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MD800 Series
AC Drive (Multidrive System)

Function Guide

Industrial Automation | Intelligent Elevator | New Energy Vehicle | Industrial Robot | Rail Transit

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Preface

Introduction

The MD800 series is a new generation of standard AC drive (multidrive system) designed for low-power and multidrive applications in the traditional OEM industry. It is widely applied in industries such as printing and packaging, woodworking machine tools, food and beverage, logistics and warehousing, textile printing and dyeing, fans and pumps.

This document describes the commissioning tools, system commissioning procedures, parameters, fault codes, and product functions and applications.

More Documents

Document Name	Description
MD800 Series AC Drive (Multidrive System) Quick Installation and Commissioning Guide	Describes the installation, wiring, quick commissioning, commissioning parameters, and troubleshooting during commissioning.
MD800 Series AC Drive (Multidrive System) Design and Selection Guide	Describes the system composition, technical specifications, and dimensions of the AC drive, specific specifications and selection of options (including installation accessories, cables, and peripheral electrical components), common EMC problems and solutions, and certifications and standards.
MD800 Series AC Drive (Multidrive System) Maintenance Guide	Describes the routine maintenance, component replacement, and troubleshooting of the product.
MD800 Series AC Drive (Multidrive System) Communication Guide	Describes the communication mode, communication networking, and communication configuration of the product.

Revision History

Date	Version	Description
August 2021	A03	Modified some panel interface figures and parameter description. Modified the styles and typos.
April 2021	A02	Corrected some minor errors.
April 2021	A01	Modified the cover and back cover.
March 2021	A00	First release

Document Acquisition

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List of Power Supply Unit Parameters

Table –1 List of function parameters of power supply unit

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F0-01	61441	Product code	800.0	800	-	Unchangeable	"F0-01" on page 36
F0-02	61442	Software version	0.00 to 655.35	0.00	-	Unchangeable	"F0-02" on page 36
F0-03	61443	Temporary software version	0.00 to 655.35	0.00	-	Unchangeable	"F0-03" on page 36
F0-04	61444	Customized No.	0 to 9999	0	-	Unchangeable	"F0-04" on page 36
F1-00	61696	Bus undervoltage threshold	Single-phase 220 V: 150 V to 220 V Three-phase 380 V: 300 V to 440 V	Single-phase 220 V: 190 V Three-phase 380 V: 350 V	V	At once	"F1-00" on page 36
F1-01	61697	Bus overvoltage threshold	Single-phase 220 V: 300 V to 410 V Three-phase 380 V: 600 V to 820 V	Single-phase 220 V: 410V Three-phase 380 V: 820V	V	At once	"F1-01" on page 37
F1-02	61698	Braking unit applied voltage	Single-phase 220 V: 300 V to 410 V Three-phase 380 V: 600 V to 820 V	Single-phase 220 V: 360V Three-phase 380 V: 760V	V	At once	"F1-02" on page 37
F1-03	61699	Braking transistor open-circuit fault	0: Disabled 1: Enabled	1	-	At once	"F1-03" on page 37
F1-04	61700	Braking transistor short-circuit	0: Disabled 1: Enabled	1	-	At once	"F1-04" on page 38
F1-05	61701	Input phase loss fault	0: Disabled 1: Enabled 2: Warning	2	-	At once	"F1-05" on page 38
F1-06	61702	Input overvoltage fault	0: Disabled 1: Enabled 2: Warning	2	-	At once	"F1-06" on page 38

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F1-07	61703	Fan fault	0: Disabled 1: Enabled 2: Warning	1	-	At once	"F1-07" on page 38
F1-08	61704	Reserved	0 to 1	1	-	Unchangeable	"F1-08" on page 39
F1-09	61705	Fan control	0: Uni-directional running 1: Forward and reverse running	0	-	At once	"F1-09" on page 39
F4-00	62464	DI1 hardware source	0: Not selected 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Extension card 1 - DI1 102: Extension card 1 - DI2 103: Extension card 1 - DI3 104: Extension card 1 - DI4 105: Extension card 1 - DI5 106: Extension card 1 - DI6 107: Extension card 1 - DI7 108: Extension card 1 - DI8 201: Extension card 2 - DI1 202: Extension card 2 - DI2 203: Extension card 2 - DI3 204: Extension card 2 - DI4 205: Extension card 2 - DI5 206: Extension card 2 - DI6 207: Extension card 2 - DI7 208: Extension card 2 - DI8	0	-	At stop	"F4-00" on page 39
F4-01	62465	DI1 function selection	0: No function 1: Operation enable 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback 5: Fault reset 6: Operation disabled for drive unit 7: Drive unit coast to stop 8: Drive unit stop according to preset stop mode	0	-	At stop	"F4-01" on page 40

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F4-02	62466	DI2 hardware source	Same as F4-00	0	-	At stop	"F4-02" on page 41
F4-03	62467	DI2 function selection	Same as F4-01	0	-	At stop	"F4-03" on page 41
F4-04	62468	DI3 hardware source	Same as F4-00	0	-	At stop	"F4-04" on page 41
F4-05	62469	DI3 function selection	Same as F4-01	0	-	At once	"F4-05" on page 41
F4-06	62470	DI4 hardware source	Same as F4-00	0	-	At stop	"F4-06" on page 42
F4-07	62471	DI4 function selection	Same as F4-01	0	-	At stop	"F4-07" on page 42
F4-08	62472	DI5 hardware source	Same as F4-00	0	-	At stop	"F4-08" on page 42
F4-09	62473	DI5 function selection	Same as F4-01	0	-	At stop	"F4-09" on page 42
F4-10	62474	DI6 hardware source	Same as F4-00	0	-	At stop	"F4-10" on page 42
F4-11	62475	DI6 function selection	Same as F4-01	0	-	At stop	"F4-11" on page 43
F4-12	62476	DI7 hardware source	Same as F4-00	0	-	At stop	"F4-12" on page 43
F4-13	62477	DI7 function selection	Same as F4-01	0	-	At stop	"F4-13" on page 43
F4-14	62478	DI8 hardware source	Same as F4-00	0	-	At stop	"F4-14" on page 43
F4-15	62479	DI8 function selection	Same as F4-01	0	-	At stop	"F4-15" on page 43
F4-16	62480	DI1 active delay	0.00s to 600.00s	0.00	s	At once	"F4-16" on page 44
F4-17	62481	DI2 active delay	0.00s to 600.00s	0.00	s	At once	"F4-17" on page 44
F4-18	62482	DI3 active delay	0.00s to 600.00s	0.00	s	At once	"F4-18" on page 44
F4-19	62483	DI4 active delay	0.00s to 600.00s	0.00	s	At once	"F4-19" on page 44
F4-20	62484	DI5 active delay	0.00s to 600.00s	0.00	s	At once	"F4-20" on page 44
F4-21	62485	DI6 active delay	0.00s to 600.00s	0.00	s	At once	"F4-21" on page 45

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F4-22	62486	DI7 active delay	0.00s to 600.00s	0.00	s	At once	"F4-22" on page 45
F4-23	62487	DI8 active delay	0.00s to 600.00s	0.00	s	At once	"F4-23" on page 45
F4-24	62488	DI1 inactive delay	0.00s to 600.00s	0.00	s	At once	"F4-24" on page 45
F4-25	62489	DI2 inactive delay	0.00s to 600.00s	0.00	s	At once	"F4-25" on page 45
F4-26	62490	DI3 inactive delay	0.00s to 600.00s	0.00	s	At once	"F4-26" on page 46
F4-27	62491	DI4 inactive delay	0.00s to 600.00s	0.00	s	At once	"F4-27" on page 46
F4-28	62492	DI5 inactive delay	0.00s to 600.00s	0.00	s	At once	"F4-28" on page 46
F4-29	62493	DI6 inactive delay	0.00s to 600.00s	0.00	s	At once	"F4-29" on page 46
F4-30	62494	DI7 inactive delay	0.00s to 600.00s	0.00	s	At once	"F4-30" on page 46
F4-31	62495	DI8 inactive delay	0.00s to 600.00s	0.00	s	At once	"F4-31" on page 47
F4-32	62496	DI (DI1 to DI5) active mode	Ones: DI1 active mode Tens: DI2 active mode Hundreds: DI3 active mode Thousands: DI4 active mode Ten thousands: DI5 active mode 0: Active low 1: Active high	0	-	At once	"F4-32" on page 47
F4-33	62497	DI (DI6 to DI8) active mode	Ones: DI6 active mode Tens: DI7 active mode Hundreds: DI8 active mode 0: Active low 1: Active high	0	-	At once	"F4-33" on page 47

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F5-00	62720	DO1/RO1 hardware source	0: Not selected 1: Power supply unit - DIO1 2: Power supply unit - DIO2 3: Power supply unit - DIO3 4: Power supply unit - DIO4 5: Power supply unit - RO1 101: Extension card 1 - DO1/ RO1 102: Extension card 1 - DO2/ RO2 103: Extension card 1 - DO3/ RO3 104: Extension card 1 - DO4/ RO4 105: Extension card 1 - DO5/ RO5 106: Extension card 1 - DO6/ RO6 107: Extension card 1 - DO7/ RO7 108: Extension card 1 - DO8/ RO8 201: Extension card 2 - DO1/ RO1 202: Extension card 2 - DO2/ RO2 203: Extension card 2 - DO3/ RO3 204: Extension card 2 - DO4/ RO4 205: Extension card 2 - DO5/ RO5 206: Extension card 2 - DO6/ RO6 207: Extension card 2 - DO7/ RO7 208: Extension card 2 - DO8/ RO8	0	-	At stop	*"F5-00" on page 48*

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F5-01	62721	DO1/RO1 function	0: No function 1: Ready to run 2: Fault 3: Warning 4: Circuit breaker action 5: Bus undervoltage 6: Bus overvoltage 7: Bus voltage normal 8: Three-phase input abnormal 9: Three-phase input normal 10: Output upon IGBT overtemperature 11: Output upon IGBT overtemperature pre-warning 12: Communication control	0	-	At stop	"F5-01" on page 48
F5-02	62722	DO2/RO2 hardware source	Same as F5-00	0	-	At stop	"F5-02" on page 49
F5-03	62723	DO2/RO2 function selection	Same as F5-01	0	-	At stop	"F5-03" on page 49
F5-04	62724	DO3/RO3 hardware source	Same as F5-00	0	-	At stop	"F5-04" on page 49
F5-05	62725	DO3/RO3 function	Same as F5-01	0	-	At stop	"F5-05" on page 49
F5-06	62726	DO4/RO4 hardware source	Same as F5-00	0	-	At stop	"F5-06" on page 50
F5-07	62727	DO4/RO4 function	Same as F5-01	0	-	At stop	"F5-07" on page 50
F5-08	62728	DO5/RO5 hardware source	Same as F5-00	0	-	At stop	"F5-08" on page 50
F5-09	62729	DO5/RO5 function	Same as F5-01	0	-	At stop	"F5-09" on page 50
F5-10	62730	DO1/RO1 active delay	0.00s to 600.00s	0.00	s	At once	"F5-10" on page 50
F5-11	62731	DO2/RO2 active delay	0.00s to 600.00s	0.00	s	At once	"F5-11" on page 51
F5-12	62732	DO3/RO3 active delay	0.00s to 600.00s	0.00	s	At once	"F5-12" on page 51
F5-13	62733	DO4/RO4 active delay	0.00s to 600.00s	0.00	s	At once	"F5-13" on page 51
F5-14	62734	DO5/RO5 active delay	0.00s to 600.00s	0.00	s	At once	"F5-14" on page 51

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F5-15	62735	DO1/RO1 inactive delay	0.00s to 600.00s	0.00	s	At once	"F5-15" on page 51
F5-16	62736	DO2/RO2 inactive delay	0.00s to 600.00s	0.00	s	At once	"F5-16" on page 52
F5-17	62737	DO3/RO3 inactive delay	0.00s to 600.00s	0.00	s	At once	"F5-17" on page 52
F5-18	62738	DO4/RO4 inactive delay	0.00s to 600.00s	0.00	s	At once	"F5-18" on page 52
F5-19	62739	DO5/RO5 inactive delay	0.00s to 600.00s	0.00	s	At once	"F5-19" on page 52
F5-20	62740	DO active mode	Ones: DO1/RO1 active mode Tens: DO2/RO2 active mode Hundreds: DO3/RO3 active mode Thousands: DO4/RO4 active mode Ten thousands: DO5/RO5 active mode 0: Active high 1: Active low	0	-	At once	"F5-20" on page 52
F5-21	62741	Circuit breaker action threshold	0V to 1000V	Three-phase 380 V: 570 V Single-phase 220 V: 330 V	V	At once	"F5-21" on page 53
FA-00	64000	Fault code of the 5th fault (latest)	-	0	-	Unchangeable	"FA-00" on page 53
FA-01	64001	Fault subcode of the 5th fault	-	0	-	Unchangeable	"FA-01" on page 53
FA-02	64002	Bus voltage upon the 5th fault	-	0.0	V	Unchangeable	"FA-02" on page 53
FA-03	64003	Heatsink temperature upon the 5th fault	-	0	℃	Unchangeable	"FA-03" on page 54
FA-04	64004	Ambient temperature upon the 5th fault	-	0	℃	Unchangeable	"FA-04" on page 54
FA-06	64006	Grid voltage Usr upon the 5th fault	-	0	V	Unchangeable	"FA-06" on page 54
FA-07	64007	Grid voltage Ust upon the 5th fault	-	0	V	Unchangeable	"FA-07" on page 54
FA-08	64008	Grid voltage Utr upon the 5th fault	-	0	V	Unchangeable	"FA-08" on page 54

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FA-09	64009	Three-phase unbalance factor upon the 5th fault	-	0.00	%	Unchangeable	"FA-09" on page 55
FA-10	64010	DI status upon the 5th fault	-	0	-	Unchangeable	"FA-10" on page 55
FA-11	64011	DO/RO status upon the 5th fault	-	0	-	Unchangeable	"FA-11" on page 55
FA-12	64012	Stop command sent from the power supply unit upon the 5th fault	1: Ready to run 2: Coast to stop 3: Stop according to preset mode	0	-	Unchangeable	"FA-12" on page 55
FA-13	64013	Total power-on duration (hour) upon the 5th fault	-	0	h	Unchangeable	"FA-13" on page 55
FA-14	64014	Total power-on duration (minute) upon the 5th fault	-	0	min	Unchangeable	"FA-14" on page 56
FA-15	64015	Total power-on duration (second) upon the 5th fault	-	0	s	Unchangeable	"FA-15" on page 56
FA-20	64020	Fault code of the 4th fault (2nd latest)	-	0	-	Unchangeable	"FA-20" on page 56
FA-21	64021	Fault subcode of the 4th fault	-	0	-	Unchangeable	"FA-21" on page 56
FA-22	64022	Bus voltage upon the 4th fault	-	0.0	V	Unchangeable	"FA-22" on page 56
FA-23	64023	Heatsink temperature upon the 4th fault	-	0.0	°C	Unchangeable	"FA-23" on page 57
FA-24	64024	Ambient temperature upon the 4th fault	-	0.0	°C	Unchangeable	"FA-24" on page 57
FA-26	64026	Grid voltage Usr upon the 4th fault	-	0.0	V	Unchangeable	"FA-26" on page 57
FA-27	64027	Grid voltage Ust upon the 4th fault	-	0.0	V	Unchangeable	"FA-27" on page 57
FA-28	64028	Grid voltage Utr upon the 4th fault	-	0.0	V	Unchangeable	"FA-28" on page 57
FA-29	64029	Three-phase unbalance factor upon the 4th fault	-	0.00	%	Unchangeable	"FA-29" on page 58
FA-30	64030	DI status upon the 4th fault	-	0.0	-	Unchangeable	"FA-30" on page 58
FA-31	64031	DO/RO status upon the 4th fault	-	0.0	-	Unchangeable	"FA-31" on page 58
FA-32	64032	Stop command sent from the power supply unit upon the 4th fault	1: Ready to run 2: Coast to stop 3: Stop according to preset mode	0.0	-	Unchangeable	"FA-32" on page 58

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FA-33	64033	Total power-on duration (hour) upon the 4th fault	-	0.0	h	Unchangeable	"FA-33" on page 58
FA-34	64034	Total power-on duration (minute) upon the 4th fault	-	0.0	min	Unchangeable	"FA-34" on page 59
FA-35	64035	Total power-on duration (second) upon the 4th fault	-	0.0	s	Unchangeable	"FA-35" on page 59
FA-40	64040	Fault code of the 3rd fault (3rd latest)	-	0.0	-	Unchangeable	"FA-40" on page 59
FA-41	64041	Fault subcode of the 3rd fault	-	0.0	-	Unchangeable	"FA-41" on page 59
FA-42	64042	Bus voltage upon the 3rd fault	-	0.0	V	Unchangeable	"FA-42" on page 59
FA-43	64043	Heatsink temperature upon the 3rd fault	-	0.0	°C	Unchangeable	"FA-43" on page 59
FA-44	64044	Ambient temperature upon the 3rd fault	-	0.0	°C	Unchangeable	"FA-44" on page 60
FA-46	64046	Grid voltage Usr upon the 3rd fault	-	0.0	V	Unchangeable	"FA-46" on page 60
FA-47	64047	Grid voltage Ust upon the 3rd fault	-	0.0	V	Unchangeable	"FA-47" on page 60
FA-48	64048	Grid voltage Utr upon the 3rd fault	-	0.0	V	Unchangeable	"FA-48" on page 60
FA-49	64049	Three-phase unbalance factor upon the 3rd fault	-	0.00	%	Unchangeable	"FA-49" on page 60
FA-50	64050	DI status upon the 3rd fault	-	0.0	-	Unchangeable	"FA-50" on page 61
FA-51	64051	DO/RO status upon the 3rd fault	-	0.0	-	Unchangeable	"FA-51" on page 61
FA-52	64052	Stop command sent from the power supply unit upon the 3rd fault	1: Ready to run 2: Coast to stop 3: Stop according to preset mode	0.0	-	Unchangeable	"FA-52" on page 61
FA-53	64053	Total power-on duration (hour) upon the 3rd fault	-	0.0	h	Unchangeable	"FA-53" on page 61
FA-54	64054	Total power-on duration (minute) upon the 3rd fault	-	0.0	min	Unchangeable	"FA-54" on page 61
FA-55	64055	Total power-on duration (second) upon the 3rd fault	-	0.0	s	Unchangeable	"FA-55" on page 62
FA-60	64060	Fault code of the 2nd fault (4th latest)	-	0.0	s	Unchangeable	"FA-60" on page 62

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FA-61	64061	Fault subcode of the 2nd fault	-	0.0	-	Unchangeable	"FA-61" on page 62
FA-62	64062	Bus voltage upon the 2nd fault	-	0.0	V	Unchangeable	"FA-62" on page 62
FA-63	64063	Heatsink temperature upon the 2nd fault	-	0.0	°C	Unchangeable	"FA-63" on page 62
FA-64	64064	Ambient temperature upon the 2nd fault	-	0.0	°C	Unchangeable	"FA-64" on page 63
FA-66	64066	Grid voltage Usr upon the 2nd fault	-	0.0	V	Unchangeable	"FA-66" on page 63
FA-67	64067	Grid voltage Ust upon the 2nd fault	-	0.0	V	Unchangeable	"FA-67" on page 63
FA-68	64068	Grid voltage Utr upon the 2nd fault	-	0.0	V	Unchangeable	"FA-68" on page 63
FA-69	64069	Three-phase unbalance factor upon the 2nd fault	-	0.00	%	Unchangeable	"FA-69" on page 63
FA-70	64070	DI status upon the 2nd fault	-	0.0	-	Unchangeable	"FA-70" on page 64
FA-71	64071	DO/RO status upon the 2nd fault	-	0.0	-	Unchangeable	"FA-71" on page 64
FA-72	64072	Stop command sent from the power supply unit upon the 2nd fault	1: Ready to run 2: Coast to stop 3: Stop according to preset mode	0.0	-	Unchangeable	"FA-72" on page 64
FA-73	64073	Total power-on time (hour) upon the 2nd fault	-	0.0	h	Unchangeable	"FA-73" on page 64
FA-74	64074	Total power-on duration (minute) upon the 2nd fault	-	0.0	min	Unchangeable	"FA-74" on page 64
FA-75	64075	Total power-on duration (second) upon the 2nd fault	-	0.0	s	Unchangeable	"FA-75" on page 65
FA-80	64080	Fault code of the 1st fault (5th latest)	-	0.0	-	Unchangeable	"FA-80" on page 65
FA-81	64081	Fault subcode of the 1st fault	-	0.0	-	Unchangeable	"FA-81" on page 65
FA-82	64082	Bus voltage upon the 1st fault	-	0.0	V	Unchangeable	"FA-82" on page 65
FA-83	64083	Heatsink temperature upon the 1st fault	-	0	°C	Unchangeable	"FA-83" on page 65
FA-84	64084	Ambient temperature upon the 1st fault	-	0	°C	Unchangeable	"FA-84" on page 66

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FA-86	64086	Grid voltage Usr upon the 1st fault	-	0	V	Unchangeable	"FA-86" on page 66
FA-87	64087	Grid voltage Ust upon the 1st fault	-	0	V	Unchangeable	"FA-87" on page 66
FA-88	64088	Grid voltage Utr upon the 1st fault	-	0	V	Unchangeable	"FA-88" on page 66
FA-89	64089	Three-phase unbalance factor upon the 1st fault	-	0.00	%	Unchangeable	"FA-89" on page 66
FA-90	64090	DI status upon the 1st fault	-	0	-	Unchangeable	"FA-90" on page 66
FA-91	64091	DO/RO status upon the 1st fault	-	0	-	Unchangeable	"FA-91" on page 67
FA-92	64092	Stop command sent from the power supply unit upon the 1st fault	1: Ready to run 2: Coast to stop 3: Stop according to preset mode	0	-	Unchangeable	"FA-92" on page 67
FA-93	64093	Total power-on duration (hour) upon the 1st fault	-	0	h	Unchangeable	"FA-93" on page 67
FA-94	64094	Total power-on duration (minute) upon the 1st fault	-	0	min	Unchangeable	"FA-94" on page 67
FA-95	64095	Total power-on duration (second) upon the 1st fault	-	0	s	Unchangeable	"FA-95" on page 67
Fd-00	64768	RS485 baud rate	0: 300 bps 1: 600 bps 2: 1200 bps 3: 2400 bps 4: 4800 bps 5: 9600 bps 6: 19200 bps 7: 38400 bps 8: 57600 bps 9: 115200 bps	5	-	At stop	"FD-00" on page 68
Fd-01	64769	RS485 data format	0: No check (8-N-2) 1: Even parity (8-E-1) 2: Odd parity (8-O-1) 3: No check (8-N-1) 4: No check (7-N-2) 5: Even parity (7-E-1) 6: Odd parity (7-O-1) 7: No check (7-N-1)	0	-	At once	"FD-01" on page 68
Fd-02	64770	RS485 local address	1 to 127	16	-	Unchangeable	"FD-02" on page 69
Fd-03	64771	RS485 response delay	0 ms to 20 ms	2	ms	At once	"FD-03" on page 69

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
Fd-04	64772	RS485 communication timeout time	0.0s to 60.0s	0.0	s	At once	"FD-04" on page 69
Fd-06	64774	Communication fault auto reset	0: Disabled 1: Enabled	1	-	At once	"FD-06" on page 69
Fd-07	64775	Maximum station number auto allocated	0 to 8	0	-	At once	"FD-07" on page 70
Fd-09	64777	CANopen/CANlink communication state	Ones: CANopen 0: Stop 1: Initializing 2: Pre-running 8: Running Tens: CANlink 0: Stop 1: Initializing 2: Pre-running 8: Running	0	-	Unchangeable	"FD-09" on page 70
Fd-10	64778	Communication protocol	1: CANopen 2: CANlink 3: Communication card mode	1	-	At once	"FD-10" on page 70
Fd-12	64780	CAN baud rate	0: 20 kbps 1: 50 kbps 2: 100 kbps 3: 125 kbps 4: 250 kbps 5: 500 kbps 6: 1 Mbps	5	-	At once	"FD-12" on page 71
Fd-13	64781	CAN station number	1 to 127	16	-	Unchangeable	"FD-13" on page 71
Fd-14	64782	Number of CAN frames received per unit time (real-time)	0 to 65535	0	-	Unchangeable	"FD-14" on page 71
Fd-15	64783	Maximum value of node reception error counter (real-time)	0 to 65535	0	-	Unchangeable	"FD-15" on page 71
Fd-16	64784	Maximum value of node transmission error counter (real-time)	0 to 65535	0	-	Unchangeable	"FD-16" on page 72
Fd-17	64785	Bus-off count per unit time	0 to 65535	0	-	Unchangeable	"FD-17" on page 72
Fd-18	64786	Power supply unit number	1 to 15	1	-	At once	"FD-18" on page 72
Fd-19	64787	CAN communication failure coefficient	1 to 15	1	-	At once	"FD-19" on page 72
Fd-34	64802	CANopen mode	0: Standard 1: Expert	0	-	At once	"FD-34" on page 72

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
Fd-35	64803	CANopen inhibit time	0 to 65535	0	-	At once	"FD-35" on page 73
Fd-36	64804	CANopen event time	0 to 65535	0	-	At once	"FD-36" on page 73
Fd-39	64807	AC drive station number configuration	0: Disabled 1: Enabled	0	-	At once	"FD-39" on page 73
Fd-40	64808	Manual setting of power supply unit station number	0 to 127	0	-	At once	"FD-40" on page 73
Fd-41	64809	Manual setting of drive unit 1 station number	0 to 127	0	-	At once	"FD-41" on page 73
Fd-42	64810	Manual setting of drive unit 2 station number	0 to 127	0	-	At once	"FD-42" on page 73
Fd-43	64811	Manual setting of drive unit 3 station number	0 to 127	0	-	At once	"FD-43" on page 74
Fd-44	64812	Manual setting of drive unit 4 station number	0 to 127	0	-	At once	"FD-44" on page 74
Fd-45	64813	Manual setting of drive unit 5 station number	0 to 127	0	-	At once	"FD-45" on page 74
Fd-46	64814	Manual setting of drive unit 6 station number	0 to 127	0	-	At once	"FD-46" on page 74
Fd-47	64815	Manual setting of drive unit 7 station number	0 to 127	0	-	At once	"FD-47" on page 74
Fd-48	64816	Manual setting of drive unit 8 station number	0 to 127	0	-	At once	"FD-48" on page 75
Fd-50	64818	Startup with station lost	0: Disabled 1: Enabled	0	-	At once	"FD-50" on page 75
Fd-51	64819	Slave station communication inhibit time	0 ms to 65535 ms	0	ms	Unchangeable	"FD-51" on page 75
Fd-52	64820	Number of online slave stations	0 to 30	0	-	Unchangeable	"FD-52" on page 75
Fd-53	64821	Online status of slave stations 1 to 15	0 to 65535	0	-	Unchangeable	"FD-53" on page 75
Fd-54	64822	Online status of slave stations 16 to 31	0 to 65535	0	-	Unchangeable	"FD-54" on page 76
Fd-55	64823	PN timeout time	0 ms to 65535 ms	0	ms	At once	"FD-55" on page 76
Fd-56	64824	PN chip status	0 to 65535	0	-	Unchangeable	"FD-56" on page 76

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
Fd-57	64825	Communication card status	0: Initializing 1: Running 2: Stop 3: Reconnecting	0	-	Unchangeable	" FD-57" on page 76
Fd-61	64829	MAC address 1	0 to 65535	0	-	Unchangeable	" FD-61" on page 77
Fd-62	64830	MAC address 2	0 to 65535	0	-	Unchangeable	" FD-62" on page 77
Fd-63	64831	MAC address 3	0 to 65535	0	-	Unchangeable	" FD-63" on page 77
Fd-70	64838	EtherCAT station name	0 to 65535	0	-	Unchangeable	" FD-70" on page 77
Fd-71	64839	EtherCAT station alias	0 to 65535	0	-	At once	" FD-71" on page 77
Fd-72	64840	Number of synchronization interrupts allowed by EtherCAT	0 to 30	10	-	At once	" FD-72" on page 77
Fd-73	64841	EtherCAT - Port0 CRC error	0 to 65535	0	-	Unchangeable	" FD-73" on page 78
Fd-74	64842	EtherCAT - Port1 CRC error	0 to 65535	0	-	Unchangeable	" FD-74" on page 78
Fd-75	64843	EtherCAT port 0/1 data forwarding error	0 to 65535	0	-	Unchangeable	" FD-75" on page 78
Fd-76	64844	EtherCAT processing unit and PDI error	0 to 65535	0	-	Unchangeable	" FD-76" on page 78
Fd-77	64845	EtherCAT port 0/1 link loss	0 to 65535	0	-	Unchangeable	" FD-77" on page 78
Fd-78	64846	EtherCAT master type	0 to 65535	0	-	At once	" FD-78" on page 79
Fd-79	64847	EtherCAT synchronization error monitoring mode	0 to 1	0	-	At once	" FD-79" on page 79
Fd-80	64848	EtherCAT synchronization frame loss count	0 to 65535	0	-	Unchangeable	" FD-80" on page 79
Fd-81	64849	EtherCAT state machine and PHYLink status	0 to 65535	0	-	Unchangeable	" FD-81" on page 79
Fd-82	64850	EtherCAT - AL fault code	0: No error 1 to 0xFFFF: Error status code	0	-	Unchangeable	" FD-82" on page 79
Fd-83	64851	EtherCAT - XML file version	0.00 to 655.35	0.00	-	Unchangeable	" FD-83" on page 80
Fd-84	64852	EtherCAT - FPGA firmware version	0 to 65535	0	-	Unchangeable	" FD-84" on page 80

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
Fd-85	64853	Station alias backup display	0 to 65535	0	-	Unchangeable	" FD-85" on page 80
Fd-86	64854	EtherCAT - EEPROM read time	0 to 65535	0	-	At once	" FD-86" on page 80
Fd-87	64855	EtherCAT - DC gain	0 to 65535	0	-	At once	" FD-87" on page 80
Fd-88	64856	EtherCAT - DC acceleration limit	0 to 65535	0	-	At once	" FD-88" on page 81
Fd-89	64857	EtherCAT - DC speed limit	0 to 65535	0	-	At once	" FD-89" on page 81
Fd-90	64858	EtherCAT - DC integral coefficient	0 to 65535	0	-	At once	" FD-90" on page 81
Fd-91	64859	Communication card version	0.00 to 655.35	0.00	-	Unchangeable	" FD-91" on page 81
Fd-92	64860	Communication version	0.00 to 655.35	0.00	-	Unchangeable	" FD-92" on page 81
Fd-93	64861	Station number of device connected to extension card slot 1	0 to 65535	0	-	Unchangeable	" FD-93" on page 82
Fd-94	64862	Station number of device connected to extension card slot 2	0 to 65535	0	-	Unchangeable	" FD-94" on page 82
Fd-95	64863	Station number of device connected to extension card slot 3	0 to 65535	0	-	Unchangeable	" FD-95" on page 82
Fd-96	64864	Station number of device connected to reserved slot 4	0 to 65535	0	-	Unchangeable	" FD-96" on page 82
Fd-97	64865	Station number of device connected to reserved slot 5	0 to 65535	0	-	Unchangeable	" FD-97" on page 82
Fd-98	64866	Station number of device connected to reserved slot 6	0 to 65535	0	-	Unchangeable	" FD-98" on page 83
Fd-99	64867	Station number of device connected to reserved slot 7	0 to 65535	0	-	Unchangeable	" FD-99" on page 83
FP-00	7936	User password	0 to 65535	0	-	At once	" FP-00" on page 83
FP-01	7937	Parameter initialization	0: No operation 1: Restore factory defaults 2: Clear records 4: Back up current user parameters 501: Restore user backup parameters	1	-	At once	" FP-01" on page 83

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FP-03	7939	Monitoring parameter display	Bit00: Bus voltage Bit01: Heatsink temperature Bit02: Ambient temperature Bit03: Usr line voltage Bit04: Ust line voltage Bit05: Utr line voltage Bit06: Three-phase unbalance factor	251	-	At once	"FP-03" on page 84
FP-05	7941	I/O card parameter restoration	0: Invalid 1: Extension I/O1 2: Extension I/O2 3: Extension I/O3 255: All extension I/Os	0	-	At once	"FP-05" on page 84
FP-06	7942	Local parameter copy mode	1: Copy all parameters 2: Copy non-motor parameters	1	-	At once	"FP-06" on page 84
FP-07	7943	Local parameter copy action	Ones: Drive unit axis number 1 to 8 Tens: Copy 1: Read 2: Write	0	-	At once	"FP-07" on page 85
A0-00	40960	I/O extension card communication cycle	0 to 100	0	-	At once	"A0-00" on page 85
A0-01	40961	Alarm threshold of consecutive drive unit frame loss	0 to 1000	10	-	At once	"A0-01" on page 85
A0-02	40962	Alarm threshold of consecutive I/O extension card frame loss	0 to 1000	10	-	At once	"A0-02" on page 85
A0-03	40963	Display of station number of axis with frame loss	Bit00: Axis 1 Bit01: Axis 2 Bit02: Axis 3 Bit03: Axis 4 Bit04: Axis 5 Bit05: Axis 6 Bit06: Axis 7 Bit07: Axis 8	0	-	Unchangeable	"A0-03" on page 86
A0-04	40964	Display of station number of I/O extension card with frame loss	Bit00: I/O extension card 1 Bit01: Extension card 2 Bit02: Extension card 3	0	-	Unchangeable	"A0-04" on page 86
A0-05	40965	Axis 1 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-05" on page 86
A0-06	40966	Axis 2 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-06" on page 87
A0-07	40967	Axis 3 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-07" on page 87

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A0-08	40968	Axis 4 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-08" on page 87
A0-09	40969	Axis 5 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-09" on page 87
A0-10	40970	Axis 6 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-10" on page 87
A0-11	40971	Axis 7 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-11" on page 88
A0-12	40972	Axis 8 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-12" on page 88
A0-13	40973	Extension card 1 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-13" on page 88
A0-14	40974	Extension card 2 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-14" on page 88
A0-15	40975	Extension card 3 - frame loss count	0 to 65535	0	-	Unchangeable	"A0-15" on page 88
A1-00	41216	Power supply unit - filter time of DI1 to DI4	0.000s to 5.000s	0.010	s	At once	"A1-00" on page 89
A1-01	41217	Power supply unit - filter time of DI5 to DI8	0.000s to 5.000s	0.010	s	At once	"A1-01" on page 89
A1-05	41221	AI1 filter time	0.00s to 10.00s	0.10	s	At once	"A1-05" on page 89
A1-06	41222	AI2 filter time	0.00s to 10.00s	0.10	s	At once	"A1-06" on page 89
A1-10	41226	AI1 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	-	At stop	"A1-10" on page 89
A1-11	41227	AI2 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	-	At stop	"A1-11" on page 90
A2-00	41472	Extension card 1 - filter time of DI1 to DI4	0.000s to 5.000s	0.010	s	At once	"A2-00" on page 90
A2-01	41473	Extension card 1 - filter time of DI5 to DI8	0.000s to 5.000s	0.010	s	At once	"A2-01" on page 90
A2-05	41477	AI1 filter time	0.00s to 10.00s	0.10	s	At once	"A2-05" on page 91

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A2-06	41478	AI2 filter time	0.00s to 10.00s	0.10	s	At once	"A2-06" on page 91
A2-10	41482	AI1 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	-	At stop	"A2-10" on page 91
A2-11	41483	AI2 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	-	At stop	"A2-11" on page 91
A3-00	41728	Extension card 2 - filter time of DI1 to DI4	0.000s to 5.000s	0.010	s	At once	"A3-00" on page 92
A3-01	41729	Extension card 2 - filter time of DI5 to DI8	0.000s to 5.000s	0.010	s	At once	"A3-01" on page 92
A3-05	41733	AI1 filter time	0.00s to 10.00s	0.10	s	At once	"A3-05" on page 92
A3-06	41734	AI2 filter time	0.00s to 10.00s	0.10	s	At once	"A3-06" on page 92
A3-10	41738	AI1 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	-	At stop	"A3-10" on page 92
A3-11	41739	AI2 input	0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PTC130 input	0	-	At stop	"A3-11" on page 93
AC-00	44032	Power supply unit - AI1 measured voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-00" on page 93
AC-01	44033	Power supply unit - AI1 displayed voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-01" on page 93
AC-02	44034	Power supply unit - AI1 measured voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-02" on page 94
AC-03	44035	Power supply unit - AI1 displayed voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-03" on page 94
AC-04	44036	Power supply unit - AI2 measured voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-04" on page 94

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
AC-05	44037	Power supply unit - AI2 displayed voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-05" on page 94
AC-06	44038	Power supply unit - AI2 measured voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-06" on page 95
AC-07	44039	Power supply unit - AI2 displayed voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-07" on page 95
AC-08	44040	Extension card 1 - AI1 measured voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-08" on page 95
AC-09	44041	Extension card 1 - AI1 displayed voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-09" on page 95
AC-10	44042	Extension card 1 - AI1 measured voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-10" on page 96
AC-11	44043	Extension card 1 - AI1 displayed voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-11" on page 96
AC-12	44044	Extension card 1 - AI2 measured voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-12" on page 96
AC-13	44045	Extension card 1 - AI2 displayed voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-13" on page 96
AC-14	44046	Extension card 1 - AI2 measured voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-14" on page 97
AC-15	44047	Extension card 1 - AI2 displayed voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-15" on page 97
AC-16	44048	Extension card 2 - AI1 measured voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-16" on page 97
AC-17	44049	Extension card 2 - AI1 measured voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-17" on page 98
AC-18	44050	Extension card 2 - AI1 measured voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-18" on page 98
AC-19	44051	Extension card 2 - AI1 displayed voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-19" on page 98
AC-20	44052	Extension card 2 - AI2 measured voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-20" on page 98
AC-21	44053	Extension card 2 - AI2 displayed voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-21" on page 99
AC-22	44054	Extension card 2 - AI2 measured voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-22" on page 99
AC-23	44055	Extension card 2 - AI2 displayed voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-23" on page 99
AC-24	44056	Extension card 3 - AI1 measured voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-24" on page 99

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
AC-25	44057	Extension card 3 - AI1 measured voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-25" on page 99
AC-26	44058	Extension card 3 - AI1 measured voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-26" on page 100
AC-27	44059	Extension card 3 - AI1 displayed voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-27" on page 100
AC-28	44060	Extension card 3 - AI2 measured voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-28" on page 100
AC-29	44061	Extension card 3 - AI2 displayed voltage 1	0.000V to 12.000V	2.000	V	At once	"AC-29" on page 100
AC-30	44062	Extension card 3 - AI2 measured voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-30" on page 100
AC-31	44063	Extension card 3 - AI2 displayed voltage 2	0.000V to 12.000V	2.000	V	At once	"AC-31" on page 101
AF-00	44800	RPDO1-SubIndex0-H	0 to 65535	0	-	At once	"AF-00" on page 101
AF-01	44801	RPDO1-SubIndex0-L	0 to 65535	0	-	At once	"AF-01" on page 101
AF-02	44802	RPDO1-SubIndex1-H	0 to 65535	0	-	At once	"AF-02" on page 101
AF-03	44803	RPDO1-SubIndex1-L	0 to 65535	0	-	At once	"AF-03" on page 101
AF-04	44804	RPDO1-SubIndex2-H	0 to 65535	0	-	At once	"AF-04" on page 102
AF-05	44805	RPDO1-SubIndex2-L	0 to 65535	0	-	At once	"AF-05" on page 102
AF-06	44806	RPDO1-SubIndex3-H	0 to 65535	0	-	At once	"AF-06" on page 102
AF-07	44807	RPDO1-SubIndex3-L	0 to 65535	0	-	At once	"AF-07" on page 102
AF-08	44808	RPDO2-SubIndex0-H	0 to 65535	0	-	At once	"AF-08" on page 102
AF-09	44809	RPDO2-SubIndex0-L	0 to 65535	0	-	At once	"AF-09" on page 103
AF-10	44810	RPDO2-SubIndex1-H	0 to 65535	0	-	At once	"AF-10" on page 103
AF-11	44811	RPDO2-SubIndex1-L	0 to 65535	0	-	At once	"AF-11" on page 103
AF-12	44812	RPDO2-SubIndex2-H	0 to 65535	0	-	At once	"AF-12" on page 103

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
AF-13	44813	RPDO2-SubIndex2-L	0 to 65535	0	-	At once	"AF-13" on page 103
AF-14	44814	RPDO2-SubIndex3-H	0 to 65535	0	-	At once	"AF-14" on page 104
AF-15	44815	RPDO2-SubIndex3-L	0 to 65535	0	-	At once	"AF-15" on page 104
AF-16	44816	RPDO3-SubIndex0-H	0 to 65535	0	-	At once	"AF-16" on page 104
AF-17	44817	RPDO3-SubIndex0-L	0 to 65535	0	-	At once	"AF-17" on page 104
AF-18	44818	RPDO3-SubIndex1-H	0 to 65535	0	-	At once	"AF-18" on page 104
AF-19	44819	RPDO3-SubIndex1-L	0 to 65535	0	-	At once	"AF-19" on page 105
AF-20	44820	RPDO3-SubIndex2-H	0 to 65535	0	-	At once	"AF-20" on page 105
AF-21	44821	RPDO3-SubIndex2-L	0 to 65535	0	-	At once	"AF-21" on page 105
AF-22	44822	RPDO3-SubIndex3-H	0 to 65535	0	-	At once	"AF-22" on page 105
AF-23	44823	RPDO3-SubIndex3-L	0 to 65535	0	-	At once	"AF-23" on page 105
AF-24	44824	RPDO4-SubIndex0-H	0 to 65535	0	-	At once	"AF-24" on page 106
AF-25	44825	RPDO4-SubIndex0-L	0 to 65535	0	-	At once	"AF-25" on page 106
AF-26	44826	RPDO4-SubIndex1-H	0 to 65535	0	-	At once	"AF-26" on page 106
AF-27	44827	RPDO4-SubIndex1-L	0 to 65535	0	-	At once	"AF-27" on page 106
AF-28	44828	RPDO4-SubIndex2-H	0 to 65535	0	-	At once	"AF-28" on page 106
AF-29	44829	RPDO4-SubIndex2-L	0 to 65535	0	-	At once	"AF-29" on page 106
AF-30	44830	RPDO4-SubIndex3-H	0 to 65535	0	-	At once	"AF-30" on page 107
AF-31	44831	RPDO4-SubIndex3-L	0 to 65535	0	-	At once	"AF-31" on page 107
AF-32	44832	TPDO1-SubIndexO-H	0 to 65535	0	-	At once	"AF-32" on page 107

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
AF-33	44833	TPDO1-SubIndexO-L	0 to 65535	0	-	At once	"AF-33" on page 107
AF-34	44834	TPDO1-SubIndex1-H	0 to 65535	0	-	At once	"AF-34" on page 107
AF-35	44835	TPDO1-SubIndex1-L	0 to 65535	0	-	At once	"AF-35" on page 108
AF-36	44836	TPDO1-SubIndex2-H	0 to 65535	0	-	At once	"AF-36" on page 108
AF-37	44837	TPDO1-SubIndex2-L	0 to 65535	0	-	At once	"AF-37" on page 108
AF-38	44838	TPDO1-SubIndex3-H	0 to 65535	0	-	At once	"AF-38" on page 108
AF-39	44839	TPDO1-SubIndex3-L	0 to 65535	0	-	At once	"AF-39" on page 108
AF-40	44840	TPDO2-SubIndex0-H	0 to 65535	0	-	At once	"AF-40" on page 109
AF-41	44841	TPDO2-SubIndex0-L	0 to 65535	0	-	At once	"AF-41" on page 109
AF-42	44842	TPDO2-SubIndex1-H	0 to 65535	0	-	At once	"AF-42" on page 109
AF-43	44843	TPDO2-SubIndex1-L	0 to 65535	0	-	At once	"AF-43" on page 109
AF-44	44844	TPDO2-SubIndex2-H	0 to 65535	0	-	At once	"AF-44" on page 109
AF-45	44845	TPDO2-SubIndex2-L	0 to 65535	0	-	At once	"AF-45" on page 110
AF-46	44846	TPDO2-SubIndex3-H	0 to 65535	0	-	At once	"AF-46" on page 110
AF-47	44847	TPDO2-SubIndex3-L	0 to 65535	0	-	At once	"AF-47" on page 110
AF-48	44848	TPDO3-SubIndex0-H	0 to 65535	0	-	At once	"AF-48" on page 110
AF-49	44849	TPDO3-SubIndex0-L	0 to 65535	0	-	At once	"AF-49" on page 110
AF-50	44850	TPDO3-SubIndex1-H	0 to 65535	0	-	At once	"AF-50" on page 110
AF-51	44851	TPDO3-SubIndex1-L	0 to 65535	0	-	At once	"AF-51" on page 111
AF-52	44852	TPDO3-SubIndex2-H	0 to 65535	0	-	At once	"AF-52" on page 111

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
AF-53	44853	TPDO3-SubIndex2-L	0 to 65535	0	-	At once	"AF-53" on page 111
AF-54	44854	TPDO3-SubIndex3-H	0 to 65535	0	-	At once	"AF-54" on page 111
AF-55	44855	TPDO3-SubIndex3-L	0 to 65535	0	-	At once	"AF-55" on page 111
AF-56	44856	TPDO4-SubIndex0-H	0 to 65535	0	-	At once	"AF-56" on page 112
AF-57	44857	TPDO4-SubIndex0-L	0 to 65535	0	-	At once	"AF-57" on page 112
AF-58	44858	TPDO4-SubIndex1-H	0 to 65535	0	-	At once	"AF-58" on page 112
AF-59	44859	TPDO4-SubIndex1-L	0 to 65535	0	-	At once	"AF-59" on page 112
AF-60	44860	TPDO4-SubIndex2-H	0 to 65535	0	-	At once	"AF-60" on page 112
AF-61	44861	TPDO4-SubIndex2-L	0 to 65535	0	-	At once	"AF-61" on page 113
AF-62	44862	TPDO4-SubIndex3-H	0 to 65535	0	-	At once	"AF-62" on page 113
AF-63	44863	TPDO4-SubIndex3-L	0 to 65535	0	-	At once	"AF-63" on page 113
AF-66	44866	Number of valid RPDOs	0 to 65535	0	-	Unchangeable	"AF-66" on page 113
AF-67	44867	Number of valid TPDOs	0 to 65535	0	-	Unchangeable	"AF-67" on page 113
U0-00	28672	Bus voltage	0V to 1000V	0	V	Unchangeable	"U0-00" on page 114
U0-01	28673	Heatsink temperature	-50°C to 150°C	0	°C	Unchangeable	"U0-01" on page 114
U0-02	28674	Ambient temperature	-50°C to 150°C	0	°C	Unchangeable	"U0-02" on page 114
U0-04	28676	Input voltage Usr	0V to 1000V	0	V	Unchangeable	"U0-04" on page 114
U0-05	28677	Input voltage Ust	0V to 1000V	0	V	Unchangeable	"U0-05" on page 114
U0-06	28678	Input voltage Utr	0V to 1000V	0	V	Unchangeable	"U0-06" on page 115
U0-07	28679	Three-phase unbalance factor	0.0% to 100.0%	1	%	Unchangeable	"U0-07" on page 115

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U0-12	28684	Current fault code	0 to 100	0	-	Unchangeable	"U0-12" on page 115
U0-13	28685	Current fault subcode	0 to 100	0	-	Unchangeable	"U0-13" on page 115
U0-14	28686	Current alarm code	0 to 100	0	-	Unchangeable	"U0-14" on page 115
U0-15	28687	Current alarm subcode	0 to 100	0	-	Unchangeable	"U0-15" on page 115
U0-16	28688	Online module list	0 to 65535	0	-	Unchangeable	"U0-16" on page 116
U0-17	28689	Number of online modules	0 to 8	0	-	Unchangeable	"U0-17" on page 116
U0-18	28690	Number of online I/O modules	0 to 3	0	-	Unchangeable	"U0-18" on page 116
U0-19	28692	Current power-on duration (hour)	0 h to 65535 h	0	h	Unchangeable	"U0-19" on page 116
U0-20	28693	Current power-on duration (minute)	0 min to 60 min	0	min	Unchangeable	"U0-20" on page 116
U0-21	28694	Current power-on duration (second)	0s to 60s	0	s	Unchangeable	"U0-21" on page 117
U0-23	28695	Current power-on duration (millisecond)	0 ms to 1000 ms	0	ms	Unchangeable	"U0-23" on page 117
U0-25	28697	Braking unit control command word	0: Braking disabled 1: Braking	0	-	Unchangeable	"U0-25" on page 117
U0-30	28702	Total power-on duration (hour)	0 h to 65535 h	0	h	Unchangeable	"U0-30" on page 117
U0-31	28703	Total power-on duration (minute)	0 min to 60 min	0	min	Unchangeable	"U0-31" on page 117
U0-32	28704	Total power-on duration (second)	0s to 60s	0	s	Unchangeable	"U0-32" on page 118
U0-33	28705	Total power-on duration (millisecond)	0 ms to 1000 ms	0	ms	Unchangeable	"U0-33" on page 118
U0-35	28707	Power supply unit state	0: No RST input 1: Normal operation 2: Fault state	0	-	Unchangeable	"U0-35" on page 118
U2-00	29184	Power supply unit I/O type	0 to 65535	0	-	Unchangeable	"U2-00" on page 118
U2-01	29185	Power supply unit I/O version	0.00 to 655.35	2	-	Unchangeable	"U2-01" on page 119
U2-02	29186	Power supply unit I/O - original DI hardware resource	0 to 8	0	-	Unchangeable	"U2-02" on page 119

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U2-03	29187	Power supply unit I/O - available DI hardware resource	0 to 8	0	-	Unchangeable	"U2-03" on page 119
U2-04	29188	Power supply unit I/O - original AI hardware resource	0 to 2	0	-	Unchangeable	"U2-04" on page 119
U2-05	29189	Power supply unit I/O - available AI hardware resource	0 to 2	0	-	Unchangeable	"U2-05" on page 119
U2-06	29190	Power supply unit I/O - original DO hardware resource	0 to 8	0	-	Unchangeable	"U2-06" on page 119
U2-07	29191	Power supply unit I/O - available DO hardware resource	0 to 8	0	-	Unchangeable	"U2-07" on page 120
U2-08	29192	Power supply unit I/O - original AO hardware resource	0 to 2	0	-	Unchangeable	"U2-08" on page 120
U2-09	29193	Power supply unit I/O - available AO hardware resource	0 to 2	0	-	Unchangeable	"U2-09" on page 120
U2-10	29194	Power supply unit I/O - DI input	0 to 65535	0	-	Unchangeable	"U2-10" on page 120
U2-11	29195	Power supply unit I/O - DO output	0 to 65535	0	-	Unchangeable	"U2-11" on page 120
U2-12	29196	Local - AI1 input (before correction)	-10.000 V to +10.000 V	0.000	V	Unchangeable	"U2-12" on page 121
U2-13	29197	Local - AI2 input (before correction)	-10.000 V to +10.000 V	0.000	V	Unchangeable	"U2-13" on page 121
U2-14	29198	Local - AI1 input (after correction)	-10.00 V to +10.00 V	0.00	V	Unchangeable	"U2-14" on page 121
U2-15	29199	Local - AI2 input (after correction)	-10.00 V to +10.00 V	0.00	V	Unchangeable	"U2-15" on page 121
U2-20	29204	Power supply unit I/O - usage of DI1 by drive unit	0 to 8	0	-	Unchangeable	"U2-20" on page 121
U2-21	29205	Power supply unit I/O - usage of DI2 by drive unit	0 to 8	0	-	Unchangeable	"U2-21" on page 122
U2-22	29206	Power supply unit I/O - usage of DI3 by drive unit	0 to 8	0	-	Unchangeable	"U2-22" on page 122
U2-23	29207	Power supply unit I/O - usage of DI4 by drive unit	0 to 8	0	-	Unchangeable	"U2-23" on page 122
U2-24	29208	Power supply unit I/O - usage of DI5 by drive unit	0 to 8	0	-	Unchangeable	"U2-24" on page 122
U2-25	29209	Power supply unit I/O - usage of DI6 by drive unit	0 to 8	0	-	Unchangeable	"U2-25" on page 122
U2-26	29210	Power supply unit I/O - usage of DI7 by drive unit	0 to 8	0	-	Unchangeable	"U2-26" on page 123

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U2-27	29211	Power supply unit I/O - usage of DI8 by drive unit	0 to 8	0	-	Unchangeable	"U2-27" on page 123
U2-30	29214	Power supply unit I/O - usage of AI1 by drive unit	0 to 2	0	-	Unchangeable	"U2-30" on page 123
U2-31	29215	Power supply unit I/O - usage of AI2 by drive unit	0 to 2	0	-	Unchangeable	"U2-31" on page 123
U2-40	29224	Power supply unit I/O - usage of DO1 by drive unit	0 to 8	0	-	Unchangeable	"U2-40" on page 123
U2-41	29225	Power supply unit I/O - usage of DO2 by drive unit	0 to 8	0	-	Unchangeable	"U2-41" on page 124
U2-42	29226	Power supply unit I/O - usage of DO3 by drive unit	0 to 8	0	-	Unchangeable	"U2-42" on page 124
U2-43	29227	Power supply unit I/O - usage of DO4 by drive unit	0 to 8	0	-	Unchangeable	"U2-43" on page 124
U2-44	29228	Power supply unit I/O - usage of DO5 by drive unit	0 to 8	0	-	Unchangeable	"U2-44" on page 124
U2-45	29229	Power supply unit I/O - usage of DO6 by drive unit	0 to 8	0	-	Unchangeable	"U2-45" on page 124
U2-46	29230	Power supply unit I/O - usage of DO7 by drive unit	0 to 8	0	-	Unchangeable	"U2-46" on page 125
U2-47	29231	Power supply unit I/O - usage of DO8 by drive unit	0 to 8	0	-	Unchangeable	"U2-47" on page 125
U3-00	29440	Type of I/O extension card 1	0 to 65535	0	-	Unchangeable	"U3-00" on page 125
U3-01	29441	Version of I/O extension card 1	0.00 to 655.35	2	-	Unchangeable	"U3-01" on page 125
U3-02	29442	I/O extension card 1 - original DI hardware resource	0 to 8	0	-	Unchangeable	"U3-02" on page 125
U3-03	29443	I/O extension card 1 - available DI hardware resource	0 to 8	0	-	Unchangeable	"U3-03" on page 126
U3-04	29444	I/O extension card 1 - original AI hardware resource	0 to 2	0	-	Unchangeable	"U3-04" on page 126
U3-05	29445	I/O extension card 1 - available AI hardware resource	0 to 2	0	-	Unchangeable	"U3-05" on page 126
U3-06	29446	I/O extension card 1 - original DO hardware resource	0 to 8	0	-	Unchangeable	"U3-06" on page 126
U3-07	29447	I/O extension card 1 - available DO hardware resource	0 to 8	0	-	Unchangeable	"U3-07" on page 126
U3-08	29448	I/O extension card 1 - original AO hardware resource	0 to 2	0	-	Unchangeable	"U3-08" on page 127

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U3-09	29449	I/O extension card 1 - available AO hardware resource	0 to 2	0	-	Unchangeable	"U3-09" on page 127
U3-10	29450	DI input of I/O extension card 1	0 to 65535	0	-	Unchangeable	"U3-10" on page 127
U3-11	29451	DO output of I/O extension card 1	0 to 65535	0	-	Unchangeable	"U3-11" on page 127
U3-12	29452	I/O extension card 1 - AI1 input (before correction)	-10.000 V to +10.000 V	0.000	V	Unchangeable	"U3-12" on page 127
U3-13	29453	I/O extension card 1 - AI2 input (before correction)	-10.000 V to +10.000 V	0.000	V	Unchangeable	"U3-13" on page 128
U3-14	29454	I/O extension card 1 - AI1 input (after correction)	-10.00 V to +10.00 V	0.00	V	Unchangeable	"U3-14" on page 128
U3-15	29455	I/O extension card 1 - AI2 input (after correction)	-10.00 V to +10.00 V	0.00	V	Unchangeable	"U3-15" on page 128
U3-20	29460	I/O extension card 1 - usage of DI1 by drive unit	0 to 8	0	-	Unchangeable	"U3-20" on page 128
U3-21	29461	I/O extension card 1 - usage of DI2 by drive unit	0 to 8	0	-	Unchangeable	"U3-21" on page 128
U3-22	29462	I/O extension card 1 - usage of DI3 by drive unit	0 to 8	0	-	Unchangeable	"U3-22" on page 128
U3-23	29463	I/O extension card 1 - usage of DI4 by drive unit	0 to 8	0	-	Unchangeable	"U3-23" on page 129
U3-24	29464	I/O extension card 1 - usage of DI5 by drive unit	0 to 8	0	-	Unchangeable	"U3-24" on page 129
U3-25	29465	I/O extension card 1 - usage of DI6 by drive unit	0 to 8	0	-	Unchangeable	"U3-25" on page 129
U3-26	29466	I/O extension card 1 - usage of DI7 by drive unit	0 to 8	0	-	Unchangeable	"U3-26" on page 129
U3-27	29467	I/O extension card 1 - usage of DI8 by drive unit	0 to 8	0	-	Unchangeable	"U3-27" on page 129
U3-30	29470	I/O extension card 1 - usage of AI1 by drive unit	0 to 2	0	-	Unchangeable	"U3-30" on page 130
U3-31	29471	I/O extension card 1 - usage of AI2 by drive unit	0 to 2	0	-	Unchangeable	"U3-31" on page 130
U3-40	29480	I/O extension card 1 - usage of DO1 by drive unit	0 to 8	0	-	Unchangeable	"U3-40" on page 130
U3-41	29481	I/O extension card 1 - usage of DO2 by drive unit	0 to 8	0	-	Unchangeable	"U3-41" on page 130
U3-42	29482	I/O extension card 1 - usage of DO3 by drive unit	0 to 8	0	-	Unchangeable	"U3-42" on page 130

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U3-43	29483	I/O extension card 1 - usage of DO4 by drive unit	0 to 8	0	-	Unchangeable	"U3-43" on page 131
U3-44	29484	I/O extension card 1 - usage of DO5 by drive unit	0 to 8	0	-	Unchangeable	"U3-44" on page 131
U3-45	29485	I/O extension card 1 - usage of DO6 by drive unit	0 to 8	0	-	Unchangeable	"U3-45" on page 131
U3-46	29486	I/O extension card 1 - usage of DO7 by drive unit	0 to 8	0	-	Unchangeable	"U3-46" on page 131
U3-47	29487	I/O extension card 1 - usage of DO8 by drive unit	0 to 8	0	-	Unchangeable	"U3-47" on page 131
U4-00	29696	Type of I/O extension card 2	0 to 65535	0	-	Unchangeable	"U4-00" on page 132
U4-01	29697	Version of I/O extension card 2	0.00 to 655.35	2	-	Unchangeable	"U4-01" on page 132
U4-02	29698	I/O extension card 2 - original DI hardware resource	0 to 8	0	-	Unchangeable	"U4-02" on page 132
U4-03	29699	I/O extension card 2 - available DI hardware resource	0 to 8	0	-	Unchangeable	"U4-03" on page 132
U4-04	29700	I/O extension card 2 - original AI hardware resource	0 to 2	0	-	Unchangeable	"U4-04" on page 132
U4-05	29701	I/O extension card 2 - available AI hardware resource	0 to 2	0	-	Unchangeable	"U4-05" on page 133
U4-06	29702	I/O extension card 2 - original DO hardware resource	0 to 8	0	-	Unchangeable	"U4-06" on page 133
U4-07	29703	I/O extension card 2 - available DO hardware resource	0 to 8	0	-	Unchangeable	"U4-07" on page 133
U4-08	29704	I/O extension card 2 - original AO hardware resource	0 to 2	0	-	Unchangeable	"U4-08" on page 133
U4-09	29705	I/O extension card 2 - available AO hardware resource	0 to 2	0	-	Unchangeable	"U4-09" on page 133
U4-10	29706	I/O extension card 2 - DI input	0 to 65535	0	-	Unchangeable	"U4-10" on page 134
U4-11	29707	I/O extension card 2 - DO output	0 to 65535	0	-	Unchangeable	"U4-11" on page 134
U4-12	29708	I/O extension card 2 - AI1 input (before correction)	-10.000 V to +10.000 V	0.000	V	Unchangeable	"U4-12" on page 134
U4-13	29709	I/O extension card 2 - AI2 input (before correction)	-10.000 V to +10.000 V	0.000	V	Unchangeable	"U4-13" on page 134
U4-14	29710	I/O extension card 2 - AI1 input (after correction)	-10.00 V to +10.00 V	0.00	V	Unchangeable	"U4-14" on page 134

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U4-15	29711	I/O extension card 2 - AI2 input (after correction)	-10.00 V to +10.00 V	0.00	V	Unchangeable	"U4-15" on page 135
U4-20	29716	I/O extension card 2 - usage of DI1 by drive unit	0 to 8	0	-	Unchangeable	"U4-20" on page 135
U4-21	29717	I/O extension card 2 - usage of DI2 by drive unit	0 to 8	0	-	Unchangeable	"U4-21" on page 135
U4-22	29718	I/O extension card 2 - usage of DI3 by drive unit	0 to 8	0	-	Unchangeable	"U4-22" on page 135
U4-23	29719	I/O extension card 2 - usage of DI4 by drive unit	0 to 8	0	-	Unchangeable	"U4-23" on page 135
U4-24	29720	I/O extension card 2 - usage of DI5 by drive unit	0 to 8	0	-	Unchangeable	"U4-24" on page 136
U4-25	29721	I/O extension card 2 - usage of DI6 by drive unit	0 to 8	0	-	Unchangeable	"U4-25" on page 136
U4-26	29722	I/O extension card 2 - usage of DI7 by drive unit	0 to 8	0	-	Unchangeable	"U4-26" on page 136
U4-27	29723	I/O extension card 2 - usage of DI8 by drive unit	0 to 8	0	-	Unchangeable	"U4-27" on page 136
U4-30	29726	I/O extension card 2 - usage of AI1 by drive unit	0 to 2	0	-	Unchangeable	"U4-30" on page 136
U4-31	29727	I/O extension card 2 - usage of AI2 by drive unit	0 to 2	0	-	Unchangeable	"U4-31" on page 136
U4-40	29736	I/O extension card 2 - usage of DO1 by drive unit	0 to 8	0	-	Unchangeable	"U4-40" on page 137
U4-41	29737	I/O extension card 2 - usage of DO2 by drive unit	0 to 8	0	-	Unchangeable	"U4-41" on page 137
U4-42	29738	I/O extension card 2 - usage of DO3 by drive unit	0 to 8	0	-	Unchangeable	"U4-42" on page 137
U4-43	29739	I/O extension card 2 - usage of DO4 by drive unit	0 to 8	0	-	Unchangeable	"U4-43" on page 137
U4-44	29740	I/O extension card 2 - usage of DO5 by drive unit	0 to 8	0	-	Unchangeable	"U4-44" on page 137
U4-45	29741	I/O extension card 2 - usage of DO6 by drive unit	0 to 8	0	-	Unchangeable	"U4-45" on page 138
U4-46	29742	I/O extension card 2 - usage of DO7 by drive unit	0 to 8	0	-	Unchangeable	"U4-46" on page 138
U4-47	29743	I/O extension card 2 - usage of DO8 by drive unit	0 to 8	0	-	Unchangeable	"U4-47" on page 138

1 Parameter Group

1.1 F0: Basic Parameters of Power Supply Unit

F0-01 **Product code**

Address: 61441
Min.: 800 Unit: -
Max.: 800 Data type: UInt16
Default: 800 Change: Unchangeable

Value Range:
800.0
Description
MD800

F0-02 **Software version**

Address: 61442
Min.: 0.00 Unit: -
Max.: 655.35 Data type: UInt16
Default: 0.00 Change: Unchangeable

Value Range:
0.00 to 655.35
Description
Software version

F0-03 **Temporary software version**

Address: 61443
Min.: 0.00 Unit: -
Max.: 655.35 Data type: UInt16
Default: 0.00 Change: Unchangeable

Value Range:
0.00 to 655.35
Description
Temporary software version

F0-04 **Customized No.**

Address: 61444
Min.: 0 Unit: -
Max.: 9999 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 9999
Description
Customized No.

1.2 F1: Fault Settings

F1-00 **Bus undervoltage threshold**

Address: 61696
Min.: 150 Unit: V

Max.:	500	Data type:	UInt16
Default:	Single-phase 220 V: 190 V Three-phase 380 V: 350 V	Change:	At once

Value Range:

Single-phase 220 V: 150 V to 220 V

Three-phase 380 V: 300 V to 440 V

Description

When the bus voltage is lower than the value of F1-00, the system determines that undervoltage occurs.

When the system is in undervoltage state, the drive unit fails to run.

F1-01 Bus overvoltage threshold

Address:	61697		
Min.:	150	Unit:	V
Max.:	850	Data type:	UInt16
Default:	Single-phase 220 V: 410 V Three-phase 380 V: 820 V	Change:	At once

Value Range:

Single-phase 220 V: 300 V to 410 V

Three-phase 380 V: 600 V to 820 V

Description

When the bus voltage is higher than the value of F1-01, the system determines that overvoltage occurs. If the bus voltage is too high, the system may be damaged.

F1-02 Braking unit applied voltage

Address:	61698		
Min.:	150	Unit:	V
Max.:	800	Data type:	UInt16
Default:	Single-phase 220 V: 360 V Three-phase 380 V: 760 V	Change:	At once

Value Range:

Single-phase 220 V: 300 V to 410 V

Three-phase 380 V: 600 V to 820 V

Description

When the bus voltage is higher than the value of this parameter, the braking unit is actuated. When the bus voltage is higher than the value of F1-02, the braking unit is actuated to reduce the bus voltage. When the braking unit is actuated, a large amount of energy will be consumed on the braking resistor. Configure the braking resistor properly according to actual application and ensure good cooling of the braking resistor.

F1-03 Braking transistor open-circuit fault

Address:	61699		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	At once

Value Range:

0: Disabled

1: Enabled

Description

When the braking transistor open circuit detection function is enabled, the system will report E61.02 if braking transistor is open-circuited.

F1-04 **Braking transistor short-circuit**

Address:	61700		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	At once

Value Range:

0: Disabled

1: Enabled

Description

When the braking transistor short circuit detection function is enabled, the system will report E61.01 or E61.03 if the braking transistor is short-circuited.

F1-05 **Input phase loss fault**

Address:	61701		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	2	Change:	At once

Value Range:

0: Disabled

1: Enabled

2: Warning

Description

This parameter defines the action upon an input phase loss fault.

This parameter is applicable only to three-phase 380 V input models, but not single-phase 220 V models.

When it is set to 0, no alarm is generated when input phase loss occurs.

When it is set to 1, E12.01 is reported when input phase loss occurs.

When it is set to 2, A12.01 is reported as a warning when input phase loss occurs.

F1-06 **Input overvoltage fault**

Address:	61702		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	2	Change:	At once

Value Range:

0: Disabled

1: Enabled

2: Warning

Description

This parameter defines the action upon an input overvoltage fault.

This parameter specifies whether to generate an alarm upon an input overvoltage fault.

When it is set to 0, no alarm is generated.

When it is set to 1, E12.04 is reported when input overvoltage occurs.

When it is set to 2, A12.04 is reported when input overvoltage occurs.

For three-phase 380 V models, the input overvoltage threshold is 576 V. For single-phase 220 V models, the input overvoltage threshold is 288 V.

F1-07 **Fan fault**

Address:	61703		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16

Default: 1 Change: At once

Value Range:

0: Disabled

1: Enabled

2: Warning

Description

This parameter defines the action upon a fan fault.

When it is set to 1, E80.00 is reported when the fan is blocked or damaged. When it is set to 2, A80.00 is reported upon a fan fault.

F1-08 **Reserved**

Address: 61704

Min.: 0 Unit: -

Max.: 1 Data type: UInt16

Default: 1 Change: Unchangeable

Value Range:

0 to 1

Description

Reserved

F1-09 **Fan control**

Address: 61705

Min.: 0 Unit: -

Max.: 1 Data type: UInt16

Default: 0 Change: At once

Value Range:

0: Uni-directional running

1: Forward and reverse running

Description

1.3 F4: Input Terminals

F4-00 **DI1 hardware source**

Address: 62464

Min.: 0 Unit: -

Max.: 208 Data type: UInt16

Default: 0 Change: At stop

Value Range:

0: Not selected
1: Power supply unit - DI1
2: Power supply unit - DI2
3: Power supply unit - DI3
4: Power supply unit - DI4
5: Power supply unit - DIO1
6: Power supply unit - DIO2
7: Power supply unit - DIO3
8: Power supply unit - DIO4
101: Extension card 1 - DI1
102: Extension card 1 - DI2
103: Extension card 1 - DI3
104: Extension card 1 - DI4
105: Extension card 1 - DI5
106: Extension card 1 - DI6
107: Extension card 1 - DI7
108: Extension card 1 - DI8
201: Extension card 2 - DI1
202: Extension card 2 - DI2
203: Extension card 2 - DI3
204: Extension card 2 - DI4
205: Extension card 2 - DI5
206: Extension card 2 - DI6
207: Extension card 2 - DI7
208: Extension card 2 - DI8

Description

This parameter defines the source of the input terminal.

F4-01 **DI1 function selection**

Address:	62465		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No function
1: Operation enable
2: Incoming circuit breaker feedback
3: Auxiliary circuit breaker feedback
4: Residual current device feedback
5: Fault reset
6: Operation disabled for drive unit
7: Drive unit coast to stop
8: Drive unit stop according to preset mode

Description

This parameter defines the function of the input terminal.

0: No function

Set 0 for unused terminals to avoid malfunction.

1: Operation enable

The power supply unit sends a running command to the drive unit.

2: Incoming circuit breaker feedback

The power supply unit sends a running command to the drive unit according to feedback signals.

3: Auxiliary circuit breaker feedback

The power supply unit sends a running command to the drive unit according to feedback signals.

4: Residual current device feedback

The power supply unit sends a running command to the drive unit according to feedback signals.

5: Fault reset

An input terminal programmed with this function can be used to reset the AC drive when a fault occurs.

6: Operation disabled for drive unit

The power supply unit sends a command to prohibit running of the drive unit.

7: Drive unit coast to stop

The power supply unit sends a coast to stop command to the drive unit.

8: Drive unit stop according to preset mode

The power supply unit sends a command to the drive unit to stop it according to the preset stop mode.

F4-02 DI2 hardware source

Address:	62466		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

Same as F4-00

Description

Same as F4-00

F4-03 DI2 function selection

Address:	62467		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

Same as F4-01

Description

Same as F4-01

F4-04 DI3 hardware source

Address:	62468		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

Same as F4-00

Description

Same as F4-00

F4-05 DI3 function selection

Address: 62469

Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: At once

Value Range:
Same as F4-01

Description
Same as F4-01

F4-06 DI4 hardware source

Address: 62470
Min.: 0 Unit: -
Max.: 208 Data type: UInt16
Default: 0 Change: At stop

Value Range:
Same as F4-00

Description
Same as F4-00

F4-07 DI4 function selection

Address: 62471
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: At stop

Value Range:
Same as F4-01

Description
Same as F4-01

F4-08 DI5 hardware source

Address: 62472
Min.: 0 Unit: -
Max.: 208 Data type: UInt16
Default: 0 Change: At stop

Value Range:
Same as F4-00

Description
Same as F4-00

F4-09 DI5 function selection

Address: 62473
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: At stop

Value Range:
Same as F4-01

Description
Same as F4-01

F4-10 DI6 hardware source

Address: 62474
Min.: 0 Unit: -
Max.: 208 Data type: UInt16

Default: 0 Change: At stop

Value Range:

Same as F4-00

Description

Same as F4-00

F4-11 DI6 function selection

Address: 62475

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: At stop

Value Range:

Same as F4-01

Description

Same as F4-01

F4-12 DI7 hardware source

Address: 62476

Min.: 0 Unit: -

Max.: 208 Data type: UInt16

Default: 0 Change: At stop

Value Range:

Same as F4-00

Description

Same as F4-00

F4-13 DI7 function selection

Address: 62477

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: At stop

Value Range:

Same as F4-01

Description

Same as F4-01

F4-14 DI8 hardware source

Address: 62478

Min.: 0 Unit: -

Max.: 208 Data type: UInt16

Default: 0 Change: At stop

Value Range:

Same as F4-00

Description

Same as F4-00

F4-15 DI8 function selection

Address: 62479

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: At stop

Value Range:

Same as F4-01

Description

Same as F4-01

F4-16 **DI1 active delay**

Address:	62480		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description

This parameter defines the response delay for the DI terminal switching from the inactive state to active state.

F4-17 **DI2 active delay**

Address:	62481		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description

Same as F4-16

F4-18 **DI3 active delay**

Address:	62482		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description

Same as F4-16

F4-19 **DI4 active delay**

Address:	62483		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description

Same as F4-16

F4-20 **DI5 active delay**

Address:	62484		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description
Same as F4-16

F4-21 **DI6 active delay**

Address:	62485		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s
Description
Same as F4-16

F4-22 **DI7 active delay**

Address:	62486		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s
Description
Same as F4-16

F4-23 **DI8 active delay**

Address:	62487		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s
Description
Same as F4-16

F4-24 **DI1 inactive delay**

Address:	62488		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s
Description
This parameter defines the response delay for the DI terminal switching from the active state to inactive state.

F4-25 **DI2 inactive delay**

Address:	62489		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s

Description
Same as F4-24

F4-26 DI3 inactive delay

Address:	62490		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s
Description
Same as F4-24

F4-27 DI4 inactive delay

Address:	62491		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s
Description
Same as F4-24

F4-28 DI5 inactive delay

Address:	62492		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s
Description
Same as F4-24

F4-29 DI6 inactive delay

Address:	62493		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s
Description
Same as F4-24

F4-30 DI7 inactive delay

Address:	62494		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s
Description
Same as F4-24

F4-31 **DI8 inactive delay**

Address:	62495		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description

Same as F4-24

F4-32 **DI (DI1 to DI5) active mode**

Address:	62496		
Min.:	0	Unit:	-
Max.:	11111	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

Ones: DI1 active mode

Tens: DI2 active mode

Hundreds: DI3 active mode

Thousands: DI4 active mode

Ten thousands: DI5 active mode

0: Active low

1: Active high

Description

When active high is selected, the DI terminal is active when connected to COM and inactive when disconnected from COM.

When active low is selected, the DI terminal is inactive when connected to COM and active when disconnected from COM.

F4-33 **DI (DI6 to DI8) active mode**

Address:	62497		
Min.:	0	Unit:	-
Max.:	11111	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

Ones: DI6 active mode

Tens: DI7 active mode

Hundreds: DI8 active mode

0: Active low

1: Active high

Description

When active high is selected, the DI terminal is active when connected to COM and inactive when disconnected from COM.

When active low is selected, the DI terminal is inactive when connected to COM and active when disconnected from COM.

1.4 F5: Output Terminals

F5-00 **DO1/RO1 hardware source**

Address: 62720

Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Not selected

1: Power supply unit - DIO1

2: Power supply unit - DIO2

3: Power supply unit - DIO3

4: Power supply unit - DIO4

5: Power supply unit - RO1

101: Extension card 1 - DO1/RO1

102: Extension card 1 - DO2/RO2

103: Extension card 1 - DO3/RO3

104: Extension card 1 - DO4/RO4

105: Extension card 1 - DO5/RO5

106: Extension card 1 - DO6/RO6

107: Extension card 1 - DO7/RO7

108: Extension card 1 - DO8/RO8

201: Extension card 2 - DO1/RO1

202: Extension card 2 - DO2/RO2

203: Extension card 2 - DO3/RO3

204: Extension card 2 - DO4/RO4

205: Extension card 2 - DO5/RO5

206: Extension card 2 - DO6/RO6

207: Extension card 2 - DO7/RO7

208: Extension card 2 - DO8/RO8

Description

This parameter defines the hardware source of the output terminal.

F5-01 **DO1/RO1 function**

Address: 62721

Min.:	0	Unit:	-
Max.:	12	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No function
1: Ready to run
2: Faulty
3: Warning
4: Circuit breaker action
5: Bus undervoltage
6: Bus overvoltage
7: Bus voltage normal
8: Three-phase input abnormal
9: Three-phase input normal
10: Output upon IGBT overtemperature
11: Output upon IGBT overtemperature pre-warning
12: Communication control

Description

This parameter defines the DO output function.

F5-02 DO2/RO2 hardware source

Address:	62722		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

Same as F5-00

Description

Same as F5-00

F5-03 DO2/RO2 function

Address:	62723		
Min.:	0	Unit:	-
Max.:	12	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

Same as F5-01

Description

Same as F5-01

F5-04 DO3/RO3 hardware source

Address:	62724		
Min.:	0	Unit:	-
Max.:	50	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

Same as F5-00

Description

Same as F5-00

F5-05 DO3/RO3 function

Address:	62725		
Min.:	0	Unit:	-
Max.:	12	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F5-01
Description
Same as F5-01

F5-06 DO4/RO4 hardware source

Address:	62726		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F5-00
Description
Same as F5-00

F5-07 DO4/RO4 function

Address:	62727		
Min.:	0	Unit:	-
Max.:	12	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F5-01
Description
Same as F5-01

F5-08 DO5/RO5 hardware source

Address:	62728		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F5-00
Description
Same as F5-00

F5-09 DO5/RO5 function

Address:	62729		
Min.:	0	Unit:	-
Max.:	12	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F5-01
Description
Same as F5-01

F5-10 DO1/RO1 active delay

Address:	62730		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 600.00s

Description

This parameter defines the response delay for the DO/RO terminal switching from the inactive state to active state.

F5-11 DO2/RO2 active delay

Address:	62731		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description

This parameter defines the response delay for the DO/RO terminal switching from the inactive state to active state.

F5-12 DO3/RO3 active delay

Address:	62732		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description

This parameter defines the response delay for the DO/RO terminal switching from the inactive state to active state.

F5-13 DO4/RO4 active delay

Address:	62733		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description

This parameter defines the response delay for the DO/RO terminal switching from the inactive state to active state.

F5-14 DO5/RO5 active delay

Address:	62734		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description

This parameter defines the response delay for the DO/RO terminal switching from the inactive state to active state.

F5-15 DO1/RO1 inactive delay

Address:	62735		
Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16

Default: 0.00 Change: At once

Value Range:

0.00s to 600.00s

Description

Defines the response delay for the DO/RO terminal switching from the active state to inactive state.

F5-16 DO2/RO2 inactive delay

Address: 62736

Min.: 0.00 Unit: s

Max.: 600.00 Data type: UInt16

Default: 0.00 Change: At once

Value Range:

0.00s to 600.00s

Description

Defines the response delay for the DO/RO terminal switching from the active state to inactive state.

F5-17 DO3/RO3 inactive delay

Address: 62737

Min.: 0.00 Unit: s

Max.: 600.00 Data type: UInt16

Default: 0.00 Change: At once

Value Range:

0.00s to 600.00s

Description

Defines the response delay for the DO/RO terminal switching from the active state to inactive state.

F5-18 DO4/RO4 inactive delay

Address: 62738

Min.: 0.00 Unit: s

Max.: 600.00 Data type: UInt16

Default: 0.00 Change: At once

Value Range:

0.00s to 600.00s

Description

Defines the response delay for the DO/RO terminal switching from the active state to inactive state.

F5-19 DO5/RO5 inactive delay

Address: 62739

Min.: 0.00 Unit: s

Max.: 600.00 Data type: UInt16

Default: 0.00 Change: At once

Value Range:

0.00s to 600.00s

Description

Defines the response delay for the DO/RO terminal switching from the active state to inactive state.

F5-20 DO active mode

Address: 62740

Min.: 0 Unit: -

Max.: 11111 Data type: UInt16

Default: 0 Change: At once

Value Range:

Ones: DO1/RO1 active mode

Tens: DO2/RO2 active mode

Hundreds :DO3/RO3 active mode

Thousands: DO4/RO4 active mode

Ten thousands: DO5/RO5 active mode

0: Active high

1: Active low

Description

When active high is selected, the DO/RO terminal is active when connected to COM and inactive when disconnected from COM.

When active low is selected, the DO/RO terminal is inactive when connected to COM and active when disconnected from COM.

F5-21 **Circuit breaker action threshold**

Address:	62741		
Min.:	0	Unit:	V
Max.:	1000	Data type:	UInt16
Default:	Three-phase 380 V: 570 V Single-phase 220 V: 330 V	Change:	At once

Value Range:

0 V to 1000 V

Description

This parameter defines the circuit breaker action threshold.

1.5 FA: Fault Log Query

FA-00 **Fault code of the 5th fault (latest)**

Address:	64000		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

-

Description

Fault code of the 5th fault (latest)

FA-01 **Fault subcode of the 5th fault**

Address:	64001		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

-

Description

Fault subcode of the 5th fault

FA-02 **Bus voltage upon the 5th fault**

Address:	64002		
Min.:	0.0	Unit:	V

Max.: 0.0 Data type: UInt16
Default: 0.0 Change: Unchangeable

Value Range:
-

Description
Bus voltage upon the 5th fault

FA-03 Heatsink temperature upon the 5th fault

Address: 64003
Min.: 0 Unit: °C
Max.: 0 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
-

Description
Heatsink temperature upon the 5th fault

FA-04 Ambient temperature upon the 5th fault

Address: 64004
Min.: 0 Unit: °C
Max.: 0 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
-

Description
Ambient temperature upon the 5th fault

FA-06 Grid voltage Usr upon the 5th fault

Address: 64006
Min.: 0 Unit: V
Max.: 0 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
-

Description
Grid voltage Usr upon the 5th fault

FA-07 Grid voltage Ust upon the 5th fault

Address: 64007
Min.: 0 Unit: V
Max.: 0 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
-

Description
Grid voltage Ust upon the 5th fault

FA-08 Grid voltage Utr upon the 5th fault

Address: 64008
Min.: 0 Unit: V
Max.: 0 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:

-

Description

Grid voltage Utr upon the 5th fault

FA-09 **Three-phase imbalance factor upon the 5th fault**

Address:	64009		
Min.:	0.00	Unit:	%
Max.:	0.00	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:

-

Description

Three-phase imbalance factor upon the 5th fault

FA-10 **DI state upon the 5th fault**

Address:	64010		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

-

Description

DI state upon the 5th fault

FA-11 **DO/RO state upon the 5th fault**

Address:	64011		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

-

Description

RO state upon the 5th fault

FA-12 **Stop command sent from the power supply unit upon the 5th fault**

Address:	64012		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

1: Ready to run

2: Coast to stop

3: Stop according to preset mode

Description

Stop command sent from the power supply unit upon the 5th fault

FA-13 **Total power-on time (hour) upon the 5th fault**

Address:	64013		
Min.:	0	Unit:	h
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
-

Description
Total power-on time (hour) upon the 5th fault

FA-14 **Total power-on time (minute) upon the 5th fault**

Address:	64014		
Min.:	0	Unit:	min
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
-

Description
Total power-on time (minute) upon the 5th fault

FA-15 **Total power-on time (second) upon the 5th fault**

Address:	64015		
Min.:	0	Unit:	s
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
-

Description
Total power-on time (second) upon the 5th fault

FA-20 **Fault code of the 4th fault (2nd latest)**

Address:	64020		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
-

Description
Fault code of the 4th fault (2nd latest)

FA-21 **Fault subcode of the 4th fault**

Address:	64021		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
-

Description
Fault subcode of the 4th fault

FA-22 **Bus voltage upon the 4th fault**

Address:	64022		
Min.:	0.0	Unit:	V
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Bus voltage upon the 4th fault

FA-23 **Heatsink temperature upon the 4th fault**

Address:	64023		
Min.:	0	Unit:	°C
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Heatsink temperature upon the 4th fault

FA-24 **Ambient temperature upon the 4th fault**

Address:	64024		
Min.:	0	Unit:	°C
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Ambient temperature upon the 4th fault

FA-26 **Grid voltage Usr upon the 4th fault**

Address:	64026		
Min.:	0	Unit:	V
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Grid voltage Usr upon the 4th fault

FA-27 **Grid voltage Ust upon the 4th fault**

Address:	64027		
Min.:	0	Unit:	V
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Grid voltage Ust upon the 4th fault

FA-28 **Grid voltage Utr upon the 4th fault**

Address:	64028		
Min.:	0	Unit:	V
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Grid voltage Utr upon the 4th fault

FA-29 **Three-phase imbalance factor upon the 4th fault**

Address:	64029		
Min.:	0.00	Unit:	%
Max.:	0.00	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:

-

Description

Three-phase imbalance factor upon the 4th fault

FA-30 **DI state upon the 4th fault**

Address:	64030		
Min.:	0	Unit:	-
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

DI state upon the 4th fault

FA-31 **DO/RO state upon the 4th fault**

Address:	64031		
Min.:	0	Unit:	-
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

RO state upon the 4th fault

FA-32 **Stop command sent from the power supply unit upon the 4th fault**

Address:	64032		
Min.:	0	Unit:	-
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

1: Ready to run

2: Coast to stop

3: Stop according to preset mode

Description

Stop command sent from the power supply unit upon the 4th fault

FA-33 **Total power-on time (hour) upon the 4th fault**

Address:	64033		
Min.:	0	Unit:	h
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

Total power-on time (hour) upon the 4th fault

FA-34 **Total power-on time (minute) upon the 4th fault**

Address: 64034

Min.:	0	Unit:	min
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

Total power-on time (minute) upon the 4th fault

FA-35 **Total power-on time (second) upon the 4th fault**

Address: 64035

Min.:	0	Unit:	s
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

Total power-on time (second) upon the 4th fault

FA-40 **Fault code of the 3rd fault (3rd latest)**

Address: 64040

Min.:	0	Unit:	-
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

Fault code of the 3rd fault (3rd latest)

FA-41 **Fault subcode of the 3rd fault**

Address: 64041

Min.:	0	Unit:	-
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

Fault subcode of the 3rd fault

FA-42 **Bus voltage upon the 3rd fault**

Address: 64042

Min.:	0.0	Unit:	V
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

Bus voltage upon the 3rd fault

FA-43 **Heatsink temperature upon the 3rd fault**

Address: 64043

Min.: 0 Unit: ℃
Max.: 0.0 Data type: UInt16
Default: 0.0 Change: Unchangeable

Value Range:
-

Description
Heatsink temperature upon the 3rd fault

FA-44 Ambient temperature upon the 3rd fault

Address: 64044
Min.: 0 Unit: ℃
Max.: 0.0 Data type: UInt16
Default: 0.0 Change: Unchangeable

Value Range:
-

Description
Ambient temperature upon the 3rd fault

FA-46 Grid voltage Usr upon the 3rd fault

Address: 64046
Min.: 0 Unit: V
Max.: 0.0 Data type: UInt16
Default: 0.0 Change: Unchangeable

Value Range:
-

Description
Grid voltage Usr upon the 3rd fault

FA-47 Grid voltage Ust upon the 3rd fault

Address: 64047
Min.: 0 Unit: V
Max.: 0.0 Data type: UInt16
Default: 0.0 Change: Unchangeable

Value Range:
-

Description
Grid voltage Ust upon the 3rd fault

FA-48 Grid voltage Utr upon the 3rd fault

Address: 64048
Min.: 0 Unit: V
Max.: 0.0 Data type: UInt16
Default: 0.0 Change: Unchangeable

Value Range:
-

Description
Grid voltage Utr upon the 3rd fault

FA-49 Three-phase imbalance factor upon the 3rd fault

Address: 64049
Min.: 0.00 Unit: %
Max.: 0.00 Data type: UInt16

Default: 0.00 Change: Unchangeable

Value Range:

-

Description

Three-phase imbalance factor upon the 3rd fault

FA-50 DI state upon the 3rd fault

Address: 64050

Min.: 0 Unit: -

Max.: 0.0 Data type: UInt16

Default: 0.0 Change: Unchangeable

Value Range:

-

Description

DI state upon the 3rd fault

FA-51 DO/RO state upon the 3rd fault

Address: 64051

Min.: 0 Unit: -

Max.: 0.0 Data type: UInt16

Default: 0.0 Change: Unchangeable

Value Range:

-

Description

RO state upon the 3rd fault

FA-52 Stop command sent from the power supply unit upon the 3rd fault

Address: 64052

Min.: 0 Unit: -

Max.: 0.0 Data type: UInt16

Default: 0.0 Change: Unchangeable

Value Range:

1: Ready to run

2: Coast to stop

3: Stop according to preset mode

Description

Stop command sent from the power supply unit upon the 3rd fault

FA-53 Total power-on time (hour) upon the 3rd fault

Address: 64053

Min.: 0 Unit: h

Max.: 0.0 Data type: UInt16

Default: 0.0 Change: Unchangeable

Value Range:

-

Description

Total power-on time (hour) upon the 3rd fault

FA-54 Total power-on duration (minute) upon the 3rd fault

Address: 64054

Min.: 0 Unit: min

Max.: 0.0 Data type: UInt16

Default: 0.0 Change: Unchangeable

Value Range:

-

Description

Total power-on duration (minute) upon the 3rd fault

FA-55 Total power-on time (second) upon the 3rd fault

Address: 64055

Min.: 0 Unit: s

Max.: 0.0 Data type: UInt16

Default: 0.0 Change: Unchangeable

Value Range:

-

Description

Total power-on time (second) upon the 3rd fault

FA-60 Fault code of the 2nd fault (4th latest)

Address: 64060

Min.: 0 Unit: s

Max.: 0.0 Data type: UInt16

Default: 0.0 Change: Unchangeable

Value Range:

-

Description

Fault code of the 2nd fault (4th latest)

FA-61 Fault subcode of the 2nd fault

Address: 64061

Min.: 0 Unit: -

Max.: 0.0 Data type: UInt16

Default: 0.0 Change: Unchangeable

Value Range:

-

Description

Fault subcode of the 2nd fault

FA-62 Bus voltage upon the 2nd fault

Address: 64062

Min.: 0.0 Unit: V

Max.: 0.0 Data type: UInt16

Default: 0.0 Change: Unchangeable

Value Range:

-

Description

Bus voltage upon the 2nd fault

FA-63 Heatsink temperature upon the 2nd fault

Address: 64063

Min.: 0 Unit: °C

Max.: 0.0 Data type: UInt16

Default: 0.0 Change: Unchangeable

Value Range:

-

Description

Heatsink temperature upon the 2nd fault

FA-64 **Ambient temperature upon the 2nd fault**

Address:	64064		
Min.:	0	Unit:	℃
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

Ambient temperature upon the 2nd fault

FA-66 **Grid voltage Usr upon the 2nd fault**

Address:	64066		
Min.:	0	Unit:	V
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

Grid voltage Usr upon the 2nd fault

FA-67 **Grid voltage Ust upon the 2nd fault**

Address:	64067		
Min.:	0	Unit:	V
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

Grid voltage Ust upon the 2nd fault

FA-68 **Grid voltage Utr upon the 2nd fault**

Address:	64068		
Min.:	0	Unit:	V
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:

-

Description

Grid voltage Utr upon the 2nd fault

FA-69 **Three-phase imbalance factor upon the 2nd fault**

Address:	64069		
Min.:	0.00	Unit:	%
Max.:	0.00	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:

-

Description
Three-phase imbalance factor upon the 2nd fault

FA-70 **DI state upon the 2nd fault**

Address:	64070		
Min.:	0	Unit:	-
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
DI state upon the 2nd fault

FA-71 **DO/RO state upon the 2nd fault**

Address:	64071		
Min.:	0	Unit:	-
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
RO state upon the 2nd fault

FA-72 **Stop command sent from the power supply unit upon the 2nd fault**

Address:	64072		
Min.:	0	Unit:	-
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
1: Ready to run
2: Coast to stop
3: Stop according to preset mode

Description
Stop command sent from the power supply unit upon the 2nd fault

FA-73 **Total power-on time (hour) upon the 2nd fault**

Address:	64073		
Min.:	0	Unit:	h
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Total power-on time (hour) upon the 2nd fault

FA-74 **Total power-on time (minute) upon the 2nd fault**

Address:	64074		
Min.:	0	Unit:	min
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Total power-on time (minute) upon the 2nd fault

FA-75 **Total power-on time (second) upon the 2nd fault**

Address:	64075		
Min.:	0	Unit:	s
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Total power-on time (second) upon the 2nd fault

FA-80 **Fault code of the 1st fault (5th latest)**

Address:	64080		
Min.:	0	Unit:	-
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Fault code of the 1st fault (5th latest)

FA-81 **Fault subcode of the 1st fault**

Address:	64081		
Min.:	0	Unit:	-
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Fault subcode of the 1st fault

FA-82 **Bus voltage upon the 1st fault**

Address:	64082		
Min.:	0.0	Unit:	V
Max.:	0.0	Data type:	UInt16
Default:	0.0	Change:	Unchangeable

Value Range:
-

Description
Bus voltage upon the 1st fault

FA-83 **Heatsink temperature upon the 1st fault**

Address:	64083		
Min.:	0	Unit:	℃
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
-

Description
Heatsink temperature upon the 1st fault

FA-84 **Ambient temperature upon the 1st fault**

Address: 64084

Min.:	0	Unit:	℃
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

-

Description

Ambient temperature upon the 1st fault

FA-86 **Grid voltage Usr upon the 1st fault**

Address: 64086

Min.:	0	Unit:	V
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

-

Description

Grid voltage Usr upon the 1st fault

FA-87 **Grid voltage Ust upon the 1st fault**

Address: 64087

Min.:	0	Unit:	V
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

-

Description

Grid voltage Ust upon the 1st fault

FA-88 **Grid voltage Utr upon the 1st fault**

Address: 64088

Min.:	0	Unit:	V
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

-

Description

Grid voltage Utr upon the 1st fault

FA-89 **Three-phase imbalance factor upon the 1st fault**

Address: 64089

Min.:	0.00	Unit:	%
Max.:	0.00	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:

-

Description

Three-phase imbalance factor upon the 1st fault

FA-90 **DI state upon the 1st fault**

Address: 64090

Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:

-

Description

DI state upon the 1st fault

FA-91 DO/RO state upon the 1st fault

Address: 64091
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:

-

Description

RO state upon the 1st fault

FA-92 Stop command sent from the power supply unit upon the 1st fault

Address: 64092
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:

1: Ready to run

2: Coast to stop

3: Stop according to preset mode

Description

Stop command sent from the power supply unit upon the 1st fault

FA-93 Total power-on time (hour) upon the 1st fault

Address: 64093
Min.: 0 Unit: h
Max.: 0 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:

-

Description

Total power-on time (hour) upon the 1st fault

FA-94 Total power-on time (minute) upon the 1st fault

Address: 64094
Min.: 0 Unit: min
Max.: 0 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:

-

Description

Total power-on time (minute) upon the 1st fault

FA-95 Total power-on time (second) upon the 1st fault

Address: 64095

Min.: 0 Unit: s
Max.: 0 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:

-

Description

Total power-on time (second) upon the 1st fault

1.6 FD: Communication Parameters

FD-00 RS485 baud rate

Address: 64768
Min.: 0 Unit: -
Max.: 9 Data type: UInt16
Default: 5 Change: At stop

Value Range:

0: 300 bps
1: 600 bps
2: 1200 bps
3: 2400 bps
4: 4800 bps
5: 9600 bps
6: 19200 bps
7:38400 bps
8: 57600 bps
9: 115200 bps

Description

Defines the speed of data transmission between the host controller and AC drive. A higher baud rate indicates faster communication.
Note that the baud rate of the host controller must be the same as that of the AC drive. Otherwise, communication will fail.

FD-01 RS485 data format

Address: 64769
Min.: 0 Unit: -
Max.: 7 Data type: UInt16
Default: 0 Change: At once

Value Range:

0: No check (8-N-2)
1: Even parity (8-E-1)
2: Odd parity (8-O-1)
3: No check (8-N-1)
4: No check (7-N-2)
5: Even parity (7-E-1)
6: Odd parity (7-O-1)
7: No check (7-N-1)

Description

Defines the format of Modbus data transmitted between the host controller and AC drive. Note that the data format set in the host controller must be the same as that set in the AC drive. Otherwise, communication will fail.

FD-02 RS485 local address

Address:	64770		
Min.:	1	Unit:	-
Max.:	127	Data type:	UInt16
Default:	16	Change:	Unchangeable

Value Range:

1 to 127

Description

When the local address is set to 0 (broadcast address), host controller broadcast is enabled.
The local address must be unique in the range of 1 to 247, which is the basis for point-point communication between the AC drive and host controller.

FD-03 RS485 response delay

Address:	64771		
Min.:	0	Unit:	ms
Max.:	20	Data type:	UInt16
Default:	2	Change:	At once

Value Range:

0 ms to 20 ms

Description

This parameter defines the interval from the end of data receiving by the AC drive to the start of data transmission to the host controller.
If the response delay is shorter than the system processing time, the system processing time prevails, which means the system sends data to the host controller immediately after data processing is completed. If the response delay is longer than the system processing time, the AC drive sends data to the host controller only after the response delay elapses.

FD-04 RS485 communication timeout time

Address:	64772		
Min.:	0.0	Unit:	s
Max.:	60.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s to 60.0s

Description

When it is set to 0.0s, the Modbus communication timeout time is invalid. It is set to 0.0s under normal circumstances. This parameter is used to monitor communication status in a system with continuous communication.
When it is set to a valid value, if the communication interval between current communication and the next communication exceeds the value of Fd-04 (Modbus communication interruption detection time), the system reports a communication fault (E16.01).

FD-06 Communication fault auto reset

Address:	64774		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16

Default: 1 Change: At once

Value Range:

0: Disabled

1: Enabled

Description

This parameter defines whether to reset the communication fault automatically.

FD-07 Maximum station number auto allocated

Address: 64775

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 8

Description

This parameter defines the maximum station number allocated automatically.

FD-09 CANopen/CANlink communication state

Address: 64777

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

Ones: CANopen

0: Stop

1: Initializing

2: Pre-running

8: Running

Tens: CANlink

0: Stop

1: Initializing

2: Pre-running

8: Running

Description

This read-only parameter is used to monitor the communication status.

FD-10 Communication protocol

Address: 64778

Min.: 1 Unit: -

Max.: 3 Data type: UInt16

Default: 1 Change: At once

Value Range:

1: CANopen

2: CANlink

3: Communication card mode

Description

This parameter defines the CAN communication protocol.

When it is set to 1, CANopen communication is used. When it is set to 2, CANlink communication is used. When it is set to 3, the communication card mode is used.

FD-12 **CAN baud rate**

Address: 64780

Min.:	0	Unit:	-
Max.:	6	Data type:	UInt16
Default:	5	Change:	At once

Value Range:

0: 20 kbps

1: 50 kbps

2: 100 kbps

3: 125 kbps

4: 250 kbps

5: 500 kbps

6: 1 Mbps

Description

This parameter defines the baud rate for CAN communication, including CANlink and CANopen communication. In the same network, baud rates of all stations must be consistent. Otherwise, communication will fail.

FD-13 **CAN station number**

Address: 64781

Min.:	1	Unit:	-
Max.:	127	Data type:	UInt16
Default:	16	Change:	Unchangeable

Value Range:

1 to 127

Description

This parameter defines the CAN station number, including station numbers for CANlink and CANopen communication. In the same network, all station numbers must be unique. Otherwise, communication will fail.

FD-14 **Number of CAN frames received per unit time (real-time)**

Address: 64782

Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter is used to monitor the bus load. It defines the number of CAN frames received by the station per second.

FD-15 **Maximum value of node reception error counter (real-time)**

Address: 64783

Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter is used to monitor bus errors. It defines the maximum value of the CAN reception error counter of the node.

FD-16 **Maximum value of node transmission error counter (real-time)**

Address:	64784		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter is used to monitor bus errors. This parameter defines the maximum value of the CAN transmission error counter of the node.

FD-17 **Bus-off count per unit time**

Address:	64785		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter is used to monitor bus errors. This parameter defines the CAN bus-off count of the node.

FD-18 **Power supply unit number**

Address:	64786		
Min.:	1	Unit:	-
Max.:	15	Data type:	UInt16
Default:	1	Change:	At once

Value Range:
1 to 15
Description
Power supply unit number

FD-19 **CAN communication failure coefficient**

Address:	64787		
Min.:	1	Unit:	-
Max.:	15	Data type:	UInt16
Default:	1	Change:	At once

Value Range:
1 to 15
Description
CAN communication failure coefficient

FD-34 **CANopen mode**

Address:	64802		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0: Standard
1: Expert
Description
CANopen mode

FD-35 **CANopen inhibit time**

Address: 64803

Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

CANopen inhibit time

FD-36 **CANopen event time**

Address: 64804

Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

CANopen event time

FD-39 **AC drive station number configuration**

Address: 64807

Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Disabled

1: Enabled

Description

AC drive station number configuration

FD-40 **Manual setting of power supply unit station number**

Address: 64808

Min.:	0	Unit:	-
Max.:	127	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 127

Description

Manual setting of power supply unit station number

FD-41 **Manual setting of drive unit 1 station number**

Address: 64809

Min.:	0	Unit:	-
Max.:	127	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 127

Description

Manual setting of drive unit 1 station number

FD-42 **Manual setting of drive unit 2 station number**

Address: 64810

Min.: 0 Unit: -
Max.: 127 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 127

Description
Manual setting of drive unit 2 station number

FD-43 **Manual setting of drive unit 3 station number**

Address: 64811
Min.: 0 Unit: -
Max.: 127 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 127

Description
Manual setting of drive unit 3 station number

FD-44 **Manual setting of drive unit 4 station number**

Address: 64812
Min.: 0 Unit: -
Max.: 127 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 127

Description
Manual setting of drive unit 4 station number

FD-45 **Manual setting of drive unit 5 station number**

Address: 64813
Min.: 0 Unit: -
Max.: 127 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 127

Description
Manual setting of drive unit 5 station number

FD-46 **Manual setting of drive unit 6 station number**

Address: 64814
Min.: 0 Unit: -
Max.: 127 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 127

Description
Manual setting of drive unit 6 station number

FD-47 **Manual setting of drive unit 7 station number**

Address: 64815
Min.: 0 Unit: -
Max.: 127 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 127

Description

Manual setting of drive unit 7 station number

FD-48 Manual setting of drive unit 8 station number

Address: 64816

Min.: 0 Unit: -

Max.: 127 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 127

Description

Manual setting of drive unit 8 station number

FD-50 Startup with slave mismatch

Address: 64818

Min.: 0 Unit: -

Max.: 1 Data type: UInt16

Default: 0 Change: At once

Value Range:

0: Disabled

1: Enabled

Description

0: The communication error E16.74 is reported when the number of slave stations configured for the PLC is inconsistent with the actual number of slave stations in the network.

1: No communication error is reported when the number of slave stations configured for the PLC is inconsistent with the actual number of slave stations in the network.

FD-51 Slave station communication inhibit time

Address: 64819

Min.: 0 Unit: ms

Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 ms to 65535 ms

Description

This parameter specifies the slave station communication inhibit time.

FD-52 Number of online slave stations

Address: 64820

Min.: 0 Unit: -

Max.: 30 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 30

Description

This parameter defines the number of online slave stations.

FD-53 Online status of slave stations 1 to 15

Address: 64821

Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the online status of stations 1 to 15. Bit1 indicates station 1, and so on.

FD-54 **Online status of slave stations 16 to 31**

Address:	64822		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the online status of stations 16 to 31. Bit0 indicates station 16, and so on.

FD-55 **PN timeout time**

Address:	64823		
Min.:	0	Unit:	ms
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 ms to 65535 ms
Description
This parameter defines the PROFINET communication timeout time.

FD-56 **PN chip state**

Address:	64824		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the state of the PRFOFINET chip.

FD-57 **Communication card state**

Address:	64825		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0: Initializing
1: Running
2: Stop
3: Reconnecting
Description
This parameter defines the state of the communication card.

FD-61 **MAC address 1**

Address: 64829
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter defines the highest two bytes of the MAC address.

FD-62 **MAC address 2**

Address: 64830
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter defines the middle two bytes of the MAC address.

FD-63 **MAC address 3**

Address: 64831
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter defines the lowest two bytes of the MAC address.

FD-70 **EtherCAT station name**

Address: 64838
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter defines the name of the EtherCAT station.

FD-71 **EtherCAT station alias**

Address: 64839
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
This parameter defines the alias of the EtherCAT station.

FD-72 **Number of synchronization interrupts allowed by EtherCAT**

Address: 64840

Min.:	0	Unit:	-
Max.:	30	Data type:	UInt16
Default:	10	Change:	At once

Value Range:
0 to 30
Description
Number of synchronization interrupts allowed by EtherCAT

FD-73 **EtherCAT - Port0 CRC error**

Address:	64841		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the maximum number of invalid frames and errors of EtherCAT port 0 per unit time.

FD-74 **EtherCAT - Port1 CRC error**

Address:	64842		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the maximum number of invalid frames and errors of EtherCAT port 1 per unit time.

FD-75 **EtherCAT port 0/1 data forwarding error**

Address:	64843		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the maximum number of EtherCAT port forwarding errors per unit time.

FD-76 **EtherCAT processing unit and PDI error**

Address:	64844		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the maximum number of EtherCAT data frame processing unit errors per unit time.

FD-77 **EtherCAT port 0/1 link loss**
Address: 64845

Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter defines the maximum EtherCAT port 0 link losses per unit time.

FD-78 EtherCAT master type

Address: 64846
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
This parameter is set according to the host controller type and reserved for customized models.

FD-79 EtherCAT synchronization error monitoring mode

Address: 64847
Min.: 0 Unit: -
Max.: 1 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 1

Description
This parameter defines the fault (synchronization loss) detection mechanism.

FD-80 EtherCAT synchronization frame loss count

Address: 64848
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter defines the number of synchronization frame losses.

FD-81 EtherCAT state machine and PHYLink state

Address: 64849
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter defines the state machine and PHYLink state.

FD-82 EtherCAT - AL fault code

Address: 64850
Min.: Unit: -
Max.: Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0: No error

1 to 0xFFFF: Error status code

Description

This parameter defines the AL fault code.

FD-83 EtherCAT - XML file version

Address: 64851

Min.: 0.00 Unit: -

Max.: 655.35 Data type: UInt16

Default: 0.00 Change: Unchangeable

Value Range:

0.00 to 655.35

Description

This parameter defines the XML file version.

FD-84 EtherCAT - FPGA firmware version

Address: 64852

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter defines the FPGA software version.

FD-85 Station alias backup display

Address: 64853

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

Station alias backup display

FD-86 EtherCAT - EEPROM read time

Address: 64854

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

This parameter defines the EtherCAT EEPROM reading time.

FD-87 EtherCAT - DC gain

Address: 64855

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:
0 to 65535
Description
This parameter defines the EtherCAT DC gain.

FD-88 **EtherCAT - DC acceleration limit**

Address:	64856		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
This parameter defines the EtherCAT DC acceleration limit.

FD-89 **EtherCAT - DC speed limit**

Address:	64857		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
This parameter defines the EtherCAT DC speed limit.

FD-90 **EtherCAT - DC integral coefficient**

Address:	64858		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
This parameter defines the EtherCAT DC integral coefficient.

FD-91 **Communication card version**

Address:	64859		
Min.:	0.00	Unit:	-
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:
0.00 to 655.35
Description
This parameter defines the software version of the communication extension card.

FD-92 **Communication version**

Address:	64860		
Min.:	0.00	Unit:	-
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:
0.00 to 655.35

Description
This parameter defines the communication software version.

FD-93 **Station number of device connected to extension card slot 1**

Address:	64861		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
Station number of device connected to extension card slot 1

FD-94 **Station number of device connected to extension card slot 2**

Address:	64862		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
Station number of device connected to extension card slot 2

FD-95 **Station number of device connected to extension card slot 3**

Address:	64863		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
Station number of device connected to extension card slot 3

FD-96 **Station number of device connected to reserved slot 4**

Address:	64864		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
Station number of device connected to reserved slot 4

FD-97 **Station number of device connected to reserved slot 5**

Address:	64865		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
Station number of device connected to reserved slot 5

FD-98 **Station number of device connected to reserved slot 6**

Address:	64866		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

Station number of device connected to reserved slot 6

FD-99 **Station number of device connected to reserved slot 7**

Address:	64867		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

Station number of device connected to reserved slot 7

1.7 FP: User Password

FP-00 **User password**

Address:	7936		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

This parameter defines the user password.

FP-01 **Parameter initialization**

Address:	7937		
Min.:	0	Unit:	-
Max.:	501	Data type:	UInt16
Default:	1	Change:	At once

Value Range:

0: No operation

1: Restore factory defaults

2: Clear records

4: Back up current user parameters

501: Restore user backup parameters

Description

This parameter is used to set the corresponding action upon parameter initialization of the AC drive.

0: No operation

The AC drive does not perform any operation.

1: Restore factory defaults mode 1

Restore factory defaults (excluding parameters in groups FA and FP).

2: Clear records

Clear record information. Clear fault records and accumulative running time of the power supply unit.

4: Back up the current user parameters

Back up the current parameter settings. The current parameter settings are backed up to facilitate restoration after parameter adjustment.

501: Restore user backup parameters

Restore your previously backed-up parameters, that is, restore parameters that are backed up by setting FP-01 to 4.

FP-03 Monitoring parameter display

Address:	7939		
Min.:	0	Unit:	-
Max.:	127	Data type:	UInt16
Default:	251	Change:	At once

Value Range:

Bit00: Bus voltage

Bit01: Heatsink temperature

Bit02: Ambient temperature

Bit03: Usr line voltage

Bit04: Ust line voltage

Bit05: Utr line voltage

Bit06: Three-phase imbalance factor

Description

This parameter defines the monitoring state of parameters switched by pressing the > key under the level 0 menu of the operating panel.

FP-05 I/O card parameter restoration

Address:	7941		
Min.:	0	Unit:	-
Max.:	255	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Invalid

1: Extension I/O1

2: Extension I/O2

3: Extension I/O3

255: All extension I/Os

Description

This parameter defines whether to restore the extension card with AI input to factory defaults. All AI calibration can be set by using parameters in group AC. After parameters in group AC are set on site, you can set FP-05 to restore factory defaults if required.

FP-06 Local parameter backup mode

Address:	7942		
Min.:	1	Unit:	-
Max.:	2	Data type:	UInt16
Default:	1	Change:	At once

Value Range:

1: Back up all parameters

2: Back up non-motor parameters

Description
This parameter defines the parameters to be backed up.

FP-07 **Local parameter backup operation**

Address:	7943		
Min.:	11	Unit:	-
Max.:	28	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
Ones: Drive unit axis number
1 to 8
Tens: Backup operation
1: Read
2: Write
Description
This parameter defines the axis to be backed up and the backup type.

1.8 A0: Internal Communication Parameters

A0-00 **I/O extension card communication cycle**

Address:	40960		
Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 100
Description
This parameter defines the communication cycle of the I/O extension card.

A0-01 **Alarm threshold of consecutive drive unit frame loss**

Address:	40961		
Min.:	0	Unit:	-
Max.:	1000	Data type:	UInt16
Default:	10	Change:	At once

Value Range:
0 to 1000
Description
This parameter defines the allowed maximum number of I/O communication data frames lost by the drive unit.
When the consecutive frame loss count of the drive unit exceeds the value of A0-01, the system reports A98.01.
When the consecutive frame loss count of the I/O extension card exceeds the value of A0-02 and the consecutive frame loss count of the drive unit exceeds the value of A0-01, the system reports A98.03.

A0-02 **Alarm threshold of consecutive I/O extension card frame loss**

Address:	40962		
Min.:	0	Unit:	-
Max.:	1000	Data type:	UInt16
Default:	10	Change:	At once

Value Range:

0 to 1000

Description

This parameter defines the allowed maximum number of communication data frames lost by the I/O extension card.

When the consecutive frame loss count of the I/O extension card exceeds the value of A0-02, the system reports A98.02.

When the consecutive frame loss count of the I/O extension card exceeds the value of A0-02 and the consecutive frame loss count of the drive unit exceeds the value of A0-01, the system reports A98.03.

A0-03 Display of station number of axis with frame loss

Address:	40963		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

Bit00: Axis 1

Bit01: Axis 2

Bit02: Axis 3

Bit03: Axis 4

Bit04: Axis 5

Bit05: Axis 6

Bit06: Axis 7

Bit07: Axis 8

Description

The station number is displayed in hexadecimal. Bits 0 to 7 correspond to axes 1 to 8 respectively. If a bit is 1, the I/O communication between the power supply unit and the axis is interrupted.

A0-04 Display of station number of I/O extension card with frame loss

Address:	40964		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

Bit00: I/O extension card 1

Bit01: Extension card 2

Bit02: Extension card 3

Description

The station number is displayed in hexadecimal. Bits 0 to 2 correspond to extension cards 1 to 3 respectively. If a bit is 1, the I/O communication between the power supply unit and the extension card is interrupted.

A0-05 Axis 1 - frame loss count

Address:	40965		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter defines the consecutive I/O data frame loss count between the power supply unit and the axis.

A0-06 **Axis 2 - frame loss count**

Address:	40966		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter defines the consecutive I/O data frame loss count between the power supply unit and the axis.

A0-07 **Axis 3 - frame loss count**

Address:	40967		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter defines the consecutive I/O data frame loss count between the power supply unit and the axis.

A0-08 **Axis 4 - frame loss count**

Address:	40968		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter defines the consecutive I/O data frame loss count between the power supply unit and the axis.

A0-09 **Axis 5 - frame loss count**

Address:	40969		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter defines the consecutive I/O data frame loss count between the power supply unit and the axis.

A0-10 **Axis 6 - frame loss count**

Address:	40970		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description
This parameter defines the consecutive I/O data frame loss count between the power supply unit and the axis.

A0-11 Axis 7 - frame loss count

Address:	40971		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the consecutive I/O data frame loss count between the power supply unit and the axis.

A0-12 Axis 8 - frame loss count

Address:	40972		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the consecutive I/O data frame loss count between the power supply unit and the axis.

A0-13 Extension card 1 - frame loss count

Address:	40973		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the consecutive I/O data frame loss count between the power supply unit and the extension card.

A0-14 Extension card 2 - frame loss count

Address:	40974		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the consecutive I/O data frame loss count between the power supply unit and the extension card.

A0-15 Extension card 3 - frame loss count

Address:	40975		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter defines the consecutive I/O data frame loss count between the power supply unit and the extension card.

1.9 A1: Power Supply Unit I/O Function Parameters

A1-00 **Power supply unit - filter time of DI1 to DI4**

Address: 41216

Min.: 0.000 Unit: s

Max.: 5.000 Data type: UInt16

Default: 0.010 Change: At once

Value Range:

0.000s to 5.000s

Description

Power supply unit - filter time of DI1 to DI4

A1-01 **Power supply unit - filter time of DI5 to DI8**

Address: 41217

Min.: 0.000 Unit: s

Max.: 5.000 Data type: UInt16

Default: 0.010 Change: At once

Value Range:

0.000s to 5.000s

Description

Power supply unit - filter time of DI5 to DI8

A1-05 **AI1 filter time**

Address: 41221

Min.: 0.00 Unit: s

Max.: 10.00 Data type: UInt16

Default: 0.10 Change: At once

Value Range:

0.00s to 10.00s

Description

AI1 filter time

A1-06 **AI2 filter time**

Address: 41222

Min.: 0.00 Unit: s

Max.: 10.00 Data type: UInt16

Default: 0.10 Change: At once

Value Range:

0.00s to 10.00s

Description

AI2 filter time

A1-10 **AI1 input**

Address: 41226

Min.: 0 Unit: -
Max.: 5 Data type: UInt16
Default: 0 Change: At stop

Value Range:

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

Description

AI1 input

A1-11 AI2 input

Address: 41227
Min.: 0 Unit: -
Max.: 5 Data type: UInt16
Default: 0 Change: At stop

Value Range:

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

Description

AI2 input

1.10 A2: I/O Extension Card 1 Function Parameters

A2-00 Extension card 1 - filter time of DI1 to DI4

Address: 41472
Min.: 0.000 Unit: s
Max.: 5.000 Data type: UInt16
Default: 0.010 Change: At once

Value Range:

0.000s to 5.000s

Description

Extension card 1 - filter time of DI1 to DI4

A2-01 Extension card 1 - filter time of DI5 to DI8

Address: 41473
Min.: 0.000 Unit: s
Max.: 5.000 Data type: UInt16
Default: 0.010 Change: At once

Value Range:

0.000s to 5.000s

Description

Extension card 1 - filter time of DI5 to DI8

A2-05 **AI1 filter time**

Address:	41477		
Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	0.10	Change:	At once

Value Range:
0.00s to 10.00s
Description
AI1 filter time

A2-06 **AI2 filter time**

Address:	41478		
Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	0.10	Change:	At once

Value Range:
0.00s to 10.00s
Description
AI2 filter time

A2-10 **AI1 input**

Address:	41482		
Min.:	0	Unit:	-
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: Voltage input
1: Current input
2: PT100 input
3: PT1000 input
4: KTY84 input
5: PTC130 input
Description
AI1 input

A2-11 **AI2 input**

Address:	41483		
Min.:	0	Unit:	-
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: Voltage input
1: Current input
2: PT100 input
3: PT1000 input
4: KTY84 input
5: PTC130 input
Description
AI2 input

1.11 A3: I/O Extension Card 2 Function Parameters

A3-00 **Extension card 2 - filter time of DI1 to DI4**

Address: 41728

Min.:	0.000	Unit:	s
Max.:	5.000	Data type:	UInt16
Default:	0.010	Change:	At once

Value Range:

0.000s to 5.000s

Description

Extension card 2 - filter time of DI1 to DI4

A3-01 **Extension card 2 - filter time of DI5 to DI8**

Address: 41729

Min.:	0.000	Unit:	s
Max.:	5.000	Data type:	UInt16
Default:	0.010	Change:	At once

Value Range:

0.000s to 5.000s

Description

Extension card 2 - filter time of DI5 to DI8

A3-05 **AI1 filter time**

Address: 41733

Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	0.10	Change:	At once

Value Range:

0.00s to 10.00s

Description

AI1 filter time

A3-06 **AI2 filter time**

Address: 41734

Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	0.10	Change:	At once

Value Range:

0.00s to 10.00s

Description

AI2 filter time

A3-10 **AI1 input**

Address: 41738

Min.:	0	Unit:	-
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Voltage input
1: Current input
2: PT100 input
3: PT1000 input
4: KTY84 input
5: PTC130 input

Description

AI1 input

A3-11 **AI2 input**

Address:	41739		
Min.:	0	Unit:	-
Max.:	5	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Voltage input
1: Current input
2: PT100 input
3: PT1000 input
4: KTY84 input
5: PTC130 input

Description

AI2 input

1.12 AC: AI Correction Coefficient

AC-00 **Power supply unit - AI1 measured voltage 1**

Address:	44032		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U2-12).

AC-01 **Power supply unit - AI1 displayed voltage 1**

Address:	44033		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U2-12).

AC-02 **Power supply unit - AI1 measured voltage 2**

Address:	44034		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U2-12).

AC-03 **Power supply unit - AI1 displayed voltage 2**

Address:	44035		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U2-12).

AC-04 **Power supply unit - AI2 measured voltage 1**

Address:	44036		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI2, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI2 voltage before correction (U2-13).

AC-05 **Power supply unit - AI2 displayed voltage 1**

Address:	44037		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:
0.000 V to 12.000 V
Description
When analog voltage correction is conducted on AI2, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI2 voltage before correction (U2-13).

AC-06 **Power supply unit - AI2 measured voltage 2**

Address:	44038		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:
0.000 V to 12.000 V
Description
When analog voltage correction is conducted on AI2, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI2 voltage before correction (U2-13).

AC-07 **Power supply unit - AI2 displayed voltage 2**

Address:	44039		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:
0.000 V to 12.000 V
Description
When analog voltage correction is conducted on AI2, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI2 voltage before correction (U2-13).

AC-08 **Extension card 1 - AI1 measured voltage 1**

Address:	44040		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:
0.000 V to 12.000 V
Description
When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U3-12).

AC-09 **Extension card 1 - AI1 displayed voltage 1**

Address:	44041		
Min.:	0.000	Unit:	V

Max.: 12.000 Data type: UInt16
Default: 2.000 Change: At once

Value Range:
0.000 V to 12.000 V

Description
When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U3-12).

AC-10 Extension card 1 - AI1 measured voltage 2

Address: 44042
Min.: 0.000 Unit: V
Max.: 12.000 Data type: UInt16
Default: 2.000 Change: At once

Value Range:
0.000 V to 12.000 V

Description
When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U3-12).

AC-11 Extension card 1 - AI1 displayed voltage 2

Address: 44043
Min.: 0.000 Unit: V
Max.: 12.000 Data type: UInt16
Default: 2.000 Change: At once

Value Range:
0.000 V to 12.000 V

Description
When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U3-12).

AC-12 Extension card 1 - AI2 measured voltage 1

Address: 44044
Min.: 0.000 Unit: V
Max.: 12.000 Data type: UInt16
Default: 2.000 Change: At once

Value Range:
0.000 V to 12.000 V

Description
When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U3-13).

AC-13 Extension card 1 - AI2 displayed voltage 1

Address: 44045

Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:
0.000 V to 12.000 V
Description
When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U3-13).

AC-14 **Extension card 1 - AI2 measured voltage 2**

Address:	44046		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:
0.000 V to 12.000 V
Description
When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U3-13).

AC-15 **Extension card 1 - AI2 displayed voltage 2**

Address:	44047		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:
0.000 V to 12.000 V
Description
When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U3-13).

AC-16 **Extension card 2 - AI1 measured voltage 1**

Address:	44048		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:
0.000 V to 12.000 V
Description
When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U4-12).

AC-17 **Extension card 2 - AI1 measured voltage 1**

Address:	44049		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U4-12).

AC-18 **Extension card 2 - AI1 measured voltage 2**

Address:	44050		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U4-12).

AC-19 **Extension card 2 - AI1 displayed voltage 2**

Address:	44051		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U4-12).

AC-20 **Extension card 2 - AI2 measured voltage 1**

Address:	44052		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U4-13).

AC-21 **Extension card 2 - AI2 displayed voltage 1**

Address:	44053		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U4-13).

AC-22 **Extension card 2 - AI2 measured voltage 2**

Address:	44054		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U4-13).

AC-23 **Extension card 2 - AI2 displayed voltage 2**

Address:	44055		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

When analog voltage correction is conducted on AI1, a correction curve is obtained based on two points, each of which corresponds to a measured voltage and a displayed voltage. The measured voltage is the voltage measured using a meter, and the displayed voltage is the AI1 voltage before correction (U4-13).

AC-24 **Extension card 3 - AI1 measured voltage 1**

Address:	44056		
Min.:	0.000	Unit:	V
Max.:	12.000	Data type:	UInt16
Default:	2.000	Change:	At once

Value Range:

0.000 V to 12.000 V

Description

Extension card 3 - AI1 measured voltage 1

AC-25 **Extension card 3 - AI1 measured voltage 1**

Address: 44057

Min.: 0.000 Unit: V
Max.: 12.000 Data type: UInt16
Default: 2.000 Change: At once
Value Range:
0.000 V to 12.000 V
Description
Extension card 3 - AI1 measured voltage 1

AC-26 Extension card 3 - AI1 measured voltage 2
Address: 44058
Min.: 0.000 Unit: V
Max.: 12.000 Data type: UInt16
Default: 2.000 Change: At once
Value Range:
0.000 V to 12.000 V
Description
Extension card 3 - AI1 measured voltage 2

AC-27 Extension card 3 - AI1 displayed voltage 2
Address: 44059
Min.: 0.000 Unit: V
Max.: 12.000 Data type: UInt16
Default: 2.000 Change: At once
Value Range:
0.000 V to 12.000 V
Description
Extension card 3 - AI1 displayed voltage 2

AC-28 Extension card 3 - AI2 measured voltage 1
Address: 44060
Min.: 0.000 Unit: V
Max.: 12.000 Data type: UInt16
Default: 2.000 Change: At once
Value Range:
0.000 V to 12.000 V
Description
Extension card 3 - AI2 measured voltage 1

AC-29 Extension card 3 - AI2 displayed voltage 1
Address: 44061
Min.: 0.000 Unit: V
Max.: 12.000 Data type: UInt16
Default: 2.000 Change: At once
Value Range:
0.000 V to 12.000 V
Description
Extension card 3 - AI2 displayed voltage 1

AC-30 Extension card 3 - AI2 measured voltage 2
Address: 44062
Min.: 0.000 Unit: V
Max.: 12.000 Data type: UInt16

Default: 2.000 Change: At once

Value Range:

0.000 V to 12.000 V

Description

Extension card 3 - AI2 measured voltage 2

AC-31 **Extension card 3 - AI2 displayed voltage 2**

Address: 44063

Min.: 0.000 Unit: V

Max.: 12.000 Data type: UInt16

Default: 2.000 Change: At once

Value Range:

0.000 V to 12.000 V

Description

Extension card 3 - AI2 displayed voltage 2

1.13 AF: Process Data Address Mapping

AF-00 **RPDO1-SubIndex0-H**

Address: 44800

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO1-SubIndex0-H

AF-01 **RPDO1-SubIndex0-L**

Address: 44801

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO1-SubIndex0-L

AF-02 **RPDO1-SubIndex1-H**

Address: 44802

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO1-SubIndex1-H

AF-03 **RPDO1-SubIndex1-L**

Address: 44803

Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO1-SubIndex1-L

AF-04 RPDO1-SubIndex2-H
Address: 44804
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO1-SubIndex2-H

AF-05 RPDO1-SubIndex2-L
Address: 44805
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO1-SubIndex2-L

AF-06 RPDO1-SubIndex3-H
Address: 44806
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO1-SubIndex3-H

AF-07 RPDO1-SubIndex3-L
Address: 44807
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO1-SubIndex3-L

AF-08 RPDO2-SubIndex0-H
Address: 44808
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex0-H

AF-09 RPDO2-SubIndex0-L

Address: 44809

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex0-L

AF-10 RPDO2-SubIndex1-H

Address: 44810

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex1-H

AF-11 RPDO2-SubIndex1-L

Address: 44811

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex1-L

AF-12 RPDO2-SubIndex2-H

Address: 44812

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex2-H

AF-13 RPDO2-SubIndex2-L

Address: 44813

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex2-L

AF-14 **RPDO2-SubIndex3-H**

Address:	44814		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex3-H

AF-15 **RPDO2-SubIndex3-L**

Address:	44815		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex3-L

AF-16 **RPDO3-SubIndex0-H**

Address:	44816		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

RPDO3-SubIndex0-H

AF-17 **RPDO3-SubIndex0-L**

Address:	44817		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

RPDO3-SubIndex0-L

AF-18 **RPDO3-SubIndex1-H**

Address:	44818		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description
RPDO3-SubIndex1-H

AF-19 **RPDO3-SubIndex1-L**

Address:	44819		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO3-SubIndex1-L

AF-20 **RPDO3-SubIndex2-H**

Address:	44820		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO3-SubIndex2-H

AF-21 **RPDO3-SubIndex2-L**

Address:	44821		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO3-SubIndex2-L

AF-22 **RPDO3-SubIndex3-H**

Address:	44822		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO3-SubIndex3-H

AF-23 **RPDO3-SubIndex3-L**

Address:	44823		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO3-SubIndex3-L

AF-24 **RPDO4-SubIndex0-H**

Address: 44824
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
RPDO4-SubIndex0-H

AF-25 **RPDO4-SubIndex0-L**

Address: 44825
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
RPDO4-SubIndex0-L

AF-26 **RPDO4-SubIndex1-H**

Address: 44826
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
RPDO4-SubIndex1-H

AF-27 **RPDO4-SubIndex1-L**

Address: 44827
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
RPDO4-SubIndex1-L

AF-28 **RPDO4-SubIndex2-H**

Address: 44828
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
RPDO4-SubIndex2-H

AF-29 **RPDO4-SubIndex2-L**

Address: 44829
Min.: 0 Unit: -

Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO4-SubIndex2-L

AF-30 RPDO4-SubIndex3-H
Address: 44830
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO4-SubIndex3-H

AF-31 RPDO4-SubIndex3-L
Address: 44831
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO4-SubIndex3-L

AF-32 TPDO1-SubIndexO-H
Address: 44832
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO1-SubIndexO-H

AF-33 TPDO1-SubIndexO-L
Address: 44833
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO1-SubIndexO-L

AF-34 TPDO1-SubIndex1-H
Address: 44834
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535
Description
TPDO1-SubIndex1-H

AF-35 TPDO1-SubIndex1-L

Address:	44835		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO1-SubIndex1-L

AF-36 TPDO1-SubIndex2-H

Address:	44836		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO1-SubIndex2-H

AF-37 TPDO1-SubIndex2-L

Address:	44837		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO1-SubIndex2-L

AF-38 TPDO1-SubIndex3-H

Address:	44838		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO1-SubIndex3-H

AF-39 TPDO1-SubIndex3-L

Address:	44839		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535

Description
TPDO1-SubIndex3-L

AF-40 **TPDO2-SubIndex0-H**

Address:	44840		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO2-SubIndex0-H

AF-41 **TPDO2-SubIndex0-L**

Address:	44841		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO2-SubIndex0-L

AF-42 **TPDO2-SubIndex1-H**

Address:	44842		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO2-SubIndex1-H

AF-43 **TPDO2-SubIndex1-L**

Address:	44843		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO2-SubIndex1-L

AF-44 **TPDO2-SubIndex2-H**

Address:	44844		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO2-SubIndex2-H

AF-45 **TPDO2-SubIndex2-L**

Address: 44845
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
TPDO2-SubIndex2-L

AF-46 **TPDO2-SubIndex3-H**

Address: 44846
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
TPDO2-SubIndex3-H

AF-47 **TPDO2-SubIndex3-L**

Address: 44847
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
TPDO2-SubIndex3-L

AF-48 **TPDO3-SubIndex0-H**

Address: 44848
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
TPDO3-SubIndex0-H

AF-49 **TPDO3-SubIndex0-L**

Address: 44849
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
TPDO3-SubIndex0-L

AF-50 **TPDO3-SubIndex1-H**

Address: 44850
Min.: 0 Unit: -

Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO3-SubIndex1-H

AF-51 TPDO3-SubIndex1-L
Address: 44851
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO3-SubIndex1-L

AF-52 TPDO3-SubIndex2-H
Address: 44852
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO3-SubIndex2-H

AF-53 TPDO3-SubIndex2-L
Address: 44853
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO3-SubIndex2-L

AF-54 TPDO3-SubIndex3-H
Address: 44854
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO3-SubIndex3-H

AF-55 TPDO3-SubIndex3-L
Address: 44855
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535
Description
TPDO3-SubIndex3-L

AF-56 TPDO4-SubIndex0-H

Address:	44856		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex0-H

AF-57 TPDO4-SubIndex0-L

Address:	44857		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex0-L

AF-58 TPDO4-SubIndex1-H

Address:	44858		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex1-H

AF-59 TPDO4-SubIndex1-L

Address:	44859		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex1-L

AF-60 TPDO4-SubIndex2-H

Address:	44860		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535

Description
TPDO4-SubIndex2-H

AF-61 **TPDO4-SubIndex2-L**

Address:	44861		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex2-L

AF-62 **TPDO4-SubIndex3-H**

Address:	44862		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex3-H

AF-63 **TPDO4-SubIndex3-L**

Address:	44863		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex3-L

AF-66 **Number of valid RPDOs**

Address:	44866		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
Number of valid RPDOs

AF-67 **Number of valid TPDOs**

Address:	44867		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
Number of valid TPDOs

1.14 U0: Monitoring Parameters

U0-00 **Bus voltage**

Address:	28672		
Min.:	0	Unit:	V
Max.:	1000	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 1000 V
Description
This parameter defines the bus voltage.

U0-01 **Heatsink temperature**

Address:	28673		
Min.:	–50	Unit:	°C
Max.:	150	Data type:	Int
Default:	0	Change:	Unchangeable

Value Range:
–50°C to 150°C
Description
This parameter defines the heatsink temperature.

U0-02 **Ambient temperature**

Address:	28674		
Min.:	–50	Unit:	°C
Max.:	150	Data type:	Int
Default:	0	Change:	Unchangeable

Value Range:
–50°C to 150°C
Description
This parameter defines the ambient temperature.

U0-04 **Input voltage Usr**

Address:	28676		
Min.:	0	Unit:	V
Max.:	1000	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 1000 V
Description
This parameter defines the input RST voltage Usr.

U0-05 **Input voltage Ust**

Address:	28677		
Min.:	0	Unit:	V
Max.:	1000	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 V to 1000 V
Description
This parameter defines the input RST voltage Ust.

U0-06 **Input voltage Utr**

Address: 28678

Min.:	0	Unit:	V
Max.:	1000	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 V to 1000 V

Description

This parameter defines the input RST voltage Utr.

U0-07 **Three-phase imbalance factor**

Address: 28679

Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	1	Change:	Unchangeable

Value Range:

0.0% to 100.0%

Description

This parameter defines the input RST imbalance factor.

U0-12 **Current fault code**

Address: 28684

Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 100

Description

This parameter defines the fault code of the current fault.

U0-13 **Current fault subcode**

Address: 28685

Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 100

Description

This parameter defines the subcode of the current fault.

U0-14 **Current alarm code**

Address: 28686

Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 100

Description

This parameter defines the alarm code of the current alarm.

U0-15 **Current alarm subcode**

Address: 28687

Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 100
Description
This parameter defines subcode of the current alarm.

U0-16 Online module list

Address:	28688		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the online module list.

U0-17 Number of online modules

Address:	28689		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the number of current online axes. It shows the number of axes installed under normal circumstances.

U0-18 Number of online I/O modules

Address:	28690		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 3
Description
This parameter shows the number of current online I/O modules. It shows the number of axes installed under normal circumstances.

U0-19 Current power-on time (hour)

Address:	28692		
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 h to 65535 h
Description
Current power-on time (hour)

U0-20 Current power-on time (minute)

Address:	28693

Min.: 0 Unit: min
Max.: 60 Data type: UInt16
Default: 0 Change: Unchangeable
Value Range:
0 min to 60 min
Description
Current power-on time (minute)

U0-21 Current power-on time (second)
Address: 28694
Min.: 0 Unit: s
Max.: 60 Data type: UInt16
Default: 0 Change: Unchangeable
Value Range:
0s to 60s
Description
Current power-on time (second)

U0-23 Current power-on time (millisecond)
Address: 28695
Min.: 0 Unit: ms
Max.: 1000 Data type: UInt16
Default: 0 Change: Unchangeable
Value Range:
0 ms to 1000 ms
Description
Current power-on time (millisecond)

U0-25 Braking unit control command word
Address: 28697
Min.: 0 Unit: -
Max.: 1 Data type: UInt16
Default: 0 Change: Unchangeable
Value Range:
0: Braking disabled
1: Braking
Description
Braking unit control command word

U0-30 Total power-on time (hour)
Address: 28702
Min.: 0 Unit: h
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable
Value Range:
0 h to 65535 h
Description
Total power-on time (hour)

U0-31 Total power-on time (minute)
Address: 28703
Min.: 0 Unit: min

Max.: 60 Data type: UInt16
Default: 0 Change: Unchangeable
Value Range:
0 min to 60 min
Description
Total power-on time (minute)

U0-32 Total power-on time (second)
Address: 28704
Min.: 0 Unit: s
Max.: 60 Data type: UInt16
Default: 0 Change: Unchangeable
Value Range:
0s to 60s
Description
Total power-on time (second)

U0-33 Total power-on time (millisecond)
Address: 28705
Min.: 0 Unit: ms
Max.: 1000 Data type: UInt16
Default: 0 Change: Unchangeable
Value Range:
0 ms to 1000 ms
Description
Total power-on time (millisecond)

U0-35 Power supply unit state
Address: 28707
Min.: 0 Unit: -
Max.: 2 Data type: UInt16
Default: 0 Change: Unchangeable
Value Range:
0: No RST input
1: Normal operation
2: Faulty state
Description
Power supply unit state

1.15 U2: Power Supply Unit I/O Monitoring Parameters

U2-00 Power supply unit I/O type
Address: 29184
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable
Value Range:
0 to 65535
Description
This parameter defines the type of the current extension card.

U2-01 **Power supply unit I/O version**

Address: 29185

Min.:	0.00	Unit:	-
Max.:	655.35	Data type:	UInt16
Default:	2	Change:	Unchangeable

Value Range:

0.00 to 655.35

Description

This parameter defines the software version of the current extension card.

U2-02 **Power supply unit I/O - original DI hardware resource**

Address: 29186

Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 8

Description

This parameter shows the number of DIs supported by the current extension card hardware.

U2-03 **Power supply unit I/O - available DI hardware resource**

Address: 29187

Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 8

Description

This parameter defines the number of DIs currently available.

U2-04 **Power supply unit I/O - original AI hardware resource**

Address: 29188

Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 2

Description

This parameter shows the number of AIs supported by the current extension card hardware.

U2-05 **Power supply unit I/O - available AI hardware resource**

Address: 29189

Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 2

Description

This parameter defines the number of AIs currently available.

U2-06 **Power supply unit I/O - original DO hardware resource**

Address: 29190

Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter shows the number of DOs supported by the current extension card hardware.

U2-07 Power supply unit I/O - available DO hardware resource

Address: 29191
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter defines the number of DOs currently available.

U2-08 Power supply unit I/O - original AO hardware resource

Address: 29192
Min.: 0 Unit: -
Max.: 2 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 2

Description
This parameter shows the number of AOs supported by the current extension card hardware.

U2-09 Power supply unit I/O - available AO hardware resource

Address: 29193
Min.: 0 Unit: -
Max.: 2 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 2

Description
This parameter defines the number of AOs currently available.

U2-10 Power supply unit I/O - DI input

Address: 29194
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter shows the current hardware DI input state. Bit0 corresponds to DI1, bit1 corresponds to DI2, and so on.

U2-11 Power supply unit I/O - DO output

Address: 29195
Min.: 0 Unit: -

Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter shows the current hardware DO output state. Bit0 corresponds to DO1, bit1 corresponds to DO2, and so on.

U2-12 Local - AI1 input (before correction)

Address: 29196
Min.: –10.000 Unit: V
Max.: 10.000 Data type: Int
Default: 0.000 Change: Unchangeable

Value Range:
–10.000 V to 10.000 V

Description
This parameter shows the current AI1 input which is not corrected.

U2-13 Local - AI2 input (before correction)

Address: 29197
Min.: –10.000 Unit: V
Max.: 10.000 Data type: Int
Default: 0.000 Change: Unchangeable

Value Range:
–10.000 V to 10.000 V

Description
This parameter shows the current AI2 input which is not corrected.

U2-14 Local - AI1 input (after correction)

Address: 29198
Min.: –10.00 Unit: V
Max.: 10.00 Data type: Int
Default: 0.00 Change: Unchangeable

Value Range:
–10.00 V to 10.00 V

Description
This parameter shows the current corrected AI1 input.

U2-15 Local - AI2 input (after correction)

Address: 29199
Min.: –10.00 Unit: V
Max.: 10.00 Data type: Int
Default: 0.00 Change: Unchangeable

Value Range:
–10.00 V to 10.00 V

Description
This parameter shows the current corrected AI2 input.

U2-20 Power supply unit I/O - usage of DI1 by drive unit

Address: 29204
Min.: 0 Unit: -
Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DI usage.

U2-21 Power supply unit I/O - usage of DI2 by drive unit

Address: 29205

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DI usage.

U2-22 Power supply unit I/O - usage of DI3 by drive unit

Address: 29206

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DI usage.

U2-23 Power supply unit I/O - usage of DI4 by drive unit

Address: 29207

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DI usage.

U2-24 Power supply unit I/O - usage of DI5 by drive unit

Address: 29208

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DI usage.

U2-25 Power supply unit I/O - usage of DI6 by drive unit

Address: 29209

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DI usage.

U2-26 **Power supply unit I/O - usage of DI7 by drive unit**

Address:	29210		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DI usage.

U2-27 **Power supply unit I/O - usage of DI8 by drive unit**

Address:	29211		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DI usage.

U2-30 **Power supply unit I/O - usage of AI1 by drive unit**

Address:	29214		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 2

Description

This parameter shows the current AI usage.

U2-31 **Power supply unit I/O - usage of AI2 by drive unit**

Address:	29215		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 2

Description

This parameter shows the current AI usage.

U2-40 **Power supply unit I/O - usage of DO1 by drive unit**

Address:	29224		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 8

Description
This parameter shows the current DO usage.

U2-41 **Power supply unit I/O - usage of DO2 by drive unit**

Address:	29225		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DO usage.

U2-42 **Power supply unit I/O - usage of DO3 by drive unit**

Address:	29226		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DO usage.

U2-43 **Power supply unit I/O - usage of DO4 by drive unit**

Address:	29227		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DO usage.

U2-44 **Power supply unit I/O - usage of DO5 by drive unit**

Address:	29228		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DO usage.

U2-45 **Power supply unit I/O - usage of DO6 by drive unit**

Address:	29229		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DO usage.

U2-46 **Power supply unit I/O - usage of DO7 by drive unit**

Address:	29230		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DO usage.

U2-47 **Power supply unit I/O - usage of DO8 by drive unit**

Address:	29231		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DO usage.

1.16 U3: I/O Extension Card 1 Monitoring Parameters

U3-00 **Type of I/O extension card 1**

Address:	29440		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the type of the current extension card.

U3-01 **Version of I/O extension card 1**

Address:	29441		
Min.:	0.00	Unit:	-
Max.:	655.35	Data type:	UInt16
Default:	2	Change:	Unchangeable

Value Range:
0.00 to 655.35
Description
This parameter defines the software version of the current extension card.

U3-02 **I/O extension card 1 - original DI hardware resource**

Address:	29442		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8

Description
This parameter shows the number of DIs supported by the current extension card hardware.

U3-03 **I/O extension card 1 - available DI hardware resource**

Address:	29443		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter defines the number of DIs currently available.

U3-04 **I/O extension card 1 - original AI hardware resource**

Address:	29444		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 2
Description
This parameter shows the number of AIs supported by the current extension card hardware.

U3-05 **I/O extension card 1 - available AI hardware resource**

Address:	29445		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 2
Description
This parameter defines the number of AIs currently available.

U3-06 **I/O extension card 1 - original DO hardware resource**

Address:	29446		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the number of DOs supported by the current extension card hardware.

U3-07 **I/O extension card 1 - available DO hardware resource**

Address:	29447		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter defines the number of DOs currently available.

U3-08 **I/O extension card 1 - original AO hardware resource**

Address:	29448		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 2
Description
This parameter shows the number of AOs supported by the current extension card hardware.

U3-09 **I/O extension card 1 - available AO hardware resource**

Address:	29449		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 2
Description
This parameter defines the number of AOs currently available.

U3-10 **I/O extension card 1 - DI input**

Address:	29450		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the current hardware DI input state. Bit0 corresponds to DI1, bit1 corresponds to DI2, and so on.

U3-11 **I/O extension card 1 - DO output**

Address:	29451		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the current hardware DO output state. Bit0 corresponds to DO1, bit1 corresponds to DO2, and so on.

U3-12 **I/O extension card 1 - AI1 input (before correction)**

Address:	29452		
Min.:	–10.000	Unit:	V
Max.:	10.000	Data type:	Int
Default:	0.000	Change:	Unchangeable

Value Range:
–10.000 V to 10.000 V
Description
This parameter shows the current AI1 input which is not corrected.

U3-13 **I/O extension card 1 - AI2 input (before correction)**

Address:	29453		
Min.:	–10.000	Unit:	V
Max.:	10.000	Data type:	Int
Default:	0.000	Change:	Unchangeable

Value Range:
–10.000 V to 10.000 V
Description
This parameter shows the current AI2 input which is not corrected.

U3-14 **I/O extension card 1 - AI1 input (after correction)**

Address:	29454		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int
Default:	0.00	Change:	Unchangeable

Value Range:
–10.00 V to 10.00 V
Description
This parameter shows the current corrected AI1 input.

U3-15 **I/O extension card 1 - AI2 input (after correction)**

Address:	29455		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int
Default:	0.00	Change:	Unchangeable

Value Range:
–10.00 V to 10.00 V
Description
This parameter shows the current corrected AI2 input.

U3-20 **I/O extension card 1 - usage of DI1 by drive unit**

Address:	29460		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DI usage.

U3-21 **I/O extension card 1 - usage of DI2 by drive unit**

Address:	29461		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DI usage.

U3-22 **I/O extension card 1 - usage of DI3 by drive unit**
Address: 29462

Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter shows the current DI usage.

U3-23 I/O extension card 1 - usage of DI4 by drive unit

Address: 29463
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter shows the current DI usage.

U3-24 I/O extension card 1 - usage of DI5 by drive unit

Address: 29464
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter shows the current DI usage.

U3-25 I/O extension card 1 - usage of DI6 by drive unit

Address: 29465
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter shows the current DI usage.

U3-26 I/O extension card 1 - usage of DI7 by drive unit

Address: 29466
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter shows the current DI usage.

U3-27 I/O extension card 1 - usage of DI8 by drive unit

Address: 29467
Min.: 0 Unit: -
Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DI usage.

U3-30 I/O extension card 1 - usage of AI1 by drive unit

Address: 29470

Min.: 0 Unit: -

Max.: 2 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 2

Description

This parameter shows the current AI usage.

U3-31 I/O extension card 1 - usage of AI2 by drive unit

Address: 29471

Min.: 0 Unit: -

Max.: 2 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 2

Description

This parameter shows the current AI usage.

U3-40 I/O extension card 1 - usage of DO1 by drive unit

Address: 29480

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

U3-41 I/O extension card 1 - usage of DO2 by drive unit

Address: 29481

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

U3-42 I/O extension card 1 - usage of DO3 by drive unit

Address: 29482

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

U3-43 I/O extension card 1 - usage of DO4 by drive unit

Address:	29483		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

U3-44 I/O extension card 1 - usage of DO5 by drive unit

Address:	29484		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

U3-45 I/O extension card 1 - usage of DO6 by drive unit

Address:	29485		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

U3-46 I/O extension card 1 - usage of DO7 by drive unit

Address:	29486		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

U3-47 I/O extension card 1 - usage of DO8 by drive unit

Address:	29487		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 8

Description
This parameter shows the current DO usage.

1.17 U4: I/O Extension Card 2 Monitoring Parameters

U4-00 **Type of I/O extension card 2**

Address:	29696		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the type of the current extension card.

U4-01 **Version of I/O extension card 2**

Address:	29697		
Min.:	0.00	Unit:	-
Max.:	655.35	Data type:	UInt16
Default:	2	Change:	Unchangeable

Value Range:
0.00 to 655.35
Description
This parameter defines the software version of the current extension card.

U4-02 **I/O extension card 2 - original DI hardware resource**

Address:	29698		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the number of DIs supported by the current extension card hardware.

U4-03 **I/O extension card 2 - available DI hardware resource**

Address:	29699		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter defines the number of DIs currently available.

U4-04 **I/O extension card 2 - original AI hardware resource**

Address:	29700		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 2
Description
This parameter shows the number of AIs supported by the current extension card hardware.

U4-05 **I/O extension card 2 - available AI hardware resource**

Address:	29701		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 2
Description
This parameter defines the number of AIs currently available.

U4-06 **I/O extension card 2 - original DO hardware resource**

Address:	29702		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the number of DOs supported by the current extension card hardware.

U4-07 **I/O extension card 2 - available DO hardware resource**

Address:	29703		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter defines the number of DOs currently available.

U4-08 **I/O extension card 2 - original AO hardware resource**

Address:	29704		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 2
Description
This parameter shows the number of AOs supported by the current extension card hardware.

U4-09 **I/O extension card 2 - available AO hardware resource**

Address:	29705		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 2

Description
This parameter defines the number of AOs currently available.

U4-10 I/O extension card 2 - DI input

Address:	29706		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the current hardware DI input state. Bit0 corresponds to DI1, bit1 corresponds to DI2, and so on.

U4-11 I/O extension card 2 - DO output

Address:	29707		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the current hardware DO output state. Bit0 corresponds to DO1, bit1 corresponds to DO2, and so on.

U4-12 I/O extension card 2 - AI1 input (before correction)

Address:	29708		
Min.:	–10.000	Unit:	V
Max.:	10.000	Data type:	Int
Default:	0.000	Change:	Unchangeable

Value Range:
–10.000 V to 10.000 V
Description
This parameter shows the current AI1 input which is not corrected.

U4-13 I/O extension card 2 - AI2 input (before correction)

Address:	29709		
Min.:	–10.000	Unit:	V
Max.:	10.000	Data type:	Int
Default:	0.000	Change:	Unchangeable

Value Range:
–10.000 V to 10.000 V
Description
This parameter shows the current AI2 input which is not corrected.

U4-14 I/O extension card 2 - AI1 input (after correction)

Address:	29710		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int
Default:	0.00	Change:	Unchangeable

Value Range:
–10.00 V to 10.00 V

Description
This parameter shows the current corrected AI1 input.

U4-15 **I/O extension card 2 - AI2 input (after correction)**

Address:	29711		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int
Default:	0.00	Change:	Unchangeable

Value Range:
–10.00 V to 10.00 V
Description
This parameter shows the current corrected AI2 input.

U4-20 **I/O extension card 2 - usage of DI1 by drive unit**

Address:	29716		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DI usage.

U4-21 **I/O extension card 2 - usage of DI2 by drive unit**

Address:	29717		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DI usage.

U4-22 **I/O extension card 2 - usage of DI3 by drive unit**

Address:	29718		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DI usage.

U4-23 **I/O extension card 2 - usage of DI4 by drive unit**

Address:	29719		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DI usage.

U4-24 **I/O extension card 2 - usage of DI5 by drive unit**

Address:	29720		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DI usage.

U4-25 **I/O extension card 2 - usage of DI6 by drive unit**

Address:	29721		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DI usage.

U4-26 **I/O extension card 2 - usage of DI7 by drive unit**

Address:	29722		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DI usage.

U4-27 **I/O extension card 2 - usage of DI8 by drive unit**

Address:	29723		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 8
Description
This parameter shows the current DI usage.

U4-30 **I/O extension card 2 - usage of AI1 by drive unit**

Address:	29726		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 2
Description
This parameter shows the current AI usage.

U4-31 **I/O extension card 2 - usage of AI2 by drive unit**

Address:	29727

Min.: 0 Unit: -
Max.: 2 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 2

Description
This parameter shows the current AI usage.

U4-40 I/O extension card 2 - usage of DO1 by drive unit

Address: 29736
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter shows the current DO usage.

U4-41 I/O extension card 2 - usage of DO2 by drive unit

Address: 29737
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter shows the current DO usage.

U4-42 I/O extension card 2 - usage of DO3 by drive unit

Address: 29738
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter shows the current DO usage.

U4-43 I/O extension card 2 - usage of DO4 by drive unit

Address: 29739
Min.: 0 Unit: -
Max.: 8 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 8

Description
This parameter shows the current DO usage.

U4-44 I/O extension card 2 - usage of DO5 by drive unit

Address: 29740
Min.: 0 Unit: -
Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

U4-45 I/O extension card 2 - usage of DO6 by drive unit

Address: 29741

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

U4-46 I/O extension card 2 - usage of DO7 by drive unit

Address: 29742

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

U4-47 I/O extension card 2 - usage of DO8 by drive unit

Address: 29743

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 8

Description

This parameter shows the current DO usage.

List of Drive Unit Parameters

Table –1 Function parameters of drive unit

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F0-00	61440	G/P type	1: G type (constant-torque load) 2: P type (fan and pump)	Model dependent	-	Unchangeable	"F0-00" on page 210
F0-01	61441	Motor 1 control mode	0: SVC 1: Reserved 2: V/f control 3: Reserved 4: Reserved 5: VC++	2	-	At stop	"F0-01" on page 210
F0-02	61442	Command source	0: Operating panel of the power supply unit/LCD operating panel/Software tool 1: Terminal 2: Communication	0	-	At stop	"F0-02" on page 210
F0-03	61443	Main frequency source X	0: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, non-retentive upon power failure) 1: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, retentive at power failure) 2: AI1 3: AI2 4: AI3 5: Reserved 6: Multi-reference 7: Simple PLC 8: PID 9: Communication 10: Reserved	0	-	At stop	"F0-03" on page 211
F0-04	61444	Auxiliary frequency source Y	0: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, non-retentive upon power failure) 1: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, retentive at power failure) 2: AI1 3: AI2 4: AI3 5: Reserved 6: Multi-reference 7: Simple PLC 8: PID 9: Communication 10: Reserved	0	-	At stop	"F0-04" on page 212

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F0-05	61445	Base value of range of auxiliary frequency source Y for superposition	0: Relative to maximum frequency 1: Relative to main frequency X	0	-	At once	"F0-05" on page 213
F0-06	61446	Range of auxiliary frequency source Y for superposition	0% to 150%	100	%	At once	"F0-06" on page 213
F0-07	61447	Frequency source superposition	Ones: 0: Main frequency reference X 1: Main and auxiliary operation result (based on tens) 2: Switchover between main frequency X and auxiliary frequency Y 3: Switchover between main frequency X and the main and auxiliary operation result 4: Switchover between auxiliary frequency Y and the main and auxiliary operation result Tens: 0: Main + Auxiliary 1: Main – Auxiliary 2: Max. (main, auxiliary) 3: Min. (main, auxiliary) 4: Main x Auxiliary	0	-	At once	"F0-07" on page 213
F0-08	61448	Preset frequency	0.00 Hz to 655.35 Hz	50.00	Hz	At once	"F0-08" on page 215
F0-09	61449	Running direction	0: Same as default direction 1: Reverse to default direction	0	-	At once	"F0-09" on page 215
F0-10	61450	Maximum frequency	50.00 Hz to 600.00 Hz	50.00	Hz	At stop	"F0-10" on page 215
F0-11	61451	Source of frequency upper limit	0: Frequency upper limit reference (F0-12) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication 6: Multi-speed reference	0	-	At stop	"F0-11" on page 215
F0-12	61452	Frequency upper limit	0.00 Hz to 655.35 Hz	50.00	Hz	At once	"F0-12" on page 216

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F0-13	61453	Frequency upper limit offset	0.00 Hz to 655.35 Hz	0.00	Hz	At once	"F0-13" on page 216
F0-14	61454	Frequency lower limit	0.00 Hz to 655.35 Hz	0.00	Hz	At once	"F0-14" on page 216
F0-15	61455	Carrier frequency	0.8 kHz to 15.0 kHz	Model dependent	kHz	At once	"F0-15" on page 216
F0-16	61456	Carrier frequency adjusted with temperature	0: No 1: Yes	1	-	At once	"F0-16" on page 217
F0-17	61457	Acceleration time 1	0.0s to 6500.0s	20.0	s	At once	"F0-17" on page 217
F0-18	61458	Deceleration time 1	0.0s to 6500.0s	20.0	s	At once	"F0-18" on page 217
F0-19	61459	Acceleration/ Deceleration time unit	0: 1s 1: 0.1s 2: 0.01s	1	-	At stop	"F0-19" on page 218
F0-21	61461	Offset of auxiliary frequency source during superposition	0.00 Hz to 655.35 Hz	0.00	Hz	At once	"F0-21" on page 218
F0-22	61462	Frequency reference resolution	1: 0.1 Hz 2: 0.01 Hz	2	Hz	At stop	"F0-22" on page 218
F0-23	61463	Retention of digital setting of frequency upon stop	0: Non-retentive 1: Retentive	0	-	At once	"F0-23" on page 218
F0-25	61465	Acceleration/ Deceleration time base frequency	0: Maximum frequency (F0-10) 1: Frequency reference 2: 100 Hz	0	-	At stop	"F0-25" on page 219
F0-26	61466	Base frequency for UP/ DOWN modification during running	0: Running frequency 1: Frequency reference	0	-	At stop	"F0-26" on page 219
F0-27	61467	Main frequency coefficient	0.00% to 100.00%	10.00	%	At once	"F0-27" on page 219
F0-28	61468	Auxiliary frequency coefficient	0.00% to 100.00%	10.00	%	At once	"F0-28" on page 219
F0-29	61469	G/P model	1 to 2	1	-	At stop	"F0-29" on page 220

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F1-00	61696	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor 2: Synchronous motor	0	-	At stop	"F1-00" on page 220
F1-01	61697	Rated motor power	0.1 kW to 1000.0 kW	Model dependent	kW	At stop	"F1-01" on page 220
F1-02	61698	Rated motor voltage	1 V to 2000 V	Model dependent	V	At stop	"F1-02" on page 221
F1-03	61699	Rated motor current	0.1 A to 6553.5 A	Model dependent	A	At stop	"F1-03" on page 221
F1-04	61700	Rated motor frequency	0.01 Hz to 655.35 Hz	Model dependent	Hz	At stop	"F1-04" on page 221
F1-05	61701	Rated motor speed	1 RPM to 65535 RPM	Model dependent	RPM	At stop	"F1-05" on page 221
F1-06	61702	Asynchronous motor stator resistance	0.001 Ω to 65.535 Ω	Model dependent	Ω	At stop	"F1-06" on page 221
F1-07	61703	Asynchronous motor rotor resistance	0.001 Ω to 65.535 Ω	Model dependent	Ω	At stop	"F1-07" on page 222
F1-08	61704	Asynchronous motor leakage inductance	0.01 mH to 655.35 mH	Model dependent	mH	At stop	"F1-08" on page 222
F1-09	61705	Asynchronous motor mutual inductance	0.01 mH to 655.35 mH	Model dependent	mH	At stop	"F1-09" on page 222
F1-10	61706	Asynchronous motor no-load current	0.1 A to 6553.5 A	Model dependent	A	At stop	"F1-10" on page 223
F1-11	61707	Asynchronous motor core saturation coefficient 1	50.0% to 100.0%	86.0	%	At once	"F1-11" on page 223
F1-12	61708	Asynchronous motor core saturation coefficient 2	100.0% to 150.0%	130.0	%	At once	"F1-12" on page 223
F1-13	61709	Asynchronous motor core saturation coefficient 3	100.0% to 170.0%	140.0	%	At once	"F1-13" on page 223

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F1-14	61710	Asynchronous motor core saturation coefficient 4	100.0% to 180.0%	150.0	%	At once	"F1-14" on page 223
F1-17	61713	Synchronous motor axis D inductance	1mH to 65535mH	Model dependent	mH	At stop	"F1-17" on page 223
F1-18	61714	Synchronous motor axis Q inductance	1mH to 65535mH	Model dependent	mH	At stop	"F1-18" on page 224
F1-19	61715	Synchronous motor back EMF coefficient	0.1V to 6553.5V	Model dependent	V	At stop	"F1-19" on page 224
F1-24	61720	Number of motor pole pairs	0 to 65535	0	-	Unchangeable	"F1-24" on page 224
F1-37	61733	Auto-tuning	0: No auto-tuning 1: Asynchronous motor static auto-tuning 2: Auto-tuning on all parameters of asynchronous motor 3: With-load auto-tuning on all parameters of asynchronous motor 4: Reserved 11: No-load dynamic auto-tuning on synchronous motor (excluding back EMF) 12: No-load dynamic auto-tuning on synchronous motor 13: Static auto-tuning on all parameters of synchronous motor 14: Reserved	0	-	At stop	"F1-37" on page 224
F2-00	61952	Low-speed speed loop Kp	1 to 200	30	-	At once	"F2-00" on page 225
F2-01	61953	Low-speed speed loop Ti	0.001s to 10.000s	0.500	s	At once	"F2-01" on page 226
F2-02	61954	Switchover frequency 1	0.00 Hz to 655.35 Hz	5.00	Hz	At once	"F2-02" on page 226
F2-03	61955	High-speed speed loop Kp	1 to 200	20	-	At once	"F2-03" on page 226
F2-04	61956	High-speed speed loop Ti	0.001s to 10.000s	1.000	s	At once	"F2-04" on page 227

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F2-05	61957	Switchover frequency 2	0.00 Hz to 655.35 Hz	10.00	Hz	At once	"F2-05" on page 227
F2-06	61958	VC slip compensation gain	50% to 200%	100	%	At once	"F2-06" on page 227
F2-07	61959	Speed feedback filter time	0.000s to 0.1000s	004	s	At once	"F2-07" on page 227
F2-08	61960	VC deceleration over-excitation gain	0 to 200	64	-	At once	"F2-08" on page 228
F2-09	61961	Torque upper limit source in speed control (motoring)	0: Digital setting (F2-10) 1: AI1 2:AI2 3: AI3 4: Reserved 5: Communication 6: MIN (AI1, AI2) 7: MAX (AI1, AI2)	0	-	At once	"F2-09" on page 228
F2-10	61962	Torque upper limit reference in speed control (motoring)	0.0% to 200.0%	150.0	%	At once	"F2-10" on page 229
F2-11	61963	Torque upper limit source in speed control (generating)	0: Digital setting (F2-10) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 8: Digital setting (F2-12)	0	-	At once	"F2-11" on page 229
F2-12	61964	Torque upper limit reference in speed control (generating)	0.0% to 200.0%	150.0	%	At once	"F2-12" on page 230
F2-13	61965	Low-speed current loop Kp adjustment	0.1 to 10.0	1.0	-	At once	"F2-13" on page 230
F2-14	61966	Low-speed current loop Ki adjustment	0.1 to 10.0	1.0	-	At once	"F2-14" on page 230
F2-15	61967	High-speed current loop Kp adjustment	0.1 to 10.0	1.0	-	At once	"F2-15" on page 230

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F2-16	61968	High-speed current loop Ki adjustment	0.1 to 10.0	1.0	-	At once	"F2-16" on page 231
F2-17	61969	Speed loop Kp upon zero speed lock	1 to 100	30	-	At once	"F2-17" on page 231
F2-18	61970	Speed loop Ti upon zero speed lock	0.001s to 10.000s	0.500	s	At once	"F2-18" on page 231
F2-20	61972	Speed loop switchover frequency upon zero speed lock	0.00 Hz to 655.35 Hz	05	Hz	At once	"F2-20" on page 231
F2-21	61973	Maximum output voltage coefficient	100 to 110	100	-	At once	"F2-21" on page 231
F2-22	61974	Output voltage filter time	0.000s to 0.010s	0.000	s	At once	"F2-22" on page 232
F2-23	61975	Zero speed lock	0: Disabled 1: Enabled	0	-	At stop	"F2-23" on page 232
F2-24	61976	Overvoltage suppression Kp in vector control mode	0 to 1000	40	-	At once	"F2-24" on page 232
F2-25	61977	Acceleration compensation gain	0 to 200	0	-	At once	"F2-25" on page 232
F2-26	61978	Acceleration compensation filter time	0 to 500	10	-	At once	"F2-26" on page 232
F2-27	61979	Overvoltage suppression in vector control mode	0: Disabled 1: Enabled	1	-	At once	"F2-27" on page 233
F2-28	61980	Torque filter cut-off frequency	50 Hz to 1000 Hz	500	Hz	At once	"F2-28" on page 233
F2-29	61981	Synchronous motor initial angle detection current	50 to 180	80	-	At once	"F2-29" on page 233
F2-30	61982	Speed loop parameter auto-calculation	0: Disabled 1: Enabled	0	-	At stop	"F2-30" on page 233
F2-31	61983	Expected speed loop bandwidth (high speed)	1.0 Hz to 200.0 Hz	10.0	Hz	At once	"F2-31" on page 234

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F2-32	61984	Expected speed loop bandwidth (low speed)	1.0 Hz to 200.0 Hz	10.0	Hz	At once	"F2-32" on page 234
F2-33	61985	Expected speed loop bandwidth (zero speed)	1.0 Hz to 200.0 Hz	10.0	Hz	At once	"F2-33" on page 234
F2-34	61986	Expected speed loop damping ratio: (unchanged generally)	0.100 to 65.000	1.000	-	At once	"F2-34" on page 234
F2-52	62004	Decoupling control	0: Disabled 1: Enabled	0	-	At stop	"F2-52" on page 234
F2-53	62005	Power limit during generating	0: Disabled 1: Enabled	0	-	At stop	"F2-53" on page 234
F2-54	62006	Power limit during generating	0.0% to 200.0%	0.0	%	At stop	"F2-54" on page 235
F2-55	62007	Flux closed loop mode	0 to 1111	1010	-	At stop	"F2-55" on page 235
F2-56	62008	AC drive output current upper limit	0.0% to 170.0%	150.0	%	At stop	"F2-56" on page 235
F3-00	62208	V/f curve reference	0: Straight-line V/f curve 1: Multi-point V/f curve 2: Square V/f curve 3: 1.2-power V/f curve 4: 1.4-power V/f curve 6: 1.6-power V/f curve 8: 1.8-power V/f curve 10: V/f complete separation mode 11:V/f half separation mode	0	-	At stop	"F3-00" on page 235
F3-01	62209	Torque boost	0.0% to 30.0%	Model dependent	%	At once	"F3-01" on page 237
F3-02	62210	Cutoff frequency of torque boost	0.00 Hz to 655.35 Hz	50.00	Hz	At stop	"F3-02" on page 237
F3-03	62211	Multi-point V/f frequency 1	0.00 Hz to 655.35 Hz	0.00	Hz	At stop	"F3-03" on page 237
F3-04	62212	Multi-point V/f voltage 1	0.0% to 100.0%	0.0	%	At stop	"F3-04" on page 237

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F3-05	62213	Multi-point V/f frequency 2	0.00 Hz to 655.35 Hz	0.00	Hz	At stop	"F3-05" on page 237
F3-06	62214	Multi-point V/f voltage 2	0.0% to 100.0%	0.0	%	At stop	"F3-06" on page 238
F3-07	62215	Multi-point V/f frequency 3	0.00 Hz to 655.35 Hz	0.00	Hz	At stop	"F3-07" on page 238
F3-08	62216	Multi-point V/f voltage 3	0.0% to 100.0%	0.0	%	At stop	"F3-08" on page 238
F3-09	62217	V/f slip compensation gain	0.0% to 200.0%	0.0	%	At once	"F3-09" on page 238
F3-10	62218	V/f overexcitation gain	0 to 200	64	-	At once	"F3-10" on page 238
F3-11	62219	V/f oscillation suppression gain	0 to 100	Model dependent	-	At once	"F3-11" on page 239
F3-12	62220	Oscillation suppression gain mode	0: Disabled 3: Enabled	3	-	At stop	"F3-12" on page 239
F3-13	62221	Voltage source for V/f separation	0: Digital setting (F3-14) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Multi-reference 6: Simple PLC 7: PID 8: Communication	0	-	At once	"F3-13" on page 239
F3-14	62222	Voltage digital setting for V/f separation	0 V to 65535 V	0	V	At once	"F3-14" on page 240
F3-15	62223	Voltage rise time of V/f separation	0.0s to 1000.0s	0.0	s	At once	"F3-15" on page 240
F3-16	62224	Voltage fall time of V/f separation	0.0s to 1000.0s	0.0	s	At once	"F3-16" on page 240
F3-17	62225	Stop mode for V/f separation	0: Frequency and voltage decline to 0 independently 1: Frequency declines to 0 after voltage declines to 0	0	-	At stop	"F3-17" on page 241

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F3-18	62226	V/f overcurrent stall action current	50% to 180%	150	%	At stop	"F3-18" on page 241
F3-19	62227	V/f overcurrent stall suppression	0: Disabled 1: Enabled	1	-	At stop	"F3-19" on page 241
F3-20	62228	V/f overcurrent stall suppression gain	0 to 100	20	-	At once	"F3-20" on page 241
F3-21	62229	Compensation coefficient of V/f speed multiplying overcurrent stall action current	50 to 180	50	-	At stop	"F3-21" on page 242
F3-22	62230	V/f overvoltage stall action voltage	330.0 V to 800.0 V	Single-phase 200 V: 370.0 V; Three-phase 400 V: 770.0 V	V	At stop	"F3-22" on page 242
F3-23	62231	V/f overvoltage stall suppression	0: Disabled 1: Enabled	1	-	At stop	"F3-23" on page 242
F3-24	62232	Frequency gain for V/f overvoltage stall suppression	0 to 100	30	-	At once	"F3-24" on page 242
F3-25	62233	Voltage gain for V/f overvoltage stall suppression	0 to 100	30	-	At once	"F3-25" on page 243
F3-26	62234	Frequency rise threshold during overvoltage stall suppression	0 to 50	5	-	At stop	"F3-26" on page 243
F3-27	62235	Slip compensation time constant	0.1 to 10.0	0.5	-	At once	"F3-27" on page 243
F3-28	62236	Automatic frequency rise	0: Disabled 1: Enabled	0	-	At stop	"F3-28" on page 243
F3-29	62237	Minimum motoring torque current	10 to 100	50	-	At stop	"F3-29" on page 243
F3-30	62238	Maximum generating torque current	10 to 100	20	-	At stop	"F3-30" on page 244
F3-31	62239	Automatic frequency rise Kp	0 to 100	50	-	At once	"F3-31" on page 244

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F3-32	62240	Automatic frequency rise Ki	0 to 100	50	-	At once	"F3-32" on page 244
F3-33	62241	Online torque compensation gain	80 to 150	100	-	At stop	"F3-33" on page 244
F4-00	62464	DI1 hardware source	0: Not selected 1: Power supply unit - DI1 2: Power supply unit - DI2 3: Power supply unit - DI3 4: Power supply unit - DI4 5: Power supply unit - DIO1 6: Power supply unit - DIO2 7: Power supply unit - DIO3 8: Power supply unit - DIO4 101: Extension card 1 - DI1 102: Extension card 1 - DI2 103: Extension card 1 - DI3 104: Extension card 1 - DI4 105: Extension card 1 - DI5 106: Extension card 1 - DI6 107: Extension card 1 - DI7 108: Extension card 1 - DI8 201: Extension card 2 - DI1 202: Extension card 2 - DI2 203: Extension card 2 - DI3 204: Extension card 2 - DI4 205: Extension card 2 - DI5 206: Extension card 2 - DI6 207: Extension card 2 - DI7 208: Extension card 2 - DI8	0	-	At stop	"F4-00" on page 244

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F4-01	62465	DI1 function selection	0: No function 1: Forward RUN (FWD) or running command 2: Reverse RUN (REV) or running direction 3: Three-wire operation control 4: Forward jog (FJOG) 5: Reverse jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: UP and DOWN setting clear (terminal, operating panel) 9: Fault reset (RESET) 10: External fault NO input 11: External fault NC input 12: User-defined fault 1 13: User-defined fault 2 14: Multi-reference terminal 1 15: Multi-reference terminal 2 16: Multi-reference terminal 3 17: Multi-reference terminal 4 18: Acceleration/deceleration selection terminal 1 19: Acceleration/deceleration selection terminal 2 20: Acceleration/Deceleration prohibition 21: Command source switchover terminal 1 22: Command source switchover terminal 2 23: Frequency reference switchover 24: Switchover between main frequency reference X and preset frequency 25: Switchover between auxiliary frequency reference Y and preset frequency 26: Frequency modification enable 27: Counter input 28: Counter reset	1	-	At stop	"F4-01" on page 245

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
(continued)	62465	DI1 function selection	29: Length count input 30: Length reset 31: PID pause 32: PID integral pause 33: PID parameter switchover 34: PID action direction reversal 35: Torque control prohibition 36: Switchover between speed control and torque control 38: Flying start 39: Immediate DC braking 40: Deceleration DC braking 41: External stop terminal 1 42: External stop terminal 2 43: Running pause 44: Coast to stop 45: Emergency stop 46: Motor selection terminal 47: Current running time clear 48: Switchover between two-wire and three-wire control 49: PLC state reset 50: Wobble pause 54–63: Reserved	1	-	At stop	"F4-01" on page 245
F4-02	62466	DI2 hardware source	Same as F4-00	0	-	At stop	"F4-02" on page 249
F4-03	62467	DI2 function selection	Same as F4-01	4	-	At stop	"F4-03" on page 249
F4-04	62468	DI3 hardware source	Same as F4-00	0	-	At stop	"F4-04" on page 249
F4-05	62469	DI3 function selection	Same as F4-01	9	-	At stop	"F4-05" on page 249
F4-06	62470	DI4 hardware source	Same as F4-00	0	-	At stop	"F4-06" on page 249
F4-07	62471	DI4 function selection	Same as F4-01	14	-	At stop	"F4-07" on page 250
F4-08	62472	DI5 hardware source	Same as F4-00	0	-	At stop	"F4-08" on page 250
F4-09	62473	DI5 function selection	Same as F4-01	15	-	At stop	"F4-09" on page 250

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F4-10	62474	DI6 hardware source	Same as F4-00	0	-	At stop	"F4-10" on page 250
F4-11	62475	DI6 function selection	Same as F4-01	0	-	At stop	"F4-11" on page 250
F4-12	62476	DI7 hardware source	Same as F4-00	0	-	At stop	"F4-12" on page 251
F4-13	62477	DI7 function selection	Same as F4-01	0	-	At stop	"F4-13" on page 251
F4-14	62478	DI8 hardware source	Same as F4-00	0	-	At stop	"F4-14" on page 251
F4-15	62479	DI8 function selection	Same as F4-01	0	-	At stop	"F4-15" on page 251
F4-17	62481	Terminal control mode	0: Two-wire mode 1 1: Two-wire mode 2 2: Three-wire mode 1 3: Three-wire mode 2	0	-	At stop	"F4-17" on page 251
F4-18	62482	Terminal UP/DOWN change rate	0.001 Hz/s to 65.535 Hz/s	1.000	Hz/s	At once	"F4-18" on page 252
F4-19	62483	DI1 delay	0.0s to 3600.0s	0.0	s	At once	"F4-19" on page 252
F4-20	62484	DI2 delay	0.0s to 3600.0s	0.0	s	At once	"F4-20" on page 252
F4-21	62485	DI3 delay	0.0s to 3600.0s	0.0	s	At once	"F4-21" on page 252

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F4-22	62486	DI active mode setting 1	Ones: 0: Active high 1: Active low Tens: 0: Active high 1: Active low Hundreds: 0: Active high 1: Active low Thousands: 0: Active high 1: Active low Ten thousands: 0: Active high 1: Active low	0	-	At stop	"F4-22" on page 253
F4-23	62487	DI active mode setting 2	Ones: 0: Active high 1: Active low Tens: 0: Active high 1: Active low Hundreds: 0: Active high 1: Active low Thousands: 0: Reserved Ten thousands: 0: Reserved	0	-	At stop	"F4-23" on page 253
F4-25	62489	AI1 hardware source	0: Not selected 1: AI1 of power supply unit 2: AI2 of power supply unit 101: AI1 of extension card 1 102: AI2 of extension card 1 201: AI1 of extension card 2 202: AI2 of extension card 2	0	-	At stop	"F4-25" on page 254
F4-27	62491	AI2 hardware source	0: Not selected 1: AI1 of power supply unit 2: AI2 of power supply unit 101: AI1 of extension card 1 102: AI2 of extension card 1 201: AI1 of extension card 2 202: AI2 of extension card 2	0	-	At stop	"F4-27" on page 254
F4-29	62493	AI3 hardware source	0: Not selected 1: AI1 of power supply unit 2: AI2 of power supply unit 101: AI1 of extension card 1 102: AI2 of extension card 1 201: AI1 of extension card 2 202: AI2 of extension card 2	0	-	At stop	"F4-29" on page 255

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F4-31	62495	AI curve 1 minimum input	–10.00 V to 10.00 V	0.00	V	At once	"F4-31" on page 255
F4-32	62496	Percentage corresponding to AI curve 1 minimum input	–100.0% to 100.0%	0.0	%	At once	"F4-32" on page 255
F4-33	62497	AI curve 1 maximum input	–10.00 V to 10.00 V	10.00	V	At once	"F4-33" on page 256
F4-34	62498	Percentage corresponding to AI curve 1 maximum input	–100.0% to 100.0%	100.0	%	At once	"F4-34" on page 256
F4-35	62499	AI curve 2 minimum input	–10.00 V to 10.00 V	0.00	V	At once	"F4-35" on page 256
F4-36	62500	Percentage corresponding to AI curve 2 minimum input	–100.0% to 100.0%	0.0	%	At once	"F4-36" on page 256
F4-37	62501	AI curve 2 maximum input	–10.00 V to 10.00 V	10.00	V	At once	"F4-37" on page 257
F4-38	62502	Percentage corresponding to AI curve 2 maximum input	–100.0% to 100.0%	100.0	%	At once	"F4-38" on page 257
F4-39	62503	AI curve 3 minimum input	–10.00 V to 10.00 V	0.00	V	At once	"F4-39" on page 257
F4-40	62504	Percentage corresponding to AI curve 3 minimum input	–100.0% to 100.0%	0.0	%	At once	"F4-40" on page 257
F4-41	62505	AI curve 3 maximum input	–10.00 V to 10.00 V	10.00	V	At once	"F4-41" on page 257
F4-42	62506	Percentage corresponding to AI curve 3 maximum input	–100.0% to 100.0%	100.0	%	At once	"F4-42" on page 258

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F4-48	62512	AI curve selection	Ones: 1: Curve 1 (2 points) 2: Curve 2 (2 points) 3: Curve 3 (2 points) 4: Curve 4 (4 points) 5: Curve 5 (4 points) Tens: 1: Curve 1 (2 points) 2: Curve 2 (2 points) 3: Curve 3 (2 points) 4: Curve 4 (4 points) 5: Curve 5 (4 points) Hundreds: 1: Curve 1 (2 points) 2: Curve 2 (2 points) 3: Curve 3 (2 points) 4: Curve 4 (4 points) 5: Curve 5 (4 points)	321	-	At once	" F4-48" on page 258
F4-49	62513	Setting for AI lower than minimum input	Ones: 0: Percentage corresponding to minimum input 1: 0.0% Tens: 0: Percentage corresponding to minimum input 1: 0.0% Hundreds: 0: Percentage corresponding to minimum input 1: 0.0%	0	-	At once	" F4-49" on page 259

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F5-00	62720	DO1/RO1 hardware source	0: Not selected 1: Power supply unit - DIO1 2: Power supply unit - DIO2 3: Power supply unit - DIO3 4: Power supply unit - DIO4 5: Power supply unit - RO1 101: Extension card 1 - DO1/RO1 102: Extension card 1 - DO2/RO2 103: Extension card 1 - DO3/RO3 104: Extension card 1 - DO4/RO4 105: Extension card 1 - DO5/RO5 106: Extension card 1 - DO6/RO6 107: Extension card 1 - DO7/RO7 108: Extension card 1 - DO8/RO8 201: Extension card 2 - DO1/RO1 202: Extension card 2 - DO2/RO2 203: Extension card 2 - DO3/RO3 204: Extension card 2 - DO4/RO4 205: Extension card 2 - DO5/RO5 206: Extension card 2 - DO6/RO6 207: Extension card 2 - DO7/RO7 208: Extension card 2 - DO8/RO8	0	-	At once	"F5-00" on page 259

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F5-01	62721	DO1/RO1 function	0: No output 1: AC drive in running 2: Ready to run 3: Fault output 1 (stop upon fault) 4: Fault output 2 5: Fault output 3 6: Abnormal output (direct output upon fault or alarm) 7: Motor overload pre-warning 8: AC drive overload pre-warning 9: Motor overtemperature pre-warning 10: AC drive load loss output 11: Undervoltage state output 12: Output overcurrent 13: Frequency-level detection FDT1 output 14: Frequency-level detection FDT2 output 15: Frequency reach 16: Frequency 1 reach output 17: Frequency 2 reach output 18: Frequency upper limit reach 19: Frequency lower limit reach (output at stop) 20: Frequency lower limit reach (no output at stop) 21: Timing reach output 22: Accumulative power-on time reach 23: Accumulative running time reach 24: Current running time reach 25: Zero current state 26: Current 1 reach output 27: Current 2 reach output 28: IGBT temperature reach	3	-	At once	"F5-01" on page 260

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
(continued)	62721	DO1/RO1 function	29: Reference count value reach 30: Designated count value reach 31: Length reach 32: Frequency limit reach 33: Torque limit reach 34: AI1 input limit exceeded 35: AI1 > AI2 36: PLC cycle completed 37: Communication setting 38: STO-EDM 39: Reserved 40: Running at 0 speed (no output at stop) 41: Running at 0 speed 2 (valid at stop) 42: Reserved 43: Reverse running 44–50: Reserved	3	-	At once	"F5-01" on page 260
F5-02	62722	DO2/RO2 hardware source	Same as F5-00	0	-	At once	"F5-02" on page 263
F5-03	62723	DO2/RO2 function	Same as F5-01	15	-	At once	"F5-03" on page 263
F5-04	62724	DO3/RO3 hardware source	Same as F5-00	0	-	At once	"F5-04" on page 263
F5-05	62725	DO3/RO3 function	Same as F5-01	0	-	At once	"F5-05" on page 264
F5-06	62726	DO4/RO4 hardware source	Same as F5-00	0	-	At once	"F5-06" on page 264
F5-07	62727	DO4/RO4 function	Same as F5-01	0	-	At once	"F5-07" on page 264
F5-08	62728	DO5/RO5 hardware source	Same as F5-00	0	-	At once	"F5-08" on page 264
F5-09	62729	DO5/RO5 function	Same as F5-01	0	-	At once	"F5-09" on page 264
F5-10	62730	DO1/RO1 output delay	0.0s to 3600.0s	0.0	s	At once	"F5-10" on page 265
F5-11	62731	DO2/RO2 output delay	0.0s to 3600.0s	0.0	s	At once	"F5-11" on page 265

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F5-12	62732	DO3/RO3 output delay	0.0s to 3600.0s	0.0	s	At once	"F5-12" on page 265
F5-13	62733	DO4/RO4 output delay	0.0s to 3600.0s	0.0	s	At once	"F5-13" on page 265
F5-14	62734	DO5/RO5 output delay	0.0s to 3600.0s	0.0	s	At once	"F5-14" on page 265
F5-15	62735	DO/RO active mode	Ones: 0: Positive logic 1: Negative logic Tens: 0: Positive logic 1: Negative logic Hundreds: 0: Positive logic 1: Negative logic Thousands: 0: Positive logic 1: Negative logic Ten thousands: 0: Positive logic 1: Negative logic	0	-	At once	"F5-15" on page 265
F6-00	62976	Start Modes	0: Direct start 1: Flying start (asynchronous motor) 2: Pre-excitation start (asynchronous motor)	0	-	At once	"F6-00" on page 266
F6-01	62977	Speed tracking mode	0: From stop frequency 1: From 50 Hz 2: From the maximum frequency 3: Fast flying start	0	-	At stop	"F6-01" on page 267
F6-02	62978	Speed of speed tracking	1 to 100	20	-	At once	"F6-02" on page 267
F6-03	62979	Startup frequency	0.00 Hz to 10.00 Hz	0.00	Hz	At once	"F6-03" on page 267
F6-04	62980	Startup frequency hold time	0.0s to 100.0s	0.0	s	At stop	"F6-04" on page 267
F6-05	62981	DC braking current/Pre-excitation current at startup	0% to 100%	0	%	At stop	"F6-05" on page 268
F6-06	62982	DC braking time/pre-excitation time at startup	0.0s to 100.0s	0.0	s	At stop	"F6-06" on page 268

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F6-07	62983	Acceleration/ Deceleration mode	0: Linear acceleration/deceleration 1: S-curve acceleration/deceleration 2: Four-segment S-curve acceleration/ deceleration	0	-	At stop	"F6-07" on page 268
F6-10	62986	Stop mode	0: Decelerate to stop 1: Coast to stop	0	-	At once	"F6-10" on page 269
F6-11	62987	Starting frequency of DC braking at stop	0.00 Hz to 655.35 Hz	0.00	Hz	At once	"F6-11" on page 269
F6-12	62988	Waiting time of DC braking at stop	0.0s to 100.0s	0.0	s	At once	"F6-12" on page 269
F6-13	62989	DC braking current at stop	0% to 100%	50	%	At once	"F6-13" on page 269
F6-14	62990	DC braking time at stop	0.0s to 100.0s	0.5	s	At once	"F6-14" on page 270
F6-16	62992	Closed loop current Kp of speed tracking	0 to 1000	500	-	At once	"F6-16" on page 270
F6-17	62993	Closed-loop current Ki of speed tracking	0 to 1000	800	-	At once	"F6-17" on page 270
F6-18	62994	Current of speed tracking	30 to 200	100	-	At once	"F6-18" on page 270
F6-19	62995	Gain coefficient of fast speed tracking	1.0 to 20.0	10.0	-	At stop	"F6-19" on page 270
F6-20	62996	Cut-off frequency of fast speed tracking	0.5 Hz to 3.0 Hz	1.1	Hz	At stop	"F6-20" on page 271
F6-21	62997	Demagnetization time	0.00s to 10.00s	1.00	s	At once	"F6-21" on page 271
F6-22	62998	Start pre-torque setting	0.0% to 200.0%	0.0	%	At once	"F6-22" on page 271
F6-23	62999	Operation at command from power supply unit	0: Stop according to F6-10 1: Ignore stop command	0	-	At stop	"F6-23" on page 271

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F6-26	63002	Time proportion of S-curve acceleration start segment	0.0% to 100.0%	30.0	%	At stop	"F6-26" on page 272
F6-27	63003	Time proportion of S-curve acceleration end segment	0.0% to 100.0%	30.0	%	At stop	"F6-27" on page 272
F6-28	63004	Time proportion of S-curve deceleration start segment	0.0% to 100.0%	30.0	%	At stop	"F6-28" on page 272
F6-29	63005	Time proportion of S-curve deceleration end segment	0.0% to 100.0%	30.0	%	At stop	"F6-29" on page 272
F6-30	63006	Trial current for synchronous motor speed tracking	5.0% to 50.0%	20.0	%	At stop	"F6-30" on page 272
F6-31	63007	Minimum tracking frequency for synchronous motor speed tracking	0.0 Hz to 100.0 Hz	0.0	Hz	At stop	"F6-31" on page 273
F6-32	63008	Angle compensation for synchronous motor speed tracking	0 to 360	0	-	At stop	"F6-32" on page 273
F6-33	63009	Proportion coefficient of synchronous motor speed tracking	0.1 to 10.0	2.0	-	At stop	"F6-33" on page 273
F6-34	63010	Integral coefficient of synchronous motor speed tracking	0.1 to 10.0	6.0	-	At stop	"F6-34" on page 273
F6-35	63011	Reverse running inhibition for flying start	0 to 2	0	-	At once	"F6-35" on page 273
F7-00	63232	IGBT module indicator testing	0 to 2	0	-	At once	"F7-00" on page 274
F7-01	63233	MF.K key function	0: MF.K key disabled 1: Switchover between operating panel control and remote command control (terminal I/O control or communication control) 2: Switchover between forward and reverse running 3: Forward jog 4: Reverse jog	0	-	At stop	"F7-01" on page 274

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F7-02	63234	STOP key function	0: STOP key enabled only in operating panel control mode 1: STOP key enabled in any operating mode	0	-	At once	"F7-02" on page 275
F7-03	63235	LED display 1 in running state	Bit00: Running frequency (Hz) Bit01: Frequency reference (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: DI status Bit08: DO status Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: AI3 voltage (V) Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID reference	31	-	At once	"F7-03" on page 275
F7-04	63236	LED display 2 in running state	Bit00: PID feedback Bit01: PLC stage Bit02: Reserved Bit03: Running frequency 2 (Hz) Bit04: Remaining running time Bit05: Reserved Bit06: Reserved Bit07: Reserved Bit08: Linear speed Bit09: Current power-on time (min) Bit10: Current running time (min) Bit11: Reserved Bit12: Communication Bit13: Reserved Bit14: Main frequency X Bit15: Auxiliary frequency Y	0	-	At once	"F7-04" on page 276
F7-05	63237	LED display in stop state	Bit00: Frequency reference (Hz) Bit01: Bus voltage (V) Bit02: DI state Bit03: DO state Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit06: AI3 voltage (V) Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID reference Bit12: Reserved	51	-	At once	"F7-05" on page 276

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F7-06	63238	STO software version	-		-	Unchangeable	"F7-06" on page 277
F7-07	63239	Heatsink temperature of IGBT	-20.0°C to 120.0°C	Model dependent	°C	Unchangeable	"F7-07" on page 277
F7-08	63240	Product SN	0 to 1000	Model dependent	-	Unchangeable	"F7-08" on page 277
F7-09	63241	Accumulative running time	0 h to 65535 h	Model dependent	h	Unchangeable	"F7-09" on page 277
F7-10	63242	Performance software version	-	Model dependent	-	Unchangeable	"F7-10" on page 277
F7-11	63243	Function software version	-	Model dependent	-	Unchangeable	"F7-11" on page 277
F7-12	63244	Accumulative power-on time	0 h to 65535 h	Model dependent	h	Unchangeable	"F7-12" on page 278
F7-13	63245	Accumulative power generation	0 kWh to 65535 kWh	Model dependent	kWh	Unchangeable	"F7-13" on page 278
F7-14	63246	Accumulative power consumption	0 kWh to 65535 kWh	Model dependent	kWh	Unchangeable	"F7-14" on page 278
F7-15	63247	Temporary performance software version	-	Model dependent	-	Unchangeable	"F7-15" on page 278
F7-16	63248	Temporary function software version	-	Model dependent	-	Unchangeable	"F7-16" on page 278
F8-00	63488	Jog frequency	0.00 Hz to 655.35 Hz	2.00	Hz	At once	"F8-00" on page 279
F8-01	63489	Jog acceleration time	0.0s to 6500.0s	20.0	s	At once	"F8-01" on page 279
F8-02	63490	Jog deceleration time	0.0s to 6500.0s	20.0	s	At once	"F8-02" on page 279
F8-03	63491	Acceleration time 2	0.0s to 6500.0s	Model dependent	s	At once	"F8-03" on page 279

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F8-04	63492	Deceleration time 2	0.0s to 6500.0s	Model dependent	s	At once	"F8-04" on page 280
F8-05	63493	Acceleration time 3	0.0s to 6500.0s	Model dependent	s	At once	"F8-05" on page 280
F8-06	63494	Deceleration time 3	0.0s to 6500.0s	Model dependent	s	At once	"F8-06" on page 280
F8-07	63495	Acceleration time 4	0.0s to 6500.0s	Model dependent	s	At once	"F8-07" on page 280
F8-08	63496	Deceleration time 4	0.0s to 6500.0s	Model dependent	s	At once	"F8-08" on page 280
F8-09	63497	Jump frequency 1	0.00 Hz to 655.35 Hz	0.00	Hz	At once	"F8-09" on page 281
F8-10	63498	Jump frequency 2	0.00 Hz to 655.35 Hz	0.00	Hz	At once	"F8-10" on page 281
F8-11	63499	Jump frequency amplitude	0.00 Hz to 5.00 Hz	0.00	Hz	At once	"F8-11" on page 281
F8-12	63500	Jump frequency selection during acceleration/ deceleration	0: Disabled 1: Enabled	0	-	At once	"F8-12" on page 281
F8-13	63501	FWD/REV Switchover Dead-zone Time	0.0s to 3000.0s	0.0	s	At once	"F8-13" on page 282
F8-14	63502	Reverse run enable	0: Reverse running allowed 1: Reverse running inhibited	0	-	At once	"F8-14" on page 282
F8-15	63503	Running mode when frequency reference below lower limit	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	0	-	At once	"F8-15" on page 282
F8-17	63505	Normally open (NO) input of external fault	0: Always active 1: Active only in running	0	-	At stop	"F8-17" on page 282
F8-18	63506	Normally closed (NC) input of external fault	0: Always active 1: Active only in running	0	-	At stop	"F8-18" on page 283

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F8-19	63507	Accumulative power-on time threshold setting	0 h to 65000 h	0	h	At once	"F8-19" on page 283
F8-20	63508	Accumulative running time threshold setting	0 h to 65000 h	0	h	At once	"F8-20" on page 283
F8-21	63509	Startup protection selection	0: Disabled 1: Enabled	0	-	At once	"F8-21" on page 284
F8-22	63510	Frequency detection value 1 (FDT1)	0.00 Hz to 655.35 Hz	50.00	Hz	At once	"F8-22" on page 284
F8-23	63511	Frequency detection hysteresis 1 (FDT1)	0.00 to F8-22	2.50	Hz	At once	"F8-23" on page 284
F8-24	63512	Frequency detection value 2 (FDT2)	0.00 Hz to 655.35 Hz	50.00	Hz	At once	"F8-24" on page 284
F8-25	63513	Frequency detection hysteresis 2 (FDT2)	0.00 Hz to 655.35 Hz	2.50	Hz	At once	"F8-25" on page 285
F8-26	63514	Frequency detection range	0.00 Hz to 655.35 Hz	2.50	Hz	At once	"F8-26" on page 285
F8-27	63515	Detection value 1 for frequency reach	0.00 Hz to 655.35 Hz	50.00	Hz	At once	"F8-27" on page 285
F8-28	63516	Detection frequency 1 for frequency reach	0.00 to F8-28	2.50	Hz	At once	"F8-28" on page 285
F8-29	63517	Detection mode for frequency reach 1	0: Always detect 1: Not detect during acceleration/ deceleration	0	-	At stop	"F8-29" on page 285
F8-30	63518	Detection value 2 for frequency reach	0.00 Hz to 655.35 Hz	50.00	Hz	At once	"F8-30" on page 286
F8-31	63519	Detection frequency 2 for frequency reach	0.00 to F8-28	2.50	Hz	At once	"F8-31" on page 286
F8-32	63520	Detection mode for frequency reach 2	0: Always detect 1: Not detect during acceleration/ deceleration	0	-	At stop	"F8-32" on page 286
F8-35	63523	Switchover frequency of acceleration time 1 and acceleration time 2	0.00 Hz to 655.35 Hz	0.00	Hz	At once	"F8-35" on page 286

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F8-36	63524	Switchover frequency of deceleration time 1 and deceleration time 2	0.00 Hz to 655.35 Hz	0.00	Hz	At once	"F8-36" on page 287
F8-37	63525	Jog preferred	0: Disabled 1: Enabled	0	-	At stop	"F8-37" on page 287
F8-38	63526	Zero current detection level	0.0% to 300.0%	5.0	%	At once	"F8-38" on page 287
F8-39	63527	Zero current detection delay	0.01s to 600.00s	0.10	s	At once	"F8-39" on page 287
F8-40	63528	Output overcurrent threshold	0.0% to 300.0%	200.0	%	At once	"F8-40" on page 288
F8-41	63529	Software overcurrent detection delay	0.00s to 600.00s	0.00	s	At once	"F8-41" on page 288
F8-42	63530	Detection level of current 1	0.0% to 300.0%	100.0	%	At once	"F8-42" on page 288
F8-43	63531	Detection width of current 1	0.0% to 300.0%	0.0	%	At once	"F8-43" on page 288
F8-44	63532	Detection level of current 2	0.0% to 300.0%	100.0	%	At once	"F8-44" on page 288
F8-45	63533	Detection width of current 2	0.0% to 300.0%	0.0	%	At once	"F8-45" on page 289
F8-46	63534	Timing function	0: Disabled 1: Enabled	0	-	At stop	"F8-46" on page 289
F8-47	63535	Timing duration source	0: F8-48 1: AI1 2: AI2	0	-	At stop	"F8-47" on page 289
F8-48	63536	Timing duration	0.0 min to 6500.0 min	0.0	min	At stop	"F8-48" on page 289
F8-49	63537	AI1 input voltage lower limit	0.00 V to 655.35 V	3.10	V	At once	"F8-49" on page 290
F8-50	63538	AI1 input voltage upper limit	0.00 V to 11.00 V	6.80	V	At once	"F8-50" on page 290

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F8-51	63539	IGBT temperature reach	0°C to 100°C	75	°C	At once	"F8-51" on page 290
F8-52	63540	Cooling Fan Control	0: Forward running during drive running 1: Forward running continuously	0	-	At once	"F8-52" on page 290
F8-54	63542	Wakeup frequency	Hibernation frequency (F8-56) to maximum frequency (F0-10)	0.00	Hz	At once	"F8-54" on page 291
F8-55	63543	Wakeup delay	0.0s to 6500.0s	0.0	s	At once	"F8-55" on page 291
F8-56	63544	Hibernation frequency	0.00 Hz to wakeup frequency (F8-54)	0.00	Hz	At once	"F8-56" on page 291
F8-57	63545	Hibernation delay	0.0s to 6500.0s	0.0	s	At once	"F8-57" on page 291
F8-58	63546	Current running time threshold	0.0 min to 6500.0 min	0.0	min	At once	"F8-58" on page 292
F8-59	63547	Switchover between communication addresses 2000H and 2001H	0: General protocol 1: Special protocol	0	-	At stop	"F8-59" on page 292
F8-60	63548	Deceleration time for emergency stop	0.0s to 6500.0s	0.0	s	At once	"F8-60" on page 292
F8-61	63549	LED operating panel jog	-	0	-	Unchangeable	"F8-61" on page 292
F8-62	63550	Load speed display coefficient	0.0001 to 6.5000	1.0000	-	At once	"F8-62" on page 293
F8-63	63551	Number of decimal places for load speed display	0: 0 decimal places 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	1	-	At once	"F8-63" on page 293
F8-64	63552	7310H address data unit	0: Frequency (Hz) 1: Speed (RPM)	0	-	At stop	"F8-64" on page 293
F9-00	63744	AC drive overload protection	0 to 1	0	-	At once	"F9-00" on page 294

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F9-01	63745	Motor overload protection gain	0.20 to 10.00	1.00	-	At once	"F9-01" on page 294
F9-02	63746	Motor overload pre-warning coefficient	50% to 100%	80	%	At once	"F9-02" on page 294
F9-06	63750	Output phase loss detection before startup	0: Disabled 1: Enabled	0	%	At once	"F9-06" on page 295
F9-07	63751	Detection of short-circuit to ground	0: Not detection 1: Detection before power-on	1	-	At stop	"F9-07" on page 295
F9-09	63753	Auto reset attempts	0 to 20	0	-	At once	"F9-09" on page 295
F9-10	63754	DO action during auto fault reset	0: Not act 1: Act	0	-	At once	"F9-10" on page 295
F9-11	63755	Auto reset interval	0.1s to 100.0s	1.0	s	At once	"F9-11" on page 295
F9-12	63755	Restart interval upon fault reset	0s to 100.0s	1.0	s	At once	"F9-12" on page 296
F9-13	63757	STO safety state reset mode	0: Manual 1: Auto	0	-	At stop	"F9-13" on page 296
F9-14	63758	1st fault type	0 to 99	Model dependent	-	Unchangeable	"F9-14" on page 296
F9-15	63759	2nd fault type	0 to 99	Model dependent	-	Unchangeable	"F9-15" on page 296
F9-16	63760	3rd (latest) fault type	0 to 99	Model dependent	-	Unchangeable	"F9-16" on page 297
F9-17	63761	Frequency upon the 3rd (latest) fault	-	Model dependent	-	Unchangeable	"F9-17" on page 297
F9-18	63762	Current upon the 3rd (latest) fault	-	Model dependent	-	Unchangeable	"F9-18" on page 297
F9-19	63763	Bus voltage upon the 3rd (latest) fault	-	Model dependent	-	Unchangeable	"F9-19" on page 297

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F9-20	63764	Input terminal state upon the 3rd (latest) fault	-	Model dependent	-	Unchangeable	"F9-20" on page 297
F9-21	63765	Output terminal state upon the 3rd (latest) fault	-	Model dependent	-	Unchangeable	"F9-21" on page 298
F9-22	63766	AC drive state upon the 3rd (latest) fault	-	Model dependent	-	Unchangeable	"F9-22" on page 298
F9-23	63767	Power-on time upon the 3rd (latest) fault	-	Model dependent	-	Unchangeable	"F9-23" on page 298
F9-24	63768	Running time upon the 3rd (latest) fault	-	Model dependent	-	Unchangeable	"F9-24" on page 298
F9-25	63769	IGBT temperature upon the 3rd (latest) fault	-	Model dependent	-	Unchangeable	"F9-25" on page 298
F9-26	63770	Fault subcode of the 3rd (latest) fault	-	Model dependent	-	Unchangeable	"F9-26" on page 299
F9-27	63771	Frequency upon the 2nd fault	-	Model dependent	-	Unchangeable	"F9-27" on page 299
F9-28	63772	Current upon the 2nd fault	-	Model dependent	-	Unchangeable	"F9-28" on page 299
F9-29	63773	Bus voltage upon the 2nd fault	-	Model dependent	-	Unchangeable	"F9-29" on page 299
F9-30	63774	Input terminal state upon the 2nd fault	-	Model dependent	-	Unchangeable	"F9-30" on page 299
F9-31	63775	Output terminal state upon the 2nd fault	-	Model dependent	-	Unchangeable	"F9-31" on page 300
F9-32	63776	AC drive state upon the 2nd fault	-	Model dependent	-	Unchangeable	"F9-32" on page 300
F9-33	63777	Power-on time upon the 2nd fault	-	Model dependent	-	Unchangeable	"F9-33" on page 300
F9-34	63778	Running time upon the 2nd fault	-	Model dependent	-	Unchangeable	"F9-34" on page 300

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F9-35	63779	IGBT temperature upon the 2nd fault	-	Model dependent	-	Unchangeable	" F9-35" on page 300
F9-36	63780	Fault subcode of the 2nd fault	-	Model dependent	-	Unchangeable	" F9-36" on page 301
F9-37	63781	Frequency upon the 1st fault	-	Model dependent	-	Unchangeable	" F9-37" on page 301
F9-38	63782	Current upon the 1st fault	-	Model dependent	-	Unchangeable	" F9-38" on page 301
F9-39	63783	Bus voltage upon the 1st fault	-	Model dependent	-	Unchangeable	" F9-39" on page 301
F9-40	63784	Input terminal state upon the 1st fault	-	Model dependent	-	Unchangeable	" F9-40" on page 301
F9-41	63785	Output terminal state upon the 1st fault	-	Model dependent	-	Unchangeable	" F9-41" on page 301
F9-42	63786	AC drive state upon the 1st fault	-	Model dependent	-	Unchangeable	" F9-42" on page 302
F9-43	63787	Power-on time upon the 1st fault	-	Model dependent	-	Unchangeable	" F9-43" on page 302
F9-44	63788	Running time upon the 1st fault	-	Model dependent	-	Unchangeable	" F9-44" on page 302
F9-45	63789	IGBT temperature upon the 1st fault	-	Model dependent	-	Unchangeable	" F9-45" on page 302
F9-46	63790	Fault subcode of the 1st fault	-	Model dependent	-	Unchangeable	" F9-46" on page 302

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F9-47	63791	Fault protection action selection 0	Ones: Overcurrent during acceleration/ deceleration/operation at constant speed (E2/E3/E4) 0: Coast to stop 2: Restart upon fault Tens: Overvoltage during acceleration/ deceleration or at constant speed (E5/ E6/E7) 0: Coast to stop 2: Restart upon fault Hundreds: Reserved 5: Disabled Thousands: Undervoltage (E9) 0: Coast to stop 2: Restart upon fault Ten thousands: AC drive overload (E10) 0: Coast to stop 2: Restart upon fault	500	-	At stop	"F9-47" on page 303
F9-48	63792	Fault protection action selection 1	Ones: Motor overload (E11) 0: Coast to stop 1: Decelerate to stop 2: Restart upon fault 4: Warning 5: Disabled Tens: Reserved 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled Hundreds: Output phase loss (E13) 0: Coast to stop 1: Decelerate to stop 2: Reset upon fault 4: Warning 5: Disabled Thousands: IGBT overtemperature (E14) 0: Coast to stop Ten thousands: External device fault (E15) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled	10050	-	At stop	"F9-48" on page 303

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F9-49	63793	Fault protection action selection 2	Ones: Communication fault (E16) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled Tens: Reserved 5: Disabled Hundreds: Reserved 0: Coast to stop Thousands: Motor auto-tuning fault (E19) 0: Coast to stop 4: Warning 5: Disabled Ten thousands: Reserved 5: Disabled	50050	-	At stop	" F9-49" on page 304
F9-50	63794	Fault protection action selection 3	Ones: EEPROM read-write fault (E21) 0: Coast to stop Tens: Motor auto-tuning result alarm (E22) 0: Coast to stop Hundreds: Short circuit to ground (E23) 0: Coast to stop 5: Disabled Thousands: Reserved 5: Disabled Ten thousands: Power supply unit fault (E25) 2: Special action 5: Disabled	25000	-	At stop	" F9-50" on page 305

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F9-51	63795	Fault protection action selection 4	Ones: Accumulative running time reach (E26) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled Tens: User-defined fault 1 (E27) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled Hundreds: User-defined fault 2 (E28) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled Thousands: Accumulative power-on time reach (E29) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled Ten thousands: Load loss (E30) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled	51111	-	At stop	"F9-51" on page 306

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F9-52	63796	Fault protection action selection 5	Ones: PID feedback loss during running (E31) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled Tens: Reserved 5: Disabled Hundreds: Reserved 5: Disabled Thousands: Excessive speed deviation (E42) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled Ten thousands: Motor overspeed (E43) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled	551	-	At stop	" F9-52" on page 307
F9-53	63797	Fault protection action selection 6	Ones: Motor overtemperature (E45) 0: Coast to stop 1: Decelerate to stop 4: Warning 5: Disabled Tens: Reserved 5: Disabled Hundreds: Reserved 5: Disabled Thousands: Reserved 5: Disabled Ten thousands: Fan fault (E80) 0: Coast to stop 1: Decelerate to stop 5: Disabled	5500	-	At stop	" F9-53" on page 307
F9-54	63798	Frequency selection for continuing to run upon fault	0: Current running frequency 1: Frequency reference 2: Frequency upper limit 3: Frequency lower limit 4: Alternative frequency upon exception	1	-	At once	" F9-54" on page 308
F9-55	63799	Backup frequency reference	0.0% to 100.0%	100.0	%	At once	" F9-55" on page 308
F9-57	63801	Motor overheat protection threshold 1	0°C to 200°C	110	°C	At once	" F9-57" on page 309

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F9-58	63802	Motor overheat pre-warning threshold 1	0°C to 200°C	90	°C	At once	"F9-58" on page 309
F9-59	63803	Motor overheat protection threshold 2	0°C to 200°C	110	°C	At once	"F9-59" on page 309
F9-60	63804	Motor overheat pre-warning threshold 2	0°C to 200°C	90	°C	At once	"F9-60" on page 309
F9-61	63805	Motor overheat protection threshold 3	0°C to 200°C	110	°C	At once	"F9-61" on page 310
F9-62	63806	Motor overheat pre-warning threshold 3	0°C to 200°C	90	°C	At once	"F9-62" on page 310
F9-63	63807	Power dip ride-through function selection	0: Disabled 1: Decelerate 2: Decelerate to stop	0	-	At stop	"F9-63" on page 310
F9-64	63808	Threshold for recovering from power dip ride-through	8.0% to 10.0%	8.5	%	At once	"F9-64" on page 311
F9-65	63809	Duration for judging voltage recovery from power dip	0.0s to 100.0s	0.5	s	At once	"F9-65" on page 311
F9-66	63810	Threshold for enabling power dip ride-through	60% to 100%	80	%	At once	"F9-66" on page 311
F9-67	63811	Alarm threshold of consecutive I/O frame loss count	1 to 1000	10	-	At stop	"F9-67" on page 312
F9-68	63812	Load loss detection level	0.0% to 100.0%	10.0	%	At once	"F9-68" on page 312
F9-69	63813	Load loss detection time	0.1s to 60.0s	1.0	s	At once	"F9-69" on page 312
F9-73	63817	Excessive speed deviation threshold	0.0% to 50.0%	20.0	%	At once	"F9-73" on page 312
F9-74	63818	Excessive speed deviation detection time	0.0s to 60.0s	5.0	s	At once	"F9-74" on page 313
F9-75	63819	Power dip ride-through gain	0 to 100	40	-	At once	"F9-75" on page 313

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
F9-76	63820	Power dip ride-through integral	0 to 100	30	-	At once	"F9-76" on page 313
F9-77	63821	Deceleration time of power dip ride-through	0.0s to 300.0s	20.0	s	At once	"F9-77" on page 313
FA-00	64000	PID reference source	0: Digital setting of PID (FA-01) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication 6: Multi-reference	0	-	At once	"FA-00" on page 314
FA-01	64001	Digital setting of PID	0.0% to 100.0%	50.0	%	At once	"FA-01" on page 314
FA-02	64002	PID feedback source	0: AI1 1: AI2 2: AI3 3: AI1 to AI2 4: Reserved 5: Communication 6: AI1 + AI2 7: Max. (|AI1|, |AI2|) 8: Min. (|AI1|, |AI2|)	0	-	At once	"FA-02" on page 315
FA-03	64003	PID action direction	0: Forward 1: Reverse	0	-	At once	"FA-03" on page 315
FA-04	64004	PID reference and feedback range	0 to 65535	1000	-	At once	"FA-04" on page 315
FA-05	64005	Proportional gain Kp1	0.0 to 1000	20.0	-	At once	"FA-05" on page 316
FA-06	64006	Integral time Ti1	0.01s to 100.00s	2.00	s	At once	"FA-06" on page 316
FA-07	64007	Derivative time Td1	0.000s to 10.000s	0.000	s	At once	"FA-07" on page 316
FA-08	64008	PID cut-off frequency in reverse direction	0.00 Hz to 655.35 Hz	2.00	Hz	At once	"FA-08" on page 316
FA-09	64009	PID deviation limit	0.0% to 100.0%	0.0	%	At once	"FA-09" on page 317

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FA-10	64010	PID derivative limit	0.00% to 100.00%	0.10	%	At once	"FA-10" on page 317
FA-11	64011	PID reference change time	0.00s to 650.00s	0.00	s	At once	"FA-11" on page 317
FA-12	64012	PID feedback filter time	0.00s to 60.00s	0.00	s	At once	"FA-12" on page 317
FA-13	64013	PID deviation gain	0.0% to 100.0%	100.0	%	At once	"FA-13" on page 317
FA-15	64015	Proportional gain Kp2	0.0 to 1000.0	20.0	-	At once	"FA-15" on page 318
FA-16	64016	Integral time Ti2	0.01s to 100.00s	2.00	s	At once	"FA-16" on page 318
FA-17	64017	Derivative time Td2	0.000s to 10.000s	0.000	s	At once	"FA-17" on page 318
FA-18	64018	PID parameter switchover condition	0: No switchover 1: Switchover by DI 2: Automatic switchover based on deviation 3: Switchover based on running frequency 6: Automatic adjustment based on roll diameter 7: Automatic adjustment based on maximum roll diameter percentage	0	-	At once	"FA-18" on page 318
FA-19	64019	PID parameter switchover deviation 1	0.0% to 6553.5%	20.0	%	At once	"FA-19" on page 319
FA-20	64020	PID parameter switchover deviation 2	0.0% to 100.0%	80.0	%	At once	"FA-20" on page 319
FA-21	64021	PID initial value	0.0% to 100.0%	0.0	%	At once	"FA-21" on page 320
FA-22	64022	Hold time of PID initial value	0.00s to 650.00s	0.00	s	At once	"FA-22" on page 320

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FA-23	64023	Maximum deviation between two PID outputs in forward direction	0.00% to 100.00%	1.00	%	At once	"FA-23" on page 320
FA-24	64024	Maximum deviation between two PID outputs in reverse direction	0.00% to 100.00%	1.00	%	At once	"FA-24" on page 320
FA-25	64025	PID integral property	0: Disabled 1: Enabled	0	-	At once	"FA-25" on page 320
FA-26	64026	Detection level of PID feedback loss	0.0% to 100.0%	0.0	%	At once	"FA-26" on page 321
FA-27	64027	Detection time of PID feedback loss	0.0s to 20.0s	0.0	s	At once	"FA-27" on page 321
FB-00	64256	Wobble setting mode	0: Relative to center frequency 1: Relative to maximum frequency	0	-	At once	"FB-00" on page 321
FB-01	64257	Wobble amplitude	0.0% to 100.0%	0.0	%	At once	"FB-01" on page 322
FB-02	64258	Wobble step	0.0% to 50.0%	0.0	%	At once	"FB-02" on page 322
FB-03	64259	Wobble cycle	0.1s to 3000.0s	10.0	s	At once	"FB-03" on page 322
FB-04	64260	Triangular wave rise time coefficient	0.1% to 100.0%	50.0	%	At once	"FB-04" on page 322
FB-05	64261	Reference length	0 m to 65535 m	1000	m	At once	"FB-05" on page 322
FB-06	64262	Actual length	0 m to 65535 m	0	m	At once	"FB-06" on page 323
FB-07	64263	Number of pulses per meter	0.1 to 6553.5	100.0	-	At once	"FB-07" on page 323
FB-08	64264	Reference count value	1 to 65535	1000	-	At once	"FB-08" on page 323

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FB-09	64265	Designated count value	1 to 65535	1000	-	At once	" FB-09" on page 323
FC-00	64512	Multi-reference 0	–100.0% to 100.0%	0.0	%	At once	" FC-00" on page 324
FC-01	64513	Multi-reference 1	–100.0% to 100.0%	0.0	%	At once	" FC-01" on page 324
FC-02	64514	Multi-reference 2	–100.0% to 100.0%	0.0	%	At once	" FC-02" on page 324
FC-03	64515	Multi-reference 3	–100.0% to 100.0%	0.0	%	At once	" FC-03" on page 324
FC-04	64516	Multi-reference 4	–100.0% to 100.0%	0.0	%	At once	" FC-04" on page 325
FC-05	64517	Multi-reference 5	–100.0% to 100.0%	0.0	%	At once	" FC-05" on page 325
FC-06	64518	Multi-reference 6	–100.0% to 100.0%	0.0	%	At once	" FC-06" on page 325
FC-07	64519	Multi-reference 7	–100.0% to 100.0%	0.0	%	At once	" FC-07" on page 325
FC-08	64520	Multi-reference 8	–100.0% to 100.0%	0.0	%	At once	" FC-08" on page 325
FC-09	64521	Multi-reference 9	–100.0% to 100.0%	0.0	%	At once	" FC-09" on page 326
FC-10	64522	Multi-reference 10	–100.0% to 100.0%	0.0	%	At once	" FC-10" on page 326
FC-11	64523	Multi-reference 11	–100.0% to 100.0%	0.0	%	At once	" FC-11" on page 326
FC-12	64524	Multi-reference 12	–100.0% to 100.0%	0.0	%	At once	" FC-12" on page 326
FC-13	64525	Multi-reference 13	–100.0% to 100.0%	0.0	%	At once	" FC-13" on page 326

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FC-14	64526	Multi-reference 14	–100.0% to 100.0%	0.0	%	At once	"FC-14" on page 326
FC-15	64527	Multi-reference 15	–100.0% to 100.0%	0.0	%	At once	"FC-15" on page 327
FC-16	64528	Simple PLC running mode	0: Stop after running for one cycle 1: Keep final values after running for one cycle 2: Repeat after running for one cycle	0	-	At once	"FC-16" on page 327
FC-17	64529	Simple PLC memory retention	Ones: 0: Non-retentive upon power failure 1: Retentive upon power failure Tens: 0: Non-retentive upon stop 1: Retentive upon stop	0	-	At once	"FC-17" on page 327
FC-18	64530	Running time of PLC reference 0	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	"FC-18" on page 328
FC-19	64531	Acceleration/ Deceleration time of PLC reference 0	0 to 3	0	-	At once	"FC-19" on page 328
FC-20	64532	Running time of PLC reference 1	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	"FC-20" on page 328
FC-21	64533	Acceleration/ Deceleration time of PLC reference 1	0 to 3	0	-	At once	"FC-21" on page 329
FC-22	64534	Running time of PLC reference 2	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	"FC-22" on page 329
FC-23	64535	Acceleration/ Deceleration time of PLC reference 2	0 to 3	0	-	At once	"FC-23" on page 329
FC-24	64536	Running time of PLC reference 3	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	"FC-24" on page 329
FC-25	64537	Acceleration/ Deceleration time of PLC reference 3	0 to 3	0	-	At once	"FC-25" on page 330
FC-26	64538	Running time of PLC reference 4	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	"FC-26" on page 330
FC-27	64539	Acceleration/ Deceleration time of PLC reference 4	0 to 3	0	-	At once	"FC-27" on page 330

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FC-28	64540	Running time of PLC reference 5	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-28" on page 330
FC-29	64541	Acceleration/ Deceleration time of PLC reference 5	0 to 3	0	-	At once	" FC-29" on page 331
FC-30	64542	Running time of PLC reference 6	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-30" on page 331
FC-31	64543	Acceleration/ Deceleration time of PLC reference 6	0 to 3	0	-	At once	" FC-31" on page 331
FC-32	64544	Running time of PLC reference 7	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-32" on page 331
FC-33	64545	Acceleration/ Deceleration time of PLC reference 7	0 to 3	0	-	At once	" FC-33" on page 332
FC-34	64546	Running time of PLC reference 8	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-34" on page 332
FC-35	64547	Acceleration/ Deceleration time of PLC reference 8	0 to 3	0	-	At once	" FC-35" on page 332
FC-36	64548	Running time of PLC reference 9	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-36" on page 332
FC-37	64549	Acceleration/ Deceleration time of PLC reference 9	0 to 3	0	-	At once	" FC-37" on page 333
FC-38	64550	Running time of PLC reference 10	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-38" on page 333
FC-39	64551	Acceleration/ Deceleration time of PLC reference 10	0 to 3	0	-	At once	" FC-39" on page 333
FC-40	64552	Running time of PLC reference 11	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-40" on page 333
FC-41	64553	Acceleration/ Deceleration time of PLC reference 11	0 to 3	0	-	At once	" FC-41" on page 334
FC-42	64554	Running time of PLC reference 12	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-42" on page 334

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FC-43	64555	Acceleration/ Deceleration time of PLC reference 12	0 to 3	0	-	At once	" FC-43" on page 334
FC-44	64556	Running time of PLC reference 13	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-44" on page 334
FC-45	64557	Acceleration/ Deceleration time of PLC reference 13	0 to 3	0	-	At once	" FC-45" on page 335
FC-46	64558	Running time of PLC reference 14	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-46" on page 335
FC-47	64559	Acceleration/ Deceleration time of PLC reference 14	0 to 3	0	-	At once	" FC-47" on page 335
FC-48	64560	Running time of PLC reference 15	0.0s (h) to 6553.5s (h)	0.0	s (h)	At once	" FC-48" on page 335
FC-49	64561	Acceleration/ Deceleration time of PLC reference 15	0 to 3	0	-	At once	" FC-49" on page 336
FC-50	64562	PLC running time unit	0: s (second) 1: h (hour)	0	-	At once	" FC-50" on page 336
FC-51	64563	Multi-reference 0 source	0: FC-00 1: AI1 2: AI2 3: AI3 4: Reserved 5: PID 6: Preset frequency (F0-08) (which can be modified by terminal UP/DOWN)	0	-	At once	" FC-51" on page 336
FD-02	64770	Local address	0 to 247	1	-	Unchangeable	" FD-02" on page 337
FD-06	64774	Communication fault reset	0 to 1	1	-	At stop	" FD-06" on page 337
FD-08	64776	Last allocated station number	0 to 65535	0	-	Unchangeable	" FD-08" on page 337

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FD-09	64777	CANopen/CANlink communication state	Ones: CANopen 0: Stop 1: Initializing 2: Pre-running 8: Running Tens: CANlink 0: Stop 1: Initializing 2: Pre-running 8: Running	0	-	Unchangeable	"FD-09" on page 337
FD-10	64778	Switchover between CANopen and CANlink	1: CANopen 2: CANlink	1	-	Unchangeable	"FD-10" on page 338
FD-13	64781	CAN station number	1 to 127	1	-	At stop	"FD-13" on page 338
FD-14	64782	Number of CAN frames received per unit time	0 to 65535	1	-	Unchangeable	"FD-14" on page 339
FD-19	64787	CAN communication failure coefficient	1 to 15	1	-	At stop	"FD-19" on page 339
FD-92	64860	Communication version	0.00 to 655.35	0.00	-	Unchangeable	"FD-92" on page 339
FE-00	65024	User-defined parameter 0	-	0	-	At once	"FE-00" on page 339
FE-01	65025	User-defined parameter 1	-	0	-	At once	"FE-01" on page 339
FE-02	65026	User-defined parameter 2	-	0	-	At once	"FE-02" on page 340
FE-03	65027	User-defined parameter 3	-	0	-	At once	"FE-03" on page 340
FE-04	65028	User-defined parameter 4	-	0	-	At once	"FE-04" on page 340
FE-05	65029	User-defined parameter 5	-	0	-	At once	"FE-05" on page 340
FE-06	65030	User-defined parameter 6	-	0	-	At once	"FE-06" on page 340

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FE-07	65031	User-defined parameter 7	-	0	-	At once	"FE-07" on page 341
FE-08	65032	User-defined parameter 8	-	0	-	At once	"FE-08" on page 341
FE-09	65033	User-defined parameter 9	-	0	-	At once	"FE-09" on page 341
FE-10	65034	User-defined parameter 10	-	0	-	At once	"FE-10" on page 341
FE-11	65035	User-defined parameter 11	-	0	-	At once	"FE-11" on page 342
FE-12	65036	User-defined parameter 12	-	0	-	At once	"FE-12" on page 342
FE-13	65037	User-defined parameter 13	-	0	-	At once	"FE-13" on page 342
FE-14	65038	User-defined parameter 14	-	0	-	At once	"FE-14" on page 342
FE-15	65039	User-defined parameter 15	-	0	-	At once	"FE-15" on page 342
FE-16	65040	User-defined parameter 16	-	0	-	At once	"FE-16" on page 343
FE-17	65041	User-defined parameter 17	-	0	-	At once	"FE-17" on page 343
FE-18	65042	User-defined parameter 18	-	0	-	At once	"FE-18" on page 343
FE-19	65043	User-defined parameter 19	-	0	-	At once	"FE-19" on page 343
FE-20	65044	User-defined parameter 20	-	0	-	At once	"FE-20" on page 343
FE-21	65045	User-defined parameter 21	-	0	-	At once	"FE-21" on page 344

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FE-22	65046	User-defined parameter 22	-	0	-	At once	"FE-22" on page 344
FE-23	65047	User-defined parameter 23	-	0	-	At once	"FE-23" on page 344
FE-24	65048	User-defined parameter 24	-	0	-	At once	"FE-24" on page 344
FE-25	65049	User-defined parameter 25	-	0	-	At once	"FE-25" on page 344
FE-26	65050	User-defined parameter 26	-	0	-	At once	"FE-26" on page 345
FE-27	65051	User-defined parameter 27	-	0	-	At once	"FE-27" on page 345
FE-28	65052	User-defined parameter 28	-	0	-	At once	"FE-28" on page 345
FE-29	65053	User-defined parameter 29	-	0	-	At once	"FE-29" on page 345
FE-30	65054	User-defined parameter 30	-	0	-	At once	"FE-30" on page 346
FE-31	65055	User-defined parameter 31	-	0	-	At once	"FE-31" on page 346
FP-00	7936	User password	0 to 65535	0	-	Unchangeable	"FP-00" on page 346
FP-01	7937	Parameter initialization	0: No operation 1: Restore factory defaults mode 1 2: Clear records 4: Back up current user parameters 501: Restore user backup parameters	1	-	At once	"FP-01" on page 346

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
FP-02	7938	Parameter display	Ones: Group U 0: Hide 1: Display Tens: Group A 0: Hide 1: Display Hundreds: Group B 0: Hide 1: Display Thousands: Group C 0: Hide 1: Display	111	-	At once	"FP-02" on page 347
FP-03	7939	Individualized parameter display mode	Ones: 0: Hide 1: Display Tens: 0: Hide 1: Display	0	-	At once	"FP-03" on page 347
FP-04	7940	Parameter modification	0: Modification allowed 1: Modification prohibited	0	-	At once	"FP-04" on page 348
A0-00	40960	Speed/Torque control mode	0: Speed control 1: Torque control	0	-	At stop	"A0-00" on page 348
A0-01	40961	Torque reference source	0: Digital setting (A0-03) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication (1000H) 6: Min. (AI1, AI2) 7: Max. (AI1, AI2)	0	-	At stop	"A0-01" on page 348
A0-03	40963	Torque digital setting	-2.000% to 2.000%	1.000	%	At once	"A0-03" on page 348
A0-04	40964	Torque filter time	0.000s to 5.000s	0.000	s	At once	"A0-04" on page 349
A0-05	40965	Speed limit digital setting	-120.0% to 120.0%	0.0	%	At once	"A0-05" on page 349
A0-07	40967	Acceleration time (torque)	0.00s to 650.00s	1.00	s	At once	"A0-07" on page 349
A0-08	40968	Deceleration time (torque)	0.00s to 650.00s	1.00	s	At once	"A0-08" on page 349

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A0-09	40969	Speed limit reference source	0: A0-05 1: Frequency source	0	-	At once	"A0-09" on page 350
A0-10	40970	Speed limit offset	0.00 to 655.35	5.00	-	At once	"A0-10" on page 350
A0-11	40971	Effective mode of speed limit offset	0: Bidirectional offset effective 1: Unidirectional offset effective	0	-	At stop	"A0-11" on page 350
A0-12	40972	Acceleration time (frequency)	0.0s to 6500.0s	1.0	s	At once	"A0-12" on page 350
A0-13	40973	Deceleration time (frequency)	0.0s to 6500.0s	1.0	s	At once	"A0-13" on page 350
A0-14	40974	Torque mode switchover	0: Not switched 1: Switched to speed mode upon stop 2: Target torque changed to 0 upon stop	1	-	At stop	"A0-14" on page 351

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A1-00	41216	VDI1 function	0: No function 1: Forward RUN (FWD) 2: Reverse RUN (REV) 3: Three-wire operation control 4: Forward jog (FJOG) 5: Reverse jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: UP and DOWN setting clear (terminal, operating panel) 9: Fault reset (RESET) 10: External fault NO input 11: External fault NC input 12: User-defined fault 1 13: User-defined fault 2 14: Multi-reference terminal 1 15: Multi-reference terminal 2 16: Multi-reference terminal 3 17: Multi-reference terminal 4 18: Acceleration/deceleration selection terminal 1 19: Acceleration/deceleration selection terminal 2 20: Acceleration/Deceleration prohibition 21: Command source switchover terminal 1 22: Command source switchover terminal 2 23: Frequency reference switchover 24:Switchover between main frequency reference X and preset frequency 25: Switchover between auxiliary frequency reference Y and preset frequency 26: Frequency modification enable 27: Counter input 28: Counter reset	0	-	At stop	"A1-00" on page 351

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
(continued)	41216	VDI1 function	29: Length count input 30: Length reset 31: PID pause 32: PID integral pause 33: PID parameter switchover 34: PID action direction reversal 35: Torque control prohibition 36: Switchover between speed control and torque control 38: Flying start 39: Immediate DC braking 40: Deceleration DC braking 41: External stop terminal 1 42: External stop terminal 2 43: Running pause 44: Coast to stop 45: Emergency stop 46: Motor selection terminal 47: Current running time clear 48: Switchover between two-wire and three-wire control 49: PLC state reset 50: Wobble pause 54–63: Reserved	0	-	At stop	"A1-00" on page 351
A1-01	41217	VDI2 function	Same as A1-00	0	-	At stop	"A1-01" on page 351
A1-02	41218	VDI3 function	Same as A1-00	0	-	At stop	"A1-02" on page 351
A1-03	41219	VDI4 function	Same as A1-00	0	-	At stop	"A1-03" on page 352
A1-04	41220	VDI5 function	Same as A1-00	0	-	At stop	"A1-04" on page 352

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A1-05	41221	VDI active state source	Ones: 0: Parameter setting (A1-06) 1: DO state 2: DI state Tens: 0: Parameter setting (A1-06) 1: DO state 2: DI state Hundreds: 0: Parameter setting (A1-06) 1: DO state 2: DI state Thousands: 0: Parameter setting (A1-06) 1: DO state 2: DI state Ten thousands: 0: Parameter setting (A1-06) 1: DO state 2: DI state	0	-	At stop	"A1-05" on page 352
A1-06	41222	VDI state	Ones: 0: Inactive 1: Active Tens: 0: Inactive 1: Active Hundreds: 0: Inactive 1: Active Thousands: 0: Inactive 1: Active Ten thousands: 0: Inactive 1: Active	0	-	At once	"A1-06" on page 353
A1-07	41223	AI1 function (used as DI)	Same as F4-01	0	-	At stop	"A1-07" on page 353
A1-08	41224	AI2 function (used as DI)	Same as F4-01	0	-	At stop	"A1-08" on page 353
A1-09	41225	AI3 function (used as DI)	Same as F4-01	0	-	At stop	"A1-09" on page 354

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A1-10	41226	AI active mode (used as DI)	Ones: 0: Active high 1: Active low Tens: 0: Active high 1: Active low Hundreds: 0: Active high 1: Active low	0	-	At stop	"A1-10" on page 354
A5-00	42240	DPWM switchover frequency upper limit	0.00 Hz to 50.00 Hz	12.00	Hz	At once	"A5-00" on page 354
A5-01	42241	PWM modulation mode	0: Asynchronous modulation 1: Synchronous modulation	0	-	At once	"A5-01" on page 354
A5-02	42242	Dead-zone compensation	0: Disabled 1: Enabled	1	-	At stop	"A5-02" on page 355
A5-03	42243	Random PWM depth	0 to 10	0	-	At once	"A5-03" on page 355
A5-04	42244	Fast current limiting	0: Disabled 1: Enabled	0	-	At once	"A5-04" on page 355
A5-05	42245	Sampling delay	1 to 13	5	-	At once	"A5-05" on page 355
A5-06	42246	Undervoltage threshold	150.0 V to 455.0 V	Three-phase 400 V: 350.0 V Single-phase 200 V: 200.0 V	V	At once	"A5-06" on page 356
A5-07	42247	SVC optimization mode	0: No optimization 1: Optimization mode 1 2: Optimization mode 2	1	-	At stop	"A5-07" on page 356
A6-00	42496	Curve 4 minimum input	–10.00 V to 10.00 V	0.00	V	At once	"A6-00" on page 356
A6-01	42497	Percentage corresponding to curve 4 minimum input	–100.0% to 100.0%	0.0	%	At once	"A6-01" on page 356
A6-02	42498	Curve 4 inflection point 1 input	–10.00 V to 10.00 V	3.00	V	At once	"A6-02" on page 357
A6-03	42499	Percentage corresponding to curve 4 inflection point 1 input	–100.0% to 100.0%	30.0	%	At once	"A6-03" on page 357

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A6-04	42500	Curve 4 inflection point 2 input	–10.00 V to 10.00 V	6.00	V	At once	"A6-04" on page 357
A6-05	42501	Percentage corresponding to curve 4 inflection point 2 input	–100.0% to 100.0%	60.0	%	At once	"A6-05" on page 357
A6-06	42502	Curve 4 maximum input	–10.00 V to 10.00 V	10.00	V	At once	"A6-06" on page 357
A6-07	42503	Percentage corresponding to curve 4 maximum input	–100.0% to 100.0%	100.0	%	At once	"A6-07" on page 358
A6-08	42504	Curve 5 minimum input	–10.00 V to 10.00 V	–10.00	V	At once	"A6-08" on page 358
A6-09	42505	Percentage corresponding to curve 5 minimum input	–100.0% to 100.0%	–100.0	%	At once	"A6-09" on page 358
A6-10	42506	Curve 5 inflection point 1 input	–10.00 V to 10.00 V	-3.00	V	At once	"A6-10" on page 358
A6-11	42507	Percentage corresponding to curve 5 inflection point 1 input	–100.0% to 100.0%	–30.0	%	At once	"A6-11" on page 358
A6-12	42508	Curve 5 inflection point 2 input	–10.00 V to 10.00 V	3.00	V	At once	"A6-12" on page 359
A6-13	42509	Percentage corresponding to curve 5 inflection point 2 input	–100.0% to 100.0%	30.0	%	At once	"A6-13" on page 359
A6-14	42510	Curve 5 maximum input	–10.00 V to 10.00 V	10.00	V	At once	"A6-14" on page 359
A6-15	42511	Percentage corresponding to curve 5 maximum input	–100.0% to 100.0%	100.0	%	At once	"A6-15" on page 359
A6-16	42512	AI1 gain	–10.00 to 10.00	1.00	-	At once	"A6-16" on page 360
A6-17	42513	AI1 offset	–100.0% to 100.0%	0.0	%	At once	"A6-17" on page 360
A6-18	42514	AI2 gain	–10.00 to 10.00	1.00	-	At once	"A6-18" on page 360

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A6-19	42515	AI2 offset	–100.0% to 100.0%	0.0	%	At once	"A6-19" on page 360
A6-20	42516	AI3 gain	–10.00 to 10.00	1.00	-	At once	"A6-20" on page 360
A6-21	42517	AI3 offset	–100.0% to 100.0%	0.0	%	At once	"A6-21" on page 360
A6-24	42520	Jump point of AI1 setting	–100.0% to 100.0%	0.0	%	At once	"A6-24" on page 361
A6-25	42521	Jump amplitude of AI1 setting	0.0% to 100.0%	0.5	%	At once	"A6-25" on page 361
A6-26	42522	Jump point of AI2 setting	–100.0% to 100.0%	0.0	%	At once	"A6-26" on page 361
A6-27	42523	Jump amplitude of AI2 setting	0.0% to 100.0%	0.5	%	At once	"A6-27" on page 361
A6-28	42524	Jump point of AI3 setting	–100.0% to 100.0%	0.0	%	At once	"A6-28" on page 361
A6-29	42525	Jump amplitude of AI3 setting	0.0% to 100.0%	0.5	%	At once	"A6-29" on page 362
A9-00	43264	Online auto-tuning on rotor time constant of asynchronous motor	0: Disabled 1: Enabled	0	-	At once	"A9-00" on page 362
A9-04	43268	Maximum torque limit coefficient for the asynchronous motor field-weakening range	30 to 150	80	-	At once	"A9-04" on page 362
A9-05	43269	Speed filter of asynchronous motor in SVC mode	5 ms to 32 ms	15	ms	At once	"A9-05" on page 362
A9-06	43270	Asynchronous motor speed feedback processing in SVC mode	0: No specific processing 1: Limit minimum synchronization frequency based on load change 2: Output fixed current during low-speed running 3: Output fixed current during low-speed running	0	-	At once	"A9-06" on page 363

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A9-07	43271	Field control bandwidth of asynchronous motor in SVC mode	0.0 to 8.0	2.0	-	At once	"A9-07" on page 363
A9-08	43272	Low-speed running current of asynchronous motor in SVC mode	30 to 170	100	-	At once	"A9-08" on page 363
A9-09	43273	Switchover frequency of output fixed current of asynchronous motor in SVC mode	2.0 Hz to 100.0 Hz	3.0	Hz	At once	"A9-09" on page 363
A9-10	43274	Speed fluctuation suppression coefficient of asynchronous motor in SVC mode	0 to 6	3	-	At once	"A9-10" on page 364
A9-11	43275	Acceleration/ Deceleration time of asynchronous motor in SVC mode	0.1s to 3000.0s	20.0	s	At once	"A9-11" on page 364
A9-12	43276	Quick auto-tuning of stator resistance before asynchronous motor startup	0: Disabled 1: Enabled	0	-	At once	"A9-12" on page 364
A9-13	43277	Coefficient 1 of quick auto-tuning of asynchronous motor stator resistance	0 to 65535	10	-	At stop	"A9-13" on page 364
A9-14	43278	Coefficient 2 of quick auto-tuning of asynchronous motor stator resistance	0 to 65535	10	-	At stop	"A9-14" on page 364
A9-15	43279	Coefficient 3 of quick auto-tuning of asynchronous motor stator resistance	0 to 65535	0	-	At stop	"A9-15" on page 365
A9-17	43281	Synchronous motor real-time angle	0 to 65535	0	-	Unchangeable	"A9-17" on page 365
A9-18	43282	Initial angle detection of synchronous motor	0: Detected upon running 1: Not detected 2: Detected upon initial running after power-on	0	-	At once	"A9-18" on page 365
A9-20	43284	Field weakening mode	0: Automatic mode 1: Synchronous motor adjustment mode 2: Synchronous motor hybrid mode 3: Disabled	1	-	At stop	"A9-20" on page 365

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A9-21	43285	Field-weakening gain of synchronous motor	0 to 50	5	-	At once	"A9-21" on page 366
A9-22	43286	Output voltage upper limit margin of synchronous motor	0% to 50%	5	%	At once	"A9-22" on page 366
A9-23	43287	Maximum output adjustment gain of synchronous motor	20% to 300%	100	%	At once	"A9-23" on page 366
A9-24	43288	Exciting current adjustment gain calculated by synchronous motor	40% to 200%	100	%	At once	"A9-24" on page 366
A9-25	43289	Estimated synchronous motor speed integral gain in SVC mode	5 to 1000	30	-	At once	"A9-25" on page 366
A9-26	43290	Estimated synchronous motor speed proportional gain in SVC mode	5 to 300	20	-	At once	"A9-26" on page 367
A9-27	43291	Estimated synchronous motor speed filter in SVC mode	10 to 2000	100	-	At once	"A9-27" on page 367
A9-28	43292	Minimum carrier frequency of synchronous motor in SVC mode	8 to 65535	20	-	At once	"A9-28" on page 367
A9-29	43293	Low-speed excitation current of synchronous motor in SVC mode	0% to 80%	30	%	At once	"A9-29" on page 367
A9-40	43304	Low-speed closed-loop current selection (for VVC)	0: Disabled 1: Enabled	0	-	At stop	"A9-40" on page 367
A9-41	43305	Low-speed closed-loop current (for VVC)	30 to 200	50	-	At stop	"A9-41" on page 368
A9-42	43306	Oscillation suppression damping coefficient (for VVC)	0 to 500	100	-	At once	"A9-42" on page 368
A9-43	43307	Initial position compensation angle (for VVC)	0 to 5	0	-	At stop	"A9-43" on page 368
A9-44	0xA92C	Initial position compensation angle of synchronous motor	0 to 360	0	-	In real time	"A9-44" on page 368

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
A9-45	0xA92D	Synchronous motor low-speed handling	0: Disabled 1: Enabled	0	-	At stop	"A9-45" on page 369
A9-46	0xA92E	Switchover frequency for synchronous motor low-speed handling	0.01 to 5.99	5	-	At stop	"A9-46" on page 369
A9-47	0xA92F	Synchronous motor low-speed handling current	10 to 200	100	-	At stop	"A9-47" on page 369
A9-48	0xA930	Synchronous motor low-speed handling feedback suppression coefficient	0 to 300	32	-	At stop	"A9-48" on page 369
A9-51	0xA933	Advanced settings for asynchronous motor parameter auto-tuning	Ones: Rotor resistance and leakage inductance DC offset 0: Standard offset 1: Large offset Tens: New rotor resistance and leakage inductance auto-tuning algorithm 0: Disabled 1: Enabled Hundreds: New mutual inductance static auto-tuning algorithm 0: Disabled 1: Enabled Thousands: Stator resistance auto-tuning algorithm 0: Current open loop 1: Current closed loop	111	-	At stop	"A9-51" on page 369
AF-00	44800	RPDO1-SubIndex0-H	0 to 65535	0	-	At once	"AF-00" on page 370
AF-01	44801	RPDO1-SubIndex0-L	0 to 65535	0	-	At once	"AF-01" on page 370
AF-02	44802	RPDO1-SubIndex1-H	0 to 65535	0	-	At once	"AF-02" on page 370
AF-03	44803	RPDO1-SubIndex1-L	0 to 65535	0	-	At once	"AF-03" on page 370
AF-04	44804	RPDO1-SubIndex2-H	0 to 65535	0	-	At once	"AF-04" on page 371
AF-05	44805	RPDO1-SubIndex2-L	0 to 65535	0	-	At once	"AF-05" on page 371

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
AF-06	44806	RPDO1-SubIndex3-H	0 to 65535	0	-	At once	"AF-06" on page 371
AF-07	44807	RPDO1-SubIndex3-L	0 to 65535	0	-	At once	"AF-07" on page 371
AF-08	44808	RPDO2-SubIndex0-H	0 to 65535	0	-	At once	"AF-08" on page 371
AF-09	44809	RPDO2-SubIndex0-L	0 to 65535	0	-	At once	"AF-09" on page 372
AF-10	44810	RPDO2-SubIndex1-H	0 to 65535	0	-	At once	"AF-10" on page 372
AF-11	44811	RPDO2-SubIndex1-L	0 to 65535	0	-	At once	"AF-11" on page 372
AF-12	44812	RPDO2-SubIndex2-H	0 to 65535	0	-	At once	"AF-12" on page 372
AF-13	44813	RPDO2-SubIndex2-L	0 to 65535	0	-	At once	"AF-13" on page 372
AF-14	44814	RPDO2-SubIndex3-H	0 to 65535	0	-	At once	"AF-14" on page 373
AF-15	44815	RPDO2-SubIndex3-L	0 to 65535	0	-	At once	"AF-15" on page 373
AF-16	44816	RPDO3-SubIndex0-H	0 to 65535	0	-	At once	"AF-16" on page 373
AF-17	44817	RPDO3-SubIndex0-L	0 to 65535	0	-	At once	"AF-17" on page 373
AF-18	44818	RPDO3-SubIndex1-H	0 to 65535	0	-	At once	"AF-18" on page 373
AF-19	44819	RPDO3-SubIndex1-L	0 to 65535	0	-	At once	"AF-19" on page 374
AF-20	44820	RPDO3-SubIndex2-H	0 to 65535	0	-	At once	"AF-20" on page 374

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
AF-21	44821	RPDO3-SubIndex2-L	0 to 65535	0	-	At once	"AF-21" on page 374
AF-22	44822	RPDO3-SubIndex3-H	0 to 65535	0	-	At once	"AF-22" on page 374
AF-23	44823	RPDO3-SubIndex3-L	0 to 65535	0	-	At once	"AF-23" on page 374
AF-24	44824	RPDO4-SubIndex0-H	0 to 65535	0	-	At once	"AF-24" on page 375
AF-25	44825	RPDO4-SubIndex0-L	0 to 65535	0	-	At once	"AF-25" on page 375
AF-26	44826	RPDO4-SubIndex1-H	0 to 65535	0	-	At once	"AF-26" on page 375
AF-27	44827	RPDO4-SubIndex1-L	0 to 65535	0	-	At once	"AF-27" on page 375
AF-28	44828	RPDO4-SubIndex2-H	0 to 65535	0	-	At once	"AF-28" on page 375
AF-29	44829	RPDO4-SubIndex2-L	0 to 65535	0	-	At once	"AF-29" on page 375
AF-30	44830	RPDO4-SubIndex3-H	0 to 65535	0	-	At once	"AF-30" on page 376
AF-31	44831	RPDO4-SubIndex3-L	0 to 65535	0	-	At once	"AF-31" on page 376
AF-32	44832	TPDO1-SubIndexO-H	0 to 65535	0	-	At once	"AF-32" on page 376
AF-33	44833	TPDO1-SubIndexO-L	0 to 65535	0	-	At once	"AF-33" on page 376
AF-34	44834	TPDO1-SubIndex1-H	0 to 65535	0	-	At once	"AF-34" on page 376
AF-35	44835	TPDO1-SubIndex1-L	0 to 65535	0	-	At once	"AF-35" on page 377

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
AF-36	44836	TPDO1-SubIndex2-H	0 to 65535	0	-	At once	"AF-36" on page 377
AF-37	44837	TPDO1-SubIndex2-L	0 to 65535	0	-	At once	"AF-37" on page 377
AF-38	44838	TPDO1-SubIndex3-H	0 to 65535	0	-	At once	"AF-38" on page 377
AF-39	44839	TPDO1-SubIndex3-L	0 to 65535	0	-	At once	"AF-39" on page 377
AF-40	44840	TPDO2-SubIndex0-H	0 to 65535	0	-	At once	"AF-40" on page 378
AF-41	44841	TPDO2-SubIndex0-L	0 to 65535	0	-	At once	"AF-41" on page 378
AF-42	44842	TPDO2-SubIndex1-H	0 to 65535	0	-	At once	"AF-42" on page 378
AF-43	44843	TPDO2-SubIndex1-L	0 to 65535	0	-	At once	"AF-43" on page 378
AF-44	44844	TPDO2-SubIndex2-H	0 to 65535	0	-	At once	"AF-44" on page 378
AF-45	44845	TPDO2-SubIndex2-L	0 to 65535	0	-	At once	"AF-45" on page 379
AF-46	44846	TPDO2-SubIndex3-H	0 to 65535	0	-	At once	"AF-46" on page 379
AF-47	44847	TPDO2-SubIndex3-L	0 to 65535	0	-	At once	"AF-47" on page 379
AF-48	44848	TPDO3-SubIndex0-H	0 to 65535	0	-	At once	"AF-48" on page 379
AF-49	44849	TPDO3-SubIndex0-L	0 to 65535	0	-	At once	"AF-49" on page 379
AF-50	44850	TPDO3-SubIndex1-H	0 to 65535	0	-	At once	"AF-50" on page 379

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
AF-51	44851	TPDO3-SubIndex1-L	0 to 65535	0	-	At once	"AF-51" on page 380
AF-52	44852	TPDO3-SubIndex2-H	0 to 65535	0	-	At once	"AF-52" on page 380
AF-53	44853	TPDO3-SubIndex2-L	0 to 65535	0	-	At once	"AF-53" on page 380
AF-54	44854	TPDO3-SubIndex3-H	0 to 65535	0	-	At once	"AF-54" on page 380
AF-55	44855	TPDO3-SubIndex3-L	0 to 65535	0	-	At once	"AF-55" on page 380
AF-56	44856	TPDO4-SubIndex0-H	0 to 65535	0	-	At once	"AF-56" on page 381
AF-57	44857	TPDO4-SubIndex0-L	0 to 65535	0	-	At once	"AF-57" on page 381
AF-58	44858	TPDO4-SubIndex1-H	0 to 65535	0	-	At once	"AF-58" on page 381
AF-59	44859	TPDO4-SubIndex1-L	0 to 65535	0	-	At once	"AF-59" on page 381
AF-60	44860	TPDO4-SubIndex2-H	0 to 65535	0	-	At once	"AF-60" on page 381
AF-61	44861	TPDO4-SubIndex2-L	0 to 65535	0	-	At once	"AF-61" on page 382
AF-62	44862	TPDO4-SubIndex3-H	0 to 65535	0	-	At once	"AF-62" on page 382
AF-63	44863	TPDO4-SubIndex3-L	0 to 65535	0	-	At once	"AF-63" on page 382
AF-66	44866	Number of valid RPDOs	0 to 65535	0	-	Unchangeable	"AF-66" on page 382
AF-67	44867	Number of valid TPDOs	0 to 65535	0	-	Unchangeable	"AF-67" on page 382

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U0-00	28672	Running frequency	0.00 Hz to target frequency	Model dependent	Hz	Unchangeable	"U0-00" on page 383
U0-01	28673	Frequency reference	0.00 Hz to target frequency	Model dependent	Hz	Unchangeable	"U0-01" on page 383
U0-02	28674	Bus voltage	0.0 V to 3000.0 V	Model dependent	V	Unchangeable	"U0-02" on page 383
U0-03	28675	Output voltage	0 V to 1140 V	Model dependent	V	Unchangeable	"U0-03" on page 383
U0-04	28676	Output current	0.00 A to 655.35 A	Model dependent	A	Unchangeable	"U0-04" on page 383
U0-05	28677	Output power	0.0 kW to 3276.7 kW	Model dependent	kW	Unchangeable	"U0-05" on page 384
U0-06	28678	Output torque	–200.0% to +200.0%	Model dependent	%	Unchangeable	"U0-06" on page 384
U0-07	28679	DI state	-	Model dependent	-	Unchangeable	"U0-07" on page 384
U0-08	28680	DO/RO state	-	Model dependent	-	Unchangeable	"U0-08" on page 384
U0-09	28681	AI1 voltage	–10.00 V to 10.00 V	Model dependent	V	Unchangeable	"U0-09" on page 385
U0-10	28682	AI2 voltage	–10.00 V to 10.00 V	Model dependent	V	Unchangeable	"U0-10" on page 385
U0-11	28683	AI3 voltage	–10.00 V to 10.00 V	Model dependent	V	Unchangeable	"U0-11" on page 385
U0-12	28684	Count value	1 to 65535	Model dependent	-	Unchangeable	"U0-12" on page 385
U0-13	28685	Length value	1 to 65535	Model dependent	-	Unchangeable	"U0-13" on page 385
U0-14	28686	Load speed display	0 to rated motor speed	Model dependent	-	Unchangeable	"U0-14" on page 386

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U0-15	28687	PID reference	0 to 65535	Model dependent	-	Unchangeable	"U0-15" on page 386
U0-16	28688	PID feedback	0 to 65535	Model dependent	-	Unchangeable	"U0-16" on page 386
U0-17	28689	PLC stage	0 to 15	Model dependent	-	Unchangeable	"U0-17" on page 386
U0-19	28691	Feedback speed	0.00 Hz to maximum frequency	Model dependent	Hz	Unchangeable	"U0-19" on page 386
U0-20	28692	Remaining runtime	0.0 min to 6500.0 min	Model dependent	min	Unchangeable	"U0-20" on page 387
U0-21	28693	AI1 voltage after gain and offset	–10.00 V to 10.00 V	Model dependent	V	Unchangeable	"U0-21" on page 387
U0-22	28694	AI2 voltage after gain and offset	–10.00 V to 10.00 V	Model dependent	V	Unchangeable	"U0-22" on page 387
U0-23	28695	AI3 voltage after gain and offset	–10.00 V to 10.00 V	Model dependent	V	Unchangeable	"U0-23" on page 387
U0-24	28696	Linear speed	0 m/min to 65535 m/min	Model dependent	m/min	Unchangeable	"U0-24" on page 387
U0-25	28697	Current power-on time	0 min to 65000 min	Model dependent	min	Unchangeable	"U0-25" on page 388
U0-26	28698	Current running time	0.0 min to 6500.0 min	Model dependent	min	Unchangeable	"U0-26" on page 388
U0-28	28700	Communication	–100.00% to 100.00%	Model dependent	%	Unchangeable	"U0-28" on page 388
U0-30	28702	Main frequency X display	0.00 Hz to 500.00 Hz	Model dependent	Hz	Unchangeable	"U0-30" on page 388
U0-31	28703	Auxiliary frequency Y display	0.00 Hz to 500.00 Hz	Model dependent	Hz	Unchangeable	"U0-31" on page 388
U0-33	28705	Synchronous motor rotor position	0.0° to 359.9°	Model dependent	°	Unchangeable	"U0-33" on page 389

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U0-35	28707	Target torque (%)	–200.0% to +200.0%	Model dependent	%	Unchangeable	"U0-35" on page 389
U0-37	28709	Power factor angle	0.0° to 6553.5°	Model dependent	°	Unchangeable	"U0-37" on page 389
U0-39	28711	Target voltage upon V/f separation	0 V to target voltage	Model dependent	V	Unchangeable	"U0-39" on page 389
U0-40	28712	Output voltage upon V/f separation	0 V to output voltage	Model dependent	V	Unchangeable	"U0-40" on page 389
U0-41	28713	DI state display	0 to 65535	Model dependent	-	Unchangeable	"U0-41" on page 389
U0-42	28714	DO/RO state display	0 to 65535	Model dependent	-	Unchangeable	"U0-42" on page 390
U0-43	28715	DI function state display 1	0 to 65535	Model dependent	-	Unchangeable	"U0-43" on page 390
U0-44	28716	DI function state display 2	0 to 65535	Model dependent	-	Unchangeable	"U0-44" on page 390
U0-45	28717	Fault code	0 to 51	Model dependent	-	Unchangeable	"U0-45" on page 390
U0-46	28718	Fault subcode	0 to 51	Model dependent	-	Unchangeable	"U0-46" on page 390
U0-47	28719	Drive unit temperature	-20°C to 120°C	Model dependent	°C	Unchangeable	"U0-47" on page 391
U0-48	28720	Voltage received through PTC channel 1	-	Model dependent	V	Unchangeable	"U0-48" on page 391
U0-49	28721	Voltage received through PTC channel 2	-	Model dependent	V	Unchangeable	"U0-49" on page 391
U0-50	28722	Voltage received through PTC channel 3	-	Model dependent	V	Unchangeable	"U0-50" on page 391
U0-51	28723	PTC1 temperature	-	Model dependent	°C	Unchangeable	"U0-51" on page 391

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U0-52	28724	PTC2 temperature	-	Model dependent	°C	Unchangeable	"U0-52" on page 392
U0-53	28725	PTC3 temperature	-	Model dependent	°C	Unchangeable	"U0-53" on page 392
U0-54	28726	Motor speed	-	Model dependent	RPM	Unchangeable	"U0-54" on page 392
U0-55	28727	Station number auto allocated	-	Model dependent	-	Unchangeable	"U0-55" on page 392
U0-56	28728	Identified axis type	1 to 3	Model dependent	-	Unchangeable	"U0-56" on page 392
U0-61	28733	AC drive operation status word 1	-	Model dependent	-	Unchangeable	"U0-61" on page 393
U0-64	28736	Special protocol status word	-	Model dependent	-	Unchangeable	"U0-64" on page 393
U0-68	28740	AC drive operation status word 2	-	Model dependent	-	Unchangeable	"U0-68" on page 393
U0-78	28750	AC drive rated current	0.0 A to AC drive rated current	Model dependent	A	Unchangeable	"U0-78" on page 394
U0-79	28751	AC drive power	0.0 V to AC drive rated voltage	Model dependent	kW	Unchangeable	"U0-79" on page 394
U0-81	28753	Local LED status	-	Model dependent	-	Unchangeable	"U0-81" on page 394
U0-88	28760	Alarm code	-	Model dependent	-	Unchangeable	"U0-88" on page 394
U0-89	28761	Alarm subcode	-	Model dependent	-	Unchangeable	"U0-89" on page 394
U0-90	28762	Fan speed percentage reference	-	Model dependent	-	Unchangeable	"U0-90" on page 395
U0-91	28763	PTC1 mode	-	Model dependent	-	Unchangeable	"U0-91" on page 395

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U0-92	28764	PTC2 mode	-	Model dependent	-	Unchangeable	"U0-92" on page 395
U0-93	28765	PTC3 mode	-	Model dependent	-	Unchangeable	"U0-93" on page 395
U0-95	28767	STO initialization flag	-	Model dependent	-	Unchangeable	"U0-95" on page 396
U0-96	28768	STO status word monitoring	-	Model dependent	-	Unchangeable	"U0-96" on page 396
U0-97	28769	STO model	-	Model dependent	-	Unchangeable	"U0-97" on page 396
U0-98	28770	STO AD sampling value	-	Model dependent	-	Unchangeable	"U0-98" on page 396
U0-99	28771	STO internal execution flag	-	Model dependent	-	Unchangeable	"U0-99" on page 397
U3-16	29456	Communication frequency	0 to 65535	0	-	Unchangeable	"U3-16" on page 397
U3-17	29457	Communication control command	0: Stop according to F6-10 1: Forward run 2: Reverse run 3: Forward jog 4: Reverse jog 5: Coast to stop 6: Decelerate to stop 7: Fault reset	0	-	Unchangeable	"U3-17" on page 397
U3-18	29458	Communication control DO/RO	Bit0: DO1/RO1 Bit1: DO2/RO2 Bit2: DO3/RO3 Bit3: DO4/RO4 Bit4: DO5/RO5	0	-	Unchangeable	"U3-18" on page 397
U4-00	29696	Fault code	0 to 65535	0	-	Unchangeable	"U4-00" on page 398
U4-01	29697	Control word	0 to 65535	0	-	Unchangeable	"U4-01" on page 398
U4-02	29698	Status word	0 to 65535	0	-	Unchangeable	"U4-02" on page 398

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U4-03	29699	Target speed	0 RPM to 65535 RPM	0	RPM	Unchangeable	"U4-03" on page 398
U4-04	29700	Preset speed	0 RPM to 65535 RPM	0	RPM	Unchangeable	"U4-04" on page 399
U4-05	29701	Output speed	0 RPM to 65535 RPM	0	RPM	Unchangeable	"U4-05" on page 399
U4-14	29710	Fast stop mode	0 to 65535	0	-	Unchangeable	"U4-14" on page 399
U4-16	29712	Disabling stop mode	0 to 65535	0	-	Unchangeable	"U4-16" on page 399
U4-19	29715	Mode selection	0 to 65535	0	-	Unchangeable	"U4-19" on page 399
U4-20	29716	Mode display	0 to 65535	0	-	Unchangeable	"U4-20" on page 399
U4-22	29718	Output torque	0.0% to 6553.5%	0.0	%	Unchangeable	"U4-22" on page 400
U5-00	29952	Power supply unit DI - hardware resource	0 to 65535	0	-	Unchangeable	"U5-00" on page 400
U5-01	29953	Power supply unit DO/ RO - hardware resource	0 to 65535	0	-	Unchangeable	"U5-01" on page 400
U5-02	29954	Power supply unit AI - hardware resource	0 to 65535	0	-	Unchangeable	"U5-02" on page 400
U5-04	29956	Extension card 1 - DI hardware resource	0 to 65535	0	-	Unchangeable	"U5-04" on page 401
U5-05	29957	Extension card 1 - DO/RO hardware resource	0 to 65535	0	-	Unchangeable	"U5-05" on page 401
U5-06	29958	Extension card 1 - AI hardware resource	0 to 65535	0	-	Unchangeable	"U5-06" on page 401
U5-08	29960	Extension card 2 - DI hardware resource	0 to 65535	0	-	Unchangeable	"U5-08" on page 401

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U5-09	29961	Extension card 2 - DO/RO hardware resource	0 to 65535	0	-	Unchangeable	" U5-09" on page 401
U5-10	29962	Extension card 2 - AI hardware resource	0 to 65535	0	-	Unchangeable	" U5-10" on page 401
U5-12	29964	Extension card 3 - DI hardware resource	0 to 65535	0	-	Unchangeable	" U5-12" on page 402
U5-13	29965	Extension card 3 - DO/RO hardware resource	0 to 65535	0	-	Unchangeable	" U5-13" on page 402
U5-14	29966	Extension card 3 - AI hardware resource	0 to 65535	0	-	Unchangeable	" U5-14" on page 402
U5-20	29972	Power supply unit DI - mapping	0 to 65535	0	-	Unchangeable	" U5-20" on page 402
U5-21	29973	Power supply unit DO/ RO - mapping	0 to 65535	0	-	Unchangeable	" U5-21" on page 402
U5-22	29974	Power supply unit AI - mapping	0 to 65535	0	-	Unchangeable	" U5-22" on page 403
U5-24	29976	Extension card 1 - DI mapping	0 to 65535	0	-	Unchangeable	" U5-24" on page 403
U5-25	29977	Extension card 1 - DO/RO mapping	0 to 65535	0	-	Unchangeable	" U5-25" on page 403
U5-26	29978	Extension card 1 - AI mapping	0 to 65535	0	-	Unchangeable	" U5-26" on page 403
U5-28	29980	Extension card 2 - DI mapping	0 to 65535	0	-	Unchangeable	" U5-28" on page 403
U5-29	29981	Extension card 2 - DO/RO mapping	0 to 65535	0	-	Unchangeable	" U5-29" on page 404
U5-30	29982	Extension card 2 - AI mapping	0 to 65535	0	-	Unchangeable	" U5-30" on page 404
U5-32	29984	Extension card 3 - DI mapping	0 to 65535	0	-	Unchangeable	" U5-32" on page 404

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U5-33	29985	Extension card 3 - DO/RO mapping	0 to 65535	0	-	Unchangeable	“ U5-33” on page 404
U5-34	29986	Extension card 3 - AI mapping	0 to 65535	0	-	Unchangeable	“ U5-34” on page 404
U5-40	29992	Power supply unit - DI data	0 to 65535	0	-	Unchangeable	“ U5-40” on page 405
U5-41	29993	Extension card 1 - DI data	0 to 65535	0	-	Unchangeable	“ U5-41” on page 405
U5-42	29994	Extension card 2 - DI data	0 to 65535	0	-	Unchangeable	“ U5-42” on page 405
U5-43	29995	Extension card 3 - DI data	0 to 65535	0	-	Unchangeable	“ U5-43” on page 405
U5-45	29997	Drive unit DO/RO data	0 to 65535	0	-	Unchangeable	“ U5-45” on page 405
U5-50	30002	Power supply unit - AI1 function	0 to 65535	0	-	Unchangeable	“ U5-50” on page 406
U5-51	30003	Power supply unit - AI2 function	0 to 65535	0	-	Unchangeable	“ U5-51” on page 406
U5-52	30004	Extension card 1 - AI1 function	0 to 65535	0	-	Unchangeable	“ U5-52” on page 406
U5-53	30005	Extension card 1 - AI2 function	0 to 65535	0	-	Unchangeable	“ U5-53” on page 406
U5-54	30006	Extension card 2 - AI1 function	0 to 65535	0	-	Unchangeable	“ U5-54” on page 407
U5-55	30007	Extension card 2 - AI2 function	0 to 65535	0	-	Unchangeable	“ U5-55” on page 407
U5-56	30008	Extension card 3 - AI1 function	0 to 65535	0	-	Unchangeable	“ U5-56” on page 407
U5-57	30009	Extension card 3 - AI2 function	0 to 65535	0	-	Unchangeable	“ U5-57” on page 408

Para. No.	Address	Name	Value Range	Default	Unit	Change	Page
U5-60	30012	Power supply unit - AI1 voltage	0 to 65535	0	-	Unchangeable	"U5-60" on page 408
U5-61	30013	Power supply unit - AI2 voltage	0 to 65535	0	-	Unchangeable	"U5-61" on page 408
U5-62	30014	Extension card 1 - AI1 voltage	0 to 65535	0	-	Unchangeable	"U5-62" on page 408
U5-63	30015	Extension card 1 - AI2 voltage	0 to 65535	0	-	Unchangeable	"U5-63" on page 409
U5-64	30016	Extension card 2 - AI1 voltage	0 to 65535	0	-	Unchangeable	"U5-64" on page 409
U5-65	30017	Extension card 2 - AI2 voltage	0 to 65535	0	-	Unchangeable	"U5-65" on page 409
U5-66	30018	Extension card 3 - AI1 voltage	0 to 65535	0	-	Unchangeable	"U5-66" on page 409
U5-67	30019	Extension card 3 - AI2 voltage	0 to 65535	0	-	Unchangeable	"U5-67" on page 409

2 Parameter Group

2.1 F0: Basic Parameters

F0-00 **G/P type**

Address:	61440		
Min.:	1	Unit:	-
Max.:	2	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

1: G type (constant-torque load)

2: P type (fan and pump)

Description

1: G type (constant-torque load)

The G type models typically carry constant-torque loads with large overload capacity. The overload capacity is 150% in general. Such loads include conveyor belts and cranes, for example.

2: P type (fan and pump)

F0-01 **Motor 1 control mode**

Address:	61441		
Min.:	0	Unit:	-
Max.:	5	Data type:	UInt16
Default:	2	Change:	At stop

Value Range:

0: SVC

1: Reserved

2: V/f control

3: Reserved

4: Reserved

5: VC++

Description

0: Sensorless vector control (SVC)

It is a type of open-loop vector control applicable to high-performance control applications, where one AC drive can drive only one motor. It is used for loads such as machine tools, centrifuges, wire drawing machines, and injection molding machines.

2: V/f control (open loop speed control)

It is applicable to applications with no high requirements on load control performance, such as fans and pumps. The V/f control mode is the only choice if one AC drive needs to drive multiple motors.

5: PMVVC (synchronous motor speed open loop control)

It is suitable for loads with low precision requirements, such as fans and pumps.

F0-02 **Command source**

Address:	61442		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Operating panel of the power supply unit/LCD operating panel/Software tool

1: Terminal

2: Communication

Description

It is used to determine the input channel of the AC drive control commands, such as run, stop, forward run, reverse run, and jog operation.

0: Operating panel of the power supply unit/LCD operating panel/Software tool

When this command source is selected, control commands are input through the operating panel of the power supply unit, LCD operating panel, or commissioning software. It is applicable to initial commissioning.

1: Terminal

In terminal I/O control mode, control commands are input through the DI terminals of the AC drive. The DI terminal control commands can be set according to different scenarios, such as start/stop, forward/reverse run, jog, two-wire/three-wire mode, multi-speed, and other functions. It is suitable for most applications.

2: Communication

In communication control mode, you can input control commands through remote communication. This mode applies to remote control or centralized control systems of multiple equipment.

F0-03 Main frequency source X

Address:	61443		
Min.:	0	Unit:	-
Max.:	10	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, non-retentive upon power failure)

1: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, retentive at power failure)

2: AI1

3: AI2

4: AI3

5: Reserved

6: Multi-reference

7: Simple PLC

8: PID

9: Communication

10: Reserved

Description

0: Digital setting (non-retentive at power failure)

The initial value of the frequency reference is the value of F0-08 (preset frequency), which can be changed by using the ▲ and ▼ keys on the operating panel (or UP and DOWN of the multi-function input terminal). The frequency reference reverts to the value of F0-08 (preset frequency) at next power-on.

1: Digital setting (retentive at power failure)

The initial value of the frequency reference is the value of F0-08 (preset frequency). which can be changed by using the ▲ and ▼ keys on the operating panel (or UP and DOWN of the multi-function input terminal). When the AC drive is powered on again after power failure, the frequency reference is the same as that at the moment of the last power failure. Modifications made by using keys ▲ and ▼ or the terminal UP/DOWN function remain effective.

2: AI1
The frequency reference is input with current or voltage signals through the AI1 terminal. The frequency is calculated according to the preset AI curve.
3: AI2
The frequency reference is input with current or voltage signals through the AI2 terminal. The frequency is calculated according to the preset AI curve.
4: AI3
The frequency reference is input with current or voltage signals through the AI3 terminal. The frequency is calculated according to the preset AI curve.
6: Multi-reference
In multi-reference control mode, different combinations of DI terminal states correspond to different frequency references. The four multi-reference terminals can provide 16 state combinations, corresponding to 16 reference values.
7: Simple PLC
Simple PLC is a multi-speed running command that can control the running time and acceleration and deceleration time. Parameters FC-00 to FC-15 are used to set the values of each frequency. FC-18 to FC-49 are used to set the running time and acceleration and deceleration time of each frequency. Up to 16 speeds can be set.
8: PID
PID is selected as the main frequency. PID control is a general process control method. PID control is used to form a closed-loop system in which each controlled variable is stabilized at the target level through proportional, integral, and differential calculation of the difference between the feedback signal and the target signal of the controlled variable. PID control is generally used in closed-loop control, such as constant pressure closed-loop control and constant tension closed-loop control.
9: Communication
The main frequency is set through communication. The frequency reference can be input through remote communication. The AC drive must be equipped with a communication card to implement communication with the host controller. This mode applies to remote control or centralized control systems of multiple equipment.
10: Reserved

F0-04 Auxiliary frequency source Y

Address:	61444		
Min.:	0	Unit:	-
Max.:	10	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, non-retentive upon power failure)
1: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, retentive at power failure)
2: AI1
3: AI2
4: AI3
5: Reserved
6: Multi-reference
7: Simple PLC
8: PID
9: Communication
10: Reserved
Description
Same as F0-03

F0-05 Base value of range of auxiliary frequency source Y for superposition

Address:	61445		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0: Relative to maximum frequency
1: Relative to main frequency X
Description
0: Relative to maximum frequency
The auxiliary frequency at superposition is equal to the auxiliary frequency source range (F0-06) multiplied by the maximum frequency (F0-10).
1: Relative to main frequency X
The auxiliary frequency at superposition is equal to the auxiliary frequency source range (F0-06) multiplied by the main frequency X.

F0-06 Range of auxiliary frequency source Y for superposition

Address:	61446		
Min.:	0	Unit:	%
Max.:	150	Data type:	UInt16
Default:	100	Change:	At once

Value Range:
0% to 150%
Description
0: Relative to maximum frequency
The auxiliary frequency at superposition is equal to the auxiliary frequency source range (F0-06) multiplied by the maximum frequency (F0-10).
1: Relative to main frequency X
The auxiliary frequency at superposition is equal to the auxiliary frequency source range (F0-06) multiplied by the main frequency X.

F0-07 Frequency source superposition

Address: 61447

Min.:	0	Unit:	-
Max.:	44	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

Ones:

0: Main frequency reference X

1: Main and auxiliary operation result (based on tens)

2: Switchover between main frequency X and auxiliary frequency Y

3: Switchover between main frequency X and the main and auxiliary operation result

4: Switchover between auxiliary frequency Y and the main and auxiliary operation result

Tens:

0: Main + Auxiliary

1: Main – Auxiliary

2: Max. (main, auxiliary)

3: Min. (main, auxiliary)

4: Main x Auxiliary

Description

Ones:

0: Main frequency reference X

The running frequency of the AC drive is directly determined by the main frequency reference X.

1: Main and auxiliary operation result (based on the tens place)

The running frequency of the AC drive is the calculation result of the main and auxiliary frequencies, and the calculation method is determined by the tens place of the value of F0-07.

2: Switchover between main frequency reference X and auxiliary frequency reference Y

The running frequency of the AC drive is selected or switched between the main frequency reference X and the auxiliary frequency reference Y through the DI terminal. In this case, the function of the DI terminal must be set to the frequency source switching function. For example, if the DI2 terminal is used for switchover, set F4-01 to 18.

3: Switchover between main frequency reference X and main and auxiliary operation result

The running frequency of the AC drive is selected or switched between the main frequency reference X and the main and auxiliary operation result through the DI terminal.

4: Switchover between auxiliary frequency reference Y and main and auxiliary operation result

The running frequency of the AC drive is selected or switched between the auxiliary frequency reference Y and the main and auxiliary operation result through the DI terminal.

Tens:

0: Main + Auxiliary

The main and auxiliary operation result is the main frequency X plus the auxiliary frequency Y.

1: Main – Auxiliary

The main and auxiliary operation result is the main frequency X minus the auxiliary frequency Y.

2: Maximum value

The main and auxiliary operation result is the larger value between the main frequency X and the auxiliary frequency Y.

3: Minimum value

The main and auxiliary operation result is the smaller value between the main frequency X and the auxiliary frequency Y.

4: Main x Auxiliary

The main and auxiliary operation result is the main frequency X multiplied by the auxiliary frequency Y.

F0-08 **Preset frequency**

Address:	61448		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	50.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

This parameter defines the target frequency.

F0-09 **Running direction**

Address:	61449		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Same as default direction

1: Reverse to default direction

Description

You can change the rotation direction of the motor by modifying this parameter without changing the motor wiring. Modifying this parameter is equivalent to exchanging any two of the motor's U, V, W wires.

F0-10 **Maximum frequency**

Address:	61450		
Min.:	50.00	Unit:	Hz
Max.:	600.00	Data type:	UInt16
Default:	50.00	Change:	At stop

Value Range:

50.00 Hz to 600.00 Hz

Description

This parameter defines the maximum output frequency of the AC drive.

F0-11 **Source of frequency upper limit**

Address:	61451		
Min.:	0	Unit:	-
Max.:	6	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Frequency upper limit reference (F0-12)

1: AI1

2: AI2

3: AI3

4: Reserved

5: Communication

6: Multi-speed reference

Description

0: Frequency upper limit reference (F0-12)

The frequency upper limit is set by F0-12.

1: AI1

The frequency upper limit is input with current or voltage signals through the AI1 terminal. The frequency is calculated according to the preset AI curve.

2: AI2

The frequency upper limit is input with current or voltage signals through the AI2 terminal. The frequency is calculated according to the preset AI curve.

3: AI3

The frequency upper limit is input with current or voltage signals through the AI3 terminal. The frequency is calculated according to the preset AI curve.

5: Communication

The frequency upper limit is set through communication.

6: Multi-speed reference

The frequency upper limit is determined by the multi-speed references set in FC-00 to FC-15.

F0-12 Frequency upper limit

Address:	61452		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	50.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

This parameter defines the maximum running frequency allowed for the motor.

F0-13 Frequency upper limit offset

Address:	61453		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

This parameter defines the offset of the frequency upper limit. It is used to adjust the output frequency value upon minimum frequency reference signal when the frequency is set by an external analog signal (voltage or current).

F0-14 Frequency lower limit

Address:	61454		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

This parameter defines the minimum running frequency for the motor.

F0-15 Carrier frequency

Address:	61455		
Min.:	0.8	Unit:	kHz
Max.:	15.0	Data type:	UInt16
Default:	Model dependent	Change:	At once

Value Range:
0.8 kHz to 15.0 kHz
Description
The carrier frequency of the AC drive determines the number of times the power switching device (such as IGBT) of the drive unit is turned on and off, so it is also called the switching frequency. It mainly affects the following aspects:
The power loss of the power module IGBT is related to the carrier frequency. As the carrier frequency increases, the power loss increases and the heating of the power module increases, which is unfavorable to the AC drive.
When the carrier frequency is high, the waveform of the secondary current output by the AC drive is sinusoidal and smooth. In this way, the harmonic is small, but the interference is relatively large, and vice versa. When the carrier frequency is too low, the effective torque of the motor decreases, the loss increases and the temperature increases. On the contrary, when the carrier frequency is too high, the loss of the AC drive itself increases, the IGBT temperature rises, and the change rate dv/dt of the output voltage increases, which has great influence on the insulation of the motor.

F0-16 Carrier frequency adjusted with temperature

Address:	61456		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	At once

Value Range:
0: No
1: Yes
Description
This parameter defines whether the carrier frequency changes with the temperature.

F0-17 Acceleration time 1

Address:	61457		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	20.0	Change:	At once

Value Range:
0.0s to 6500.0s
Description
The acceleration time indicates the time required for the output frequency to rise from 0 to F0-25 (acceleration/deceleration base frequency). It is usually determined by the rise of the frequency reference signal. When the motor accelerates, the rising rate of the frequency reference must be limited to prevent overcurrent.
The acceleration current must be limited below the overcurrent capacity of the AC drive to prevent the AC drive from tripping due to overcurrent stall.

F0-18 Deceleration time 1

Address:	61458		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	20.0	Change:	At once

Value Range:
0.0s to 6500.0s
Description

The deceleration time indicates the time required for the output frequency to decrease from F0-25 (acceleration/deceleration base frequency) to 0. The deceleration time is usually determined by the fall of the frequency reference signal. When the motor decelerates, the falling rate of the frequency reference must be limited to prevent overvoltage.
The deceleration time must be set properly to avoid excessively high voltage of the smoothing circuit, preventing the AC drive from tripping due to regenerative overvoltage stall.

F0-19 Acceleration/Deceleration time unit

Address:	61459		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:
0: 1s
1: 0.1s
2: 0.01s
Description
This parameter defines the acceleration/deceleration time unit.

F0-21 Offset of auxiliary frequency source during superposition

Address:	61461		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00 Hz to 655.35 Hz
Description
This parameter defines the offset of the auxiliary frequency during superposition. It is used to adjust the auxiliary frequency upon minimum frequency reference signal when the frequency is set by an external analog signal (voltage or current).

F0-22 Frequency reference resolution

Address:	61462		
Min.:	0	Unit:	Hz
Max.:	1	Data type:	UInt16
Default:	2	Change:	At stop

Value Range:
1: 0.1 Hz
2: 0.01 Hz
Description
This parameter defines the decimal places of the frequency reference.

F0-23 Retention of digital setting of frequency upon stop

Address:	61463		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0: Non-retentive
1: Retentive
Description

0: Non-retentive

F0-08 (preset frequency) set through the operating panel and frequency modifications made by using the ▲ and ▼ keys or UP and DOWN of terminals are cleared when the AC drive stops.

1: Retentive

F0-08 (preset frequency) set through the operating panel and frequency modifications made by using the ▲ and ▼ keys or UP and DOWN of terminals are retained when the AC drive stops.

F0-25 Acceleration/Deceleration time base frequency

Address:	61465		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Maximum frequency (F0-10)

1: Frequency reference

2: 100 Hz

Description

This parameter defines the target frequency during acceleration and the starting frequency during deceleration.

F0-26 Base frequency for UP/DOWN modification during running

Address:	61466		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Running frequency

1: Frequency reference

Description

This parameter defines the base frequency from which the target frequency is adjusted by using the UP/DOWN key of the operating panel during operation.

If it is set to 0 and the running frequency is 25 Hz, the target frequency will change from 25 Hz at a certain rate when the UP key is pressed.

If it is set to 1, the target frequency will change from the original target frequency when the UP key is pressed.

F0-27 Main frequency coefficient

Address:	61467		
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	10.00	Change:	At once

Value Range:

0.00% to 100.00%

Description

This parameter defines the main frequency reference coefficient when the frequency superposition mode is Main x Auxiliary. The value 100.00% corresponds to the target main frequency reference.

F0-28 Auxiliary frequency coefficient

Address:	61468		
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16

Default: 10.00 Change: At once

Value Range:

0.00% to 100.00%

Description

This parameter defines the auxiliary frequency reference coefficient when the frequency superposition mode is Main x Auxiliary. The value 100.00% corresponds to the target auxiliary frequency reference.

F0-29 G/P model

Address: 61469

Min.: 1 Unit: -

Max.: 2 Data type: UInt16

Default: 1 Change: At stop

Value Range:

1 to 2

Description

1: G type (constant-torque load)

The G type models typically carry constant-torque loads with large overload capacity. The overload capacity is 150% in general. Such loads include conveyor belts and cranes, for example.

2: P type (fan and pump)

2.2 F1: Motor 1 Parameters

F1-00 Motor type selection

Address: 61696

Min.: 0 Unit: -

Max.: 2 Data type: UInt16

Default: 0 Change: At stop

Value Range:

0: Common asynchronous motor

1: Variable frequency asynchronous motor

2: Synchronous motor

Description

A variable frequency motor can adjust its frequency and speed according to the load. Where the voltage is low, it can reduce the frequency and start reliably. Where the load is light, it can reduce the frequency, speed, and current to save electric energy.

A common asynchronous motor is suitable for applications with normal voltage but often full load. It is designed based on constant frequency and constant voltage. Therefore, it may not meet all the frequency and speed control requirements.

F1-01 Rated motor power

Address: 61697

Min.: 0.1 Unit: kW

Max.: 1000.0 Data type: UInt16

Default: Model dependent Change: At stop

Value Range:

0.1 kW to 1000.0 kW

Description

Rated motor power indicates the axis output power of the motor working in rated conditions. Select a motor of proper power rating based on the requirements of the mechanical load, with due consideration to factors such as motor heating, overload capacity, and starting capacity.

F1-02 Rated motor voltage

Address:	61698		
Min.:	1	Unit:	V
Max.:	2000	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:

1 V to 2000 V

Description

Rated motor voltage indicates the voltage of the motor during normal operation, which usually refers to the line voltage.

F1-03 Rated motor current

Address:	61699		
Min.:	0.1	Unit:	A
Max.:	6553.5	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:

0.1 A to 6553.5 A

Description

Rated motor current indicates the current of the motor during normal operation, which usually refers to the line current.

F1-04 Rated motor frequency

Address:	61700		
Min.:	01	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:

0.01 Hz to 655.35 Hz

Description

Rated motor frequency indicates the frequency of the power supply connected to the stator winding under the rated operation state of the motor.

F1-05 Rated motor speed

Address:	61701		
Min.:	1	Unit:	RPM
Max.:	65535	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:

1 RPM to 65535 RPM

Description

Rated motor speed indicates the speed of the rotor under the rated operating state, and the unit is RPM.

F1-06 Asynchronous motor stator resistance

Address:	61702		
Min.:	001	Unit:	Ω

Max.:	65.535	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:
0.001 Ω to 65.535 Ω

Description
This parameter defines the DC resistance (phase value) of stator winding of the asynchronous motor, which can be obtained by motor auto-tuning.

F1-07 Asynchronous motor rotor resistance

Address:	61703		
Min.:	001	Unit:	Ω
Max.:	65.535	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:
0.001 Ω to 65.535 Ω

Description
This parameter defines the DC resistance of rotor winding of the asynchronous motor, which can be obtained by static auto-tuning or dynamic auto-tuning of the motor.

F1-08 Asynchronous motor leakage inductance

Address:	61704		
Min.:	01	Unit:	mH
Max.:	655.35	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:
0.01 mH to 655.35 mH

Description
The asynchronous motor leakage inductance is caused by the leakage flux of motor winding. In the winding of the motor, when current is introduced, magnetic flux will be generated. The magnetic flux can be divided into two parts based on the path: main flux and leakage flux. The leakage flux is the leakage inductance. This parameter can be obtained by static auto-tuning or dynamic auto-tuning of the motor.

F1-09 Asynchronous motor mutual inductance

Address:	61705		
Min.:	01	Unit:	mH
Max.:	655.35	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:
0.01 mH to 655.35 mH

Description
When the current in one coil of the motor changes, induced EMF is generated in the coil adjacent to it. This mutually induced EMF can be expressed by mutual inductance.
The mutual inductance of a motor can be roughly divided into two types: one is the inter-phase inductive reactance of the stator or rotor, that is, the inductance between two phases of the stator; and the other is the inductive reactance between the stator and the rotor. The inductive reactance of the first type does not change with the rotation of the rotor, while that of the second type changes accordingly with the rotation of the rotor. This parameter can be obtained by dynamic auto-tuning of the motor.

F1-10 **Asynchronous motor no-load current**

Address:	61706		
Min.:	0.1	Unit:	A
Max.:	6553.5	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:

0.1 A to 6553.5 A

Description

This parameter defines the current passing through the three-phase winding of the stator when the motor is running without load. It can be obtained by dynamic auto-tuning of the motor.

F1-11 **Asynchronous motor core saturation coefficient 1**

Address:	61707		
Min.:	50.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	86.0	Change:	At once

Value Range:

50.0% to 100.0%

Description

This parameter defines core saturation coefficient 1 of the asynchronous motor.

F1-12 **Asynchronous motor core saturation coefficient 2**

Address:	61708		
Min.:	100.0	Unit:	%
Max.:	150.0	Data type:	UInt16
Default:	130.0	Change:	At once

Value Range:

100.0% to 150.0%

Description

This parameter defines core saturation coefficient 2 of the asynchronous motor.

F1-13 **Asynchronous motor core saturation coefficient 3**

Address:	61709		
Min.:	100.0	Unit:	%
Max.:	170.0	Data type:	UInt16
Default:	140.0	Change:	At once

Value Range:

100.0% to 170.0%

Description

This parameter defines core saturation coefficient 3 of the asynchronous motor.

F1-14 **Asynchronous motor core saturation coefficient 4**

Address:	61710		
Min.:	100.0	Unit:	%
Max.:	180.0	Data type:	UInt16
Default:	150.0	Change:	At once

Value Range:

100.0% to 180.0%

Description

This parameter defines core saturation coefficient 4 of the asynchronous motor.

F1-17 **Synchronous motor axis D inductance**

Address: 61713

Min.:	1	Unit:	mH
Max.:	65535	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:
1mH to 65535mH
Description
This parameter defines the inductance of the main pole axis (longitudinal axis) of the synchronous motor.

F1-18 Synchronous motor axis Q inductance

Address:	61714		
Min.:	1	Unit:	mH
Max.:	65535	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:
1mH to 65535mH
Description
This parameter defines the inductance of the center line (quadrature axis) between the adjacent pole axes of the synchronous motor rotor.

F1-19 Synchronous motor back EMF coefficient

Address:	61715		
Min.:	0.1	Unit:	V
Max.:	6553.5	Data type:	UInt16
Default:	Model dependent	Change:	At stop

Value Range:
0.1V to 6553.5V
Description
This parameter defines the valid value of the motor back EMF at the rated frequency (F1-04).

F1-24 Number of motor pole pairs

Address:	61720		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter defines the number of motor pole pairs.

F1-37 Auto-tuning

Address:	61733		
Min.:	0	Unit:	-
Max.:	14	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: No auto-tuning
1: Asynchronous motor static auto-tuning
2: Auto-tuning on all parameters of asynchronous motor
3: With-load auto-tuning on all parameters of asynchronous motor
4: Reserved
11: No-load dynamic auto-tuning on synchronous motor (excluding back EMF)
12: No-load dynamic auto-tuning on synchronous motor
13: Static auto-tuning on all parameters of synchronous motor
14: Reserved

Description

0: No operation
Auto-tuning is not performed.
1: Asynchronous motor static auto-tuning
This mode applies to scenarios where motors cannot be disconnected from the load and dynamic auto-tuning is not allowed.
In this mode, some motor parameters are auto-tuned, including F1-06 (asynchronous motor stator resistance), F1-07 (asynchronous motor rotor resistance), and F1-08 (asynchronous motor leakage inductance).
2: Auto-tuning on all parameters of asynchronous motor
This mode applies to scenarios where the motor can be disconnected from the load.
In this mode, all motor parameters are auto-tuned, including F1-06 (asynchronous motor stator resistance), F1-07 (asynchronous motor rotor resistance), F1-08 (asynchronous motor leakage inductance), F1-09 (asynchronous motor mutual inductance), and F1-10 (asynchronous motor no-load current).
3: With-load auto-tuning on all parameters of asynchronous motor
This mode applies to scenarios where motors cannot be disconnected from the load and dynamic auto-tuning on all parameters is not allowed.
In this mode, all motor parameters are auto-tuned, including F1-06 (asynchronous motor stator resistance), F1-07 (asynchronous motor rotor resistance), F1-08 (asynchronous motor leakage inductance), F1-09 (asynchronous motor mutual inductance), and F1-10 (asynchronous motor no-load current). 11: No-load dynamic auto-tuning on synchronous motor (excluding back EMF)
12: No-load dynamic auto-tuning on synchronous motor
13: Static auto-tuning on all parameters of synchronous motor

2.3 F2: Motor 1 Vector Control Parameters

F2-00 **Low-speed speed loop Kp**

Address:	61952		
Min.:	1	Unit:	-
Max.:	200	Data type:	UInt16
Default:	30	Change:	At once

Value Range:
1 to 200

Description

This parameter indicates the speed loop PID control parameter Kp, which affects the response to the motor speed. A greater the Kp value indicates higher adjustment sensitivity and adjustment intensity. A smaller the Kp value indicates lower adjustment sensitivity and adjustment intensity. The low-speed speed loop Kp is used in the case of low speed.

F2-01 Low-speed speed loop Ti

Address:	61953		
Min.:	001	Unit:	s
Max.:	10.000	Data type:	UInt16
Default:	0.500	Change:	At once

Value Range:

0.001s to 10.000s

Description

The reciprocal of the speed loop integral time constant is the integral gain. The speed loop integral time constant affects the steady-state speed error of the motor and the stability of the speed loop system. Increasing the speed loop integral time constant slows down the response of the speed loop. In this case, increase the speed loop proportional gain to shorten the response time of the speed loop. The low-speed speed loop Ti is used in the case of low speed.

F2-02 Switchover frequency 1

Address:	61954		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	5.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

The speed loop PI parameters are divided into two groups: low speed and high speed. When the running frequency is lower than switchover frequency 1 (F2-02), the speed loop PI is adjusted by F2-00 and F2-01. When the running frequency is higher than switchover frequency 2 (F2-05), the speed loop PI is adjusted by F2-03 and F3-04. When the running frequency falls between switchover frequency 1 and switchover frequency 2, PI parameters are obtained from linear switchover between the two groups of PI parameters. The value of this parameter must be smaller than F2-05 (switchover frequency 2).

F2-03 High-speed speed loop Kp

Address:	61955		
Min.:	1	Unit:	-
Max.:	200	Data type:	UInt16
Default:	20	Change:	At once

Value Range:

1 to 200

Description

This parameter indicates the speed loop PID control parameter Kp, which affects the response to the motor speed. A greater the Kp value indicates higher adjustment sensitivity and adjustment intensity. A smaller the Kp value indicates lower adjustment sensitivity and adjustment intensity. The high-speed speed loop Kp is used in the case of high speed.

F2-04 **High-speed speed loop Ti**

Address:	61956		
Min.:	001	Unit:	s
Max.:	10.000	Data type:	UInt16
Default:	1.000	Change:	At once

Value Range:
0.001s to 10.000s

Description
The reciprocal of the speed loop integral time constant is the integral gain. The speed loop integral time constant affects the steady-state speed error of the motor and the stability of the speed loop system. Increasing the speed loop integral time constant slows down the response of the speed loop. In this case, increase the speed loop proportional gain to shorten the response time of the speed loop. The high speed loop Ti is used in the case of high speed.

F2-05 **Switchover frequency 2**

Address:	61957		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	10.00	Change:	At once

Value Range:
0.00 Hz to 655.35 Hz

Description
The speed loop PI parameters are divided into two groups: low speed and high speed. When the running frequency is lower than switchover frequency 1 (F2-02), the speed loop PI is adjusted by F2-00 and F2-01. When the running frequency is higher than switchover frequency 2 (F2-05), the speed loop PI is adjusted by F2-03 and F3-04. When the running frequency falls between switchover frequency 1 and switchover frequency 2, PI parameters are obtained from linear switchover between the two groups of PI parameters. The value of this parameter must be smaller than F2-05 (switchover frequency 2).

F2-06 **VC slip compensation gain**

Address:	61958		
Min.:	50	Unit:	%
Max.:	200	Data type:	UInt16
Default:	100	Change:	At once

Value Range:
50% to 200%

Description
In SVC control mode, this parameter is used to adjust the speed stability accuracy of the motor. For example, when the running frequency of the motor is lower than the output frequency of the AC drive, you can increase the value of this parameter.
No adjustment is required under normal circumstances.

F2-07 **Speed feedback filter time**

Address:	61959		
Min.:	0.000	Unit:	s
Max.:	0.1000	Data type:	UInt16
Default:	004	Change:	At once

Value Range:
0.000s to 0.1000s

Description

In SVC control mode (F0-01 = 0), the speed loop feedback filter time is valid. You can improve the stability of the motor by adjusting this parameter. Increasing the speed loop feedback filter time can enhance motor stability but slow down dynamic response. Decreasing it will bring faster dynamic response. An excessively small parameter value may lead to motor oscillation.
Generally, the motor stability meets requirements, and no adjustment is required.

F2-08 VC deceleration over-excitation gain

Address:	61960		
Min.:	0	Unit:	-
Max.:	200	Data type:	UInt16
Default:	64	Change:	At once

Value Range:

0 to 200

Description

-

F2-09 Torque upper limit source in speed control (motoring)

Address:	61961		
Min.:	0	Unit:	-
Max.:	7	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Digital setting (F2-10)

1: AI1

2:AI2

3: AI3

4: Reserved

5: Communication

6: MIN (AI1, AI2)

7: MAX (AI1, AI2)

Description

0: Digital setting (F2-10)

The torque upper limit in speed control mode is set by F2-10 (digital setting of torque upper limit in speed control).

1: AI1

The torque upper limit is input with the current or voltage signal through the AI1 terminal. The frequency is calculated according to the preset AI curve.

2: AI2

The torque upper limit is input with the current or voltage signal through the AI2 terminal. The frequency is calculated according to the preset AI curve.

3: AI3

The torque upper limit is input with the current or voltage signal through the AI3 terminal. The frequency is calculated according to the preset AI curve.

5: Communication

The main frequency is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to implement communication with the host controller. This mode applies to remote control or centralized control systems of multiple equipment.

6: MIN (AI1, AI2)

The torque upper limit in speed control mode is the smaller value between AI1 and AI2 inputs.

7: MAX (AI1, AI2)

The torque upper limit in speed control mode is the larger value between AI1 and AI2 inputs.

F2-10 Torque upper limit reference in speed control (motoring)

Address:	61962		
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	150.0	Change:	At once

Value Range:

0.0% to 200.0%

Description

The torque upper limit under motoring state takes the rated current of the AC drive as the base value.

F2-11 Torque upper limit source in speed control (generating)

Address:	61963		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Digital setting (F2-10)

1: AI1

2: AI2

3: AI3

4: Reserved

5: Communication

6: MIN (AI1, AI2)

7: MAX (AI1, AI2)

8: Digital setting (F2-12)

Description

0: Digital setting (F2-10)

The torque upper limit in speed control mode is set by F2-10 (digital setting of torque upper limit in speed control).

1: AI1

The torque upper limit is input with the current or voltage signal through the AI1 terminal. The frequency is calculated according to the preset AI curve.

2: AI2

The torque upper limit is input with the current or voltage signal through the AI2 terminal. The frequency is calculated according to the preset AI curve.

3: AI3

The torque upper limit is input with the current or voltage signal through the AI3 terminal. The frequency is calculated according to the preset AI curve.

5: Communication

The main frequency is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to implement communication with the host controller. This mode applies to remote control or centralized control systems of multiple equipment.

6: MIN (AI1, AI2)
The torque upper limit in speed control mode is the smaller value between AI1 and AI2 inputs.
7: MAX (AI1, AI2)
The torque upper limit in speed control mode is the larger value between AI1 and AI2 inputs.
8: Digital setting (F2-12)
The torque upper limit in speed control mode is set by F2-12 (torque upper limit reference in speed control (generating)).

F2-12 Torque upper limit reference in speed control (generating)

Address:	61964		
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	150.0	Change:	At once

Value Range:
0.0% to 200.0%
Description
The torque upper limit under generating state takes the rated current of the AC drive as the base value.

F2-13 Low-speed current loop Kp adjustment

Address:	61965		
Min.:	0.1	Unit:	-
Max.:	10.0	Data type:	UInt16
Default:	1.0	Change:	At once

Value Range:
0.1 to 10.0
Description
This parameter defines the proportional coefficient of the low-speed current loop. A larger value indicates faster current response. The default value is recommended.

F2-14 Low-speed current loop Ki adjustment

Address:	61966		
Min.:	0.1	Unit:	-
Max.:	10.0	Data type:	UInt16
Default:	1.0	Change:	At once

Value Range:
0.1 to 10.0
Description
This parameter defines the integral coefficient of the low-speed current loop. A larger value indicates faster current response. The default value is recommended.

F2-15 High-speed current loop Kp adjustment

Address:	61967		
Min.:	0.1	Unit:	-
Max.:	10.0	Data type:	UInt16
Default:	1.0	Change:	At once

Value Range:
0.1 to 10.0
Description
This parameter defines the proportional coefficient of the high-speed current loop. A larger value indicates faster current response. The default value is recommended.

F2-16 **High-speed current loop Ki adjustment**

Address:	61968		
Min.:	0.1	Unit:	-
Max.:	10.0	Data type:	UInt16
Default:	1.0	Change:	At once

Value Range:
0.1 to 10.0
Description
This parameter defines the integral coefficient of the high-speed current loop. A larger value indicates faster current response. The default value is recommended.

F2-17 **Speed loop Kp upon zero speed lock**

Address:	61969		
Min.:	1	Unit:	-
Max.:	100	Data type:	UInt16
Default:	30	Change:	At once

Value Range:
1 to 100
Description
This parameter defines the proportional coefficient of the speed loop at zero speed. A larger value indicates stronger rigidity. The default value is recommended.

F2-18 **Speed loop Ti upon zero speed lock**

Address:	61970		
Min.:	001	Unit:	s
Max.:	10.000	Data type:	UInt16
Default:	0.500	Change:	At once

Value Range:
0.001s to 10.000s
Description
This parameter defines the integral coefficient of the speed loop at zero speed. A smaller value indicates stronger rigidity. The default value is recommended.

F2-20 **Speed loop switchover frequency upon zero speed lock**

Address:	61972		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	05	Change:	At once

Value Range:
0.00 Hz to 655.35 Hz
Description
This parameter defines the switchover frequency of the speed loop upon zero speed lock. The default value is recommended as an excessively high setpoint may cause vibration.

F2-21 **Maximum output voltage coefficient**

Address:	61973		
Min.:	100	Unit:	-
Max.:	110	Data type:	UInt16
Default:	100	Change:	At once

Value Range:
100 to 110
Description

This parameter defines the boost capacity of the maximum output voltage of the AC drive. Increasing the value of F2-21 will enhance the maximum loading capacity in the field-weakening range of the motor. However, this may lead to an increase in motor current ripple and an increase in motor heating. Decreasing it will reduce motor current ripple and motor heating, but this will also reduce the maximum loading capacity in the field-weakening range of the motor. No adjustment is required under normal circumstances.

F2-22 Output voltage filter time

Address:	61974		
Min.:	0.000	Unit:	s
Max.:	0.010	Data type:	UInt16
Default:	0.000	Change:	At once

Value Range:
0.000s to 0.010s

Description
This parameter defines the output voltage filter time. An excessively high setpoint weakens the delay control effect.

F2-23 Zero speed lock

Address:	61975		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: Disabled
1: Enabled

Description
This parameter defines whether to enable zero speed lock.

F2-24 Overvoltage suppression Kp in vector control mode

Address:	61976		
Min.:	0	Unit:	-
Max.:	1000	Data type:	UInt16
Default:	40	Change:	At once

Value Range:
0 to 1000

Description
This parameter defines the proportional coefficient of overvoltage suppression in vector control mode. If overvoltage occurs, increase the parameter value appropriately.

F2-25 Acceleration compensation gain

Address:	61977		
Min.:	0	Unit:	-
Max.:	200	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 200

Description
This parameter defines the acceleration compensation gain.

F2-26 Acceleration compensation filter time

Address: 61978

Min.:	0	Unit:	-
Max.:	500	Data type:	UInt16
Default:	10	Change:	At once

Value Range:
0 to 500
Description
This parameter defines the acceleration compensation filter time.

F2-27 Overvoltage suppression in vector control mode

Address:	61979		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	At once

Value Range:
0: Disabled
1: Enabled
Description
This parameter defines whether to enable overvoltage suppression in vector control mode.

F2-28 Torque filter cut-off frequency

Address:	61980		
Min.:	50	Unit:	Hz
Max.:	1000	Data type:	UInt16
Default:	500	Change:	At once

Value Range:
50 Hz to 1000 Hz
Description
This parameter defines the cut-off frequency of the torque filter. It can be adjusted based on the torque source.

F2-29 Synchronous motor initial angle detection current

Address:	61981		
Min.:	50	Unit:	-
Max.:	180	Data type:	UInt16
Default:	80	Change:	At once

Value Range:
50 to 180
Description
This parameter defines the initial angle detection current of the synchronous motor. The default value is recommended.

F2-30 Speed loop parameter auto-calculation

Address:	61982		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: Disabled
1: Enabled
Description
Speed loop parameter auto-calculation

F2-31 **Expected speed loop bandwidth (high speed)**

Address:	61983		
Min.:	1.0	Unit:	Hz
Max.:	200.0	Data type:	UInt16
Default:	10.0	Change:	At once

Value Range:

1.0 Hz to 200.0 Hz

Description

Expected speed loop bandwidth (high speed)

F2-32 **Expected speed loop bandwidth (low speed)**

Address:	61984		
Min.:	1.0	Unit:	Hz
Max.:	200.0	Data type:	UInt16
Default:	10.0	Change:	At once

Value Range:

1.0 Hz to 200.0 Hz

Description

Expected speed loop bandwidth (low speed)

F2-33 **Expected speed loop bandwidth (zero speed)**

Address:	61985		
Min.:	1.0	Unit:	Hz
Max.:	200.0	Data type:	UInt16
Default:	10.0	Change:	At once

Value Range:

1.0 Hz to 200.0 Hz

Description

Expected speed loop bandwidth (zero speed)

F2-34 **Expected speed loop damping ratio: (unchanged generally)**

Address:	61986		
Min.:	0.100	Unit:	-
Max.:	65.000	Data type:	UInt16
Default:	1.000	Change:	At once

Value Range:

0.100 to 65.000

Description

Expected speed loop damping ratio: (unchanged generally)

F2-52 **Decoupling control**

Address:	62004		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

This parameter defines whether to enable decoupling control.

F2-53 **Power limit during generating**

Address: 62005

Min.: 0 Unit: -
Max.: 1 Data type: UInt16
Default: 0 Change: At stop

Value Range:

0: Disabled

1: Enabled

Description

This parameter defines whether to enable power limit during generating.

F2-54 Power limit during generating

Address: 62006
Min.: 0.0 Unit: %
Max.: 200.0 Data type: UInt16
Default: 0.0 Change: At stop

Value Range:

0.0% to 200.0%

Description

This parameter defines the power limit during generating, which can limit the power during generating according to actual applications.

F2-55 Flux closed loop mode

Address: 62007
Min.: 0 Unit: -
Max.: 1111 Data type: UInt16
Default: 1010 Change: At stop

Value Range:

0 to 1111

Description

This parameter defines the flux closed loop mode. The default value is recommended.

F2-56 AC drive output current upper limit

Address: 62008
Min.: 0.0 Unit: %
Max.: 170.0 Data type: UInt16
Default: 150.0 Change: At stop

Value Range:

0.0% to 170.0%

Description

This parameter defines the output current upper limit of the AC drive. The default value is recommended.

2.4 F3: V/f Control Parameters

F3-00 V/f curve reference

Address: 62208
Min.: 0 Unit: -
Max.: 11 Data type: UInt16
Default: 0 Change: At stop

Value Range:

0: Straight-line V/f curve
1: Multi-point V/f curve
2: Square V/f curve
3: 1.2-power V/f curve
4: 1.4-power V/f curve
6: 1.6-power V/f curve
8: 1.8-power V/f curve
10: V/f complete separation mode
11:V/f half separation mode

Description

0: Straight-line V/f curve

Under the rated frequency, the output voltage of the AC drive changes linearly with the output frequency. This curve is applicable to general mechanical drive applications such as large-inertia fan acceleration, punch presses, centrifuges, and water pumps.

1: Multi-point V/f curve

The range of the frequency points is 0.00 Hz to the rated motor frequency. The range of the voltage points is 0.0% to 100.0%, which corresponds to the range of 0 V to the rated motor voltage. The multi-point V/f curve references are typically determined based on load characteristics of the motor. Ensure that the following conditions are met: F3-03 ⩽ F3-05 ⩽ F3-07.

2: Square V/f curve

Under the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 2-power curve. This curve is applicable to applications with light loads that seldom change, such as fans and water pumps.

3: 1.2-power V/f curve

Under the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 1.2-power curve.

4: 1.4-power V/f curve

Under the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 1.2-power curve.

6: 1.6-power V/f curve

Under the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 1.2-power curve.

8: 1.8-power V/f curve

Under the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 1.2-power curve.

10: V/f complete separation mode

The output frequency and output voltage of the AC drive are independent of each other. The output frequency is determined by the frequency source, and the output voltage is determined by voltage source for V/f separation. This curve is generally applicable to scenarios such as motor torque control.

11: V/f half separation mode

In this mode, the voltage (V) is proportional to the frequency (f). The relationship between V and f can be set by the voltage source, and it is also related to the rated motor voltage and rated motor frequency in group F1. Assuming that the voltage source input is X (X ranges from 0% to 100%), the relationship between V and f is as follows: V/f = 2 x X x (Rated motor voltage)/(Rated motor frequency).

F3-01 **Torque boost**

Address:	62209		
Min.:	0.0	Unit:	%
Max.:	30.0	Data type:	UInt16
Default:	Model dependent	Change:	At once

Value Range:
0.0% to 30.0%

Description
The torque boost function generally applies to the AC drive at low frequency. The output torque of the AC drive in V/f control mode is proportional to the frequency. Under the condition of low frequency, the torque is very small when the motor is running at a low speed. In this case, you can set this parameter to increase the output voltage of the AC drive, thereby increasing the current and output torque.
Do not set this parameter to a large value, otherwise, overload protection may be triggered.

F3-02 **Cutoff frequency of torque boost**

Address:	62210		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	50.00	Change:	At stop

Value Range:
0.00 Hz to 655.35 Hz

Description
When the running frequency reaches the cutoff frequency of torque boost, the torque boost function is disabled.

F3-03 **Multi-point V/f frequency 1**

Address:	62211		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At stop

Value Range:
0.00 Hz to 655.35 Hz

Description
This parameter defines frequency 1 in the multi-point V/f curve.

F3-04 **Multi-point V/f voltage 1**

Address:	62212		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value Range:
0.0% to 100.0%

Description
This parameter defines voltage 1 in the multi-point V/f curve.

F3-05 **Multi-point V/f frequency 2**

Address:	62213		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At stop

Value Range:

0.00 Hz to 655.35 Hz

Description

This parameter defines frequency 2 in the multi-point V/f curve.

F3-06 Multi-point V/f voltage 2

Address:	62214		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value Range:

0.0% to 100.0%

Description

This parameter defines voltage 2 in the multi-point V/f curve.

F3-07 Multi-point V/f frequency 3

Address:	62215		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At stop

Value Range:

0.00 Hz to 655.35 Hz

Description

This parameter defines frequency 3 in the multi-point V/f curve.

F3-08 Multi-point V/f voltage 3

Address:	62216		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value Range:

0.0% to 100.0%

Description

This parameter defines voltage 3 in the multi-point V/f curve.

F3-09 V/f slip compensation gain

Address:	62217		
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0% to 200.0%

Description

In V/f mode, increasing the output frequency compensates for reduction in the motor speed. A higher the gain indicates a higher compensation frequency. However, an excessively high gain can incur overcompensation.

F3-10 V/f overexcitation gain

Address:	62218		
Min.:	0	Unit:	-
Max.:	200	Data type:	UInt16
Default:	64	Change:	At once

Value Range:

0 to 200

Description

A larger overexcitation gain indicates better suppression effect.

When a braking resistor, braking unit, or energy feedback unit is used, set this parameter to 0. Otherwise, overcurrent may occur during operation.

F3-11 V/f oscillation suppression gain

Address:	62219		
Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	Model dependent	Change:	At once

Value Range:

0 to 100

Description

A larger oscillation gain indicates better suppression effect.

F3-12 Oscillation suppression gain mode

Address:	62220		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	3	Change:	At stop

Value Range:

0: Disabled

3: Enabled

Description

In V/f mode, speed and current oscillation typically occurs when the motor runs at low frequency, which may lead to overcurrent of the AC drive. In this case, you can enable this function to eliminate oscillation.

F3-13 Voltage source for V/f separation

Address:	62221		
Min.:	0	Unit:	-
Max.:	8	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Digital setting (F3-14)

1: AI1

2: AI2

3: AI3

4: Reserved

5: Multi-reference

6: Simple PLC

7: PID

8: Communication

Description

This parameter sets the target voltage in V/f separation mode.

0: Digital setting (F3-14)

The V/f separation voltage is set by F3-14 (voltage digital setting of V/f separation).

1: AI1

The V/f separation voltage is input with current or voltage signals through the AI1 terminal. The frequency is calculated according to the preset AI curve.

2: AI2
The V/f separation voltage is input with current or voltage signals through the AI2 terminal. The frequency is calculated according to the preset AI curve.
3: AI3
The V/f separation voltage is input with current or voltage signals through the AI3 terminal. The frequency is calculated according to the preset AI curve. The AC drive has two AI terminals by default, and the AI3 terminal needs to be provided through the I/O extension card.
5: Multi-reference
In multi-reference mode, different combinations of DI terminal states correspond to different reference values. The four multi-reference terminals can provide 16 state combinations, corresponding to 16 reference values (percentage x maximum frequency) of parameters in group FC.
6: Simple PLC
The V/f separation voltage is set by simple PLC. For details, see the function description of simple PLC.
7: PID
The V/f separation voltage is set by PID. For details, see the PID function description.
9: Communication
The main frequency is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to implement communication with the host controller. This mode applies to remote control or centralized control systems of multiple equipment.

F3-14 Voltage digital setting for V/f separation

Address:	62222		
Min.:	0	Unit:	V
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 V to 65535 V
Description
The reference value is between 0 V and the rated voltage. In V/f half separation mode, the output voltage is twice the reference value.

F3-15 Voltage rise time of V/f separation

Address:	62223		
Min.:	0.0	Unit:	s
Max.:	1000.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:
0.0s to 1000.0s
Description
This parameter defines the time required for the output voltage to rise from 0 to the rated motor voltage. In V/f half separation mode, this parameter is invalid, and the voltage rise time is the same as that set by F0-17.

F3-16 Voltage fall time of V/f separation

Address:	62224		
Min.:	0.0	Unit:	s
Max.:	1000.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:
0.0s to 1000.0s
Description
This parameter defines the time required for the output voltage to fall from rated motor voltage to 0. In V/f half separation mode, this parameter is invalid, and the voltage fall time is the same as that set by F0-18.

F3-17 Stop mode for V/f separation

Address:	62225		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: Frequency and voltage decline to 0 independently
1: Frequency declines to 0 after voltage declines to 0
Description
This parameter defines the stop mode for V/f separation. Use stop mode 1 for applications requiring energy discharge upon stop with load.

F3-18 V/f overcurrent stall action current

Address:	62226		
Min.:	50	Unit:	%
Max.:	180	Data type:	UInt16
Default:	150	Change:	At stop

Value Range:
50% to 180%
Description
When the motor current reaches the value of this parameter, the AC drive starts the overcurrent stall suppression function. The default value is 150%, indicating 1.5 times the rated current of the AC drive.

F3-19 V/f overcurrent stall suppression

Address:	62227		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:
0: Disabled
1: Enabled
Description
This parameter defines whether to enable V/f overcurrent stall suppression.

F3-20 V/f overcurrent stall suppression gain

Address:	62228		
Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	20	Change:	At once

Value Range:
0 to 100

Description

When the current exceeds the overcurrent stall action current, the overcurrent stall suppression function is triggered. The output frequency decreases until the current falls below the overcurrent stall threshold, and then the output frequency increases to the target frequency, which prolongs the actual acceleration time automatically. A larger parameter value indicates better suppression effect.

F3-21 Compensation coefficient of V/f speed multiplying overcurrent stall action current

Address:	62229		
Min.:	50	Unit:	-
Max.:	180	Data type:	UInt16
Default:	50	Change:	At stop

Value Range:

50 to 180

Description

This parameter defines the compensation coefficient of V/f speed multiplying overcurrent stall action current, which can be used to adjust the overcurrent suppression current threshold in the field-weakening range.

F3-22 V/f overvoltage stall action voltage

Address:	62230		
Min.:	330.0	Unit:	V
Max.:	800.0	Data type:	UInt16
Default:	Single-phase 200 V: 370.0 V; Three-phase 400 V: 770.0 V	Change:	At stop

Value Range:

330.0 V to 800.0 V

Description

When the bus voltage reaches the value of this parameter, the AC drive starts overvoltage stall protection.

F3-23 V/f overvoltage stall suppression

Address:	62231		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

This parameter defines whether to enable V/f overvoltage stall suppression.

F3-24 Frequency gain for V/f overvoltage stall suppression

Address:	62232		
Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	30	Change:	At once

Value Range:

0 to 100

Description

Increasing F3-24 will improve the bus voltage control effect, but the output frequency will fluctuate. If the output frequency fluctuates greatly, reduce F3-24 appropriately.

F3-25 **Voltage gain for V/f overvoltage stall suppression**

Address:	62233		
Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	30	Change:	At once

Value Range:

0 to 100

Description

This parameter is used to suppress the bus voltage. Increasing the parameter value reduces the overshoot of the bus voltage.

F3-26 **Frequency rise threshold during overvoltage stall suppression**

Address:	62234		
Min.:	0	Unit:	-
Max.:	50	Data type:	UInt16
Default:	5	Change:	At stop

Value Range:

0 to 50

Description

The running frequency may increase when overvoltage stall suppression is enabled. This parameter limits the increase of the running frequency.

F3-27 **Slip compensation time constant**

Address:	62235		
Min.:	0.1	Unit:	-
Max.:	10.0	Data type:	UInt16
Default:	0.5	Change:	At once

Value Range:

0.1 to 10.0

Description

This parameter defines the time constant of the slip compensation frequency. As the time constant increases, the slip compensation frequency becomes more stable and less affected by load disturbance and noise interference. However, the response to load change will be slower.

F3-28 **Automatic frequency rise**

Address:	62236		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

Automatic frequency rise

F3-29 **Minimum motoring torque current**

Address:	62237		
Min.:	10	Unit:	-
Max.:	100	Data type:	UInt16
Default:	50	Change:	At stop

Value Range:

10 to 100

Description
Minimum motoring torque current

F3-30 **Maximum generating torque current**

Address:	62238		
Min.:	10	Unit:	-
Max.:	100	Data type:	UInt16
Default:	20	Change:	At stop

Value Range:
10 to 100
Description
Maximum generating torque current

F3-31 **Automatic frequency rise Kp**

Address:	62239		
Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	50	Change:	At once

Value Range:
0 to 100
Description
Automatic frequency rise Kp

F3-32 **Automatic frequency rise Ki**

Address:	62240		
Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	50	Change:	At once

Value Range:
0 to 100
Description
Automatic frequency rise Ki

F3-33 **Online torque compensation gain**

Address:	62241		
Min.:	80	Unit:	-
Max.:	150	Data type:	UInt16
Default:	100	Change:	At stop

Value Range:
80 to 150
Description
This parameter defines the automatic torque boost gain. The automatic torque boost function takes effect when the value of this parameter is greater than or equal to 100. The default value is recommended.

2.5 F4: Input Terminals

F4-00 **DI1 hardware source**

Address:	62464		
Min.:	0	Unit:	-

Max.: 208 Data type: UInt16
Default: 0 Change: At stop

Value Range:

0: Not selected
1: Power supply unit - DI1
2: Power supply unit - DI2
3: Power supply unit - DI3
4: Power supply unit - DI4
5: Power supply unit - DIO1
6: Power supply unit - DIO2
7: Power supply unit - DIO3
8: Power supply unit - DIO4
101: Extension card 1 - DI1
102: Extension card 1 - DI2
103: Extension card 1 - DI3
104: Extension card 1 - DI4
105: Extension card 1 - DI5
106: Extension card 1 - DI6
107: Extension card 1 - DI7
108: Extension card 1 - DI8
201: Extension card 2 - DI1
202: Extension card 2 - DI2
203: Extension card 2 - DI3
204: Extension card 2 - DI4
205: Extension card 2 - DI5
206: Extension card 2 - DI6
207: Extension card 2 - DI7
208: Extension card 2 - DI8

Description

This parameter defines the source of the input terminal.

F4-01 DI1 function selection

Address: 62465
Min.: 0 Unit: -
Max.: 63 Data type: UInt16
Default: 1 Change: At stop

Value Range:

0 to 63

Description

This parameter defines the function of the input terminal.

0: No function

Set 0 for reserved terminals to avoid malfunction.

1: Forward RUN (FWD) or running command

When two-wire mode 1 is selected (F4-17 = 0), the terminal is used to set the AC drive to forward run.

When two-wire mode 2 is selected (F4-17 = 1), the terminal is used to give a running command.

2: Reverse RUN (REV) or running direction

When three-wire mode 1 is selected (F4-17 = 2), the terminal is used to set the AC drive to reverse run.

When two-wire mode 2 is selected (F4-17 = 3), the terminal is used to set the running direction.

3: Three-wire operation control

This function is available only when the AC drive runs in three-wire control mode. To set a running command through the terminal, set F4-17 (terminal control mode) to 2 (three-wire mode 1) or 3 (three-wire mode 2), and set this parameter to 3.

4: Forward jog (FJOG)

The terminal is used to set the AC drive to FJOG mode. The jog frequency, acceleration time, and deceleration time are described respectively in F8-00, F8-01, and F8-02.

5: Reverse jog (RJOG)

The terminal is used to set the AC drive to RJOG mode. The jog frequency, acceleration time, and deceleration time are described respectively in F8-00, F8-01, and F8-02.

6: Terminal UP

The terminal is used to increase the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the UP key is pressed and held.

7: Terminal DOWN

The terminal is used to decrease the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the DOWN key is pressed and held.

8: UP and DOWN setting clear (terminal, operating panel)

The terminal is used to clear the frequency set through the UP or DOWN key on the operating panel or the terminal assigned with the UP/DOWN function (6 or 7), allowing the reference frequency to return to the value of F0-08.

9: Fault reset (RESET)

The terminal is used to reset faults of the AC drive. Remote fault reset can be implemented by using this function.

10: External fault NO input

When the terminal is active, the AC drive reports E15.01 upon receiving an external signal.

11: External fault NC input

When the terminal is active, the AC drive reports E15.02 upon receiving an external signal.

12: User-defined fault 1

When E27.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

13: User-defined fault 2

When E27.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).

14 to 17: Multi-reference terminals 1 to 4

The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four terminals.

18 to 19: Acceleration/deceleration selection terminals 1 to 2

Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.

20: Acceleration/Deceleration inhibition

The terminal is used to keep the AC drive at the current running frequency regardless of changes of the external input frequency (unless a stop command is received).

21: Command source switchover terminal 1

When the running command is set through the terminal (F0-02 = 1) and this parameter is set to 21, you can switch between terminal control and operating panel control by using this terminal. When the running command is set through communication (F0-02 = 2) and this parameter is set to 21, you can switch between communication control and operating panel control by using this terminal.

22: Command source switchover terminal 2

The terminal is used for switchover between terminal control and communication control. If terminal control is used, the system switches to communication control when the terminal is active. If communication control is used, the system switches to terminal control when the terminal is active.

23: Frequency reference switching

The terminal is used to switch between two frequency reference sources according to F0-07 (frequency reference superposition).

24: Switchover between frequency source X and preset frequency

The terminal is used to switch from the main frequency to the preset frequency (F0-08).

25: Switchover between auxiliary frequency source Y and preset frequency

The terminal is used to switch from the auxiliary frequency to the preset frequency (F0-08).

26: Frequency modification enable

When the terminal is active, the frequency can be modified. When the terminal is inactive, the frequency cannot be modified.

27: Counter input

In the count process, a count pulse is input when the terminal is active.

28: Counter reset

In the count process, the counter status is cleared when the terminal is active.

29: Length count input

In the fixed length process, the length count is input when the terminal is active.

30: Length reset

In the fixed length process, the length is cleared when the terminal is active.

31: PID pause

The terminal is used to suspend PID control temporarily, so that the AC drive keeps the current output frequency with no more PID tuning on the frequency source.

32: PID integral pause

The integral adjustment function pauses when the terminal is active. However, the proportional and derivative adjustment functions are still valid.

33: PID parameter switchover

If PID parameters are switched by using the DI terminal (FA-18 = 1), the PID parameters FA-05 to FA-07 are used when the terminal is inactive, and the PID parameters FA-15 to FA-17 are used when the terminal is active.

34: PID action direction reversal

The terminal is used to reverse the direction set by FA-03 (PID action direction).

35: Torque control disable

In torque control mode, the system switches to speed control when this terminal is active. The system switches back to the torque control mode when the terminal becomes inactive.

36: Switchover between speed control and torque control

The terminal is used to switch between speed control and torque control.

When A0-00 (speed/torque control mode) is set to 0, the torque control mode is used when the terminal is active, and the speed control mode is used when the terminal is inactive.

When A0-00 (speed/torque control mode) is set to 1, the torque control mode is used when the terminal is inactive, and the speed control mode is used when the terminal is active.

38: Flying start

Flying start is enabled when the DI is active.

39: Immediate DC braking

The terminal is used to directly switch the AC drive to the DC braking state.

40: Deceleration DC braking
The terminal is used to make the AC drive decelerate to the start frequency of DC braking during stop (F6-11) and then enter the DC braking state.
41: External stop terminal 1
When the running command source is the operating panel (F0-02 = 0), this terminal is used to stop the AC drive.
42: External stop terminal 2
The terminal is used to make the AC drive decelerate to stop in any control mode (operating panel, terminal, or communication control). In this case, the deceleration time is fixed to deceleration time 4 (F8-08).
43: Running pause
When the terminal is active, the AC drive decelerates to stop with all running parameters memorized (such as the PLC, wobble, and PID parameters). When the terminal is inactive, the AC drive resumes its status before stop.
44: Coast to stop
When the terminal is active, the AC drive stops output, and the motor coasts to stop under the action of mechanical inertia.
45: Emergency stop
When the system is in the emergency state, the AC drive decelerates according to the deceleration time for emergency stop set in F8-59, and it decelerates according to the minimum unit time when the deceleration time for emergency stop is 0s in V/f mode. The input terminal does not need to be in the closed state continuously. Even if it is closed for only an instant, an emergency stop will be performed immediately.
Different from general deceleration, the emergency stop action prevents the AC drive from restarting even if the emergency stop input terminal is opened after the deceleration time for emergency stop expires and the run signal is still valid on the AC drive terminal. To restart the AC drive in this case, disconnect the running terminal and input the run command.
46: Motor selection
The terminal is used to select the motor. When the terminal is active, motor 2 is selected. When the terminal is inactive, motor 1 is selected.
47: Clear the current running time
The terminal is used to clear the current operation time of the AC drive.
If the current operation time is less than the setpoint (greater than 0) of F8-57 (current running time threshold) and the terminal is active during this process, the current operation time is cleared.
If the current running time threshold is greater than the setpoint (greater than 0) of F8-57 and the terminal is active, the current operation time is not cleared.
48: Switchover between two-wire and three-wire control
The terminal is used to switch between two-wire and three-wire control.
If F4-17 is set to 0 (two-wire mode 1), the AC drive switches to three-wire mode 1 when the terminal is active.
If F4-17 is set to 1 (two-wire mode 2), the AC drive switches to three-wire mode 2 when the terminal is active.
If F4-17 is set to 2 (three-wire mode 1), the AC drive switches to two-wire mode 1 when the terminal is active.
If F4-17 is set to 3 (three-wire mode 2), the AC drive switches to two-wire mode 2 when the terminal is active.
49: PLC state reset
The terminal is used to restore the AC drive to the initial state of the simple PLC.

50: Wobble pause
In the wobble process, when this terminal is active, the wobble function is paused (the AC drive outputs at the center frequency).
54 to 63: Reserved

F4-02 DI2 hardware source

Address:	62466		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F4-00
Description
Same as F4-00

F4-03 DI2 function selection

Address:	62467		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	4	Change:	At stop

Value Range:
Same as F4-01
Description
Same as F4-01

F4-04 DI3 hardware source

Address:	62468		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F4-00
Description
Same as F4-00

F4-05 DI3 function selection

Address:	62469		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	9	Change:	At stop

Value Range:
Same as F4-01
Description
Same as F4-01

F4-06 DI4 hardware source

Address:	62470		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F4-00

Description
Same as F4-00

F4-07 DI4 function selection

Address:	62471		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	14	Change:	At stop

Value Range:
Same as F4-01
Description
Same as F4-01

F4-08 DI5 hardware source

Address:	62472		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F4-00
Description
Same as F4-00

F4-09 DI5 function selection

Address:	62473		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	15	Change:	At stop

Value Range:
Same as F4-01
Description
Same as F4-01

F4-10 DI6 hardware source

Address:	62474		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F4-00
Description
Same as F4-00

F4-11 DI6 function selection

Address:	62475		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F4-01
Description
Same as F4-01

F4-12 **DI7 hardware source**

Address: 62476
Min.: 0 Unit: -
Max.: 208 Data type: UInt16
Default: 0 Change: At stop

Value Range:
Same as F4-00

Description
Same as F4-00

F4-13 **DI7 function selection**

Address: 62477
Min.: 0 Unit: -
Max.: 63 Data type: UInt16
Default: 0 Change: At stop

Value Range:
Same as F4-01

Description
Same as F4-01

F4-14 **DI8 hardware source**

Address: 62478
Min.: 0 Unit: -
Max.: 208 Data type: UInt16
Default: 0 Change: At stop

Value Range:
Same as F4-00

Description
Same as F4-00

F4-15 **DI8 function selection**

Address: 62479
Min.: 0 Unit: -
Max.: 63 Data type: UInt16
Default: 0 Change: At stop

Value Range:
Same as F4-01

Description
Same as F4-01

F4-17 **Terminal control mode**

Address: 62481
Min.: 0 Unit: -
Max.: 3 Data type: UInt16
Default: 0 Change: At stop

Value Range:
0: Two-wire mode 1
1: Two-wire mode 2
2: Three-wire mode 1
3: Three-wire mode 2

Description
This parameter defines the mode in which the AC drive is controlled by external terminals.

0: Two-wire mode 1
Two DI terminals are connected: one is used to start/stop the AC drive in forward run mode, and the other is used to start/stop the AC drive in reverse run mode.
1: Two-wire mode 2
Two DI terminals are connected: one is used to start/stop the AC drive, and the other is used to control the running direction.
2: Three-wire mode 1
Three DI terminals are connected: one is used to start/stop the AC drive, and the other two are used to control the running direction.
3: Three-wire mode 2
Three DI terminals are connected: one is used to start the AC drive, one is used to stop the AC drive, and the other is used to control the running direction.

F4-18 Terminal UP/DOWN change rate

Address:	62482		
Min.:	001	Unit:	Hz/s
Max.:	65.535	Data type:	UInt16
Default:	1.000	Change:	At once

Value Range:
0.001 Hz/s to 65.535 Hz/s
Description
This parameter defines the change rate when the frequency is adjusted through terminal UP/DOWN. It must be set when the function of a DI terminal is set to terminal UP or terminal DOWN (any one of F4-01 to F4-15 is set to 6 or 7).

F4-19 DI1 delay

Address:	62483		
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:
0.0s to 3600.0s
Description
This parameter defines the delay of the DI state change. The delay setting function is available only for DI1, DI2, and DI3 currently.

F4-20 DI2 delay

Address:	62484		
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:
0.0s to 3600.0s
Description
This parameter defines the delay of the DI state change. The delay setting function is available only for DI1, DI2, and DI3 currently.

F4-21 DI3 delay

Address:	62485		
Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16

Default: 0.0 Change: At once

Value Range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DI state change. The delay setting function is available only for DI1, DI2, and DI3 currently.

F4-22 DI active mode setting 1

Address: 62486

Min.: 0 Unit: -

Max.: 11111 Data type: UInt16

Default: 0 Change: At stop

Value Range:

Ones:

0: Active high

1: Active low

Tens:

0: Active high

1: Active low

Hundreds:

0: Active high

1: Active low

Thousands:

0: Active high

1: Active low

Ten thousands:

0: Active high

1: Active low

Description

The active mode for terminals DI1 to DI5 are set by ones, tens, hundreds, thousands, and ten thousands of this parameter.

0: Active high

The DI terminals (DI1 to DI5) are active when connected to COM and inactive when disconnected from COM.

1: Active low

The DI terminals (DI1 to DI5) are inactive when connected to COM and active when disconnected from COM.

F4-23 DI active mode setting 2

Address: 62487

Min.: 0 Unit: -

Max.: 11111 Data type: UInt16

Default: 0 Change: At stop

Value Range:

Ones:
0: Active high
1: Active low
Tens:
0: Active high
1: Active low
Hundreds:
0: Active high
1: Active low
Thousands:
0: Reserved
Ten thousands:
0: Reserved

Description

The active mode for terminals DI1 to DI8 are set by ones, tens, hundreds, thousands, and ten thousands of this parameter.

0: Active high

The DI terminals (DI6 to DI8) are active when connected to COM and inactive when disconnected from COM.

1: Active low

The DI terminals (DI6 to DI8) are inactive when connected to COM and active when disconnected from COM.

F4-25 AI1 hardware source

Address:	62489		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Not selected
1: AI1 of power supply unit
2: AI2 of power supply unit
101: AI1 of extension card 1
102: AI2 of extension card 1
201: AI1 of extension card 2
202: AI2 of extension card 2

Description

This parameter defines the analog/temperature input source.

F4-27 AI2 hardware source

Address:	62491		
Min.:	0	Unit:	-
Max.:	202	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Not selected
1: AI1 of power supply unit
2: AI2 of power supply unit
101: AI1 of extension card 1
102: AI2 of extension card 1
201: AI1 of extension card 2
202: AI2 of extension card 2

Description

This parameter defines the analog/temperature input source.

F4-29 AI3 hardware source

Address:	62493		
Min.:	0	Unit:	-
Max.:	202	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Not selected
1: AI1 of power supply unit
2: AI2 of power supply unit
101: AI1 of extension card 1
102: AI2 of extension card 1
201: AI1 of extension card 2
202: AI2 of extension card 2

Description

This parameter defines the analog/temperature input source.

F4-31 AI curve 1 minimum input

Address:	62495		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	0.00	Change:	At once

Value Range:

–10.00 V to 10.00 V

Description

When the main frequency is set by analog input, the AI terminals are used as frequency sources. Five types of AI curves can be set for each AI terminal.

The AI curve sets the relationship between the analog input voltage (or analog input current) and the percentage corresponding to the maximum frequency (F0-10). The x-axis of the AI curve indicates the analog input voltage (or analog input current), and the y-axis indicates the setpoint corresponding to the analog input, that is, the percentage to the maximum frequency (F0-10).

Five AI curves are provided. Curves 1 to 3 are two-point curves, and the relevant parameters are F4-31 to F4-42. Curves 4 and 5 are four-point curves, and the relevant parameters are A6-00 to A6-15.

The two points on curves 1 to 3 are the minimum input point and maximum input point, respectively. F4-31 defines the x-axis of the minimum input point on AI curve 1, that is, the minimum analog input voltage (or minimum analog input current).

F4-32 Percentage corresponding to AI curve 1 minimum input

Address:	62496		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16

Default: 0.0 Change: At once

Value Range:

–100.0% to 100.0%

Description

This parameter defines the y-axis of the minimum input point on AI curve 1, that is, the percentage of the minimum analog input relative to the maximum frequency.

F4-33 AI curve 1 maximum input

Address: 62497

Min.: –10.00 Unit: V

Max.: 10.00 Data type: Int16

Default: 10.00 Change: At once

Value Range:

–10.00 V to 10.00 V

Description

This parameter defines the x-axis of the maximum input point on AI curve 1, that is, the maximum analog input voltage (or maximum analog input current).

F4-34 Percentage corresponding to AI curve 1 maximum input

Address: 62498

Min.: –100.0 Unit: %

Max.: 100.0 Data type: Int16

Default: 100.0 Change: At once

Value Range:

–100.0% to 100.0%

Description

This parameter defines the y-axis of the maximum input point on AI curve 1, that is, the percentage of the maximum analog input relative to the maximum frequency.

F4-35 AI curve 2 minimum input

Address: 62499

Min.: –10.00 Unit: V

Max.: 10.00 Data type: Int16

Default: 0.00 Change: At once

Value Range:

–10.00 V to 10.00 V

Description

This parameter defines the x-axis of the minimum input point on AI curve 2, that is, the minimum analog input voltage (or minimum analog input current).

F4-36 Percentage corresponding to AI curve 2 minimum input

Address: 62500

Min.: –100.0 Unit: %

Max.: 100.0 Data type: Int16

Default: 0.0 Change: At once

Value Range:

–100.0% to 100.0%

Description

This parameter defines the y-axis of the minimum input point on AI curve 2, that is, the percentage of the minimum analog input relative to the maximum frequency.

F4-37 **AI curve 2 maximum input**

Address:	62501		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	10.00	Change:	At once

Value Range:

–10.00 V to 10.00 V

Description

This parameter defines the x-axis of the maximum input point on AI curve 2, that is, the maximum analog input voltage (or maximum analog input current).

F4-38 **Percentage corresponding to AI curve 2 maximum input**

Address:	62502		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	100.0	Change:	At once

Value Range:

–100.0% to 100.0%

Description

This parameter defines the y-axis of the maximum input point on AI curve 2, that is, the percentage of the maximum analog input relative to the maximum frequency.

F4-39 **AI curve 3 minimum input**

Address:	62503		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	0.00	Change:	At once

Value Range:

–10.00 V to 10.00 V

Description

This parameter defines the x-axis of the minimum input point on AI curve 3, that is, the minimum analog input voltage (or minimum analog input current).

F4-40 **Percentage corresponding to AI curve 3 minimum input**

Address:	62504		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:

–100.0% to 100.0%

Description

This parameter defines the y-axis of the minimum input point on AI curve 3, that is, the percentage of the minimum analog input relative to the maximum frequency.

F4-41 **AI curve 3 maximum input**

Address:	62505		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	10.00	Change:	At once

Value Range:

–10.00 V to 10.00 V

Description

This parameter defines the x-axis of the maximum input point on AI curve 3, that is, the maximum analog input voltage (or maximum analog input current).

F4-42 Percentage corresponding to AI curve 3 maximum input

Address:	62506		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	100.0	Change:	At once

Value Range:

–100.0% to 100.0%

Description

This parameter defines the y-axis of the maximum input point on AI curve 3, that is, the percentage of the maximum analog input relative to the maximum frequency.

F4-48 AI curve selection

Address:	62512		
Min.:	0	Unit:	-
Max.:	555	Data type:	UInt16
Default:	321	Change:	At once

Value Range:

Ones:

1: Curve 1 (2 points)

2: Curve 2 (2 points)

3: Curve 3 (2 points)

4: Curve 4 (4 points)

5: Curve 5 (4 points)

Tens:

1: Curve 1 (2 points)

2: Curve 2 (2 points)

3: Curve 3 (2 points)

4: Curve 4 (4 points)

5: Curve 5 (4 points)

Hundreds:

1: Curve 1 (2 points)

2: Curve 2 (2 points)

3: Curve 3 (2 points)

4: Curve 4 (4 points)

5: Curve 5 (4 points)

Description

The curves for AI1 to AI3 are set through the ones, tens, and hundreds of this parameter. You can select any AI curve for each AI.
1: Curve 1 (2 points)
Two-point curve. The relationship between the voltage and frequency is set by F4-31 to F4-34.
1: Curve 2 (2 points)
Two-point curve. The relationship between the voltage and frequency is set by F4-35 to F4-38.
3: Curve 3 (2 points)
Two-point curve. The relationship between the voltage and frequency is set by F4-39 to F4-42.
4: Curve 4 (4 points)
Four-point curve. The relationship between the voltage and frequency is set by F6-00 to F6-07.
4: Curve 4 (4 points)
Four-point curve. The relationship between the voltage and frequency is set by F6-08 to F6-15.

F4-49 Setting for AI lower than minimum input

Address:	62513		
Min.:	0	Unit:	-
Max.:	111	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
Ones:
0: Percentage corresponding to minimum input
1: 0.0%
Tens:
0: Percentage corresponding to minimum input
1: 0.0%
Hundreds:
0: Percentage corresponding to minimum input
1: 0.0%

Description
The settings for AI1 to AI3 less than the minimum input are set through the ones, tens, and hundreds of this parameter.
0: Percentage corresponding to minimum input
When the AI input is lower than the minimum setting value, the frequency is calculated based on the minimum input.
1: 0.0%
When the AI input is lower than the minimum setting value, the frequency is calculated based on the AI input being 0.0%.

2.6 F5: Output Terminals

F5-00 DO1/RO1 hardware source

Address:	62720		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Not selected
1: Power supply unit - DIO1
2: Power supply unit - DIO2
3: Power supply unit - DIO3
4: Power supply unit - DIO4
5: Power supply unit - RO1
101: Extension card 1 - DO1/RO1
102: Extension card 1 - DO2/RO2
103: Extension card 1 - DO3/RO3
104: Extension card 1 - DO4/RO4
105: Extension card 1 - DO5/RO5
106: Extension card 1 - DO6/RO6
107: Extension card 1 - DO7/RO7
108: Extension card 1 - DO8/RO8
201: Extension card 2 - DO1/RO1
202: Extension card 2 - DO2/RO2
203: Extension card 2 - DO3/RO3
204: Extension card 2 - DO4/RO4
205: Extension card 2 - DO5/RO5
206: Extension card 2 - DO6/RO6
207: Extension card 2 - DO7/RO7
208: Extension card 2 - DO8/RO8

Description

This parameter defines the hardware source of the output terminal.

F5-01 DO1/RO1 function

Address:	62721		
Min.:	0	Unit:	-
Max.:	50	Data type:	UInt16
Default:	3	Change:	At once

Value Range:

0 to 50

Description

This parameter defines the function of the output terminal.

0: No output

The output terminal has no function.

1: AC drive in running

The terminal outputs an "active" signal when the AC drive is running with output frequency (which can be 0).

2: Ready to run

The terminal outputs an "active" signal when the AC drive is ready for running without any fault after power-on.

3: Fault output 1 (stop upon fault)

When the AC drive coasts to stop or decelerates to stop upon a fault, the DO terminal outputs an "active" signal after the AC drive stops completely.

4: Fault output 2

When the AC drive coasts to stop or decelerates to stop upon a fault (undervoltage excluded), the DO terminal outputs an "active" signal after the AC drive stops completely.

5: Fault output 3
When the AC drive coasts to stop or decelerates to stop upon a fault (undervoltage excluded), the DO terminal outputs an "active" signal.
6: Exception output (direct output upon fault or alarm)
When the AC drive has a fault or alarm, the DO/RO terminal outputs an "active" signal.
7: Motor overload pre-warning
The AC drive determines whether the motor load exceeds the overload pre-warning threshold according to the overload pre-warning coefficient (F9-02) before performing the protection action. The terminal outputs an "active" signal when the overload pre-warning threshold is exceeded.
8: AC drive overload pre-warning
The terminal outputs an "active" signal 10s before the AC drive performs overload protection.
9: Motor over-temperature pre-warning
The terminal outputs an "active" signal when the motor temperature reaches the threshold defined by F9-58, F9-60, or F9-62 (motor overtemperature pre-warning threshold).
10: AC drive load loss output
The terminal outputs an "active" signal when load loss occurs.
11: Undervoltage state output
The terminal outputs an "active" signal when undervoltage occurs on the AC drive.
12: Output overcurrent
The DO terminal outputs an "active" signal when the output current of the AC drive remains higher than F8-40 (output overcurrent threshold) for longer than F8-41 (output overcurrent detection delay).
13: Frequency-level detection FDT1 output
When the running frequency is higher than the detected value, the DO terminal outputs an "active" signal. When the running frequency is lower than the result of the detected value minus the FDT hysteresis value, the "active" signal is canceled. For details, see the description of F8-22 and F8-23.
14: Frequency-level detection FDT2 output
When the running frequency is higher than the detected value, the DO terminal outputs an "active" signal. When the running frequency is lower than the result of the detected value minus the FDT hysteresis value, the "active" signal is canceled. For details, see the description of F8-24 and F8-25.
15: Frequency reach
The DO/RO terminal outputs an "active" signal when the running frequency of the AC drive is within a certain range (target frequency±setpoint of F8-26).
16: Frequency 1 reach output
The DO terminal outputs an "active" signal when the running frequency of the AC drive is within the frequency detection range of F8-27 (detection value 1 for frequency reach). The frequency detection range is as follows: (F8-27–F8-28) to (F8-27+F8-28).
17: Frequency 2 reach output
The DO terminal outputs an "active" signal when the running frequency of the AC drive is within the frequency detection range of F8-30 (detection value 2 for frequency reach). The frequency detection range is as follows: (F8-30–F8-31) to (F8-30+F8-31).
18: Frequency upper limit reach
The terminal outputs an "active" signal when the running frequency reaches the frequency upper limit (F0-12).
19: Frequency lower limit reach (output even at stop)
The terminal outputs an "active" signal when the running frequency reaches the frequency lower limit (F0-14). The terminal also outputs the "active" signal when the AC drive stops.

20: Frequency lower limit reach (no output at stop)
If F8-15 (running mode when frequency reference lower than lower limit) is set to 1 (stop), the terminal outputs an "inactive" signal no matter whether the running frequency reaches the frequency lower limit.
If F8-15 (running mode when frequency reference lower than lower limit) is set to 0 (run at frequency lower limit) or 2 (run at zero speed), the terminal outputs an "active" signal when the running frequency reaches the frequency lower limit.
21: Timing reach output
When the timing function (F8-46) is enabled, the terminal outputs an "active" signal when the current operation time of the AC drive reaches the set timing duration. The timing duration is set by F8-47 and F8-48.
22: Accumulative power-on time reach
The terminal outputs an "active" signal when the accumulative power-on time of the AC drive (F7-12) exceeds the value of F8-19 (accumulative power-on time reach).
23: Accumulative running time reach
The terminal outputs an "active" signal when the accumulative running time of the AC drive exceeds the value of F8-20 (accumulative running time threshold).
24: Current running time reach
The terminal outputs an "active" signal when the current operation time of the AC drive exceeds the value of F8-57 (current running time threshold).
25: Zero current state
The DO terminal outputs an "active" signal when the output current of the AC drive is within the zero-current range for longer than F8-39 (zero current detection delay). The zero current detection range is 0 to (F8-38 x F1-03).
26: Current 1 reach output
The DO terminal outputs an "active" signal when the output current of the AC drive is within the detection range of F8-42 (detection level of current 1). The current detection range is (F8-42–F8-43) x F1-03 (rated motor current) to (F8-42+F8-43) x F1-03.
27: Current 2 reach output
The DO terminal outputs an "active" signal when the output current of the AC drive is within the detection range of F8-44 (detection level of current 2). The current detection range is (F8-44–F8-45) x F1-03 (rated motor current) to (F8-44+F8-45) x F1-03.
28: IGBT temperature reach
The terminal outputs an "active" signal when the IGBT heatsink temperature (F7-07) reaches the value of F8-51 (IGBT temperature reach).
29: Reference count value reach
The terminal outputs an "active" signal when the count value reaches the value of Fb-08.
30: Designated count value reach
The terminal outputs an "active" signal when the count value reaches the value of Fb-09.
31: Length reach
The terminal outputs an "active" signal when the detected actual length exceeds the value of Fb-05.
32: Frequency limit reach
The terminal outputs an "active" signal when the frequency reference exceeds the frequency upper or lower limit, and the output frequency of AC drive reaches the upper or lower limit.
33: Torque limit reach
The terminal outputs an "active" signal when the output torque of the AC drive reaches the toque limit in speed control mode.

34: AI1 input limit exceeded

The terminal outputs an "active" signal when the AI1 input is higher than the value of F8-49 (AI1 input voltage upper limit) or lower than the value of F8-50 (AI1 input voltage lower limit).

35: AI1 > AI2

The terminal outputs an "active" signal when the AI1 input is higher than the AI2 input.

36: PLC cycle completed

The terminal outputs a pulse signal with the width of 250 ms when the simple PLC completes one cycle.

37: Communication control

Whether the terminal is active or inactive is determined by the setpoint in communication address 0x2001.

38: STO-EDM

The DO terminal outputs an "active" signal when STO is triggered.

40: Running at zero speed (no output at stop)

The terminal outputs an "active" signal when the output frequency of the AC drive is 0 during running. When the AC drive stops, an "inactive" signal is output.

41: Running at zero speed 2 (output at stop)

The terminal outputs an "active" signal when the output frequency of the AC drive is 0 during running. When the AC drive stops, the "active" signal is retained.

43: Reverse running

The terminal outputs an "active" signal when the AC drive runs in the reverse direction.

44 to 50: Reserved

F5-02 **DO2/RO2 hardware source**

Address:	62722		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

Same as F5-00

Description

Same as F5-00

F5-03 **DO2/RO2 function**

Address:	62723		
Min.:	0	Unit:	-
Max.:	50	Data type:	UInt16
Default:	15	Change:	At once

Value Range:

Same as F5-01

Description

Same as F5-01

F5-04 **DO3/RO3 hardware source**

Address:	62724		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

Same as F5-00

Description
Same as F5-00

F5-05 DO3/RO3 function

Address:	62725		
Min.:	0	Unit:	-
Max.:	50	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
Same as F5-01
Description
Same as F5-01

F5-06 DO4/RO4 hardware source

Address:	62726		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
Same as F5-00
Description
Same as F5-00

F5-07 DO4/RO4 function

Address:	62727		
Min.:	0	Unit:	-
Max.:	50	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
Same as F5-01
Description
Same as F5-01

F5-08 DO5/RO5 hardware source

Address:	62728		
Min.:	0	Unit:	-
Max.:	208	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
Same as F5-00
Description
Same as F5-00

F5-09 DO5/RO5 function

Address:	62729		
Min.:	0	Unit:	-
Max.:	50	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
Same as F5-01
Description
Same as F5-01

F5-10 **DO1/RO1 output delay**

Address: 62730

Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DO/RO terminal state change.

F5-11 **DO2/RO2 output delay**

Address: 62731

Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DO/RO terminal state change.

F5-12 **DO3/RO3 output delay**

Address: 62732

Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DO/RO terminal state change.

F5-13 **DO4/RO4 output delay**

Address: 62733

Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DO/RO terminal state change.

F5-14 **DO5/RO5 output delay**

Address: 62734

Min.:	0.0	Unit:	s
Max.:	3600.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s to 3600.0s

Description

This parameter defines the delay of the DO/RO terminal state change.

F5-15 **DO/RO active mode**

Address: 62735

Min.:	0	Unit:	-
Max.:	11111	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

Ones:

0: Positive logic

1: Negative logic

Tens:

0: Positive logic

1: Negative logic

Hundreds:

0: Positive logic

1: Negative logic

Thousands:

0: Positive logic

1: Negative logic

Ten thousands:

0: Positive logic

1: Negative logic

Description

0: Positive logic (same as NO contact)

The DO/RO terminal is active when it is internally connected to the COM terminal.

The DO/RO terminal is inactive when it is disconnected from the COM terminal.

1: Negative logic (same as NC contact)

The DO/RO terminal is active when it is disconnected from the COM terminal.

The DO/RO terminal is inactive when it is internally connected to the COM terminal.

2.7 F6: Start/Stop Control

F6-00 **Start Modes**

Address: 62976

Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Direct start

1: Flying start (asynchronous motor)

2: Pre-excitation start (asynchronous motor)

Description

0: Direct start

This mode is applicable to most loads. Startup with the startup frequency is applicable to load hoisting applications such as elevators and cranes.

1: Flying start (asynchronous motor)
This mode is applicable only to asynchronous motors. In some scenarios, the motor rotates before the AC drive is started. With this setting, the AC drive can automatically track the motor speed and direction to start the rotating motor smoothly without impact. For example, when transient power failure occurs, the AC drive restarts but the motor is still rotating due to inertia. In this case, the AC drive must detect the actual speed of the motor first to control the asynchronous motor again. Otherwise, overcurrent or overvoltage can occur on the AC drive during start, which may damage the power transistor of the AC drive.
2: Pre-excitation start (asynchronous motor)
This mode applies only to asynchronous motors in SVC mode. Performing pre-excitation on the motor before start improves the responsiveness of the motor and reduces the starting current. The startup timing is the same as the DC braking restart timing.

F6-01 Speed tracking mode

Address:	62977		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: From stop frequency
1: From 50 Hz
2: From the maximum frequency
3: Fast flying start
Description
This parameter defines the starting frequency for speed tracking upon flying start.

F6-02 Speed of speed tracking

Address:	62978		
Min.:	1	Unit:	-
Max.:	100	Data type:	UInt16
Default:	20	Change:	At once

Value Range:
1 to 100
Description
This parameter defines the speed coefficient for speed tracking. A greater value indicates faster speed. It is valid only for flying start mode 0/1/2. The default value is recommended.

F6-03 Startup frequency

Address:	62979		
Min.:	0.00	Unit:	Hz
Max.:	10.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00 Hz to 10.00 Hz
Description
This parameter defines the startup frequency for direct start of the AC drive. When the startup frequency is higher than the frequency reference, the AC drive will not start but stay standby.

F6-04 Startup frequency hold time

Address:	62980

Min.:	0.0	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value Range:
0.0s to 100.0s

Description
This parameter defines the hold time during which the output frequency remains at the startup frequency. After this hold time elapses, the AC drive will accelerate to the reference frequency.

F6-05 DC braking current/Pre-excitation current at startup

Address:	62981		
Min.:	0	Unit:	%
Max.:	100	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0% to 100%

Description
When startup with DC braking is enabled, the AC drive starts only after DC braking upon receiving the start command. A greater DC braking current indicates greater braking force. 100% corresponds to the rated motor current (the upper limit of the current is 80% of the rated current of the AC drive). The current upper limit can be set through F6-34, and the maximum upper limit allowed is 135% of the rated current of the AC drive.

F6-06 DC braking time/pre-excitation time at startup

Address:	62982		
Min.:	0.0	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value Range:
0.0s to 100.0s

Description
This parameter defines the time for DC braking at startup, which is valid only when the startup mode is direct start.

F6-07 Acceleration/Deceleration mode

Address:	62983		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: Linear acceleration/deceleration
1: S-curve acceleration/deceleration
2: Four-segment S-curve acceleration/deceleration

Description
This parameter defines the frequency change mode during the AC drive start and stop process.
0: The output frequency increases or decreases linearly.
1: When the target frequency changes dynamically in real time, the output frequency increases or decreases based on the S-curve. This mode is applicable to applications requiring supreme comfort and quick response in real time.
2: On the basis of 1, the start and end sections of acceleration and deceleration of the S-curve can be set by F6-26 to F6-29.

F6-10 **Stop mode**

Address:	62986		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Decelerate to stop

1: Coast to stop

Description

0: Decelerate to stop

Upon receiving the stop command, the AC drive decreases the output frequency to 0 based on the deceleration time and then stops.

1: Coast to stop

Upon receiving the stop command, the AC drive immediately stops output. The motor then coasts to stop under the action of the mechanical inertia.

F6-11 **Starting frequency of DC braking at stop**

Address:	62987		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

The AC drive starts DC braking when the running frequency decreases to the value of this parameter during deceleration to stop.

F6-12 **Waiting time of DC braking at stop**

Address:	62988		
Min.:	0.0	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s to 100.0s

Description

When the running frequency decreases to the start frequency of DC braking at stop, the AC drive stops output for a period of time and then starts DC braking. This prevents faults such as overcurrent caused due to DC braking at high speed.

F6-13 **DC braking current at stop**

Address:	62989		
Min.:	0	Unit:	%
Max.:	100	Data type:	UInt16
Default:	50	Change:	At once

Value Range:

0% to 100%

Description

A greater DC braking current indicates greater braking force. 100% corresponds to the rated motor current (the current upper limit is 80% of the rated current of the AC drive).

F6-14 **DC braking time at stop**

Address:	62990		
Min.:	0.0	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	0.5	Change:	At once

Value Range:
0.0s to 100.0s

Description
This parameter indicates the hold time of DC braking. If this parameter is set to 0, DC braking is disabled.

F6-16 **Closed loop current Kp of speed tracking**

Address:	62992		
Min.:	0	Unit:	-
Max.:	1000	Data type:	UInt16
Default:	500	Change:	At once

Value Range:
0 to 1000

Description
This parameter defines the proportional gain of the current suppression PI regulator during speed tracking of flying start. It is valid when F6-01 is set to 0, 1, or 2.

F6-17 **Closed-loop current Ki of speed tracking**

Address:	62993		
Min.:	0	Unit:	-
Max.:	1000	Data type:	UInt16
Default:	800	Change:	At once

Value Range:
0 to 1000

Description
This parameter defines the integral gain of the current suppression PI regulator during speed tracking of flying start. It is valid when F6-01 is set to 0, 1, or 2.

F6-18 **Current of speed tracking**

Address:	62994		
Min.:	30	Unit:	-
Max.:	200	Data type:	UInt16
Default:	100	Change:	At once

Value Range:
30 to 200

Description
Overcurrent may occur on the asynchronous motor during flying start due to large slip. Current limit is a must for preventing overcurrent. This parameter defines the motor current to be suppressed during speed tracking of flying start.

F6-19 **Gain coefficient of fast speed tracking**

Address:	62995		
Min.:	1.0	Unit:	-
Max.:	20.0	Data type:	UInt16
Default:	10.0	Change:	At stop

Value Range:
1.0 to 20.0

Description

This parameter defines the gain coefficient of fast speed tracking. It is valid when F6-01 is set to 3. A larger value indicates faster flying start.

F6-20 Cut-off frequency of fast speed tracking

Address:	62996		
Min.:	0.5	Unit:	Hz
Max.:	3.0	Data type:	UInt16
Default:	1.1	Change:	At stop

Value Range:

0.5 Hz to 3.0 Hz

Description

This parameter defines the cut-off frequency of fast speed tracking. It is valid when F6-01 is set to 3. The default value is recommended.

F6-21 Demagnetization time

Address:	62997		
Min.:	0.00	Unit:	s
Max.:	10.00	Data type:	UInt16
Default:	1.00	Change:	At once

Value Range:

0.00s to 10.00s

Description

In vector control mode, when flying start is enabled (F6-00 = 1), the AC drive cannot be started when residual magnetism is still present in the motor. The AC drive can be started only after the voltage of the AC drive has been disconnected for at least the demagnetization time set by F6-21.

F6-22 Start pre-torque setting

Address:	62998		
Min.:	0.0	Unit:	%
Max.:	200.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0% to 200.0%

Description

This parameter defines the startup pre-torque setpoint, which can be used to speed up dynamic response of the motor.

F6-23 Operation at command from power supply unit

Address:	62999		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Stop according to F6-10

1: Ignore stop command

Description

This parameter defines whether the drive unit stops according to the specified mode when receiving a stop command from the power supply unit.

0: Stop according to the mode set by F6-10 of the drive unit

1: Continue to run, ignoring the stop command sent by the power supply unit

F6-26 **Time proportion of S-curve acceleration start segment**

Address:	63002		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	30.0	Change:	At stop

Value Range:
0.0% to 100.0%
Description
This parameter defines the time proportion of the acceleration start segment of the S-curve. 100% corresponds to the acceleration time of the current frequency.

F6-27 **Time proportion of S-curve acceleration end segment**

Address:	63003		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	30.0	Change:	At stop

Value Range:
0.0% to 100.0%
Description
This parameter defines the time proportion of the acceleration end segment of the S-curve. 100% corresponds to the acceleration time of the current frequency.

F6-28 **Time proportion of S-curve deceleration start segment**

Address:	63004		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	30.0	Change:	At stop

Value Range:
0.0% to 100.0%
Description
This parameter defines the time proportion of the deceleration start segment of the S-curve. 100% corresponds to the deceleration time of the current frequency.

F6-29 **Time proportion of S-curve deceleration end segment**

Address:	63005		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	30.0	Change:	At stop

Value Range:
0.0% to 100.0%
Description
This parameter defines the time proportion of the deceleration end segment of the S-curve. 100% corresponds to the deceleration time of the current frequency.

F6-30 **Trial current for synchronous motor speed tracking**

Address:	63006		
Min.:	5.0	Unit:	%
Max.:	50.0	Data type:	UInt16
Default:	20.0	Change:	At stop

Value Range:
5.0% to 50.0%

Description

This parameter defines the trial current for speed tracking of the synchronous motor. The default value is recommended.

F6-31 Minimum tracking frequency for synchronous motor speed tracking

Address:	63007		
Min.:	0.0	Unit:	Hz
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At stop

Value Range:

0.0 Hz to 100.0 Hz

Description

This parameter defines the minimum speed tracking frequency for the synchronous motor. The default value is recommended.

F6-32 Angle compensation for synchronous motor speed tracking

Address:	63008		
Min.:	0	Unit:	-
Max.:	360	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0 to 360

Description

This parameter defines the angle compensation for speed tracking of the synchronous motor. The default value is recommended.

F6-33 Proportion coefficient of synchronous motor speed tracking

Address:	63009		
Min.:	0.1	Unit:	-
Max.:	10.0	Data type:	UInt16
Default:	2.0	Change:	At stop

Value Range:

0.1 to 10.0

Description

This parameter defines the proportion coefficient of speed tracking of the synchronous motor. The default value is recommended.

F6-34 Integral coefficient of synchronous motor speed tracking

Address:	63010		
Min.:	0.1	Unit:	-
Max.:	10.0	Data type:	UInt16
Default:	6.0	Change:	At stop

Value Range:

0.1 to 10.0

Description

This parameter defines the integral coefficient of speed tracking of the synchronous motor. The default value is recommended.

F6-35 Reverse running inhibition for flying start

Address:	63011		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16

Default: 0 Change: At once

Value Range:

0 to 2

Description

2.8 F7: Operating Panel and Display

F7-00 IGBT module indicator testing

Address: 63232

Min.: 0 Unit: -

Max.: 2 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 2

Description

IGBT module indicator testing

F7-01 MF.K key function

Address: 63233

Min.: 0 Unit: -

Max.: 4 Data type: UInt16

Default: 0 Change: At stop

Value Range:

0: MF.K key disabled

1: Switchover between operating panel control and remote command control (terminal I/O control or communication control)

2: Switchover between forward and reverse running

3: Forward jog

4: Reverse jog

Description

The MF.K key is a multi-functional key. This parameter is used to set the function of the MF.K key.

0: MF.K key disabled

The MF.K key does not work.

1: Switchover between operating panel control and remote control (terminal I/O control or communication control)

When F0-02 is set to 0 (operating panel), the MF.K key does not work. When F0-02 is set to 1 (terminal), the MF.K key is used for switchover between terminal I/O control and operating panel control. When F0-02 is set to 2 (communication), the MF.K key is used for switchover between the communication control and operating panel control.

2: Switchover between forward and reverse running

The MF.K key is used for changing the direction of the frequency reference. This function is valid only when the command source is set to operating panel control.

3: Forward jog

The MF.K key is used for enabling forward jog (FJOG). This function is valid only when the command source is set to operating panel control.

4: Reverse jog

The MF.K key is used for enabling reverse jog (RJOG). This function is available only when the command source is set to the operating panel.

F7-02 STOP key function

Address:	63234		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: STOP key enabled only in operating panel control mode

1: STOP key enabled in any operating mode

Description

The STOP key on the operating panel is used for stop/reset. This parameter is used to set the function of this key.

0: STOP key enabled only in operating panel control mode

The STOP key is valid only in operating panel control mode.

1: STOP key enabled in any operating mode

The STOP key is valid in any operating mode.

F7-03 LED display 1 in running state

Address:	63235		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	31	Change:	At once

Value Range:

Bit00: Running frequency (Hz)

Bit01: Frequency reference (Hz)

Bit02: Bus voltage (V)

Bit03: Output voltage (V)

Bit04: Output current (A)

Bit05: Output power (kW)

Bit06: Output torque (%)

Bit07: DI status

Bit08: DO status

Bit09: AI1 voltage (V)

Bit10: AI2 voltage (V)

Bit11: AI3 voltage (V)

Bit12: Count value

Bit13: Length value

Bit14: Load speed display

Bit15: PID reference

Description

To display a parameter during running, set the corresponding bit to 1, convert the binary number to a hexadecimal equivalent, and set it in F7-03.

F7-04 **LED display 2 in running state**

Address:	63236		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

Bit00: PID feedback
Bit01: PLC stage
Bit02: Reserved
Bit03: Running frequency 2 (Hz)
Bit04: Remaining running time
Bit05: Reserved
Bit06: Reserved
Bit07: Reserved
Bit08: Linear speed
Bit09: Current power-on time (min)
Bit10: Current running time (min)
Bit11: Reserved
Bit12: Communication
Bit13: Reserved
Bit14: Main frequency X
Bit15: Auxiliary frequency Y

Description

To display a parameter during running, set the corresponding bit to 1, convert the binary number to a hexadecimal equivalent, and set it in F7-04.

F7-05 **LED display in stop state**

Address:	63237		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	51	Change:	At once

Value Range:

Bit00: Frequency reference (Hz)
Bit01: Bus voltage (V)
Bit02: DI state
Bit03: DO state
Bit04: AI1 voltage (V)
Bit05: AI2 voltage (V)
Bit06: AI3 voltage (V)
Bit07: Count value
Bit08: Length value
Bit09: PLC stage
Bit10: Load speed
Bit11: PID reference
Bit12: Reserved

Description

To display a parameter upon stop, set the corresponding bit to 1, convert the binary number to a hexadecimal equivalent, and set it in F7-05.

F7-06 **STO software version**

Address: 63238

Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:		Change:	Unchangeable

Value Range:

-

Description

This parameter shows the STO software version of the AC drive.

F7-07 **Heatsink temperature of IGBT**

Address: 63239

Min.:	-20	Unit:	°C
Max.:	120	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-20.0°C to 120.0°C

Description

Heatsink temperature of the IGBT

F7-08 **Product SN**

Address: 63240

Min.:	0	Unit:	-
Max.:	1000	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0 to 1000

Description

This parameter shows the product SN of the AC drive.

F7-09 **Accumulative running time**

Address: 63241

Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0 h to 65535 h

Description

This parameter shows the accumulative running time of the AC drive.

F7-10 **Performance software version**

Address: 63242

Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the performance software version of the AC drive.

F7-11 **Function software version**

Address: 63243

Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the performance software version of the AC drive.

F7-12 Accumulative power-on time

Address:	63244		
Min.:	0	Unit:	h
Max.:	65535	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0 h to 65535 h

Description

This parameter shows the accumulative power-on duration of the AC drive.

F7-13 Accumulative power generation

Address:	63245		
Min.:	0	Unit:	kWh
Max.:	65535	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0 kWh to 65535 kWh

Description

This parameter shows the accumulative power generation of the AC drive.

F7-14 Accumulative power consumption

Address:	63246		
Min.:	0	Unit:	kWh
Max.:	65535	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0 kWh to 65535 kWh

Description

This parameter shows the accumulative power consumption of the AC drive.

F7-15 Temporary performance software version

Address:	63247		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the temporary performance software version.

F7-16 Temporary function software version

Address:	63248		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the temporary function software version.

2.9 F8: Auxiliary Functions

F8-00 Jog frequency

Address: 63488

Min.: 0.00 Unit: Hz

Max.: 655.35 Data type: UInt16

Default: 2.00 Change: At once

Value Range:

0.00 Hz to 655.35 Hz

Description

This parameter defines the running frequency of the AC drive in the jogging mode.

F8-01 Jog acceleration time

Address: 63489

Min.: 0.0 Unit: s

Max.: 6500.0 Data type: UInt16

Default: 20.0 Change: At once

Value Range:

0.0s to 6500.0s

Description

This parameter defines the acceleration time of the AC drive in the jogging mode.

F8-02 Jog deceleration time

Address: 63490

Min.: 0.0 Unit: s

Max.: 6500.0 Data type: UInt16

Default: 20.0 Change: At once

Value Range:

0.0s to 6500.0s

Description

This parameter defines the deceleration time of the AC drive in the jogging mode.

F8-03 Acceleration time 2

Address: 63491

Min.: 0.0 Unit: s

Max.: 6500.0 Data type: UInt16

Default: Model dependent Change: At once

Value Range:

0.0s to 6500.0s

Description

The AC drive provides four groups of acceleration time, which can be switched by using the DI terminal. This parameter defines the second group of acceleration time.

F8-04 **Deceleration time 2**

Address:	63492		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	Model dependent	Change:	At once

Value Range:
0.0s to 6500.0s

Description
The AC drive provides four groups of deceleration time, which can be switched by using the DI terminal. This parameter defines the second group of deceleration time.

F8-05 **Acceleration time 3**

Address:	63493		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	Model dependent	Change:	At once

Value Range:
0.0s to 6500.0s

Description
The AC drive provides four groups of acceleration time, which can be switched by using the DI terminal. This parameter defines the third group of acceleration time.

F8-06 **Deceleration time 3**

Address:	63494		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	Model dependent	Change:	At once

Value Range:
0.0s to 6500.0s

Description
The AC drive provides four groups of deceleration time, which can be switched by using the DI terminal. This parameter defines the third group of deceleration time.

F8-07 **Acceleration time 4**

Address:	63495		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	Model dependent	Change:	At once

Value Range:
0.0s to 6500.0s

Description
The AC drive provides four groups of acceleration time, which can be switched by using the DI terminal. This parameter defines the fourth group of acceleration time.

F8-08 **Deceleration time 4**

Address:	63496		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	Model dependent	Change:	At once

Value Range:
0.0s to 6500.0s

Description

The AC drive provides four groups of deceleration time, which can be switched by using the DI terminal. This parameter defines the fourth group of deceleration time.

F8-09 **Jump frequency 1**

Address:	63497		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

The jump frequency enables the AC drive to avoid any frequency at which a mechanical resonance may occur. This parameter defines the first jump frequency. If it is set to 0, the first jump frequency is canceled.

F8-10 **Jump frequency 2**

Address:	63498		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

The jump frequency enables the AC drive to avoid any frequency at which a mechanical resonance may occur. This parameter defines the second jump frequency. If it is set to 0, the second jump frequency is canceled.

F8-11 **Jump frequency amplitude**

Address:	63499		
Min.:	0.00	Unit:	Hz
Max.:	5.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00 Hz to 5.00 Hz

Description

During acceleration, when the running frequency increases to a value that is close to the jump frequency, the AC drive runs for a period at the current frequency and then skips over the jump frequency. The jump range is twice the value of F8-11 (jump frequency amplitude).

During deceleration, when the running frequency decreases to a value that is close to the jump frequency, the AC drive runs for a period at the current frequency and then skips over the jump frequency. The jump range is twice the value of F8-11 (jump frequency amplitude).

F8-12 **Jump frequency selection during acceleration/deceleration**

Address:	63500		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Disabled

1: Enabled

Description

This parameter defines whether to enable the jump frequency function during acceleration and deceleration.

0: Disabled

The jump frequency function is disabled during acceleration and deceleration.

1: Enabled

The jump frequency function is enabled during acceleration and deceleration.

F8-13 FWD/REV Switchover Dead-zone Time

Address:	63501		
Min.:	0.0	Unit:	s
Max.:	3000.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s to 3000.0s

Description

This parameter defines the transition time at 0 Hz output during transition between forward running and reverse running.

F8-14 Reverse run enable

Address:	63502		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Reverse running allowed

1: Reverse running inhibited

Description

When F8-14 is active, the motor runs at zero frequency when a reverse run command is input to the AC drive.

F8-15 Running mode when frequency reference below lower limit

Address:	63503		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Run at frequency lower limit

1: Stop

2: Run at zero speed

Description

0: Run at frequency lower limit

If the running frequency is lower than the frequency lower limit, the AC drive runs at the frequency lower limit.

1: Stop

If the running frequency is lower than the frequency lower limit, the AC drive stops.

2: Run at zero speed

If the running frequency is lower than the frequency lower limit, the AC drive runs at zero speed.

F8-17 Normally open (NO) input of external fault

Address: 63505

Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Always active

1: Active only in running

Description

This parameter defines DI function 10: external fault NO input mode.

0: Always active

E15.01 is reported whenever DI function 10 (external fault NO input) is triggered.

1: Active only in running

E15.01 is reported when DI function 10 (external fault NO input) is triggered during running.

F8-18 Normally closed (NC) input of external fault

Address: 63506

Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Always active

1: Active only in running

Description

This parameter defines DI function 11: external fault NC input mode.

0: Always active

E15.02 is reported whenever DI function 11 (external fault NC input) is triggered.

1: Active only in running

E15.02 is reported when DI function 11 (external fault NC input) is triggered during running.

F8-19 Accumulative power-on time threshold setting

Address: 63507

Min.:	0	Unit:	h
Max.:	65000	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 h to 65000 h

Description

This parameter defines the accumulative power-on time threshold of the AC drive. When F7-12 (accumulative power-on time) exceeds F8-19 (accumulative power-on time threshold), the DO/RO terminal outputs an active signal.

F8-20 Accumulative running time threshold setting

Address: 63508

Min.:	0	Unit:	h
Max.:	65000	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 h to 65000 h

Description

This parameter defines the accumulative running time threshold of the AC drive. When F7-09 (accumulative running time) exceeds F8-20 (accumulative running time threshold), the DO/RO terminal outputs an active signal.

F8-21 **Startup protection selection**

Address:	63509		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Disabled

1: Enabled

Description

The AC drive is equipped with the startup protection function to prevent the motor from responding to commands upon unexpected power-on or fault reset.

F8-22 **Frequency detection value 1 (FDT1)**

Address:	63510		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	50.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

When the running frequency is higher than the frequency detection value (FDT1), the DO/RO terminal outputs an active signal; when the running frequency is lower than the result of the frequency detection value (FDT1) minus the frequency check hysteresis (FDT1), the DO/RO terminal outputs an inactive signal. The valid value range is 0.00 Hz to F0-10 (maximum frequency).

F8-23 **Frequency detection hysteresis 1 (FDT1)**

Address:	63511		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	2.50	Change:	At once

Value Range:

0.00 to F8-22

Description

When the running frequency is higher than F8-22, the DO/RO terminal outputs an active signal. When the running frequency is lower than a specific value (F8-22 minus F8-23), the DO/RO terminal outputs an inactive signal.

F8-24 **Frequency detection value 2 (FDT2)**

Address:	63512		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	50.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

When the running frequency is higher than the frequency detection value (FDT2), the DO/RO terminal outputs an active signal; when the running frequency is lower than the result of the frequency detection value (FDT2) minus the frequency check hysteresis (FDT2), the DO/RO terminal outputs an inactive signal. The valid value range is 0.00 Hz to F0-10 (maximum frequency).

F8-25 **Frequency detection hysteresis 2 (FDT2)**

Address:	63513		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	2.50	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

When the running frequency is higher than F8-24, the DO/RO terminal outputs an active signal. When the running frequency is lower than a specific value (F8-24 minus F8-25), the DO/RO terminal outputs an inactive signal.

F8-26 **Frequency detection range**

Address:	63514		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	2.50	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

The DO terminal outputs an active signal when the running frequency of the AC drive is within the specified range (frequency reference±F8-26).

F8-27 **Detection value 1 for frequency reach**

Address:	63515		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	50.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

When the running frequency of the AC drive is within the frequency detection range, the DO/RO terminal outputs an active signal. The valid value range is 0.00 Hz to F0-10 (maximum frequency).

F8-28 **Detection frequency 1 for frequency reach**

Address:	63516		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	2.50	Change:	At once

Value Range:

0.00 to F8-27

Description

Frequency detection range = (Detection value 1 for frequency reach)±(Detection frequency 1 for frequency reach). That is, the frequency detection rang is calculated using (F8-27)±(F8-28).

F8-29 **Detection mode for frequency reach 1**

Address:	63517		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Always detect

1: Not detect during acceleration/deceleration

Description

This parameter defines the frequency 1 reach detection mode.

When it is set to 0, the DO/RO terminal outputs an active signal if the detection condition is met.

When it is set to 1, the DO/RO terminal does not output an active signal during acceleration and deceleration even if the detection condition is met.

F8-30 Detection value 2 for frequency reach

Address:	63518		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	50.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

When the running frequency of the AC drive is within the frequency detection range, the DO/RO terminal outputs an active signal. The valid value range is 0.00 Hz to F0-10 (maximum frequency).

F8-31 Detection frequency 2 for frequency reach

Address:	63519		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	2.50	Change:	At once

Value Range:

0.00 to F8-28

Description

Frequency detection range = (Detection value 2 for frequency reach)±(Detection frequency 2 for frequency reach). That is, the frequency detection rang is calculated using (F8-30)±(F8-31).

F8-32 Detection mode for frequency reach 2

Address:	63520		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Always detect

1: Not detect during acceleration/deceleration

Description

This parameter defines the frequency 1 reach detection mode.

When it is set to 0, the DO/RO terminal outputs an active signal if the detection condition is met.

When it is set to 1, the DO/RO terminal does not output an active signal during acceleration and deceleration even if the detection condition is met.

F8-35 Switchover frequency of acceleration time 1 and acceleration time 2

Address:	63523		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

This function is used to switch the acceleration/deceleration time based on the running frequency range when the AC drive is running. This function is available only when motor 1 is selected (F0-24 = 0) and the DI terminal is not assigned with function 18 (acceleration/deceleration time selection terminal 1) or 19 (acceleration/deceleration time selection terminal 2).
The valid value range is 0.00 Hz to F0-10 (maximum frequency).

F8-36 Switchover frequency of deceleration time 1 and deceleration time 2

Address:	63524		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

This function is used to switch the acceleration/deceleration time based on the running frequency range when the AC drive is running. This function is available only when motor 1 is selected (F0-24 = 0) and the DI terminal is not assigned with function 18 (acceleration/deceleration time selection terminal 1) or 19 (acceleration/deceleration time selection terminal 2).
The valid value range is 0.00 Hz to F0-10 (maximum frequency).

F8-37 Jog preferred

Address:	63525		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

This parameter defines whether to set the highest priority to the terminal jog function. If it is set to 1, the AC drive enters the jog running status immediately when any of F4-00 to F4-09 is set to 4 (forward jog) or 5 (reverse jog).

F8-38 Zero current detection level

Address:	63526		
Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	5.0	Change:	At once

Value Range:

0.0% to 300.0%

Description

When the output current of the AC drive is lower than or equal to F8-38 (zero current detection level) for longer than F8-39 (zero current detection delay), the DO/RO terminal outputs an active signal.

F8-39 Zero current detection delay

Address:	63527		
Min.:	01	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.10	Change:	At once

Value Range:

0.01s to 600.00s

Description

When the output current of the AC drive is lower than or equal to F8-38 (zero current detection level) for longer than F8-39 (zero current detection delay), the DO/RO terminal outputs an active signal.

F8-40 Output overcurrent threshold

Address: 63528

Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	200.0	Change:	At once

Value Range:

0.0% to 300.0%

Description

When the output current of the AC drive is higher than F8-40 (output current threshold) for longer than F8-41 (output overcurrent detection delay), the DO/RO terminal outputs an active signal.

F8-41 Software overcurrent detection delay

Address: 63529

Min.:	0.00	Unit:	s
Max.:	600.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 600.00s

Description

When the output current of the AC drive is higher than F8-40 (output current threshold) for longer than F8-41 (output overcurrent detection delay), the DO/RO terminal outputs an active signal.

F8-42 Detection level of current 1

Address: 63530

Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	100.0	Change:	At once

Value Range:

0.0% to 300.0%

Description

When the output current of the AC drive is within the range of F8-42 (current 1)±F8-43 (detection width of current 1) x F1-03 (rated motor current), the DO/RO terminal outputs an active signal.

F8-43 Detection width of current 1

Address: 63531

Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0% to 300.0%

Description

When the output current of the AC drive is within the range of F8-42 (current 1)±F8-43 (detection width of current 1) x F1-03 (rated motor current), the DO/RO terminal outputs an active signal.

F8-44 Detection level of current 2

Address: 63532

Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	100.0	Change:	At once

Value Range:
0.0% to 300.0%
Description
When the output current of the AC drive is within the range of F8-44 (current 2)±F8-45 (detection width of current 2) x F1-03 (rated motor current), the DO/RO terminal outputs an active signal.

F8-45 **Detection width of current 2**

Address:	63533		
Min.:	0.0	Unit:	%
Max.:	300.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:
0.0% to 300.0%
Description
Detection width of current 2 = F8-45 (detection width of current 2) x F1-03 (rated motor current)

F8-46 **Timing function**

Address:	63534		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: Disabled
1: Enabled
Description
If F8-46 (timing function) is set to 1, the DO/RO terminal outputs an active signal when the current operation time of the AC drive reaches the specified timing duration. The timing duration is set by F8-47 and F8-48.

F8-47 **Timing duration source**

Address:	63535		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: F8-48
1: AI1
2: AI2
Description
When it is set to 0, the timing duration is set by F8-48.
When it is set to 1, the timing duration = (AI1 voltage/10 V) x F8-48. 100% of analog input corresponds to the value of F8-48.
When it is set to 2, the timing duration = (AI2 voltage/10 V) x F8-48. 100% of analog input corresponds to the value of F8-48.

F8-48 **Timing duration**

Address:	63536		
Min.:	0.0	Unit:	min
Max.:	6500.0	Data type:	UInt16

Default: 0.0 Change: At stop

Value Range:

0.0 min to 6500.0 min

Description

The timing duration is determined by F8-47 and F8-48.

F8-49 AI1 input voltage lower limit

Address: 63537

Min.: 0.00 Unit: V

Max.: 655.35 Data type: UInt16

Default: 3.10 Change: At once

Value Range:

0.00 V to 655.35 V

Description

When the AI1 input is higher than F8-50 (AI1 input voltage upper limit) or lower than F8-49 (AI1 input voltage lower limit), the DO/RO terminal outputs an "AI1 input limit exceeded" active signal to indicate whether the AI1 input voltage is within the setting range.

F8-50 AI1 input voltage upper limit

Address: 63538

Min.: 0.00 Unit: V

Max.: 11.00 Data type: UInt16

Default: 6.80 Change: At once

Value Range:

0.00 V to 11.00 V

Description

When the AI1 input is higher than F8-50 (AI1 input voltage upper limit) or lower than F8-49 (AI1 input voltage lower limit), the DO/RO terminal outputs an "AI1 input limit exceeded" active signal to indicate whether the AI1 input voltage is within the setting range.

F8-51 IGBT temperature reach

Address: 63539

Min.: 0 Unit: °C

Max.: 100 Data type: UInt16

Default: 75 Change: At once

Value Range:

0°C to 100°C

Description

When the IGBT heatsink temperature reaches the value of F8-51, the DO/RO terminal outputs an active signal.

F8-52 Cooling Fan Control

Address: 63540

Min.: 0 Unit: -

Max.: 1 Data type: UInt16

Default: 0 Change: At once

Value Range:

0: Forward running during drive running

1: Forward running continuously

Description

Single-axis drive unit and axis 1 of dual-axis drive unit:

When this parameter is set to 0, the fan works when the AC drive is running. When the AC drive stops, the fan works if the heatsink temperature is higher than 40°C and stops if the heatsink temperature is lower than 40°C.
When this parameter is set to 1, the fan keeps working after power-on.
Axis 2 of dual-axis drive unit:
F8-52 is not editable. The default value is 0, that is, the fan works when axis 2 of the dual-axis drive unit is running.

F8-54 Wakeup frequency

Address:	63542		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
Hibernation frequency (F8-56) to maximum frequency (F0-10)
Description
In hibernation state, when the frequency reference is equal to or higher than F8-54 (wakeup frequency) and the current running command is valid, the AC drive starts directly after the delay set by F8-50 (wakeup delay) elapses.

F8-55 Wakeup delay

Address:	63543		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:
0.0s to 6500.0s
Description
In hibernation state, when the frequency reference is equal to or higher than F8-54 (wakeup frequency) and the current running command is valid, the AC drive starts directly after the delay set by F8-55 (wakeup delay) elapses.

F8-56 Hibernation frequency

Address:	63544		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00 Hz to wakeup frequency (F8-54)
Description
When the frequency reference is lower than or equal to F8-56 (hibernation frequency) during running, the AC drive enters the hibernation state and coasts to stop after the time defined by F8-57 (hibernation delay) elapses.

F8-57 Hibernation delay

Address:	63545		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:
0.0s to 6500.0s

Description

When the frequency reference is lower than or equal to F8-56 (hibernation frequency) during running, the AC drive enters the hibernation state and coasts to stop after the time defined by F8-57 (hibernation delay) elapses.

F8-58 Current running time threshold

Address:	63546		
Min.:	0.0	Unit:	min
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0 min to 6500.0 min

Description

When the current operation time reaches the value of F8-58, the DO/RO terminal outputs an active signal. It is valid only for the current AC drive running. The previous operation time is not included.

F8-59 Switchover between communication addresses 2000H and 2001H

Address:	63547		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: General protocol

1: Special protocol

Description

This parameter defines the meaning of addresses 2000H and 2001H.

0: General protocol

The control word is written to 2000H, and DO output control is written to 2001H.

1: Special protocol

The special control word is written to 2000H, and the frequency reference is written to 2001H.

F8-60 Deceleration time for emergency stop

Address:	63548		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s to 6500.0s

Description

This parameter defines the deceleration time for emergency stop.

F8-61 LED operating panel jog

Address:	63549		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

-

Description

Switch to F8-61 using the operating panel of the power supply unit, press the ENT key to enter the jog mode, and then press the UP/DOWN key to implement forward/reverse jog.

F8-62 **Load speed display coefficient**

Address:	63550		
Min.:	1E-4	Unit:	-
Max.:	6.5000	Data type:	UInt16
Default:	1.0000	Change:	At once

Value Range:

0.0001 to 6.5000

Description

This parameter defines the ratio of the actual with-load speed to motor speed.

F8-63 **Number of decimal places for load speed display**

Address:	63551		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	1	Change:	At once

Value Range:

0: 0 decimal places

1: 1 decimal place

2: 2 decimal places

3: 3 decimal places

Description

The ones place of this parameter defines the number of decimal places of the value U0-14 (load speed).

0: 0 decimal places

No decimal places are retained.

1: 1 decimal place

The value is rounded to one decimal place.

2: 2 decimal places

The value is rounded to two decimal places.

3: 3 decimal places

The value is rounded to three decimal places.

F8-64 **7310H address data unit**

Address:	63552		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Frequency (Hz)

1: Speed (RPM)

Description

This parameter defines the unit of data written to the address 7310.

0: Frequency (Hz)

The unit of the written data is Hz.

1: Speed (RPM)

The unit of the written data is RPM.

2.10 F9: Fault and Protection

F9-00 **AC drive overload protection**

Address:	63744		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 1

Description
This parameter specifies whether to enable or disable the motor overload protection function. The AC drive determines whether the motor is overloaded according to the inverse time delay curve. When motor overload is detected, the AC drive will report an overload fault.
0: Disabled
Motor overload protection is disabled. If this parameter is set to 0, install a thermal relay before the motor for protection starts.
1: Enabled
Motor overload protection is enabled.

F9-01 **Motor overload protection gain**

Address:	63745		
Min.:	0.20	Unit:	-
Max.:	10.00	Data type:	UInt16
Default:	1.00	Change:	At once

Value Range:
0.20 to 10.00

Description
The motor overload protection gain is calculated according to the percentage of time during which the motor runs continuously at a certain overload threshold without reporting an overload fault.
It is used to adjust the actual overload fault report time of the AC drive when motor overload occurs.

F9-02 **Motor overload pre-warning coefficient**

Address:	63746		
Min.:	50	Unit:	%
Max.:	100	Data type:	UInt16
Default:	80	Change:	At once

Value Range:
50% to 100%

Description
The motor overload pre-warning coefficient is calculated according to the percentage of time during which the motor runs continuously at a certain overload threshold without reporting overload pre-warning. A pre-warning signal is sent to the control system through DO before motor overload protection starts.
This signal is used to determine how early to send the pre-warning signal before the motor overload protection starts. The larger the value is, the later the pre-warning signal is sent.
When the accumulative output current of the AC drive is greater than the overload time (value Y of the motor overload protection inverse time delay curve) multiplied by the motor overload pre-warning coefficient (F9-02), the multi-functional DO terminal of the AC drive outputs a motor overload pre-warning signal.

F9-06 **Output phase loss detection before startup**

Address:	63750		
Min.:	0	Unit:	%
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Disabled

1: Enabled

Description

It takes about several seconds to detect output phase loss during running. For low-frequency running applications or applications where risks exist in start with phase loss, this function enables quick detection of output phase loss during startup. However, it does not apply to applications that have strict requirements on startup time.

F9-07 **Detection of short-circuit to ground**

Address:	63751		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: Not detection

1: Detection before power-on

Description

This parameter defines whether to enable or disable the short-circuit to ground detection function.

F9-09 **Auto reset attempts**

Address:	63753		
Min.:	0	Unit:	-
Max.:	20	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 20

Description

This parameter defines the number of auto fault reset attempts of the AC drive. If the number of reset attempts exceeds the value of this parameter, the AC drive will remain in the faulty state.

F9-10 **DO action during auto fault reset**

Address:	63754		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Not act

1: Act

Description

This parameter defines whether the faulty DO (assigned with function 3) acts during auto fault reset if the auto fault reset function is enabled.

F9-11 **Auto reset interval**

Address:	63755		
Min.:	0.1	Unit:	s
Max.:	100.0	Data type:	UInt16

Default: 1.0 Change: At once

Value Range:

0.1s to 100.0s

Description

This parameter defines the delay of auto fault reset after the AC drive reports a fault.

F9-12 Restart interval upon fault reset

Address: 63755

Min.: 0 Unit: s

Max.: 100.0 Data type: UInt16

Default: 1.0 Change: At once

Value Range:

0s to 100.0s

Description

This parameter defines the delay of restart after automatic fault reset of the AC drive.

F9-13 STO safety state reset mode

Address: 63757

Min.: 0 Unit: -

Max.: 1 Data type: UInt16

Default: 0 Change: At stop

Value Range:

0: Manual

1: Auto

Description

This parameter defines whether auto reset is performed after the system triggers STO and then recovers.

0: Manual

After the system triggers STO and then recovers, manual reset is required.

1: Auto

After the system triggers STO and then recovers, auto reset is performed.

F9-14 1st fault type

Address: 63758

Min.: 0 Unit: -

Max.: 99 Data type: UInt16

Default: Model dependent Change: Unchangeable

Value Range:

0 to 99

Description

This parameter shows the fault codes of the latest three (1st, 2nd, and 3rd (latest)) faults. The host controller reads the communication address to obtain the fault code of the AC drive and triggers the AC drive to report the fault. The fault code can be viewed on the operating panel.

F9-15 2nd fault type

Address: 63759

Min.: 0 Unit: -

Max.: 99 Data type: UInt16

Default: Model dependent Change: Unchangeable

Value Range:

0 to 99

Description

This parameter shows the fault codes of the latest three (1st, 2nd, and 3rd (latest)) faults. The host controller reads the communication address to obtain the fault code of the AC drive and triggers the AC drive to report the fault. The fault code can be viewed on the operating panel.

F9-16 3rd (latest) fault type

Address:	63760		
Min.:	0	Unit:	-
Max.:	99	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0 to 99

Description

This parameter shows the fault codes of the latest three (1st, 2nd, and 3rd (latest)) faults. The host controller reads the communication address to obtain the fault code of the AC drive and triggers the AC drive to report the fault. The fault code can be viewed on the operating panel.

F9-17 Frequency upon the 3rd (latest) fault

Address:	63761		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the frequency of the AC drive upon the latest fault.

F9-18 Current upon the 3rd (latest) fault

Address:	63762		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the current of the AC drive upon the latest fault.

F9-19 Bus voltage upon the 3rd (latest) fault

Address:	63763		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the bus voltage of the AC drive upon the latest fault.

F9-20 Input terminal state upon the 3rd (latest) fault

Address:	63764		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the input terminal state of the AC drive upon the latest fault.

F9-21 Output terminal state upon the 3rd (latest) fault

Address: 63765

Min.: 0 Unit: -

Max.: 0 Data type: UInt16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the output terminal state of the AC drive upon the latest fault.

F9-22 AC drive state upon the 3rd (latest) fault

Address: 63766

Min.: 0 Unit: -

Max.: 0 Data type: UInt16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the state of the AC drive upon the latest fault.

F9-23 Power-on time upon the 3rd (latest) fault

Address: 63767

Min.: 0 Unit: -

Max.: 0 Data type: UInt16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the power-on duration of the AC drive upon the latest fault.

F9-24 Running time upon the 3rd (latest) fault

Address: 63768

Min.: 0 Unit: -

Max.: 0 Data type: UInt16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the operation time of the AC drive upon the latest fault.

F9-25 IGBT temperature upon the 3rd (latest) fault

Address: 63769

Min.: 0 Unit: -

Max.: 0 Data type: UInt16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the IGBT temperature of the AC drive upon the latest fault.

F9-26 **Fault subcode of the 3rd (latest) fault**

Address:	63770		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the fault subcode of the latest fault.

F9-27 **Frequency upon the 2nd fault**

Address:	63771		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the frequency of the AC drive upon the second fault.

F9-28 **Current upon the 2nd fault**

Address:	63772		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the current of the AC drive upon the second fault.

F9-29 **Bus voltage upon the 2nd fault**

Address:	63773		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the bus voltage of the AC drive upon the second fault.

F9-30 **Input terminal state upon the 2nd fault**

Address:	63774		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description
This parameter shows the input terminal state of the AC drive upon the second fault.

F9-31 Output terminal state upon the 2nd fault

Address:	63775		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
-

Description
This parameter show the output terminal state of the AC drive upon the second fault.

F9-32 AC drive state upon the 2nd fault

Address:	63776		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
-

Description
This parameter shows the state of the AC drive upon the second fault.

F9-33 Power-on time upon the 2nd fault

Address:	63777		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
-

Description
This parameter shows the power-on duration of the AC drive upon the second fault.

F9-34 Running time upon the 2nd fault

Address:	63778		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
-

Description
This parameter shows the operation time of the AC drive upon the second fault.

F9-35 IGBT temperature upon the 2nd fault

Address:	63779		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
-

Description
This parameter shows the IGBT temperature of the AC drive upon the second fault.

F9-36 **Fault subcode of the 2nd fault**

Address: 63780
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:
-

Description
This parameter shows the fault subcode of the second fault.

F9-37 **Frequency upon the 1st fault**

Address: 63781
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:
-

Description
This parameter shows the frequency of the AC drive upon the first fault.

F9-38 **Current upon the 1st fault**

Address: 63782
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:
-

Description
This parameter shows the current of the AC drive upon the first fault.

F9-39 **Bus voltage upon the 1st fault**

Address: 63783
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:
-

Description
This parameter shows the bus voltage of the AC drive upon the first fault.

F9-40 **Input terminal state upon the 1st fault**

Address: 63784
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:
-

Description
This parameter shows the input terminal state of the AC drive upon the first fault.

F9-41 **Output terminal state upon the 1st fault**

Address: 63785

Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the output terminal state of the AC drive upon the first fault.

F9-42 AC drive state upon the 1st fault

Address: 63786
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the state of the AC drive upon the first fault.

F9-43 Power-on time upon the 1st fault

Address: 63787
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the power-on duration of the AC drive upon the first fault.

F9-44 Running time upon the 1st fault

Address: 63788
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the operation time of the AC drive upon the first fault.

F9-45 IGBT temperature upon the 1st fault

Address: 63789
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the IGBT temperature of the AC drive upon the first fault.

F9-46 Fault subcode of the 1st fault

Address: 63790
Min.: 0 Unit: -
Max.: 0 Data type: UInt16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

This parameter shows the fault subcode of the first fault.

F9-47 Fault protection action selection 0

Address: 63791

Min.: 0 Unit: -

Max.: 55555 Data type: UInt16

Default: 500 Change: At stop

Value Range:

Ones: Overcurrent during acceleration/deceleration/operation at constant speed (E2/E3/E4)

0: Coast to stop

2: Restart upon fault

Tens: Overvoltage during acceleration/deceleration or at constant speed (E5/E6/E7)

0: Coast to stop

2: Restart upon fault

Hundreds: Reserved

5: Disabled

Thousands: Undervoltage (E9)

0: Coast to stop

2: Restart upon fault

Ten thousands: AC drive overload (E10)

0: Coast to stop

2: Restart upon fault

Description

The fault protection actions are set by the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

2: Restart upon fault

The AC drive will restart upon faults.

4: Warning

The AC drive continues to run.

5: Disabled

Fault detection is disabled.

F9-48 Fault protection action selection 1

Address: 63792

Min.: 0 Unit: -

Max.: 55555 Data type: UInt16

Default: 10050 Change: At stop

Value Range:

Ones: Motor overload (E11)
0: Coast to stop
1: Decelerate to stop
2: Restart upon fault
4: Warning
5: Disabled
Tens: Reserved
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disabled
Hundreds: Output phase loss (E13)
0: Coast to stop
1: Decelerate to stop
2: Reset upon fault
4: Warning
5: Disabled
Thousands: IGBT overtemperature (E14)
0: Coast to stop
Ten thousands: External device fault (E15)
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disabled

Description

The fault protection actions are set by the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

2: Restart upon fault

The AC drive will restart upon faults.

4: Warning

The AC drive continues to run.

5: Disabled

Fault detection is disabled.

F9-49 Fault protection action selection 2

Address:	63793		
Min.:	0	Unit:	-
Max.:	55555	Data type:	UInt16
Default:	50050	Change:	At stop

Value Range:

Ones: Communication fault (E16)

0: Coast to stop

1: Decelerate to stop

4: Warning

5: Disabled

Tens: Reserved

5: Disabled

Hundreds: Reserved

0: Coast to stop

Thousands: Motor auto-tuning fault (E19)

0: Coast to stop

4: Warning

5: Disabled

Ten thousands: Reserved

5: Disabled

Description

The fault protection actions are set by the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disabled

Fault detection is disabled.

F9-50 **Fault protection action selection 3**

Address:	63794		
Min.:	0	Unit:	-
Max.:	55555	Data type:	UInt16
Default:	25000	Change:	At stop

Value Range:

Ones: EEPROM read-write fault

(E21)

0: Coast to stop

Tens: Motor auto-tuning result alarm

(E22)

0: Coast to stop

Hundreds: Short circuit to ground (E23)

0: Coast to stop

5: Disabled

Thousands: Reserved

5: Disabled

Ten thousands: Power supply unit fault (E25)

2: Special action

5: Disabled

Description

The fault protection actions are set by the ones, tens, hundreds, thousands, and ten thousands places of this parameter.
0: Coast to stop
The AC drive coasts to stop.
2: Special action
The AC drive stops according to the stop command sent by the power supply unit.
5: Disabled
Fault detection is disabled.

F9-51 Fault protection action selection 4

Address:	63795		
Min.:	0	Unit:	-
Max.:	55555	Data type:	UInt16
Default:	51111	Change:	At stop

Value Range:
Ones: Accumulative running time reach
(E26)
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disabled
Tens: User-defined fault 1 (E27)
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disabled
Hundreds: User-defined fault 2 (E28)
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disabled
Thousands: Accumulative power-on time reach
(E29)
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disabled
Ten thousands: Load loss (E30)
0: Coast to stop
1: Decelerate to stop
4: Warning
5: Disabled

Description
The fault protection actions are set by the ones, tens, hundreds, thousands, and ten thousands places of this parameter.
0: Coast to stop
The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disabled

Fault detection is disabled.

F9-52 Fault protection action selection 5

Address:	63796		
Min.:	0	Unit:	-
Max.:	55555	Data type:	UInt16
Default:	551	Change:	At stop

Value Range:

Ones: PID feedback loss during running

(E31)

0: Coast to stop

1: Decelerate to stop

4: Warning

5: Disabled

Tens: Reserved

5: Disabled

Hundreds: Reserved

5: Disabled

Thousands: Excessive speed deviation

(E42)

0: Coast to stop

1: Decelerate to stop

4: Warning

5: Disabled

Ten thousands: Motor overspeed (E43)

0: Coast to stop

1: Decelerate to stop

4: Warning

5: Disabled

Description

The fault protection actions are set by the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disabled

Fault detection is disabled.

F9-53 Fault protection action selection 6

Address:	63797		
Min.:	0	Unit:	-

Max.: 55555 Data type: UInt16
Default: 5500 Change: At stop

Value Range:

Ones: Motor overtemperature (E45)

0: Coast to stop

1: Decelerate to stop

4: Warning

5: Disabled

Tens: Reserved

5: Disabled

Hundreds: Reserved

5: Disabled

Thousands: Reserved

5: Disabled

Ten thousands: Fan fault (E80)

0: Coast to stop

1: Decelerate to stop

5: Disabled

Description

The fault protection actions are set by the ones, tens, hundreds, thousands, and ten thousands places of this parameter.

0: Coast to stop

The AC drive coasts to stop.

1: Decelerate to stop

The AC drive decelerates to stop.

4: Warning

The AC drive continues to run.

5: Disabled

Fault detection is disabled.

F9-54 Frequency selection for continuing to run upon fault

Address: 63798
Min.: 0 Unit: -
Max.: 4 Data type: UInt16
Default: 1 Change: At once

Value Range:

0: Current running frequency

1: Frequency reference

2: Frequency upper limit

3: Frequency lower limit

4: Alternative frequency upon exception

Description

This parameter defines the frequency at which the AC drive continues to run when it is faulty. If a fault occurs during running of the AC drive and the fault protection action is set to "Continue to run", the AC drive displays A** and continues to run at the frequency defined by F9-54.

F9-55 Backup frequency reference

Address: 63799
Min.: 0.0 Unit: %

Max.: 100.0 Data type: UInt16
Default: 100.0 Change: At once

Value Range:
0.0% to 100.0%

Description
This parameter defines the alternative frequency of the AC drive upon fault. If a fault occurs during running and the fault protection action is to run at the alternative frequency upon error (F9-54 = 4), the AC drive displays A** and continues running at the alternative frequency.

F9-57 Motor overheat protection threshold 1

Address: 63801
Min.: 0 Unit: °C
Max.: 200 Data type: UInt16
Default: 110 Change: At once

Value Range:
0°C to 200°C

Description
Motor overheat protection threshold 1 When the motor temperature measured by the sensor connected to the hardware source mapped to AI1 exceeds the value of F9-57 (motor overheat protection threshold 1), the AC drive reports a motor overtemperature fault (E45.00) and acts according to F9-53 (fault protection action selection 6).

F9-58 Motor overheat pre-warning threshold 1

Address: 63802
Min.: 0 Unit: °C
Max.: 200 Data type: UInt16
Default: 90 Change: At once

Value Range:
0°C to 200°C

Description
Motor overheat pre-warning threshold 1 When the motor temperature measured by the sensor connected to the hardware source mapped to AI1 exceeds the value of F9-58 (motor overheat pre-warning threshold) and the function of the DO/RO terminal is set to 9 (motor overtemperature), the DO/RO terminal outputs an active signal.

F9-59 Motor overheat protection threshold 2

Address: 63803
Min.: 0 Unit: °C
Max.: 200 Data type: UInt16
Default: 110 Change: At once

Value Range:
0°C to 200°C

Description
Motor overheat protection threshold 2 When the motor temperature measured by the sensor connected to the hardware source mapped to AI2 exceeds the value of F9-59 (motor overheat protection threshold 2), the AC drive reports a motor overtemperature fault (E45.00) and acts according to F9-53 (fault protection action selection 6).

F9-60 Motor overheat pre-warning threshold 2

Address: 63804

Min.:	0	Unit:	℃
Max.:	200	Data type:	UInt16
Default:	90	Change:	At once

Value Range:

0℃ to 200℃

Description

Motor overheat pre-warning threshold 2 When the motor temperature measured by the sensor connected to the hardware source mapped to AI2 exceeds the value of F9-60 (motor overheat pre-warning threshold) and the function of the DO/RO terminal is set to 9 (motor overtemperature), the DO/RO terminal outputs an active signal.

F9-61 Motor overheat protection threshold 3

Address: 63805

Min.:	0	Unit:	℃
Max.:	200	Data type:	UInt16
Default:	110	Change:	At once

Value Range:

0℃ to 200℃

Description

Motor overheat protection threshold 3 When the motor temperature measured by the sensor connected to the hardware source mapped to AI3 exceeds the value of F9-61 (motor overheat protection threshold 1), the AC drive reports a motor overtemperature fault (E45.00) and acts according to F9-53 (fault protection action selection 6).

F9-62 Motor overheat pre-warning threshold 3

Address: 63806

Min.:	0	Unit:	℃
Max.:	200	Data type:	UInt16
Default:	90	Change:	At once

Value Range:

0℃ to 200℃

Description

Motor overheat pre-warning threshold 3 When the motor temperature measured by the sensor connected to the hardware source mapped to AI3 exceeds the value of F9-62 (motor overheat pre-warning threshold) and the function of the DO/RO terminal is set to 9 (motor overtemperature), the DO/RO terminal outputs an active signal.

F9-63 Power dip ride-through function selection

Address: 63807

Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Disabled

1: Decelerate

2: Decelerate to stop

Description

This parameter defines whether the AC drive runs continuously upon instantaneous power failure. When instantaneous power failure occurs, the AC drive keeps the motor in the power generating state to keep the bus voltage at a value around the "voltage threshold for enabling power dip ride-through". This prevents the AC drive from stopping due to undervoltage.
0: Disabled
The power dip ride-through function is disabled.
1: Keep bus voltage constant
When power failure occurs, the bus voltage stays at a value around the "voltage threshold for enabling power dip ride-through". In this mode, when the line voltage recovers, the AC drive accelerates to the target frequency based on the acceleration time.
2: Decelerate to stop
When power failure occurs, the AC drive decelerates to stop. In this mode, when the line voltage recovers, the AC drive decelerates to 0 Hz and stops. The AC drive will start again only when a new startup command is received.
"Keep bus voltage constant" is recommended for large-inertia applications such as fans, water pumps, and centrifuges. "Decelerate to stop" is recommended for the textile industry.

F9-64 Threshold for recovering from power dip ride-through

Address:	63808		
Min.:	8.0	Unit:	%
Max.:	10.0	Data type:	UInt16
Default:	8.5	Change:	At once

Value Range:
8.0% to 10.0%
Description
This parameter defines the voltage threshold for recovering from power dip ride-through. 100% corresponds to 540 V. This value is slightly lower than the bus voltage before power failure.
Upon power failure, the bus voltage is maintained at about F9-66 (threshold for enabling power dip ride-through). When the power supply recovers, the bus voltage rises from F9-66 (threshold for enabling power dip ride-through) to F9-64 (threshold for recovering from power dip ride-through). During this period, the output frequency of the AC drive keeps decreasing until the bus voltage reaches F9-64 (threshold for recovering from power dip ride-through).

F9-65 Duration for judging voltage recovery from power dip

Address:	63809		
Min.:	0.0	Unit:	s
Max.:	100.0	Data type:	UInt16
Default:	0.5	Change:	At once

Value Range:
0.0s to 100.0s
Description
This parameter defines the time required for the bus voltage to rise from F9-64 (threshold for recovering from power dip ride-through) to the voltage before power failure.

F9-66 Threshold for enabling power dip ride-through

Address:	63810		
Min.:	60	Unit:	%
Max.:	100	Data type:	UInt16
Default:	80	Change:	At once

Value Range:
60% to 100%
Description
This parameter defines the voltage level at which the bus voltage is maintained upon power failure. When power failure occurs, the bus voltage retains at a value around F9-66 (threshold for enabling power dip ride-through).

F9-67 Alarm threshold of consecutive I/O frame loss count

Address:	63811		
Min.:	1	Unit:	-
Max.:	1000	Data type:	UInt16
Default:	10	Change:	At stop

Value Range:
1 to 1000
Description
This parameter defines the alarm threshold of continuous I/O data frame loss times. The AC drive reports E16.04 when the continuous frame loss count is greater than the value of this parameter.

F9-68 Load loss detection level

Address:	63812		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	10.0	Change:	At once

Value Range:
0.0% to 100.0%
Description
When the output current of the AC drive stays below F9-68 (load loss detection level) for longer than the time set by F9-69 (load loss detection time), the AC drive performs the load loss protection action (F9-49).

F9-69 Load loss detection time

Address:	63813		
Min.:	0.1	Unit:	s
Max.:	60.0	Data type:	UInt16
Default:	1.0	Change:	At once

Value Range:
0.1s to 60.0s
Description
When the output current of the AC drive stays below F9-68 (load loss detection level) for longer than the time set by F9-69 (load loss detection time), the AC drive performs the load loss protection action (F9-49).

F9-73 Excessive speed deviation threshold

Address:	63817		
Min.:	0.0	Unit:	%
Max.:	50.0	Data type:	UInt16
Default:	20.0	Change:	At once

Value Range:
0.0% to 50.0%
Description

When the difference between the detected motor speed and the frequency reference exceeds the value of F9-73 (excessive speed deviation threshold) for longer than the time set by F9-74 (excessive speed deviation detection time), the AC drive reports E42.00 (excessive speed deviation) and handles the fault as defined by F9-50 (fault protection action).
If F9-73 (excessive speed deviation threshold) is set to 0.0% or F9-74 (excessive speed deviation detection time) is set to 0.0s, the excessive speed deviation detection function is disabled.
This function is available only when the AC drive works in SVC mode (F0-01 = 0).

F9-74 Excessive speed deviation detection time

Address:	63818		
Min.:	0.0	Unit:	s
Max.:	60.0	Data type:	UInt16
Default:	5.0	Change:	At once

Value Range:
0.0s to 60.0s
Description
When the difference between the detected motor speed and the frequency reference exceeds the value of F9-73 (excessive speed deviation threshold) for longer than the time set by F9-74 (excessive speed deviation detection time), the AC drive reports E42.00 (excessive speed deviation) and handles the fault as defined by F9-50 (fault protection action).
If F9-73 (excessive speed deviation threshold) is set to 0.0% or F9-74 (excessive speed deviation detection time) is set to 0.0s, the excessive speed deviation detection function is disabled.
This function is available only when the AC drive works in SVC mode (F0-01 = 0).

F9-75 Power dip ride-through gain

Address:	63819		
Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	40	Change:	At once

Value Range:
0 to 100
Description
This parameter is valid only in the "keep bus voltage constant" mode (F9-59 = 1).
If undervoltage occurs frequently during power dip ride-through, increase the power dip ride-through gain and integral coefficient.

F9-76 Power dip ride-through integral

Address:	63820		
Min.:	0	Unit:	-
Max.:	100	Data type:	UInt16
Default:	30	Change:	At once

Value Range:
0 to 100
Description
This parameter is valid only in the "keep bus voltage constant" mode (F9-59 = 1).
If undervoltage occurs frequently during power dip ride-through, increase the power dip ride-through gain and integral coefficient.

F9-77 Deceleration time of power dip ride-through

Address: 63821

Min.:	0.0	Unit:	s
Max.:	300.0	Data type:	UInt16
Default:	20.0	Change:	At once

Value Range:
0.0s to 300.0s
Description
This parameter is valid only in the "decelerate to stop" mode (F9-59 = 2).
When the bus voltage is lower than the value of F9-62, the AC drive decelerates to stop. The deceleration time is determined by this parameter but not F0-18.

2.11 FA: Process Control PID Function

FA-00 **PID reference source**

Address:	64000		
Min.:	0	Unit:	-
Max.:	6	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0: Digital setting of PID (FA-01)
1: AI1
2: AI2
3: AI3
4: Reserved
5: Communication
6: Multi-reference
Description
This parameter specifies the PID reference source. The PID reference is a relative value. The value 100% corresponds to 100% of the feedback signal of the controlled system.
0: Digital setting of PID (FA-01)
The PID reference is set by FA-01 (PID reference value).
1: AI1
The PID reference source is the AI1 input.
2: AI2
The PID reference source is the AI2 input.
3: AI3
The PID reference source is the AI2 input.
5: Communication
The PID reference is set by remote communication.
6: Multi-reference
In the multi-reference mode, different combinations of DI terminal states correspond to different frequency references. The four multi-reference terminals provide 16 state combinations, corresponding to 16 target frequency values. Note: When FA-00 is set to 6 (multi-reference), FC-51 (reference 0 source) cannot be set to 5 (PID reference).

FA-01 **Digital setting of PID**

Address:	64001		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16

Default: 50.0 Change: At once

Value Range:

0.0% to 100.0%

Description

When FA-00 (PID reference source) is set to 0, this parameter must be set. The setpoint 100% corresponds to the maximum feedback value.

FA-02 PID feedback source

Address: 64002

Min.: 0 Unit: -

Max.: 8 Data type: UInt16

Default: 0 Change: At once

Value Range:

0: AI1

1: AI2

2: AI3

3: AI1 to AI2

4: Reserved

5: Communication

6: AI1 + AI2

7: Max. (|AI1|, |AI2|)

8: Min. (|AI1|, |AI2|)

Description

This parameter defines the PID feedback source.

FA-03 PID action direction

Address: 64003

Min.: 0 Unit: -

Max.: 1 Data type: UInt16

Default: 0 Change: At once

Value Range:

0: Forward

1: Reverse

Description

0: Forward

When the feedback value is lower than the PID reference, the output frequency of the AC drive increases.

1: Reverse

When the feedback value is lower than the PID reference, the output frequency of the AC drive decreases.

FA-04 PID reference and feedback range

Address: 64004

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 1000 Change: At once

Value Range:

0 to 65535

Description

This parameter is used for display of the PID reference and feedback, which are dimensionless. For example, if this parameter is set to 1000, the PID reference (0% to 100%) corresponds linearly to the feedback value (0 to 1000).

FA-05 Proportional gain Kp1

Address:	64005		
Min.:	0.0	Unit:	-
Max.:	1000	Data type:	UInt16
Default:	20.0	Change:	At once

Value Range:

0.0 to 1000

Description

This parameter defines the proportional gain Kp in PID control. The deviation reduction speed depends on the proportional coefficient Kp. A larger Kp tends to reduce the deviation faster, but may cause system oscillation, especially at large hysteresis. A smaller Kp indicates lower possibility of oscillation but also slower deviation reduction.

FA-06 Integral time Ti1

Address:	64006		
Min.:	01	Unit:	s
Max.:	100.00	Data type:	UInt16
Default:	2.00	Change:	At once

Value Range:

0.01s to 100.00s

Description

This parameter defines the integral time Ti in PID control. It determines the integral adjustment intensity of the PID controller. Shorter integral time indicates greater adjustment intensity.

FA-07 Derivative time Td1

Address:	64007		
Min.:	0.000	Unit:	s
Max.:	10.000	Data type:	UInt16
Default:	0.000	Change:	At once

Value Range:

0.000s to 10.000s

Description

This parameter defines the derivative time Td in PID control. It determines the deviation variation adjustment intensity of the PID controller. Longer derivative time indicates greater adjustment intensity.

FA-08 PID cut-off frequency in reverse direction

Address:	64008		
Min.:	0.00	Unit:	Hz
Max.:	655.35	Data type:	UInt16
Default:	2.00	Change:	At once

Value Range:

0.00 Hz to 655.35 Hz

Description

When the frequency source is "PID only", the PID cut-off frequency in reverse direction is the minimum value of the current PID output. When the frequency source is "main + PID", FA-08 takes into account the "main + PID" as a whole and outputs the minimum frequency value calculated through the "main + PID" operation.

FA-09 PID deviation limit

Address:	64009		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0% to 100.0%

Description

When the deviation is within the PID deviation limit, no adjustment is required. This parameter helps balance the accuracy and stability of the system output.

FA-10 PID derivative limit

Address:	64010		
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	0.10	Change:	At once

Value Range:

0.00% to 100.00%

Description

This parameter defines the PID derivative output range. In PID control, the derivative may easily cause system oscillation. Therefore, the PID derivative action is restricted to a small range.

FA-11 PID reference change time

Address:	64011		
Min.:	0.00	Unit:	s
Max.:	650.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 650.00s

Description

This parameter defines the time required for the PID reference to change from 0.0% to 100.0%.

FA-12 PID feedback filter time

Address:	64012		
Min.:	0.00	Unit:	s
Max.:	60.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:

0.00s to 60.00s

Description

This parameter defines the filter time of PID feedback. The filter helps to reduce interference on the feedback but lowers the responsiveness of the process closed-loop system.

FA-13 PID deviation gain

Address: 64013

Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	100.0	Change:	At once

Value Range:
0.0% to 100.0%
Description
This parameter is used to reduce the deviation value proportionally, and the reduced deviation value is the product of the original deviation value multiplied by the value of FA-13.

FA-15 **Proportional gain Kp2**

Address:	64015		
Min.:	0.0	Unit:	-
Max.:	1000.0	Data type:	UInt16
Default:	20.0	Change:	At once

Value Range:
0.0 to 1000.0
Description
This parameter defines the proportional gain Kp in PID control. The deviation reduction speed depends on the proportional coefficient Kp. A larger Kp tends to reduce the deviation faster, but may cause system oscillation, especially at large hysteresis. A smaller Kp indicates lower possibility of oscillation but also slower deviation reduction.

FA-16 **Integral time Ti2**

Address:	64016		
Min.:	01	Unit:	s
Max.:	100.00	Data type:	UInt16
Default:	2.00	Change:	At once

Value Range:
0.01s to 100.00s
Description
This parameter defines the integral time Ti in PID control. It determines the integral adjustment intensity of the PID controller. Shorter integral time indicates greater adjustment intensity.

FA-17 **Derivative time Td2**

Address:	64017		
Min.:	0.000	Unit:	s
Max.:	10.000	Data type:	UInt16
Default:	0.000	Change:	At once

Value Range:
0.000s to 10.000s
Description
This parameter defines the derivative time Td in PID control. It determines the deviation variation adjustment intensity of the PID controller. Longer derivative time indicates greater adjustment intensity.

FA-18 **PID parameter switchover condition**

Address:	64018		
Min.:	0	Unit:	-
Max.:	7	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: No switchover
1: Switchover by DI
2: Automatic switchover based on deviation
3: Switchover based on running frequency
6: Automatic adjustment based on roll diameter
7: Automatic adjustment based on maximum roll diameter percentage

Description

This parameter defines the switchover between two groups of PID parameters.

0: No switchover

No switchover is performed.

1: Switchover by DI

To use this function, the DI terminal must be assigned with function 43 (PID parameter switchover). If the DI is inactive, parameter group 1 (FA-05 to FA-07) is selected. If the DI is active, parameter group 2 (FA-15 to FA-17) is selected.

2: Automatic switchover based on deviation

If the absolute value of the deviation between the reference and the feedback is lower than that set by FA-19 (PID parameter switchover deviation 1), parameter group 1 applies. If the absolute value of the deviation between the reference and the feedback is higher than that set by FA-20 (PID parameter switchover deviation 2), parameter group 2 applies. If this absolute value is between FA-19 (PID parameter switchover deviation 1) and FA-20 (PID parameter switchover deviation 2), the PID parameters are the linear interpolation values of the two groups of parameters.

3: Switchover based on running frequency

PID parameters are switched automatically based on the running frequency of the AC drive.

6: Automatic adjustment based on roll diameter

When the current roll diameter changes between the maximum roll diameter (B0-08) and the minimum roll diameter (B0-09), the PID parameters are the linear interpolation values of the two groups of PID parameters. The minimum roll diameter corresponds to parameter group 1 (FA-05 to FA-07), and the maximum roll diameter corresponds to parameter group 2 (FA-15 to FA-17).

7: Automatic adjustment based on maximum roll diameter percentage

When the current roll diameter changes between the maximum roll diameter (B0-08) x FA-20 and the maximum roll diameter (B0-08) x FA-19, the PID parameters are the linear interpolation values of the two groups of PID parameters.

FA-19 PID parameter switchover deviation 1

Address:	64019		
Min.:	0.0	Unit:	%
Max.:	6553.5	Data type:	UInt16
Default:	20.0	Change:	At once

Value Range:

0.0% to 6553.5%

Description

The value 100% corresponds to the maximum deviation between the reference and feedback. The value range is 0.0% to FA-20 (PID parameter switchover deviation 2).

FA-20 PID parameter switchover deviation 2

Address:	64020		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	80.0	Change:	At once

Value Range:
0.0% to 100.0%
Description
The value 100% corresponds to the maximum deviation between the reference and feedback. The value range is FA-19 (PID parameter switchover deviation 1) to 100.0%.

FA-21 PID initial value

Address:	64021		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:
0.0% to 100.0%
Description
When the AC drive starts, the PID starts closed-loop adjustment operation only after the PID has output the initial value (FA-21) for longer than the time set by FA-22 (hold time of PID initial value).

FA-22 Hold time of PID initial value

Address:	64022		
Min.:	0.00	Unit:	s
Max.:	650.00	Data type:	UInt16
Default:	0.00	Change:	At once

Value Range:
0.00s to 650.00s
Description
When the AC drive starts, the PID starts closed-loop adjustment operation only after the PID has output the initial value (FA-21) for longer than the time set by FA-22 (hold time of PID initial value).

FA-23 Maximum deviation between two PID outputs in forward direction

Address:	64023		
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	1.00	Change:	At once

Value Range:
0.00% to 100.00%
Description
When the deviation between two adjacent outputs is greater than FA-23, the PID output value is the calculated value plus the value of FA-23.

FA-24 Maximum deviation between two PID outputs in reverse direction

Address:	64024		
Min.:	0.00	Unit:	%
Max.:	100.00	Data type:	UInt16
Default:	1.00	Change:	At once

Value Range:
0.00% to 100.00%
Description
When the deviation between two adjacent outputs is less than FA-24, the PID output value is the calculated value minus the value of FA-24.

FA-25 PID integral property
Address: 64025

Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Disabled

1: Enabled

Description

0: Disabled When integral pause is disabled, it remains inactive no matter whether the multi-functional DI is active.

1: Enabled When integral pause is enabled, the PID integral operation stops when the DI assigned with the PID integral pause function is active (F4-00 = 22 for example). In this case, only PID proportional and derivative actions are active.

FA-26 **Detection level of PID feedback loss**

Address:	64026		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0% to 100.0%

Description

This parameter is used to determine whether the PID feedback is lost. When the PID feedback remains lower than the value of FA-26 (PID feedback loss detection value) for longer than the time set by FA-27 (PID feedback loss detection time), the AC drive reports E31.00.

The setpoint 0 indicates that detection on feedback loss is disabled.

FA-27 **Detection time of PID feedback loss**

Address:	64027		
Min.:	0.0	Unit:	s
Max.:	20.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s to 20.0s

Description

This parameter is used to determine whether the PID feedback is lost. When the PID feedback remains lower than the value of FA-26 (PID feedback loss detection value) for longer than the time set by FA-27 (PID feedback loss detection time), the AC drive reports E31.00.

2.12 FB: Wobble, Fixed Length, and Count

FB-00 **Wobble setting mode**

Address:	64256		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Relative to center frequency

1: Relative to maximum frequency

Description

0: Relative to center frequency (F0-07, frequency reference superposition). This mode applies to variable swing systems, in which the swing changes with the center frequency (frequency reference).
1: Relative to the maximum frequency (F0-10, maximum frequency). This mode applies to fixed swing systems, in which the swing is a fixed value calculated based on the maximum frequency.

FB-01 Wobble amplitude

Address:	64257		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0% to 100.0%

Description

When Fb-01 is set to 0, the wobble amplitude is 0, indicating that the wobble function is disabled.

FB-02 Wobble step

Address:	64258		
Min.:	0.0	Unit:	%
Max.:	50.0	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0% to 50.0%

Description

This parameter defines the wobble amplitude and step. The wobble running frequency is limited by the frequency upper limit and frequency lower limit.

FB-03 Wobble cycle

Address:	64259		
Min.:	0.1	Unit:	s
Max.:	3000.0	Data type:	UInt16
Default:	10.0	Change:	At once

Value Range:

0.1s to 3000.0s

Description

This parameter defines the time of a complete wobble cycle.

FB-04 Triangular wave rise time coefficient

Address:	64260		
Min.:	0.1	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	50.0	Change:	At once

Value Range:

0.1% to 100.0%

Description

This parameter defines the percentage of the triangular wave rise time relative to the wobble cycle (Fb-03).

FB-05 Reference length

Address:	64261		
Min.:	0	Unit:	m

Max.:	65535	Data type:	UInt16
Default:	1000	Change:	At once

Value Range:
0 m to 65535 m

Description
This parameter specifies the length value to be controlled in fixed length control mode.

FB-06 Actual length

Address:	64262		
Min.:	0	Unit:	m
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 m to 65535 m

Description
The actual length is a monitored value. Actual length (Fb-06) = Number of pulses sampled by DI/ Number of pulses per meter (Fb-07).

FB-07 Number of pulses per meter

Address:	64263		
Min.:	0.1	Unit:	-
Max.:	6553.5	Data type:	UInt16
Default:	100.0	Change:	At once

Value Range:
0.1 to 6553.5

Description
This parameter defines the number of pulses output per meter. The length pulses are sampled by a DI terminal assigned with function 29 (length count input).

FB-08 Reference count value

Address:	64264		
Min.:	1	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	1000	Change:	At once

Value Range:
1 to 65535

Description
When the count value reaches Fb-08, the DO terminal outputs an active signal indicating that the reference count value is reached.

FB-09 Designated count value

Address:	64265		
Min.:	1	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	1000	Change:	At once

Value Range:
1 to 65535

Description
When the count value reaches Fb-09, the DO terminal outputs an active signal indicating that the designated count value is reached. Fb-09 must be less than or equal to Fb-08 (reference count value).

2.13 FC: Multi-Reference and Simple PLC

FC-00 **Multi-reference 0**

Address:	64512		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
This parameter defines the frequency reference of each speed. FC-00 to FC-15 correspond to a total of 16 frequency setpoints for 16 segments numbered from 0 to 15. The frequency setpoint is calculated as a percentage to the maximum frequency. The value 100% corresponds to F0-10 (maximum frequency). The AC drive provides four multi-reference terminals, which provide 16 state combinations, corresponding to 16 frequency setpoints.
When the simple PLC is used as the main frequency source, you need to set parameters in group FC. In some industrial applications, the AC motor is only used to implement simple functions including start/stop, timed and segmented speed regulation, and automatic forward and reverse running. With the simple PLC, you can implement other control functions without adding a physical PLC. The simple PLC is generally used in industrial equipment such as mixture mixing and industrial washing machines.
When the simple PLC is used as the main frequency source (F0-03 = 7), you need to set the parameters in group FC.

FC-01 **Multi-reference 1**

Address:	64513		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
Same as FC-00

FC-02 **Multi-reference 2**

Address:	64514		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
Same as FC-00

FC-03 **Multi-reference 3**

Address:	64515		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
Same as FC-00

FC-04 **Multi-reference 4**

Address:	64516		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%
Description
Same as FC-00

FC-05 **Multi-reference 5**

Address:	64517		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%
Description
Same as FC-00

FC-06 **Multi-reference 6**

Address:	64518		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%
Description
Same as FC-00

FC-07 **Multi-reference 7**

Address:	64519		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%
Description
Same as FC-00

FC-08 **Multi-reference 8**

Address:	64520		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%
Description
Same as FC-00

FC-09 **Multi-reference 9**

Address: 64521
Min.: –100.0 Unit: %
Max.: 100.0 Data type: Int16
Default: 0.0 Change: At once

Value Range:
–100.0% to 100.0%

Description
Same as FC-00

FC-10 **Multi-reference 10**

Address: 64522
Min.: –100.0 Unit: %
Max.: 100.0 Data type: Int16
Default: 0.0 Change: At once

Value Range:
–100.0% to 100.0%

Description
Same as FC-00

FC-11 **Multi-reference 11**

Address: 64523
Min.: –100.0 Unit: %
Max.: 100.0 Data type: Int16
Default: 0.0 Change: At once

Value Range:
–100.0% to 100.0%

Description
Same as FC-00

FC-12 **Multi-reference 12**

Address: 64524
Min.: –100.0 Unit: %
Max.: 100.0 Data type: Int16
Default: 0.0 Change: At once

Value Range:
–100.0% to 100.0%

Description
Same as FC-00

FC-13 **Multi-reference 13**

Address: 64525
Min.: –100.0 Unit: %
Max.: 100.0 Data type: Int16
Default: 0.0 Change: At once

Value Range:
–100.0% to 100.0%

Description
Same as FC-00

FC-14 **Multi-reference 14**

Address: 64526
Min.: –100.0 Unit: %

Max.: 100.0 Data type: Int16
Default: 0.0 Change: At once

Value Range:
–100.0% to 100.0%

Description
Same as FC-00

FC-15 Multi-reference 15

Address: 64527
Min.: –100.0 Unit: %
Max.: 100.0 Data type: Int16
Default: 0.0 Change: At once

Value Range:
–100.0% to 100.0%

Description
Same as FC-00

FC-16 Simple PLC running mode

Address: 64528
Min.: 0 Unit: -
Max.: 2 Data type: UInt16
Default: 0 Change: At once

Value Range:
0: Stop after running for one cycle
1: Keep final values after running for one cycle
2: Repeat after running for one cycle

Description
When the simple PLC is used as the main frequency source, FC-16 defines the running mode of the simple PLC, and FC-17 defines whether the operation stage and running frequency of the PLC before power failure are retentive upon power failure or shutdown.
0: Stop after running for one cycle
The AC drive stops automatically after running for one cycle and starts again only after receiving a running command.
1: Keep the final value after running for one cycle
The AC drive keeps the final running frequency and direction after running for one cycle and starts from the initial PLC state upon restart.
2: Repeat after running for one cycle
The AC drive automatically starts another cycle after running for one cycle and stops only after receiving a stop command.

FC-17 Simple PLC memory retention

Address: 64529
Min.: 0 Unit: -
Max.: 11 Data type: UInt16
Default: 0 Change: At once

Value Range:

Ones:
0: Non-retentive upon power failure
1: Retentive upon power failure
Tens:
0: Non-retentive upon stop
1: Retentive upon stop

Description

When the simple PLC is used as the main frequency source, FC-16 defines the running mode of the simple PLC, and FC-17 defines whether the operation stage and running frequency of the PLC before power failure are retentive upon power failure or shutdown.

Ones: Memory retention upon power failure

This parameter defines whether the PLC process starts all over again upon power-on. When it is set to 1, the AC drive retains the PLC running stage and running frequency before power failure and continues to run from the retained values after it is powered on again.

Tens: Memory retention upon stop

This parameter defines whether the PLC process starts all over again upon startup. When it is set to 1, the AC drive retains the PLC running stage and running frequency before stop and continues to run from the retained values after it is started again.

FC-18 Running time of PLC reference 0

Address:	64530		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-19 Acceleration/Deceleration time of PLC reference 0

Address:	64531		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-20 Running time of PLC reference 1

Address:	64532		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-21 Acceleration/Deceleration time of PLC reference 1

Address:	64533		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-22 Running time of PLC reference 2

Address:	64534		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-23 Acceleration/Deceleration time of PLC reference 2

Address:	64535		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-24 Running time of PLC reference 3

Address:	64536		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-25 Acceleration/Deceleration time of PLC reference 3

Address:	64537		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-26 Running time of PLC reference 4

Address:	64538		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-27 Acceleration/Deceleration time of PLC reference 4

Address:	64539		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-28 Running time of PLC reference 5

Address:	64540		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-29 Acceleration/Deceleration time of PLC reference 5

Address:	64541		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-30 Running time of PLC reference 6

Address:	64542		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-31 Acceleration/Deceleration time of PLC reference 6

Address:	64543		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-32 Running time of PLC reference 7

Address:	64544		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-33 Acceleration/Deceleration time of PLC reference 7

Address:	64545		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-34 Running time of PLC reference 8

Address:	64546		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-35 Acceleration/Deceleration time of PLC reference 8

Address:	64547		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-36 Running time of PLC reference 9

Address:	64548		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-37 Acceleration/Deceleration time of PLC reference 9

Address:	64549		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-38 Running time of PLC reference 10

Address:	64550		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-39 Acceleration/Deceleration time of PLC reference 10

Address:	64551		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-40 Running time of PLC reference 11

Address:	64552		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-41 Acceleration/Deceleration time of PLC reference 11

Address:	64553		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-42 Running time of PLC reference 12

Address:	64554		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-43 Acceleration/Deceleration time of PLC reference 12

Address:	64555		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-44 Running time of PLC reference 13

Address:	64556		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-45 Acceleration/Deceleration time of PLC reference 13

Address:	64557		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-46 Running time of PLC reference 14

Address:	64558		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-47 Acceleration/Deceleration time of PLC reference 14

Address:	64559		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-48 Running time of PLC reference 15

Address:	64560		
Min.:	0.0	Unit:	s (h)
Max.:	6553.5	Data type:	UInt16
Default:	0.0	Change:	At once

Value Range:

0.0s (h) to 6553.5s (h)

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-49 Acceleration/Deceleration time of PLC reference 15

Address:	64561		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 3

Description

FC-18 to FC-49 define the operation time and acceleration/deceleration time of each of the 16 multi-speed references respectively. The operation duration of each reference is the sum of the acceleration or deceleration time plus the time of operation at constant speed and target frequency.

FC-50 PLC running time unit

Address:	64562		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: s (second)

1: h (hour)

Description

This parameter defines the unit of the PLC operation time.

FC-51 Multi-reference 0 source

Address:	64563		
Min.:	0	Unit:	-
Max.:	6	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: FC-00

1: AI1

2: AI2

3: AI3

4: Reserved

5: PID

6: Preset frequency (F0-08) (which can be modified by terminal UP/DOWN)

Description

Reference 0 can be set by digital setting, analog input, PID, and preset frequency.

0: FC-00

The frequency reference 0 is set by FC-00.

1: AI1

The frequency reference 0 is set by AI1 input.

2: AI2

The frequency reference 0 is set by AI2 input.

3: AI3

The frequency reference 0 is set by AI3 input.

5: PID

The frequency reference 0 is set by PID.

6: Preset frequency (F0-08)

The frequency reference 0 is set by F0-08 (preset frequency).

2.14 FD: Communication Parameters

FD-02 **Local address**

Address:	64770		
Min.:	0	Unit:	-
Max.:	247	Data type:	UInt16
Default:	1	Change:	Unchangeable

Value Range:

0 to 247

Description

When the local address is set to 0 (broadcast address), host controller broadcast is enabled. The local address must be unique in the range of 1 to 247, which is the basis for point-point communication between the AC drive and host controller.

FD-06 **Communication fault reset**

Address:	64774		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0 to 1

Description

This parameter defines whether to reset the communication fault automatically.

FD-08 **Last allocated station number**

Address:	64776		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

When the station number allocation is normal, this value is the station number allocated this time. When the station number allocation is abnormal, the current value is used as the current station number.

FD-09 **CANopen/CANlink communication state**

Address:	64777		
Min.:	0	Unit:	-
Max.:	999	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

Ones: CANopen

0: Stop

1: Initializing

2: Pre-running

8: Running

Tens: CANlink

0: Stop

1: Initializing

2: Pre-running

8: Running

Description

This read-only parameter is used to monitor the communication status.

FD-10 Switchover between CANopen and CANlink

Address:	64778		
Min.:	1	Unit:	-
Max.:	2	Data type:	UInt16
Default:	1	Change:	Unchangeable

Value Range:

1: CANopen

2: CANlink

Description

This parameter shows the CAN communication protocol for the power supply unit.

If the value is 1, the CANopen communication or communication extension card mode is used. If the value is 2, CANlink communication is used.

This parameter is read-only. To select a communication protocol, use Fd-10 of the power supply unit.

FD-11 CANopen402

Address:	64779		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

This parameter defines whether to enable the CANopen mode.

When it is set to 0, the normal mode is used. When it is set to 1, the CiA402 mode is enabled.

FD-13 CAN station number

Address:	64781		
Min.:	1	Unit:	-
Max.:	127	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

1 to 127

Description

This parameter defines the CAN station number, including station numbers for CANlink and CANopen communication. In the same network, all station numbers must be unique. Otherwise, communication will fail.

FD-14 **Number of CAN frames received per unit time**

Address:	64782		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	1	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter is used to monitor the bus load. It defines the number of CAN frames received by the station per second.

FD-19 **CAN communication failure coefficient**

Address:	64787		
Min.:	1	Unit:	-
Max.:	15	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

1 to 15

Description

This parameter defines the CAN communication disconnection coefficient.

FD-92 **Communication version**

Address:	64860		
Min.:	0.00	Unit:	-
Max.:	655.35	Data type:	UInt16
Default:	0.00	Change:	Unchangeable

Value Range:

0.00 to 655.35

Description

This parameter shows the communication software version of the AC drive.

2.15 FE: User-Defined Parameters

FE-00 **User-defined parameter 0**

Address:	65024		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-01 **User-defined parameter 1**

Address:	65025		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-02 User-defined parameter 2

Address:	65026		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-03 User-defined parameter 3

Address:	65027		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-04 User-defined parameter 4

Address:	65028		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-05 User-defined parameter 5

Address:	65029		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-06 User-defined parameter 6

Address:	65030		
Min.:	0	Unit:	-

Max.: 0 Data type: UInt16
Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-07 User-defined parameter 7

Address: 65031
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-08 User-defined parameter 8

Address: 65032
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-09 User-defined parameter 9

Address: 65033
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-10 User-defined parameter 10

Address: 65034
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-11 **User-defined parameter 11**

Address:	65035		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-12 **User-defined parameter 12**

Address:	65036		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-13 **User-defined parameter 13**

Address:	65037		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-14 **User-defined parameter 14**

Address:	65038		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-15 **User-defined parameter 15**

Address:	65039		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-16 User-defined parameter 16

Address:	65040		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-17 User-defined parameter 17

Address:	65041		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-18 User-defined parameter 18

Address:	65042		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-19 User-defined parameter 19

Address:	65043		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-20 User-defined parameter 20

Address:	65044		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16

Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-21 User-defined parameter 21

Address: 65045

Min.: 0 Unit: -

Max.: 0 Data type: UInt16

Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-22 User-defined parameter 22

Address: 65046

Min.: 0 Unit: -

Max.: 0 Data type: UInt16

Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-23 User-defined parameter 23

Address: 65047

Min.: 0 Unit: -

Max.: 0 Data type: UInt16

Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-24 User-defined parameter 24

Address: 65048

Min.: 0 Unit: -

Max.: 0 Data type: UInt16

Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-25 User-defined parameter 25

Address: 65049

Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-26 User-defined parameter 26

Address: 65050
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-27 User-defined parameter 27

Address: 65051
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-28 User-defined parameter 28

Address: 65052
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-29 User-defined parameter 29

Address: 65053
Min.: 0 Unit: -
Max.: 0 Data type: UInt16
Default: 0 Change: At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-30 **User-defined parameter 30**

Address:	65054		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

FE-31 **User-defined parameter 31**

Address:	65055		
Min.:	0	Unit:	-
Max.:	0	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

-

Description

Group FE consists of user-defined parameters. Users can add commonly used parameters to group FE for easier check and modification.

2.16 FP: User Parameters

FP-00 **User password**

Address:	7936		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

After the password is set, the password is required when the operating panel of the power supply unit is used to control the drive unit.

FP-01 **Parameter initialization**

Address:	7937		
Min.:	0	Unit:	-
Max.:	501	Data type:	UInt16
Default:	1	Change:	At once

Value Range:

0: No operation

1: Restore factory defaults mode 1

2: Clear records

4: Back up current user parameters

501: Restore user backup parameters

Description

This parameter is used to set the corresponding action upon parameter initialization of the AC drive.

0: No operation

The AC drive does not perform any operation.

1: Restore factory defaults mode 1

Most of the parameters are restored to factory defaults. However, motor parameters, F0-22 (decimal places of frequency reference), fault records, F7-09 (accumulative running time), F7-13 (accumulative power-on time), F7-14 (accumulative power consumption), and F7-07 (IGBT heatsink temperature) are not restored.

2: Clear records

The fault records, F7-09 (accumulative running time), F7-13 (accumulative power-on time), and F7-14 (accumulative power consumption) are cleared.

4: Back up current user parameters

The current parameter settings are backed up.

501: Restore user backup parameters

Parameters backed up by setting FP-01 to 4 are restored.

FP-02 Parameter display

Address:	7938		
Min.:	0	Unit:	-
Max.:	1111	Data type:	UInt16
Default:	111	Change:	At once

Value Range:

Ones: Group U

0: Hide

1: Display

Tens: Group A

0: Hide

1: Display

Hundreds: Group B

0: Hide

1: Display

Thousands: Group C

0: Hide

1: Display

Description

This parameter is used to determine whether to display the parameters of groups U, A, B, and C on the operating panel.

FP-03 Individualized parameter display mode

Address:	7939		
Min.:	0	Unit:	-
Max.:	11	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

Ones:

0: Hide

1: Display

Tens:

0: Hide

1: Display

Description
This parameter is used to determine whether to display the user-customized parameter group and the user-modified parameter group on the operating panel.

FP-04 **Parameter modification**

Address:	7940		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0: Modification allowed
1: Modification prohibited
Description
This parameter defines whether the user password can be modified.

2.17 A0: Torque Control and Limit Parameters

A0-00 **Speed/Torque control mode**

Address:	40960		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: Speed control
1: Torque control
Description
Two control modes are provided under vector control: speed control and torque control.

A0-01 **Torque reference source**

Address:	40961		
Min.:	0	Unit:	-
Max.:	7	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: Digital setting (A0-03)
1: AI1
2: AI2
3: AI3
4: Reserved
5: Communication (1000H)
6: Min. (AI1, AI2)
7: Max. (AI1, AI2)
Description
This parameter defines the torque reference source. There are a total of seven torque reference sources.

A0-03 **Torque digital setting**

Address:	40963		
Min.:	-2.000	Unit:	%

Max.:	2.000	Data type:	Int16
Default:	1.000	Change:	At once

Value Range:
-2.000% to 2.000%

Description
This parameter defines digital setting of the torque in torque control mode. The torque reference is a relative value. The value 100.0% corresponds to the rated torque of the AC drive. (The output torque of the AC drive can be viewed by using U0-07, where the value 100% corresponds to the rated torque of the AC drive. The output torque of the motor can be viewed by using U0-06, where the value 100% corresponds to the rated torque of the motor.) The value range is –200.0% to +200.0%, indicating that the maximum torque is twice the rated torque.
When the torque reference is a positive value, the AC drive runs in the forward direction. When it is a negative value, the AC drive runs in the reverse direction.

A0-04 **Torque filter time**

Address:	40964		
Min.:	0.000	Unit:	s
Max.:	5.000	Data type:	UInt16
Default:	0.000	Change:	At once

Value Range:
0.000s to 5.000s

Description
This parameter defines the torque filter time. It can be adjusted based on the torque source.

A0-05 **Speed limit digital setting**

Address:	40965		
Min.:	-120.0	Unit:	%
Max.:	120.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
-120.0% to 120.0%

Description
This parameter defines the digital setting of the speed limit.

A0-07 **Acceleration time (torque)**

Address:	40967		
Min.:	0.00	Unit:	s
Max.:	650.00	Data type:	UInt16
Default:	1.00	Change:	At once

Value Range:
0.00s to 650.00s

Description
This parameter defines the torque reference acceleration time.

A0-08 **Deceleration time (torque)**

Address:	40968		
Min.:	0.00	Unit:	s
Max.:	650.00	Data type:	UInt16
Default:	1.00	Change:	At once

Value Range:
0.00s to 650.00s

Description
This parameter defines the torque reference deceleration time.

A0-09 Speed limit reference source

Address:	40969		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0: A0-05
1: Frequency source
Description
This parameter defines the speed limit reference source. When it is set to 0, A0-05 is used as the source. When it is set to 1, the frequency source is used as the source.

A0-10 Speed limit offset

Address:	40970		
Min.:	0.00	Unit:	-
Max.:	655.35	Data type:	UInt16
Default:	5.00	Change:	At once

Value Range:
0.00 to 655.35
Description
The parameter defines the speed limit offset. If the actual speed exceeds the limit by a value greater than the speed limit offset, the output torque will be limited.

A0-11 Effective mode of speed limit offset

Address:	40971		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0: Bidirectional offset effective
1: Unidirectional offset effective
Description
When it is set to 0, bidirectional offset is effective. When it is set to 1, unidirectional offset is effective.

A0-12 Acceleration time (frequency)

Address:	40972		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	1.0	Change:	At once

Value Range:
0.0s to 6500.0s
Description
This parameter defines the frequency acceleration time, which is valid in torque control mode.

A0-13 Deceleration time (frequency)

Address:	40973		
Min.:	0.0	Unit:	s
Max.:	6500.0	Data type:	UInt16
Default:	1.0	Change:	At once

Value Range:
0.0s to 6500.0s
Description
This parameter defines the frequency deceleration time, which is valid in torque control mode.

A0-14 **Torque mode switchover**

Address:	40974		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:
0: Not switched
1: Switched to speed mode upon stop
2: Target torque changed to 0 upon stop
Description
This parameter is used to switch the torque mode. If it is set to 0, no switchover is performed. If it is set to 1, the mode is switched to the speed mode upon stop. If it is set to 2, the target torque is changed to 0 upon stop.

2.18 A1: VDI/VDO

A1-00 **VDI1 function**

Address:	41216		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
0 to 63
Description
VDI1 to VDI5 can be used as multi-functional DIs. The functions 0 to 63 are the same as those of common DIs. For details, see the description of F4-01.

A1-01 **VDI2 function**

Address:	41217		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as A1-00
Description
Same as A1-00

A1-02 **VDI3 function**

Address:	41218		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as A1-00

Description
Same as A1-00

A1-03 VDI4 function

Address:	41219		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as A1-00
Description
Same as A1-00

A1-04 VDI5 function

Address:	41220		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as A1-00
Description
Same as A1-00

A1-05 VDI active state source

Address:	41221		
Min.:	0	Unit:	-
Max.:	22222	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Ones:
0: Parameter setting (A1-06)
1: DO state
2: DI state
Tens:
0: Parameter setting (A1-06)
1: DO state
2: DI state
Hundreds:
0: Parameter setting (A1-06)
1: DO state
2: DI state
Thousands:
0: Parameter setting (A1-06)
1: DO state
2: DI state
Ten thousands:
0: Parameter setting (A1-06)
1: DO state
2: DI state
Description

Three ways of setting VDI status are available and can be selected by using A1-05.
When this parameter is set to 0, the VDI state is determined by the binary bit of A1-06.
When it is set to 1, the VDI state is determined by the state (active or inactive) of the corresponding DO/RO. VDIx is uniquely bound to DOx/ROx (x ranges from 1 to 5).
When it is set to 2, the VDI state is determined by the state (active or inactive) of the corresponding DI. VDIx is uniquely bound to DIx (x ranges from 1 to 5).

A1-06 VDI state

Address:	41222		
Min.:	0	Unit:	-
Max.:	11111	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
Ones:
0: Inactive
1: Active
Tens:
0: Inactive
1: Active
Hundreds:
0: Inactive
1: Active
Thousands:
0: Inactive
1: Active
Ten thousands:
0: Inactive
1: Active

Description
This parameter defines whether VDIx (x ranges from 1 to 5) is active or inactive.

A1-07 AI1 function (used as DI)

Address:	41223		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F4-01

Description
Same as F4-01

A1-08 AI2 function (used as DI)

Address:	41224		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F4-01

Description
Same as F4-01

A1-09 **AI3 function (used as DI)**

Address:	41225		
Min.:	0	Unit:	-
Max.:	63	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Same as F4-01
Description
Same as F4-01

A1-10 **AI active mode (used as DI)**

Address:	41226		
Min.:	0	Unit:	-
Max.:	111	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:
Ones:
0: Active high
1: Active low
Tens:
0: Active high
1: Active low
Hundreds:
0: Active high
1: Active low
Description
Same as F4-01

2.19 A5: Control Optimization Parameters

A5-00 **DPWM switchover frequency upper limit**

Address:	42240		
Min.:	0.00	Unit:	Hz
Max.:	50.00	Data type:	UInt16
Default:	12.00	Change:	At once

Value Range:
0.00 Hz to 50.00 Hz
Description
The AC drive supports two PWM modes: CPWM and DPWM. When the running frequency is higher than A5-00 (switchover frequency), the DPWM mode is used. When the running frequency is lower than A5-00 (switchover frequency), the CPWM mode is used. The DPWM mode can improve the AC drive efficiency, and the CPWM mode can reduce the motor noise.
Increasing the value of this parameter to the maximum frequency will reduce the motor noise.

A5-01 **PWM modulation mode**

Address:	42241		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Asynchronous modulation

1: Synchronous modulation

Description

This parameter defines the PWM modulation mode. Synchronous modulation applies to scenarios that require constant ratio of carrier frequency to modulated wave.

A5-02 Dead-zone compensation

Address:	42242		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

A dead zone must be reserved for the switch signals of the upper and lower switch transistors on the same bridge arm of the AC drive. Dead zone compensation can improve the current waveform when the motor runs at low frequency.

A5-03 Random PWM depth

Address:	42243		
Min.:	0	Unit:	-
Max.:	10	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 10

Description

If the motor noise is large, setting A5-03 to a non-zero value can suppress the motor noise. A higher value indicates better noise suppression effect. However, an excessively high value may affect motor control. Therefore, set this parameter to 1 at the beginning of commissioning and then increase it by 1 each time as required.

A5-04 Fast current limiting

Address:	42244		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Disabled

1: Enabled

Description

This function is used to minimize the overcurrent faults, ensuring normal operation of the AC drive. Disable this function in hoist applications such as cranes.

A5-05 Sampling delay

Address:	42245		
Min.:	1	Unit:	-
Max.:	13	Data type:	UInt16
Default:	5	Change:	At once

Value Range:

1 to 13

Description

This parameter defines the sampling delay.

A5-06 **Undervoltage threshold**

Address:	42246		
Min.:	150.0	Unit:	V
Max.:	455.0	Data type:	UInt16
Default:	Three-phase 400 V: 350.0 V Single-phase 200 V: 200.0 V	Change:	At once

Value Range:

150.0 V to 455.0 V

Description

When the bus voltage is lower than the setpoint of A5-06, the AC drive reports E09.00.

A5-07 **SVC optimization mode**

Address:	42247		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: No optimization

1: Optimization mode 1

2: Optimization mode 2

Description

This parameter defines the SVC optimization mode.

2.20 A6: AI Curve Settings

A6-00 **Curve 4 minimum input**

Address:	42496		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	0.00	Change:	At once

Value Range:

-10.00 V to 10.00 V

Description

This parameter defines the x-axis of the minimum input point on AI curve 4, that is, the minimum analog input voltage (or minimum analog input current).

A6-01 **Percentage corresponding to curve 4 minimum input**

Address:	42497		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:

–100.0% to 100.0%

Description

This parameter defines the y-axis of the minimum input point on AI curve 4, that is, the percentage of the minimum analog input relative to the maximum frequency.

A6-02 **Curve 4 inflection point 1 input**

Address:	42498		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	3.00	Change:	At once

Value Range:
-10.00 V to 10.00 V

Description
This parameter defines the x-axis of inflection 1 on AI curve 4, that is, the analog input voltage (or analog input current) at inflection 1.

A6-03 **Percentage corresponding to curve 4 inflection point 1 input**

Address:	42499		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	30.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
This parameter defines the y-axis of inflection 1 on AI curve 4, that is, the percentage of the analog input at inflection 1 relative to the maximum frequency.

A6-04 **Curve 4 inflection point 2 input**

Address:	42500		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	6.00	Change:	At once

Value Range:
-10.00 V to 10.00 V

Description
This parameter defines the x-axis of inflection 2 on AI curve 4, that is, the analog input voltage (or analog input current) at inflection 2.

A6-05 **Percentage corresponding to curve 4 inflection point 2 input**

Address:	42501		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	60.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
This parameter defines the y-axis of inflection 2 on AI curve 4, that is, the percentage of the analog input at inflection 2 relative to the maximum frequency.

A6-06 **Curve 4 maximum input**

Address:	42502		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	10.00	Change:	At once

Value Range:
-10.00 V to 10.00 V

Description

This parameter defines the x-axis of the maximum input point on AI curve 4, that is, the maximum analog input voltage (or maximum analog input current).

A6-07 Percentage corresponding to curve 4 maximum input

Address:	42503		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	100.0	Change:	At once

Value Range:

–100.0% to 100.0%

Description

This parameter defines the y-axis of the maximum input point on AI curve 4, that is, the percentage of the maximum analog input relative to the maximum frequency.

A6-08 Curve 5 minimum input

Address:	42504		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	–10.00	Change:	At once

Value Range:

–10.00 V to 10.00 V

Description

This parameter defines the x-axis of the minimum input point on AI curve 5, that is, the minimum analog input voltage (or minimum analog input current).

A6-09 Percentage corresponding to curve 5 minimum input

Address:	42505		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	–100.0	Change:	At once

Value Range:

–100.0% to 100.0%

Description

This parameter defines the y-axis of the minimum input point on AI curve 5, that is, the percentage of the minimum analog input relative to the maximum frequency.

A6-10 Curve 5 inflection point 1 input

Address:	42506		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	–3.00	Change:	At once

Value Range:

–10.00 V to 10.00 V

Description

This parameter defines the x-axis of inflection 1 on AI curve 5, that is, the analog input voltage (or analog input current) at inflection 1.

A6-11 Percentage corresponding to curve 5 inflection point 1 input

Address:	42507		
Min.:	–100.0	Unit:	%

Max.:	100.0	Data type:	Int16
Default:	–30.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
This parameter defines the y-axis of inflection 1 on AI curve 5, that is, the percentage of the analog input at inflection 1 relative to the maximum frequency.

A6-12 Curve 5 inflection point 2 input

Address:	42508		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	3.00	Change:	At once

Value Range:
–10.00 V to 10.00 V

Description
This parameter defines the x-axis of inflection 2 on AI curve 5, that is, the analog input voltage (or analog input current) at inflection 2.

A6-13 Percentage corresponding to curve 5 inflection point 2 input

Address:	42509		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	30.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
This parameter defines the y-axis of inflection 2 on AI curve 5, that is, the percentage of the analog input at inflection 2 relative to the maximum frequency.

A6-14 Curve 5 maximum input

Address:	42510		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	10.00	Change:	At once

Value Range:
–10.00 V to 10.00 V

Description
This parameter defines the x-axis of the maximum input point on AI curve 5, that is, the maximum analog input voltage (or maximum analog input current).

A6-15 Percentage corresponding to curve 5 maximum input

Address:	42511		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	100.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
This parameter defines the y-axis of the maximum input point on AI curve 5, that is, the percentage of the maximum analog input relative to the maximum frequency.

A6-16 **AI1 gain**

Address:	42512		
Min.:	–10.00	Unit:	-
Max.:	10.00	Data type:	Int16
Default:	1.00	Change:	At once

Value Range:
–10.00 to 10.00

Description
This parameter defines the AI1 voltage correction gain.

A6-17 **AI1 offset**

Address:	42513		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
This parameter defines the zero offset coefficient for AI1 voltage correction.

A6-18 **AI2 gain**

Address:	42514		
Min.:	–10.00	Unit:	-
Max.:	10.00	Data type:	Int16
Default:	1.00	Change:	At once

Value Range:
–10.00 to 10.00

Description
This parameter defines the AI2 voltage correction gain.

A6-19 **AI2 offset**

Address:	42515		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%

Description
This parameter defines the zero offset coefficient for AI2 voltage correction.

A6-20 **AI3 gain**

Address:	42516		
Min.:	–10.00	Unit:	-
Max.:	10.00	Data type:	Int16
Default:	1.00	Change:	At once

Value Range:
–10.00 to 10.00

Description
This parameter defines the AI3 voltage correction gain.

A6-21 **AI3 offset**

Address: 42517

Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%
Description
This parameter defines the zero offset coefficient for AI3 voltage correction.

A6-24 Jump point of AI1 setting

Address:	42520		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%
Description
This parameter defines the jump point for the AI1 terminal setting.

A6-25 Jump amplitude of AI1 setting

Address:	42521		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.5	Change:	At once

Value Range:
0.0% to 100.0%
Description
This parameter defines the jump amplitude for the AI1 terminal setting.

A6-26 Jump point of AI2 setting

Address:	42522		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16
Default:	0.0	Change:	At once

Value Range:
–100.0% to 100.0%
Description
This parameter defines the jump point for the AI2 terminal setting.

A6-27 Jump amplitude of AI2 setting

Address:	42523		
Min.:	0.0	Unit:	%
Max.:	100.0	Data type:	UInt16
Default:	0.5	Change:	At once

Value Range:
0.0% to 100.0%
Description
This parameter defines the jump amplitude for the AI2 terminal setting.

A6-28 Jump point of AI3 setting

Address:	42524		
Min.:	–100.0	Unit:	%
Max.:	100.0	Data type:	Int16

Default: 0.0 Change: At once

Value Range:

–100.0% to 100.0%

Description

This parameter defines the jump point for the AI3 terminal setting.

A6-29 Jump amplitude of AI3 setting

Address: 42525

Min.: 0.0 Unit: %

Max.: 100.0 Data type: UInt16

Default: 0.5 Change: At once

Value Range:

0.0% to 100.0%

Description

This parameter defines the jump amplitude for the AI3 terminal setting.

2.21 A9: Vector Control Supplementary Parameters

A9-00 Online auto-tuning on rotor time constant of asynchronous motor

Address: 43264

Min.: 0 Unit: -

Max.: 1 Data type: UInt16

Default: 0 Change: At once

Value Range:

0: Disabled

1: Enabled

Description

This parameter defines whether to enable online auto-tuning on the rotor time constant of the asynchronous motor. Enabling it can improve the accuracy of field orientation. The default value is recommended.

A9-04 Maximum torque limit coefficient for the asynchronous motor field-weakening range

Address: 43268

Min.: 30 Unit: -

Max.: 150 Data type: UInt16

Default: 80 Change: At once

Value Range:

30 to 150

Description

This parameter defines the maximum torque limit coefficient for the asynchronous motor field-weakening range. The default value is recommended.

A9-05 Speed filter of asynchronous motor in SVC mode

Address: 43269

Min.: 5 Unit: ms

Max.: 32 Data type: UInt16

Default: 15 Change: At once

Value Range:

5 ms to 32 ms

Description

This parameter defines the speed filter of the asynchronous motor in SVC mode. Increase the value as appropriate in scenarios where the speed fluctuates greatly. The default value is recommended.

A9-06 Asynchronous motor speed feedback processing in SVC mode

Address:	43270		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: No specific processing

1: Limit minimum synchronization frequency based on load change

2: Output fixed current during low-speed running

3: Output fixed current during low-speed running

Description

This parameter defines speed feedback processing of the synchronous motor in SVC mode. The default value is recommended.

A9-07 Field control bandwidth of asynchronous motor in SVC mode

Address:	43271		
Min.:	0.0	Unit:	-
Max.:	8.0	Data type:	UInt16
Default:	2.0	Change:	At once

Value Range:

0.0 to 8.0

Description

This parameter defines the field control bandwidth of the asynchronous motor in SVC mode. The default value is recommended.

A9-08 Low-speed running current of asynchronous motor in SVC mode

Address:	43272		
Min.:	30	Unit:	-
Max.:	170	Data type:	UInt16
Default:	100	Change:	At once

Value Range:

30 to 170

Description

This parameter defines the low-speed running current of the asynchronous motor in SVC mode. The default value is recommended.

A9-09 Switchover frequency of output fixed current of asynchronous motor in SVC mode

Address:	43273		
Min.:	2.0	Unit:	Hz
Max.:	100.0	Data type:	UInt16
Default:	3.0	Change:	At once

Value Range:

2.0 Hz to 100.0 Hz

Description

This parameter defines the switchover frequency of output fixed current of the asynchronous motor in SVC mode. The default value is recommended.

A9-10 **Speed fluctuation suppression coefficient of asynchronous motor in SVC mode**

Address:	43274		
Min.:	0	Unit:	-
Max.:	6	Data type:	UInt16
Default:	3	Change:	At once

Value Range:

0 to 6

Description

This parameter defines the speed fluctuation suppression coefficient of the asynchronous motor in SVC mode. The default value is recommended.

A9-11 **Acceleration/Deceleration time of asynchronous motor in SVC mode**

Address:	43275		
Min.:	0.1	Unit:	s
Max.:	3000.0	Data type:	UInt16
Default:	20.0	Change:	At once

Value Range:

0.1s to 3000.0s

Description

This parameter defines the acceleration/deceleration time of the asynchronous motor in SVC mode. The default value is recommended.

A9-12 **Quick auto-tuning of stator resistance before asynchronous motor startup**

Address:	43276		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Disabled

1: Enabled

Description

This parameter defines whether to enable quick auto-tuning of the stator resistance of the asynchronous motor before startup. The default value is recommended.

A9-13 **Coefficient 1 of quick auto-tuning of asynchronous motor stator resistance**

Address:	43277		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	10	Change:	At stop

Value Range:

0 to 65535

Description

This parameter defines coefficient 1 of quick auto-tuning of stator resistance of the asynchronous motor.

A9-14 **Coefficient 2 of quick auto-tuning of asynchronous motor stator resistance**

Address:	43278		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	10	Change:	At stop

Value Range:

0 to 65535

Description

This parameter defines coefficient 2 of quick auto-tuning of stator resistance of the asynchronous motor.

A9-15 Coefficient 3 of quick auto-tuning of asynchronous motor stator resistance

Address:	43279		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0 to 65535

Description

This parameter defines coefficient 3 of quick auto-tuning of stator resistance of the asynchronous motor.

A9-17 Synchronous motor real-time angle

Address:	43281		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the real-time angle of the synchronous motor.

A9-18 Initial angle detection of synchronous motor

Address:	43282		
Min.:	0	Unit:	-
Max.:	2	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0: Detected upon running

1: Not detected

2: Detected upon initial running after power-on

Description

This parameter defines the detection mode of the initial position angle of the synchronous motor. The default value is recommended.

A9-20 Field weakening mode

Address:	43284		
Min.:	0	Unit:	-
Max.:	3	Data type:	UInt16
Default:	1	Change:	At stop

Value Range:

0: Automatic mode

1: Synchronous motor adjustment mode

2: Synchronous motor hybrid mode

3: Disabled

Description

This parameter defines the field weakening mode. The default value is recommended.

A9-21 **Field-weakening gain of synchronous motor**

Address:	43285		
Min.:	0	Unit:	-
Max.:	50	Data type:	UInt16
Default:	5	Change:	At once

Value Range:

0 to 50

Description

This parameter defines the field-weakening gain of the synchronous motor. The default value is recommended.

A9-22 **Output voltage upper limit margin of synchronous motor**

Address:	43286		
Min.:	0	Unit:	%
Max.:	50	Data type:	UInt16
Default:	5	Change:	At once

Value Range:

0% to 50%

Description

This parameter defines the margin of the output voltage upper limit of the synchronous motor. The default value is recommended.

A9-23 **Maximum output adjustment gain of synchronous motor**

Address:	43287		
Min.:	20	Unit:	%
Max.:	300	Data type:	UInt16
Default:	100	Change:	At once

Value Range:

20% to 300%

Description

This parameter defines the maximum output adjustment gain of the synchronous motor. The default value is recommended.

A9-24 **Exciting current adjustment gain calculated by synchronous motor**

Address:	43288		
Min.:	40	Unit:	%
Max.:	200	Data type:	UInt16
Default:	100	Change:	At once

Value Range:

40% to 200%

Description

This parameter defines the exciting current adjustment gain calculated by the synchronous motor. The default value is recommended.

A9-25 **Estimated synchronous motor speed integral gain in SVC mode**

Address:	43289		
Min.:	5	Unit:	-
Max.:	1000	Data type:	UInt16
Default:	30	Change:	At once

Value Range:

5 to 1000

Description

This parameter defines the speed estimation integral gain of the synchronous motor in SVC mode. The default value is recommended.

A9-26 Estimated synchronous motor speed proportional gain in SVC mode

Address:	43290		
Min.:	5	Unit:	-
Max.:	300	Data type:	UInt16
Default:	20	Change:	At once

Value Range:

5 to 300

Description

This parameter defines the speed estimation proportional gain of the synchronous motor in SVC mode. The default value is recommended.

A9-27 Estimated synchronous motor speed filter in SVC mode

Address:	43291		
Min.:	10	Unit:	-
Max.:	2000	Data type:	UInt16
Default:	100	Change:	At once

Value Range:

10 to 2000

Description

This parameter defines the speed estimation filter of the synchronous motor in SVC mode. The default value is recommended.

A9-28 Minimum carrier frequency of synchronous motor in SVC mode

Address:	43292		
Min.:	8	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	20	Change:	At once

Value Range:

8 to 65535

Description

This parameter defines the minimum carrier frequency of the synchronous motor in SVC mode. The default value is recommended.

A9-29 Low-speed excitation current of synchronous motor in SVC mode

Address:	43293		
Min.:	0	Unit:	%
Max.:	80	Data type:	UInt16
Default:	30	Change:	At once

Value Range:

0% to 80%

Description

This parameter defines the low-speed excitation current of the synchronous motor in SVC mode. The default value is recommended.

A9-40 Low-speed closed-loop current selection (for VVC)

Address:	43304		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16

Default: 0 Change: At stop

Value Range:

0: Disabled

1: Enabled

Description

This parameter defines whether to enable low-speed closed-loop current (for VVC). The default value is recommended.

A9-41 Low-speed closed-loop current (for VVC)

Address: 43305

Min.: 30 Unit: -

Max.: 200 Data type: UInt16

Default: 50 Change: At stop

Value Range:

30 to 200

Description

This parameter defines the low-speed closed-loop current (for PMVVC). The default value is recommended.

A9-42 Oscillation suppression damping coefficient (for VVC)

Address: 43306

Min.: 0 Unit: -

Max.: 500 Data type: UInt16

Default: 100 Change: At once

Value Range:

0 to 500

Description

This parameter defines the oscillation suppression damping coefficient (for PMVVC). The default value is recommended.

A9-43 Initial position compensation angle (for VVC)

Address: 43307

Min.: 0 Unit: -

Max.: 5 Data type: UInt16

Default: 0 Change: At stop

Value Range:

0 to 5

Description

This parameter defines the initial position compensation angle (for PMVVC). The default value is recommended.

A9-44 Initial position compensation angle of synchronous motor

Address: 0xA92C

Min.: 0 Unit: -

Max.: 360 Data type: UInt16

Default: 0 Change: In real time

Value Range:

0 to 360

Description

A9-45 **Synchronous motor low-speed handling**

Address:	0xA92D		
Min.:	0	Unit:	-
Max.:	1	Data type:	UInt16
Default:	0	Change:	At stop

Value Range:

0: Disabled

1: Enabled

Description

A9-46 **Switchover frequency for synchronous motor low-speed handling**

Address:	0xA92E		
Min.:	01	Unit:	-
Max.:	599	Data type:	UInt16
Default:	5	Change:	At stop

Value Range:

0.01 to 5.99

Description

A9-47 **Synchronous motor low-speed handling current**

Address:	0xA92F		
Min.:	10	Unit:	-
Max.:	200	Data type:	UInt16
Default:	100	Change:	At stop

Value Range:

10 to 200

Description

A9-48 **Synchronous motor low-speed handling feedback suppression coefficient**

Address:	0xA930		
Min.:	0	Unit:	-
Max.:	300	Data type:	UInt16
Default:	32	Change:	At stop

Value Range:

0 to 300

Description

A9-51 **Advanced settings for asynchronous motor parameter auto-tuning**

Address:	0xA933		
Min.:	0	Unit:	-
Max.:	1111	Data type:	UInt16
Default:	111	Change:	At stop

Value Range:

Ones: Rotor resistance and leakage inductance DC offset
0: Standard offset
1: Large offset
Tens: New rotor resistance and leakage inductance auto-tuning algorithm
0: Disabled
1: Enabled
Hundreds: New mutual inductance static auto-tuning algorithm
0: Disabled
1: Enabled
Thousands: Stator resistance auto-tuning algorithm
0: Current open loop
1: Current closed loop
Description

2.22 AF: Process Data Address Mapping

AF-00 **RPDO1-SubIndex0-H**

Address:	44800		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO1-SubIndex0-H

AF-01 **RPDO1-SubIndex0-L**

Address:	44801		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO1-SubIndex0-L

AF-02 **RPDO1-SubIndex1-H**

Address:	44802		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO1-SubIndex1-H

AF-03 **RPDO1-SubIndex1-L**
Address: 44803

Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO1-SubIndex1-L

AF-04 RPDO1-SubIndex2-H
Address: 44804
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO1-SubIndex2-H

AF-05 RPDO1-SubIndex2-L
Address: 44805
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO1-SubIndex2-L

AF-06 RPDO1-SubIndex3-H
Address: 44806
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO1-SubIndex3-H

AF-07 RPDO1-SubIndex3-L
Address: 44807
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO1-SubIndex3-L

AF-08 RPDO2-SubIndex0-H
Address: 44808
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex0-H

AF-09 RPDO2-SubIndex0-L

Address: 44809

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex0-L

AF-10 RPDO2-SubIndex1-H

Address: 44810

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex1-H

AF-11 RPDO2-SubIndex1-L

Address: 44811

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex1-L

AF-12 RPDO2-SubIndex2-H

Address: 44812

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex2-H

AF-13 RPDO2-SubIndex2-L

Address: 44813

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex2-L

AF-14 **RPDO2-SubIndex3-H**

Address:	44814		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex3-H

AF-15 **RPDO2-SubIndex3-L**

Address:	44815		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

RPDO2-SubIndex3-L

AF-16 **RPDO3-SubIndex0-H**

Address:	44816		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

RPDO3-SubIndex0-H

AF-17 **RPDO3-SubIndex0-L**

Address:	44817		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description

RPDO3-SubIndex0-L

AF-18 **RPDO3-SubIndex1-H**

Address:	44818		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:

0 to 65535

Description
RPDO3-SubIndex1-H

AF-19 **RPDO3-SubIndex1-L**

Address:	44819		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO3-SubIndex1-L

AF-20 **RPDO3-SubIndex2-H**

Address:	44820		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO3-SubIndex2-H

AF-21 **RPDO3-SubIndex2-L**

Address:	44821		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO3-SubIndex2-L

AF-22 **RPDO3-SubIndex3-H**

Address:	44822		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO3-SubIndex3-H

AF-23 **RPDO3-SubIndex3-L**

Address:	44823		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
RPDO3-SubIndex3-L

AF-24 **RPDO4-SubIndex0-H**

Address: 44824
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
RPDO4-SubIndex0-H

AF-25 **RPDO4-SubIndex0-L**

Address: 44825
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
RPDO4-SubIndex0-L

AF-26 **RPDO4-SubIndex1-H**

Address: 44826
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
RPDO4-SubIndex1-H

AF-27 **RPDO4-SubIndex1-L**

Address: 44827
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
RPDO4-SubIndex1-L

AF-28 **RPDO4-SubIndex2-H**

Address: 44828
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
RPDO4-SubIndex2-H

AF-29 **RPDO4-SubIndex2-L**

Address: 44829
Min.: 0 Unit: -

Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO4-SubIndex2-L

AF-30 RPDO4-SubIndex3-H
Address: 44830
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO4-SubIndex3-H

AF-31 RPDO4-SubIndex3-L
Address: 44831
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
RPDO4-SubIndex3-L

AF-32 TPDO1-SubIndexO-H
Address: 44832
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO1-SubIndexO-H

AF-33 TPDO1-SubIndexO-L
Address: 44833
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO1-SubIndexO-L

AF-34 TPDO1-SubIndex1-H
Address: 44834
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535
Description
TPDO1-SubIndex1-H

AF-35 TPDO1-SubIndex1-L

Address:	44835		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO1-SubIndex1-L

AF-36 TPDO1-SubIndex2-H

Address:	44836		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO1-SubIndex2-H

AF-37 TPDO1-SubIndex2-L

Address:	44837		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO1-SubIndex2-L

AF-38 TPDO1-SubIndex3-H

Address:	44838		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO1-SubIndex3-H

AF-39 TPDO1-SubIndex3-L

Address:	44839		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535

Description
TPDO1-SubIndex3-L

AF-40 **TPDO2-SubIndex0-H**

Address:	44840		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO2-SubIndex0-H

AF-41 **TPDO2-SubIndex0-L**

Address:	44841		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO2-SubIndex0-L

AF-42 **TPDO2-SubIndex1-H**

Address:	44842		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO2-SubIndex1-H

AF-43 **TPDO2-SubIndex1-L**

Address:	44843		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO2-SubIndex1-L

AF-44 **TPDO2-SubIndex2-H**

Address:	44844		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO2-SubIndex2-H

AF-45 **TPDO2-SubIndex2-L**

Address: 44845
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
TPDO2-SubIndex2-L

AF-46 **TPDO2-SubIndex3-H**

Address: 44846
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
TPDO2-SubIndex3-H

AF-47 **TPDO2-SubIndex3-L**

Address: 44847
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
TPDO2-SubIndex3-L

AF-48 **TPDO3-SubIndex0-H**

Address: 44848
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
TPDO3-SubIndex0-H

AF-49 **TPDO3-SubIndex0-L**

Address: 44849
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535

Description
TPDO3-SubIndex0-L

AF-50 **TPDO3-SubIndex1-H**

Address: 44850
Min.: 0 Unit: -

Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO3-SubIndex1-H

AF-51 TPDO3-SubIndex1-L
Address: 44851
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO3-SubIndex1-L

AF-52 TPDO3-SubIndex2-H
Address: 44852
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO3-SubIndex2-H

AF-53 TPDO3-SubIndex2-L
Address: 44853
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO3-SubIndex2-L

AF-54 TPDO3-SubIndex3-H
Address: 44854
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once
Value Range:
0 to 65535
Description
TPDO3-SubIndex3-H

AF-55 TPDO3-SubIndex3-L
Address: 44855
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: At once

Value Range:
0 to 65535
Description
TPDO3-SubIndex3-L

AF-56 TPDO4-SubIndex0-H

Address:	44856		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex0-H

AF-57 TPDO4-SubIndex0-L

Address:	44857		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex0-L

AF-58 TPDO4-SubIndex1-H

Address:	44858		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex1-H

AF-59 TPDO4-SubIndex1-L

Address:	44859		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex1-L

AF-60 TPDO4-SubIndex2-H

Address:	44860		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535

Description
TPDO4-SubIndex2-H

AF-61 **TPDO4-SubIndex2-L**

Address:	44861		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex2-L

AF-62 **TPDO4-SubIndex3-H**

Address:	44862		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex3-H

AF-63 **TPDO4-SubIndex3-L**

Address:	44863		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	At once

Value Range:
0 to 65535
Description
TPDO4-SubIndex3-L

AF-66 **Number of valid RPDOs**

Address:	44866		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the number of valid RPDOs.

AF-67 **Number of valid TPDOs**

Address:	44867		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the number of valid TPDOs.

2.23 U0: General Monitoring Parameters

U0-00 **Running frequency**

Address:	28672		
Min.:	0.00	Unit:	Hz
Max.:	320.00	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0.00 Hz to target frequency

Description

This parameter shows the running frequency (Hz) of the AC drive.

U0-01 **Frequency reference**

Address:	28673		
Min.:	0.00	Unit:	Hz
Max.:	320.00	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0.00 Hz to target frequency

Description

This parameter shows the frequency reference (Hz) of the AC drive.

U0-02 **Bus voltage**

Address:	28674		
Min.:	0.0	Unit:	V
Max.:	3000.0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0.0 V to 3000.0 V

Description

This parameter defines the bus voltage (V) of the AC drive.

U0-03 **Output voltage**

Address:	28675		
Min.:	0	Unit:	V
Max.:	1140	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0 V to 1140 V

Description

This parameter shows the output voltage (V) of the AC drive.

U0-04 **Output current**

Address:	28676		
Min.:	0.00	Unit:	A
Max.:	655.35	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0.00 A to 655.35 A

Description

This parameter shows the output current (A) of the AC drive.

U0-05 **Output power**

Address:	28677		
Min.:	0.0	Unit:	kW
Max.:	3276.7	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:

0.0 kW to 3276.7 kW

Description

This parameter shows the output power (kW) of the AC drive.

U0-06 **Output torque**

Address:	28678		
Min.:	-200.0	Unit:	%
Max.:	200.0	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:

–200.0% to +200.0%

Description

This parameter shows the output torque (%) of the AC drive.

U0-07 **DI state**

Address:	28679		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

Input state of the DI terminal of the AC drive

Bit0: DI1
Bit1: DI2
Bit2: DI3
Bit3: DI4
Bit4: DI5
Bit5: DI6
Bit6: DI7
Bit7: DI8
Bit8: VDI1
Bit9: VDI2
Bit10: VDI3
Bit11: VDI4
Bit12: VDI5
Bit13: AI1-DI
Bit14: AI2-DI
Bit15: AI3-DI

U0-08 **DO/RO state**

Address:	28680		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

Output state of the DO/RO terminal of the AC drive

Bit0: DO1/RO1

Bit1: DO2/RO2

Bit2: DO3/RO3

Bit3: DO4/RO4

Bit4: DO5/RO5

U0-09 AI1 voltage

Address:	28681		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:

–10.00 V to 10.00 V

Description

Voltage (V) of the current AI1

U0-10 AI2 voltage

Address:	28682		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:

–10.00 V to 10.00 V

Description

Voltage (V) of the current AI2

U0-11 AI3 voltage

Address:	28683		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:

–10.00 V to 10.00 V

Description

Voltage (V) of the current AI3

U0-12 Count value

Address:	28684		
Min.:	1	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

1 to 65535

Description

Count value

U0-13 Length value

Address:	28685		
Min.:	1	Unit:	-

Max.: 65535 Data type: UInt16
Default: Model dependent Change: Unchangeable
Value Range:
1 to 65535
Description
Length value

U0-14 Load speed display
Address: 28686
Min.: - Unit: -
Max.: - Data type: UInt16
Default: Model dependent Change: Unchangeable
Value Range:
0 to rated motor speed
Description
Load speed display

U0-15 PID reference
Address: 28687
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: Model dependent Change: Unchangeable
Value Range:
0 to 65535
Description
PID reference

U0-16 PID feedback
Address: 28688
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: Model dependent Change: Unchangeable
Value Range:
0 to 65535
Description
PID feedback

U0-17 PLC stage
Address: 28689
Min.: 0 Unit: -
Max.: 15 Data type: UInt16
Default: Model dependent Change: Unchangeable
Value Range:
0 to 15
Description
PLC stage

U0-19 Feedback speed
Address: 28691
Min.: - Unit: Hz
Max.: - Data type: Int16
Default: Model dependent Change: Unchangeable

Value Range:
0.00 Hz to maximum frequency
Description
Feedback speed

U0-20 Remaining runtime

Address:	28692		
Min.:	0.0	Unit:	min
Max.:	6500.0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0.0 min to 6500.0 min
Description
Remaining runtime

U0-21 AI1 voltage after gain and offset

Address:	28693		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:
–10.00 V to 10.00 V
Description
Voltage (V) of AI1 after gain and offset

U0-22 AI2 voltage after gain and offset

Address:	28694		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:
–10.00 V to 10.00 V
Description
Voltage (V) of AI2 after gain and offset

U0-23 AI3 voltage after gain and offset

Address:	28695		
Min.:	–10.00	Unit:	V
Max.:	10.00	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:
–10.00 V to 10.00 V
Description
Voltage (V) of AI3 after gain and offset

U0-24 Linear speed

Address:	28696		
Min.:	0	Unit:	m/min
Max.:	65535	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0 m/min to 65535 m/min

Description
Linear speed

U0-25 **Current power-on time**

Address:	28697		
Min.:	0	Unit:	min
Max.:	65000	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0 min to 65000 min
Description
Duration (min) from power-on to the current time.

U0-26 **Current running time**

Address:	28698		
Min.:	0.0	Unit:	min
Max.:	6500.0	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0.0 min to 6500.0 min
Description
Duration (min) from power-on to the current time.

U0-28 **Communication**

Address:	28700		
Min.:	–100.00	Unit:	%
Max.:	100.00	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:
–100.00% to 100.00%
Description
Communication

U0-30 **Main frequency X display**

Address:	28702		
Min.:	0.00	Unit:	Hz
Max.:	500.00	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0.00 Hz to 500.00 Hz
Description
Main frequency (Hz) of the AC drive

U0-31 **Auxiliary frequency Y display**

Address:	28703		
Min.:	0.00	Unit:	Hz
Max.:	500.00	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0.00 Hz to 500.00 Hz
Description
Auxiliary frequency (Hz) of the AC drive

U0-33 **Synchronous motor rotor position**

Address:	28705		
Min.:	0.0	Unit:	°
Max.:	359.9	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0.0° to 359.9°
Description
Synchronous motor rotor position

U0-35 **Target torque (%)**

Address:	28707		
Min.:	-200.0	Unit:	%
Max.:	200.0	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:
–200.0% to +200.0%
Description
Target torque

U0-37 **Power factor angle**

Address:	28709		
Min.:	0.0	Unit:	°
Max.:	6553.5	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0.0° to 6553.5°
Description
Power factor angle

U0-39 **Target voltage upon V/f separation**

Address:	28711		
Min.:	-	Unit:	V
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0 V to target voltage
Description
Target voltage upon V/f separation

U0-40 **Output voltage upon V/f separation**

Address:	28712		
Min.:	-	Unit:	V
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0 V to output voltage
Description
Output voltage upon V/f separation

U0-41 **DI state display**

Address: 28713

Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: Model dependent Change: Unchangeable
Value Range:
0 to 65535
Description
DI state display

U0-42 DO/RO state display
Address: 28714
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: Model dependent Change: Unchangeable
Value Range:
0 to 65535
Description
DO/RO state display

U0-43 DI function state display 1
Address: 28715
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: Model dependent Change: Unchangeable
Value Range:
0 to 65535
Description
Validity of terminal functions 1 to 40.

U0-44 DI function state display 2
Address: 28716
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: Model dependent Change: Unchangeable
Value Range:
0 to 65535
Description
Validity of terminal functions 41 to 59.

U0-45 Fault code
Address: 28717
Min.: 0 Unit: -
Max.: 51 Data type: UInt16
Default: Model dependent Change: Unchangeable
Value Range:
0 to 51
Description
Fault code of the AC drive

U0-46 Fault subcode
Address: 28718
Min.: 0 Unit: -
Max.: 51 Data type: UInt16

Default: Model dependent Change: Unchangeable

Value Range:

0 to 51

Description

Fault subcode of the AC drive

U0-47 Drive unit temperature

Address: 28719

Min.: -20 Unit: °C

Max.: 120 Data type: Int16

Default: Model dependent Change: Unchangeable

Value Range:

-20°C to 120°C

Description

Heatsink temperature of the IGBT

U0-48 Voltage received through PTC channel 1

Address: 28720

Min.: - Unit: V

Max.: - Data type: Int16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

Voltage (V) received from the power supply unit when AI1 is used for temperature sensor input

U0-49 Voltage received through PTC channel 2

Address: 28721

Min.: - Unit: V

Max.: - Data type: Int16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

Voltage (V) received from the power supply unit when AI2 is used for temperature sensor input

U0-50 Voltage received through PTC channel 3

Address: 28722

Min.: - Unit: V

Max.: - Data type: Int16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

Voltage (V) received from the power supply unit when AI3 is used for temperature sensor input

U0-51 PTC1 temperature

Address: 28723

Min.: - Unit: °C

Max.: - Data type: Int16

Default: Model dependent Change: Unchangeable

Value Range:

-

Description

Temperature (°C) calculated when AI1 is used for temperature sensor input

U0-52 PTC2 temperature

Address:	28724		
Min.:	-	Unit:	°C
Max.:	-	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

Temperature (°C) calculated when AI2 is used for temperature sensor input

U0-53 PTC3 temperature

Address:	28725		
Min.:	-	Unit:	°C
Max.:	-	Data type:	Int16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

Temperature (°C) calculated when AI3 is used for temperature sensor input

U0-54 Motor speed

Address:	28726		
Min.:	-	Unit:	RPM
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

Current motor speed (RPM)

U0-55 Station number auto allocated

Address:	28727		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

Station number that is automatically assigned

U0-56 Identified axis type

Address:	28728		
Min.:	1	Unit:	-
Max.:	3	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

1 to 3

Description

Axis type identified by the AC drive
1: Single axis
2: Axis 1 of dual-axis drive unit
3: Axis 2 of dual-axis drive unit

U0-61 AC drive operation status word 1

Address: 28733
Min.: - Unit: -
Max.: - Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:
-

Description
AC drive operation status word 1
1: Forward running
2: Reverse running
3: Stopped
4: Motor auto-tuning
5: Faulty

U0-64 Special protocol status word

Address: 28736
Min.: - Unit: -
Max.: - Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:
-

Description
AC drive operation status word 2
Bit1 to Bit0: Running status
Bit2: Jog enabled or not
Bit4 to Bit3: Running direction state
Bit3 to Bit7: Reserved
Bit8: Main frequency set by communication
Bit9: Main frequency set by AI
Bit10: Command source from communication
Bit11 to Bit15: Reserved

U0-68 AC drive operation status word 2

Address: 28740
Min.: - Unit: -
Max.: - Data type: UInt16
Default: Model dependent Change: Unchangeable

Value Range:
-

Description
AC drive operation status word 2
Bit0: Running status
Bit1: Forward/Reverse state
Bit2: Whether a fault occurs
Bit3: Whether the output frequency reaches the frequency reference

Bit4: Communication normal flag
Bit5 to Bit7: Reserved
Bit8 to Bit15: Fault code

U0-78 AC drive rated current

Address:	28750		
Min.:	-	Unit:	A
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0.0 A to AC drive rated current
Description
Rated current (A) of the AC drive

U0-79 AC drive power

Address:	28751		
Min.:	-	Unit:	kW
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
0.0 V to AC drive rated voltage
Description
Rated power (kW) of the AC drive

U0-81 Local LED status

Address:	28753		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
-
Description
LED status of the drive unit
Bit0: RUN indicator
Bit1: Fault indicator

U0-88 Alarm code

Address:	28760		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:
-
Description
Alarm code of the AC drive

U0-89 Alarm subcode

Address:	28761		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

Alarm subcode of the AC drive

U0-90 **Fan speed percentage reference**

Address:	28762		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

This parameter shows the current speed reference of the fan.

U0-91 **PTC1 mode**

Address:	28763		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

AI1 input type

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U0-92 **PTC2 mode**

Address:	28764		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

AI2 input type

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U0-93 **PTC3 mode**

Address:	28765		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

AI3 input type

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U0-95 STO initialization flag

Address:	28767		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

STO initialization flag

0: Initialization failed

1: Initialization succeeded

U0-96 STO status word monitoring

Address:	28768		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

STO internal status word monitoring

U0-97 STO model

Address:	28769		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

Flag used for identifying STO models

0: Non-STO model

1: STO model

U0-98 STO AD sampling value

Address:	28770		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

AD value of the supply voltage of the STO circuit

U0-99 **STO internal execution flag**

Address:	28771		
Min.:	-	Unit:	-
Max.:	-	Data type:	UInt16
Default:	Model dependent	Change:	Unchangeable

Value Range:

-

Description

Execution flag of the STO internal detection program

2.24 U3: 73xxH Address Communication Data Monitoring Parameters

U3-16 **Communication frequency**

Address:	29456		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter defines the frequency reference set through communication.

U3-17 **Communication control command**

Address:	29457		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0: Stop according to F6-10

1: Forward run

2: Reverse run

3: Forward jog

4: Reverse jog

5: Coast to stop

6: Decelerate to stop

7: Fault reset

Description

This parameter shows the control command written through communication.

U3-18 **Communication control DO/RO**

Address:	29458		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
Bit0: DO1/RO1
Bit1: DO2/RO2
Bit2: DO3/RO3
Bit3: DO4/RO4
Bit4: DO5/RO5
Description
This parameter shows the DO/RO control value written through communication.

2.25 U4: CANopen 402 Data Monitoring Parameters

U4-00 **Fault code**

Address:	29696		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the fault code of CiA 402.

U4-01 **Control word**

Address:	29697		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the control word of CiA 402.

U4-02 **Status word**

Address:	29698		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the status word of CiA 402.

U4-03 **Target speed**

Address:	29699		
Min.:	0	Unit:	RPM
Max.:	65535	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:
0 RPM to 65535 RPM
Description
This parameter shows the target speed of CiA 402.

U4-04 **Preset speed**

Address:	29700		
Min.:	0	Unit:	RPM
Max.:	65535	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

0 RPM to 65535 RPM

Description

This parameter shows the speed reference of CiA 402.

U4-05 **Output speed**

Address:	29701		
Min.:	0	Unit:	RPM
Max.:	65535	Data type:	Int16
Default:	0	Change:	Unchangeable

Value Range:

0 RPM to 65535 RPM

Description

This parameter shows the output speed of CiA 402.

U4-14 **Fast stop mode**

Address:	29710		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the fast stop mode of CiA 402.

U4-16 **Disabling stop mode**

Address:	29712		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the disabling stop mode of CiA 402.

U4-19 **Mode selection**

Address:	29715		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mode of CiA 402.

U4-20 **Mode display**

Address: 29716

Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows mode display of CiA 402.

U4-22 Output torque

Address:	29718		
Min.:	0.0	Unit:	%
Max.:	6553.5	Data type:	Int16
Default:	0.0	Change:	Unchangeable

Value Range:
0.0% to 6553.5%
Description
This parameter shows the output torque of CiA 402.

2.26 U5: I/O Data Monitoring Parameters

U5-00 Power supply unit DI - hardware resource

Address:	29952		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the DI resources of the power supply unit received by the AC drive.

U5-01 Power supply unit DO/RO - hardware resource

Address:	29953		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the DO/RO resources of the power supply unit received by the AC drive.

U5-02 Power supply unit AI - hardware resource

Address:	29954		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the AI resources of the power supply unit received by the AC drive.

U5-04 **Extension card 1 - DI hardware resource**

Address:	29956		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the DI resources of extension card 1 received by the AC drive.

U5-05 **Extension card 1 - DO/RO hardware resource**

Address:	29957		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the DO/RO resources of extension card 1 received by the AC drive.

U5-06 **Extension card 1 - AI hardware resource**

Address:	29958		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the AI resources of extension card 1 received by the AC drive.

U5-08 **Extension card 2 - DI hardware resource**

Address:	29960		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the DI resources of extension card 2 received by the AC drive.

U5-09 **Extension card 2 - DO/RO hardware resource**

Address:	29961		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the DO/RO resources of extension card 2 received by the AC drive.

U5-10 **Extension card 2 - AI hardware resource**
Address: 29962

Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the AI resources of extension card 2 received by the AC drive.

U5-12 Extension card 3 - DI hardware resource

Address:	29964		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the DI resources of extension card 3 received by the AC drive.

U5-13 Extension card 3 - DO/RO hardware resource

Address:	29965		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the DO/RO resources of extension card 3 received by the AC drive.

U5-14 Extension card 3 - AI hardware resource

Address:	29966		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the AI resources of extension card 3 received by the AC drive.

U5-20 Power supply unit DI - mapping

Address:	29972		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the mapping between the AC drive and DIs on the power supply unit.

U5-21 Power supply unit DO/RO - mapping

Address:	29973		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mapping between the AC drive and DOs/ROs on the power supply unit.

U5-22 Power supply unit AI - mapping

Address: 29974

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mapping between the AC drive and AIs on the power supply unit.

U5-24 Extension card 1 - DI mapping

Address: 29976

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mapping between the AC drive and DIs on extension card 1.

U5-25 Extension card 1 - DO/RO mapping

Address: 29977

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mapping between the AC drive and DOs/ROs on extension card 1.

U5-26 Extension card 1 - AI mapping

Address: 29978

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mapping between the AC drive and AIs on extension card 1.

U5-28 Extension card 2 - DI mapping

Address: 29980

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mapping between the AC drive and DIs on extension card 2.

U5-29 Extension card 2 - DO/RO mapping

Address:	29981		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mapping between the AC drive and DOs/ROs on extension card 2.

U5-30 Extension card 2 - AI mapping

Address:	29982		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mapping between the AC drive and AIs on extension card 2.

U5-32 Extension card 3 - DI mapping

Address:	29984		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mapping between the AC drive and DIs on extension card 3.

U5-33 Extension card 3 - DO/RO mapping

Address:	29985		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the mapping between the AC drive and DOs/ROs on extension card 3.

U5-34 Extension card 3 - AI mapping

Address:	29986		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description
This parameter shows the mapping between the AC drive and AIs on extension card 3.

U5-40 **Power supply unit - DI data**

Address:	29992		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the state of the DI of the power supply unit received by the AC drive.

U5-41 **Extension card 1 - DI data**

Address:	29993		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the state of the DI of extension card 1 received by the AC drive.

U5-42 **Extension card 2 - DI data**

Address:	29994		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the state of the DI of extension card 2 received by the AC drive.

U5-43 **Extension card 3 - DI data**

Address:	29995		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the state of the DI of extension card 3 received by the AC drive.

U5-45 **Drive unit DO/RO data**

Address:	29997		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the DO/RO data sent by the AC drive.

U5-50 **Power supply unit - AI1 function**

Address:	30002		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the AI1 function of the power supply unit received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U5-51 **Power supply unit - AI2 function**

Address:	30003		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the AI2 function of the power supply unit received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U5-52 **Extension card 1 - AI1 function**

Address:	30004		
Min.:	0	Unit:	-
Max.:	65535	Data type:	UInt16
Default:	0	Change:	Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the AI function of extension card 1 received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC130 input

U5-53 **Extension card 1 - AI2 function**

Address: 30005

Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter shows the AI2 function of extension card 1 received by the AC drive.
0: Voltage input
1: Current input
2: PT100 input
3: PT1000 input
4: KTY84 input
5: PTC130 input

U5-54 Extension card 2 - AI1 function

Address: 30006
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter shows the AI1 function of extension card 2 received by the AC drive.
0: Voltage input
1: Current input
2: PT100 input
3: PT1000 input
4: KTY84 input
5: PTC131 input

U5-55 Extension card 2 - AI2 function

Address: 30007
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535

Description
This parameter shows the AI2 function of extension card 2 received by the AC drive.
0: Voltage input
1: Current input
2: PT100 input
3: PT1000 input
4: KTY84 input
5: PTC131 input

U5-56 Extension card 3 - AI1 function

Address: 30008
Min.: 0 Unit: -
Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the AI1 function of extension card 3 received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC132 input

U5-57 Extension card 3 - AI2 function

Address: 30009

Min.: 0 Unit: -

Max.: 65535 Data type: UInt16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the AI2 function of extension card 3 received by the AC drive.

0: Voltage input

1: Current input

2: PT100 input

3: PT1000 input

4: KTY84 input

5: PTC132 input

U5-60 Power supply unit - AI1 voltage

Address: 30012

Min.: 0 Unit: -

Max.: 65535 Data type: Int16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the AI1 voltage of the power supply unit received by the AC drive.

U5-61 Power supply unit - AI2 voltage

Address: 30013

Min.: 0 Unit: -

Max.: 65535 Data type: Int16

Default: 0 Change: Unchangeable

Value Range:

0 to 65535

Description

This parameter shows the AI2 voltage of the power supply unit received by the AC drive.

U5-62 Extension card 1 - AI1 voltage

Address: 30014

Min.: 0 Unit: -

Max.: 65535 Data type: Int16
Default: 0 Change: Unchangeable
Value Range:
0 to 65535
Description
This parameter shows the AI1 voltage of extension card 1 received by the AC drive.

U5-63 Extension card 1 - AI2 voltage
Address: 30015
Min.: 0 Unit: -
Max.: 65535 Data type: Int16
Default: 0 Change: Unchangeable
Value Range:
0 to 65535
Description
This parameter shows the AI2 voltage of extension card 1 received by the AC drive.

U5-64 Extension card 2 - AI1 voltage
Address: 30016
Min.: 0 Unit: -
Max.: 65535 Data type: Int16
Default: 0 Change: Unchangeable
Value Range:
0 to 65535
Description
This parameter shows the AI1 voltage of extension card 2 received by the AC drive.

U5-65 Extension card 2 - AI2 voltage
Address: 30017
Min.: 0 Unit: -
Max.: 65535 Data type: Int16
Default: 0 Change: Unchangeable
Value Range:
0 to 65535
Description
This parameter shows the AI2 voltage of extension card 2 received by the AC drive.

U5-66 Extension card 3 - AI1 voltage
Address: 30018
Min.: 0 Unit: -
Max.: 65535 Data type: Int16
Default: 0 Change: Unchangeable
Value Range:
0 to 65535
Description
This parameter shows the AI1 voltage of extension card 3 received by the AC drive.

U5-67 Extension card 3 - AI2 voltage
Address: 30019
Min.: 0 Unit: -
Max.: 65535 Data type: Int16
Default: 0 Change: Unchangeable

Value Range:
0 to 65535
Description
This parameter shows the AI2 voltage of extension card 3 received by the AC drive.

3 Software Tools

3.1 LED Operating Panel

3.1.1 Description of the Operating Panel

The LED operating panel displays the running status and allows you to set parameters and view fault information. The following figure shows the operating panel.

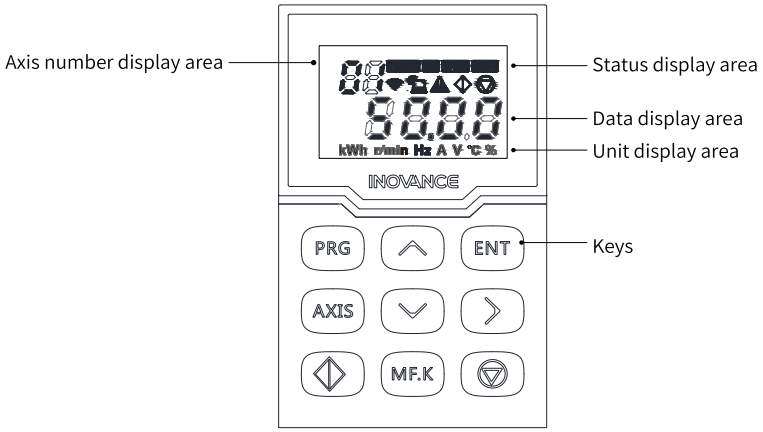


Figure 3-1 Operating panel

Keys

Table 3–1 Keys

Key	Name	Function
PRG	Programming	Returns to the previous page. Enters Level I menu.
ENT	Enter	Goes to the next page. Confirms the mode, parameter, and value.
AXIS	Axis switchover key	Switches between multiple axes. The power supply unit is selected by default.
∧	Increment	Changes (Increases) the parameter number and value.
∨	Decrement	Changes (Decreases) the parameter number and value.
>	Shift	Shifts to the right to select parameters to display in cycle. Shifts the bit to modify to the right when setting the parameter number or value.
MF.K	Multifunction	Switches among selected functions according to the setting of F7-01.
◇	Run	Runs the AC drive when the operating panel control mode is used.
▽	Stop/Fault reset	Stops the AC drive when the AC drive is running. Resets to clear the fault when a fault is reported.

Status Indicators

The status indicators are on the drive unit.

Table 3–2 Indicators on the drive unit

Symbol	Name	Status
PWR (yellow)	Power indicator	Steady ON: The device is powered on. OFF: The device is powered off.
RUN (green)	RUN indicator	Steady ON: The device is running. OFF: The device is stopped. Blinking: The device is operated through the operating panel of the power supply unit.
ERR (red)	Alarm indicator	Steady ON: The device is faulty. OFF: The device is normal. Blinking: An alarm is generated.

Data Display

- Axis number display area
  Two-digit LED display is used: 0 indicates the power supply unit and 1 to 8 indicates the drive units.
- Status display area

Table 3–3 Status icons

Icon	Name	Function	Status
AXIS	Axis (AXIS)	Axis switchover key	-
TC	Torque control (TC)	Torque control mode	Steady ON: The torque control mode is used. Blinking: Auto-tuning is in progress.
FWD	Forward (FWD)	Forward running	-
REV	Reverse (REV)	Reverse running	-
	Wi-Fi	Wi-Fi connection mode	-
	Remote	Remote connection mode	Steady ON: terminal control as command source Blinking: communication control as command source
	Alarm	Alarm state	Steady ON: The device is faulty. Blinking: An alarm is generated.
	Run	Running state	-
	Stop	Stop state	-

- Data display area
  Five-digit data is displayed on the LED display of the operating panel. The data is used to indicate the frequency reference, output frequency, various monitoring data, and fault codes.
- Unit display area

Table 3–4 Units

Unit	Description
kWh	Energy unit
RPM	Speed unit
Hz	Frequency unit
A	Current unit
V	Voltage unit
°C	Temperature unit
%	Percentage

3.1.2 Related Parameters

Table 3–5 Parameters related to the operating panel

Para. No.	Name	Default	Value Range	Description
F7-01	MF.K key function	0	0: MF.K key disabled 1: Switchover between operating panel control and remote command control (terminal or communication) 2: Switchover between forward and reverse run 3: Forward jog 4: Reverse jog	The MF.K key is a multi-functional key. This parameter is used to set the function of the MF.K key. 0: MF.K key disabled The MF.K key does not work. 1: Switchover between operating panel control and remote command control (terminal or communication) When F0-02 is set to 0 (operating panel), the MF.K does not work. When F0-02 is set to 1 (terminal), the MF.K key implements switchover from terminal I/O control to operating panel control. When F0-02 is set to 2 (communication), the MF.K key implements switchover from communication control to operating panel control. 2: Switchover between forward and reverse run The direction of the frequency reference can be changed by using the MF.K key. This function is valid only when the command source is set to operating panel control. 3: Forward jog Forward jog (FJOG) can be enabled by using the MF.K key. This function is valid only when the command source is set to operating panel control. 4: Reverse jog Reverse jog (RJOG) can be enabled by using the MF.K key. This function is valid only when the command source is set to operating panel control.
F7-02	STOP key function	0	0: Valid only under operating panel control 1: Valid in all operation modes	The STOP key on the operating panel is used for stop/ reset. This parameter is used to set the function of this key. 0: Valid only under operating panel control This key is valid only under operating panel control. 1: Valid in all operation modes This key is valid in all operation modes.

Para. No.	Name	Default	Value Range	Description
F7-03	LED display 1 in running state	31	Bit00: Running frequency (Hz) Bit01: Frequency reference (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: DI state Bit08: DO state Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: AI3 voltage (V) Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID reference	To display a parameter during running, set the corresponding bit to 1, convert the binary number to a hexadecimal equivalent, and set it in F7-03.
F7-04	LED display 2 in running state	0	Bit00: PID feedback Bit01: PLC stage Bit02: Reserved Bit03: Running frequency 2 (Hz) Bit04: Remaining running time Bit05: Reserved Bit06: Reserved Bit07: Reserved Bit08: Linear speed Bit09: Current power-on time (min) Bit10: Current running time (min) Bit11: Reserved Bit12: Communication Bit13: Reserved Bit14: Main frequency X display Bit15: Auxiliary frequency Y display	To display a parameter during running, set the corresponding bit to 1, convert the binary number to a hexadecimal equivalent, and set it in F7-04.

Para. No.	Name	Default	Value Range	Description
F7-05	LED display in stop state	51	Bit00: Frequency reference (Hz) Bit01: Bus voltage (V) BIT02: DI state BIT03: DO state Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit06: AI3 voltage (V) Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed display Bit11: PID reference Bit12: Reserved	To display a parameter upon stop, set the corresponding bit to 1, convert the binary number to a hexadecimal equivalent, and set it in F7-05.
FP-01	Parameter initialization	1	0: No operation 1: Restore factory defaults mode 1 2: Clear records 4: Back up current parameters 501: Restore user backup parameters	This parameter is used to set the corresponding action upon parameter initialization of the AC drive. 0: No operation The AC drive does not perform any operation. 1: Restore factory defaults mode 1 Most of the parameters are restored to factory defaults. However, motor parameters including F0-10 (maximum frequency), F0-22 (decimal places of frequency reference), fault records, F7-09 (accumulative running time), F7-12 (accumulative power-on time), F7-13 (accumulative power generation), and F7-14 (accumulative power consumption) are not restored. 2: Clear records The fault records, F7-09 (accumulative running time), F7-12 (accumulative power-on time), F7-13 (accumulative power generation), and F7-14 (accumulative power consumption) are cleared. 4: Back up current parameters The current parameter setting is backed up. 501: Restore user backup parameters Parameters backed up by setting FP-01 to 4 are restored.

Para. No.	Name	Default	Value Range	Description
FP-02	Parameter display	111	Ones: Group U 0: Hide 1: Display Tens: Group A 0: Hide 1: Display Hundreds: Group B 0: Hide 1: Display Thousands: Group C 0: Hide 1: Display	This parameter is used to determine whether to display the parameters of groups U, A, B, and C on the operating panel.
FP-03	Individualized parameter display mode	0	Ones: 0: Hide 1: Display Tens: 0: Hide 1: Display	This parameter is used to determine whether to display the user-customized parameter group and the user-modified parameter group on the operating panel.

3.1.3 Setting Parameters

The operating panel adopts the following three-level menu to perform operations such as parameter settings:

- Level I: parameter group
- Level II: parameter No.
- Level III: parameter setting value

After entering the menu, you can press , , and to modify the blinking bit on the operating panel.

Example: changing the value of F3-02 from 10.00 Hz to 15.00 Hz

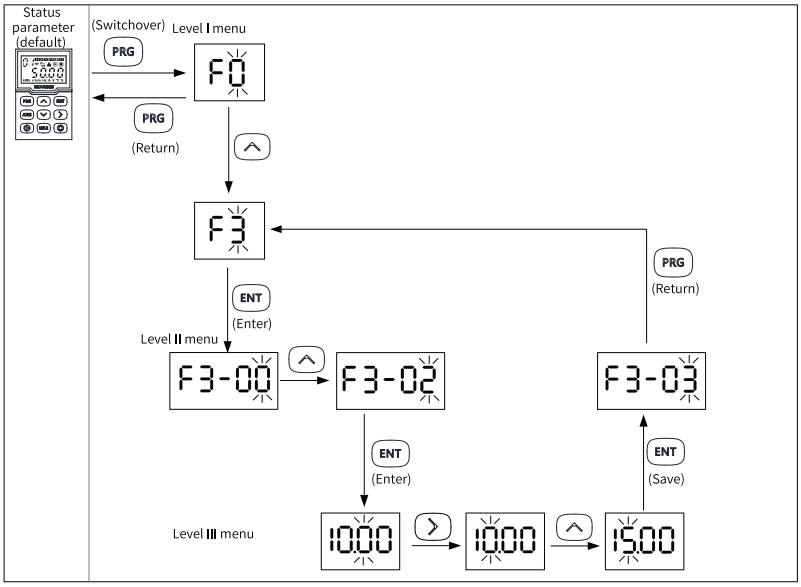


Figure 3-2 Parameter modification example

You can return to Level II menu from Level III menu by pressing PRG or ENT. The difference between the two keys is as follows:

1. After you press ENT, the system saves the parameter setting and then goes back to Level II menu and shifts to the next parameter number.
2. After you press PRG, the system does not save the parameter setting, but directly returns to Level II menu and remains at the current parameter number.

If a parameter does not include a blinking digit in Level III menu, the parameter cannot be modified. This may be because:

1. The parameter is an unmodifiable parameter such as the product model, actual detection parameter, and running record parameter.
2. This parameter can be modified only after the AC drive stops.

3.1.4 Viewing Parameters

You can set FP-03 to 11 to view all parameters on the operating panel. The following figure shows the operation procedure.

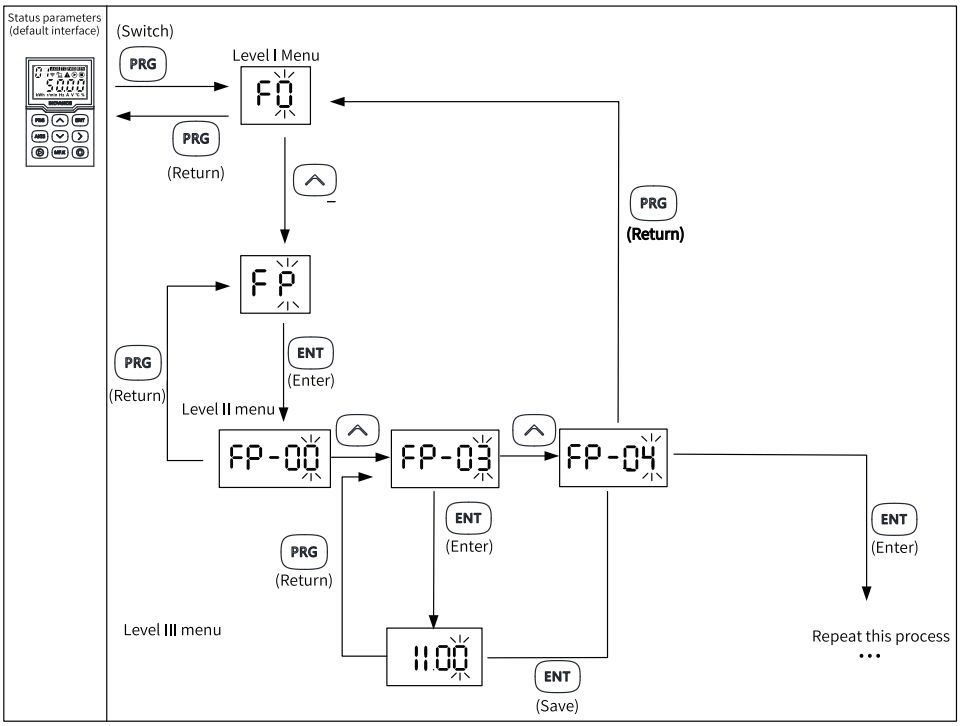


Figure 3-3 Viewing parameters

Note the following when viewing status parameters:

- When the AC drive is running, you can press to view status parameters. The following status parameters are displayed by default: running frequency, frequency reference, bus voltage, output voltage, and output current. To view more status parameters, see description of F7-03 and F7-04 in *"3.1.2 Related Parameters" on page 413*.
- When the AC drive stops, you can press to view status parameters. The following status parameters are displayed by default: frequency reference, bus voltage, AI1 voltage, and AI2 voltage. To view more status parameters, see description of F7-05 in *"3.1.2 Related Parameters" on page 413*.

3.1.5 Fault and Alarm Display

When the equipment fails, the fault indicator is steady on, and the equipment immediately stops outputting. The operating panel displays the fault code, as shown in the following figure. Find and remove the fault cause. Then, reset the fault.

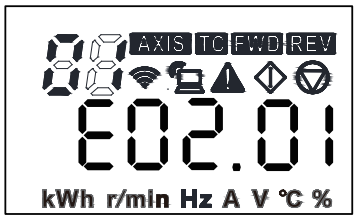


Figure 3-4 Fault code displayed on the operating panel

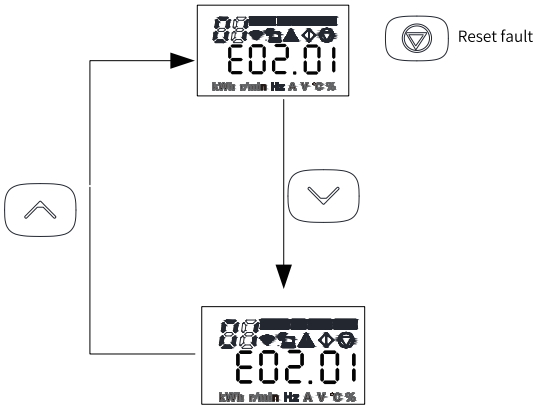


Figure 3-5 Viewing and resetting a fault

3.1.6 Using the MF.K Multi-functional Key

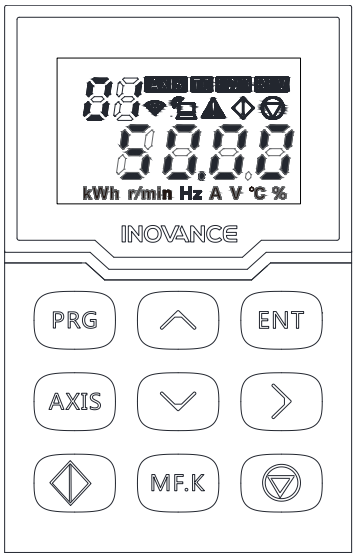
The MF.K key on the operating panel is a multi-functional key. Its function can be set through F7-01. When the AC drive stops or is running, you can press this key to switch over between control channels and enable forward/reverse running and jog of the AC drive.

3.1.7 Driving the Motor with the Operating Panel

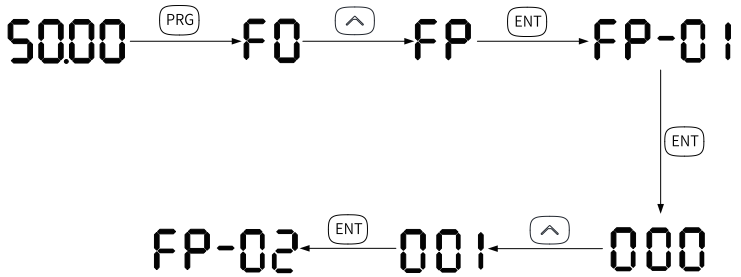
You can press the MF.K key on the operating panel to control the motor (forward and reverse jog) and press the or keys to start or stop the motor.

Procedure

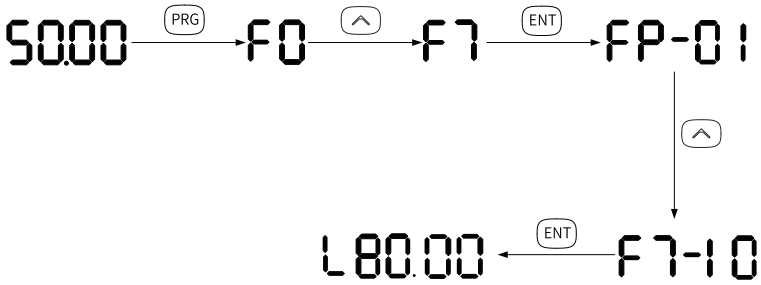
1. Check before power-on.
   Check the installation and wiring according to the installation guide. For details, see the description of inspection before power-on in the *Installation Guide*.
2. Press the power switch to connect the power supply of the AC drive.
3. Check that 50.00 is displayed on the operating panel, which indicates successful power-on.



4. Set FP-01 to 001 to restore all parameters to default values. The following shows an example.



5. Check the values of F7-10/F7-11, which indicate the software version.

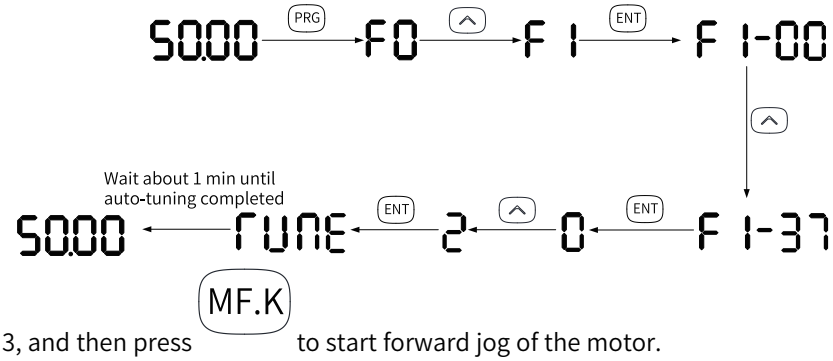


6. Set motor parameters in group F1 according to the motor nameplate.

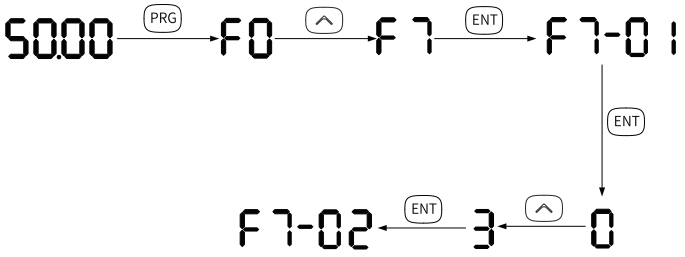
Table 3–6 Motor parameters

Para. No.	Name	Default	Value Range	Description	Setpoint
F1-00	Motor type selection	0	0: Common asynchronous motor 1: Variable frequency asynchronous motor 2: Synchronous motor	A variable frequency motor can adjust its frequency and speed according to the load. Where the voltage is low, it can reduce the frequency and start reliably. Where the load is light, it can reduce the frequency, speed, and current to save electric energy. A common asynchronous motor is suitable for applications with normal voltage but often full load. It is designed based on constant frequency and constant voltage. Therefore, it may not meet all the frequency and speed control requirements.	0
F1-01	Rated motor power	Model dependent	0.1 kW to 1000.0 kW	Rated motor power indicates the axis output power of the motor working in rated conditions. Select a motor of proper power rating based on the requirements of the mechanical load, with due consideration to factors such as motor heating, overload capacity, and starting capacity.	3.7 kW
F1-02	Rated motor voltage	Model dependent	1 V to 2000 V	Rated motor voltage indicates the voltage of the motor during normal operation, which usually refers to the line voltage.	380.0 V
F1-03	Rated motor current	Model dependent	0.1 A to 6553.5 A	Rated motor current indicates the current of the motor during normal operation, which usually refers to the line current.	9.0 A
F1-04	Rated motor frequency	Model dependent	0.01 Hz to 600.00 Hz	Rated motor frequency indicates the frequency of the power supply connected to the stator winding under the rated operation state of the motor.	50.00 Hz
F1-05	Rated motor speed	Model dependent	1 RPM to 65535 RPM	Rated motor speed indicates the speed of the rotor under the rated operating state, and the unit is RPM.	1460 rpm

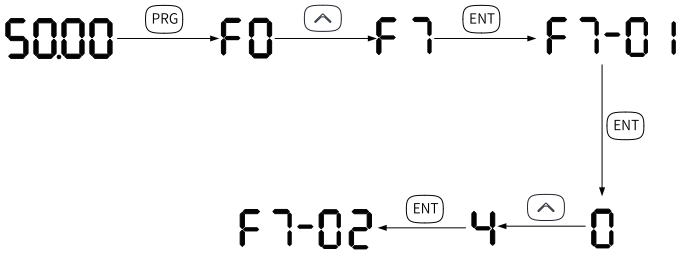
7. Set F1-37 to 2, and press ENTER. The operating panel displays . Press the RUN key on the operating panel for more than 3 seconds to start motor auto-tuning. During this process, the RUN indicator is steady on, the TC indicator flashes, and the AC drive energizes the motor. After about 1 minute, the panel displays 50.00, indicating that auto-tuning is completed.



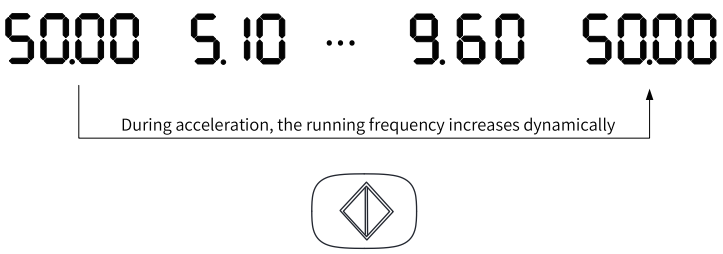
8. Set F7-01 to 3, and then press MF.K to start forward jog of the motor.



9. Set F7-01 to 4, and then press MF.K to start reverse jog of the motor.



10. Press to start the motor. The motor shaft starts to accelerate and rotate, and the panel displays the current running frequency, as shown in the following figure. After acceleration is completed, the displayed frequency is 50.00. Press to switch the displayed running status parameters.



11. Press to decelerate and stop the motor.

4 Function Applications

4.1 Drive Configuration

4.1.1 Operation Command Sources

4.1.1.1 Setting Operation Command Source

Operation commands are used to control the start, stop, forward run, reverse run, and jog operations of the AC drive. Three operation command sources are available: operating panel, terminals, and communication. You can select the operation command source by setting F0-02.

Para. No.	Name	Default	Value Range	Description
F0-02	Operation command source	0	0: Operating panel control 1: Terminal I/O control 2: Communication control	This parameter defines the source of the AC drive control commands, such as run, stop, forward run, reverse run, and jog. 0: Operating panel control When this command source is selected, control commands are input by using (RUN key), (stop command/fault reset key), and MF.K (multi-function key) on the operating panel. It applies to initial commissioning. 1: Terminal I/O control When this command source is selected, control commands are input through the DI terminals of the AC drive. The DI terminal control commands can be set according to different scenarios, such as start/stop, forward/reverse run, jog, two-wire/three-wire control, multi-speed, and other functions. It is suitable for most applications. 2: Communication control When this command source is selected, control commands are input through remote communication. It is applicable to scenarios requiring remote control or centralized control of multiple devices.

4.1.1.2 Operating Panel Control

When F0-02 is set to 0, the operation commands for the AC drive are issued by pressing (RUN key) and (stop command/fault reset key) on the operating panel.

- Pressing (RUN key) on the operating panel enables the AC drive to run immediately (the RUN indicator is ON).

- When the AC drive is running, pressing (stop command/fault reset key) on the operating panel stops the AC drive immediately (the RUN indicator is OFF).

4.1.1.3 Terminal I/O Control

When F0-02 is set to 1, the start and stop of the AC drive are controlled through terminals.

F4-17 defines the terminal I/O control mode. Four terminal I/O control modes are available, including two-wire mode 1, two-wire mode 2, three-wire mode 1, and three-wire mode 2.

Para. No.	Name	Default	Value Range	Description
F4-17	Terminal control mode	0	0: Two-wire mode 1 1: Two-wire mode 2 2: Three-wire mode 1 3: Three-wire mode 2	This parameter defines the mode in which the AC drive is controlled by external terminals.

Terminals DI1 to DI8 can be used as the external terminals. The following uses DI1 to DI3 as an example to describe the control modes using external terminals. That is, set F4-01, F4-03, and F4 -05 to select the functions for DI1, DI2, and DI3.

Two-wire Mode 1 (F4-17 = 0)

It is the most commonly used two-wire mode. In this mode, DI1 and DI2 determine the forward or reverse running of the motor. The parameters are set as follows.

Para. No.	Name	Setpoint	Function Description
F4-17	Terminal control mode	0	Two-wire mode 1
F4-00	DI1 hardware source	1	DI1 of the power supply unit
F4-01	DI1 function	1	Forward RUN (FWD)
F4-02	DI2 hardware source	2	DI2 of the power supply unit
F4-03	DI2 function	2	Reverse RUN (REV)

When SW1 is closed and SW2 is open, the motor rotates in the forward direction. When SW1 is open and SW2 is closed, the motor rotates in the reverse direction. When SW1 and SW2 are both open or closed, the motor stops. See the following figure.

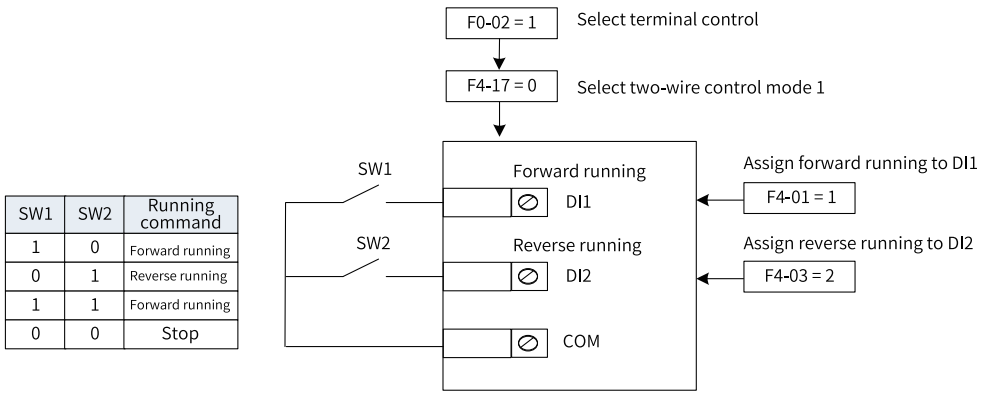


Figure 4-1 Wiring and parameter setting for two-wire mode 1

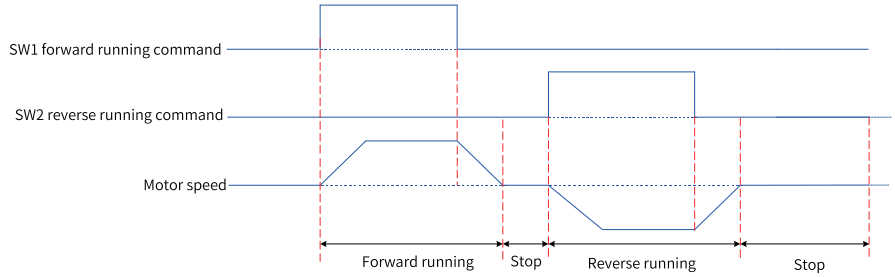


Figure 4-2 Timing diagram of two-wire mode 1 (normal)

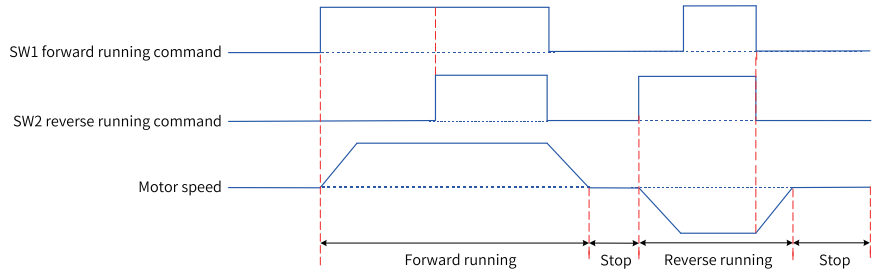


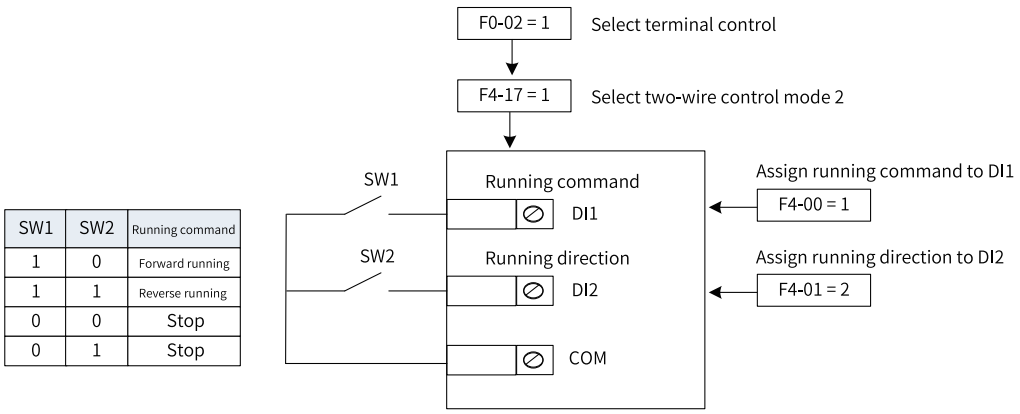
Figure 4-3 Timing diagram of two-wire mode 1 (abnormal)

Two-wire Mode 2 (F4-17 = 1)

In this mode, DI1 is assigned with the operation command function, and DI2 is assigned with the running direction function. The parameters are set as follows.

Para. No.	Name	Setpoint	Function Description
F4-17	Terminal control mode	0	Two-wire mode 2
F4-00	DI1 hardware source	1	DI1 of the power supply unit
F4-01	DI1 function	1	Operation command
F4-02	DI2 hardware source	2	DI2 of the power supply unit
F4-03	DI2 function	2	Running direction

When SW1 is closed, the motor rotates in the forward direction with SW2 open, and it rotates in the reverse direction with SW2 closed. When SW1 is open, the motor stops regardless of the status of SW2. See the following figure.



SW1	SW2	Running command
1	0	Forward running
1	1	Reverse running
0	0	Stop
0	1	Stop

Figure 4-4 Wiring and parameter setting for two-wire mode 2

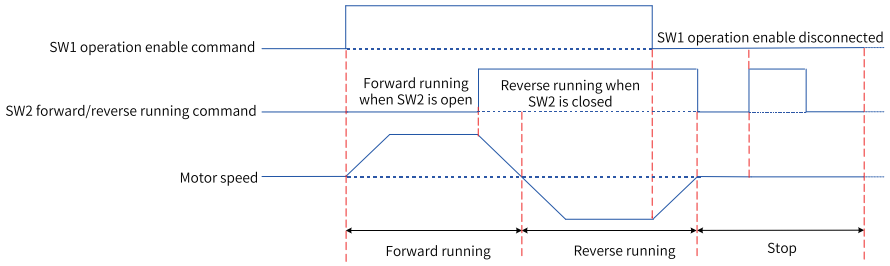


Figure 4-5 Timing diagram of two-wire mode 2

Three-wire Mode 1 (F4-17 = 2)

In this mode, DI3 is assigned with the three-wire operation control function, DI1 is assigned with the forward run function, and DI2 is assigned with the reverse run function. The AC drive buttons are used as the start/stop switch. The start/stop button is connected to DI3, the forward RUN button is connected to DI1, and the reverse RUN button is connected to DI2. The parameters are set as follows.

Para. No.	Name	Setpoint	Function Description
F4-17	Terminal control mode	0	Three-wire mode 1
F4-00	DI1 hardware source	1	DI1 of the power supply unit
F4-01	DI1 function	1	Forward RUN (FWD)
F4-02	DI2 hardware source	2	DI2 of the power supply unit
F4-03	DI2 function	2	Reverse RUN (REV)
F4-04	DI3 hardware source	3	DI3 of the power supply unit
F4-05	DI3 function	3	Three-wire operation control

SW3 is a normally-closed (NC) button, whereas SW1 and SW2 are normally-open (NO) buttons. If SW3 is closed, the motor rotates in the forward direction when you press down SW1, and it rotates in the reverse direction when you press down SW2. The motor stops immediately when SW3 opens. SW3 must remain closed during normal start and running. A signal from SW1 or SW2 takes effect once SW1 or SW2 is closed.

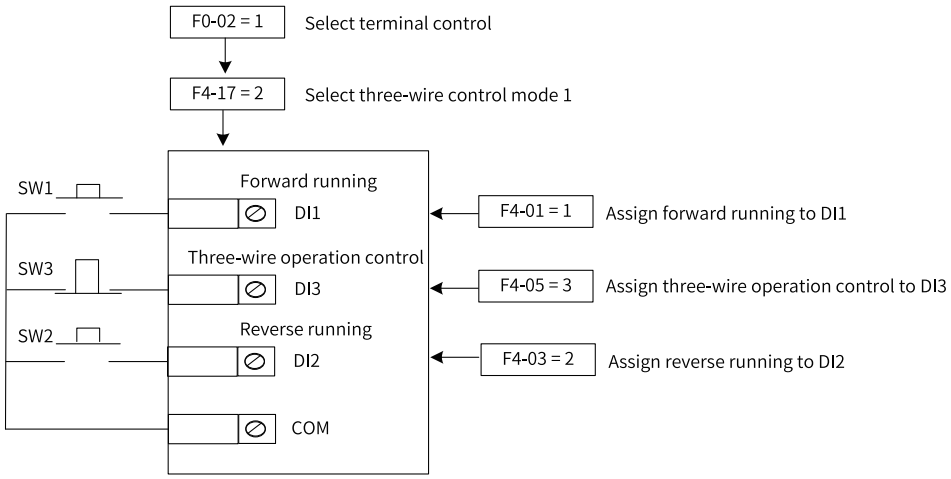


Figure 4-6 Wiring and parameter setting for three-wire mode 1

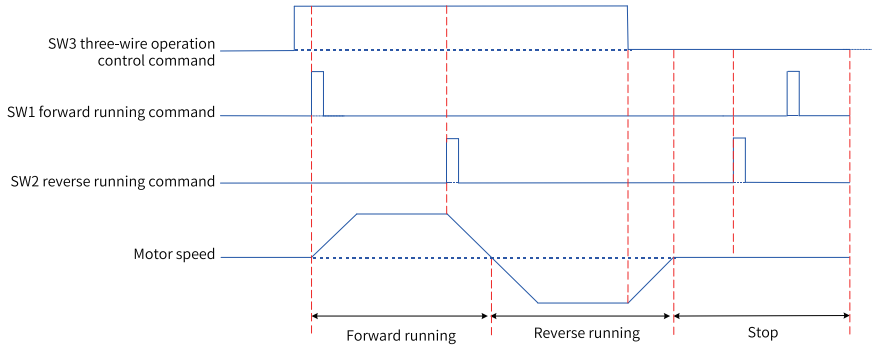


Figure 4-7 Timing diagram of three-wire mode 1

Three-wire Mode 2 (F4-17 = 3)

In this mode, DI3 is assigned with the three-wire operation control function, DI1 is assigned with the operation command function, and DI2 is assigned with the running direction function. The start/stop button is connected to DI3, running enabling is connected to DI1, and the forward/reverse RUN button is connected to DI2. The parameters are set as follows.

Para. No.	Name	Setpoint	Function Description
F4-17	Terminal control mode	0	Three-wire mode 2
F4-00	DI1 hardware source	1	DI1 of the power supply unit
F4-01	DI1 function	1	Operation command
F4-02	DI2 hardware source	2	DI2 of the power supply unit
F4-03	DI2 function	2	Running direction
F4-04	DI3 hardware source	3	DI3 of the power supply unit
F4-05	DI3 function	3	Three-wire operation control

With SW3 closed, pressing SW1 makes the drive rotates in the forward direction if SW2 is open, and in the reverse direction if SW2 is closed. The motor stops immediately when SW3 opens. SW3 must remain closed during normal start and running. A signal from SW1 takes effect once SW1 is closed.

Figure 4-8 Wiring and parameter setting for three-wire mode 2

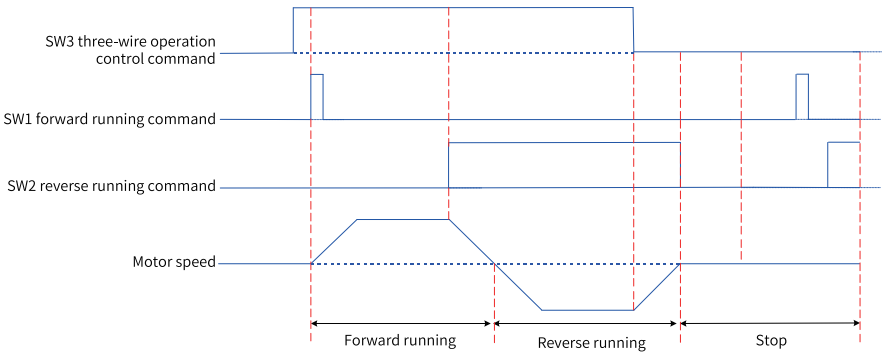


Figure 4-9 Timing diagram of three-wire mode 2

4.1.1.4 Communication Control

When F0-02 is set to 2, the operation commands such as start and stop of the AC drive are issued through communication.

The following five methods are available for communication with the host controller: Modbus, CANopen, CANlink, PROFINET, and EtherCAT. Extension cards are required when PROFINET or EtherCAT communication is used.

Step	Related Parameter	Description	
Step 1: Select communication as the frequency reference.	F0-02	F0-02 = 2	
Step 2: Select a communication mode.	Fd-10	CANopen communication	Fd-10 = 1
		PROFINET communication	
		EtherCAT communication	
		CANlink communication	Fd-10 = 2
Modbus is always enabled and no setting is required.			

4.1.2 Frequency Reference Sources

4.1.2.1 Frequency Reference Input Mode

The AC drive supports three frequency reference input modes: main frequency reference, auxiliary frequency reference, and superposition of main and auxiliary frequencies.

4.1.2.2 Selecting Source of Main Frequency Reference

There are nine main frequency reference sources available, including digital setting (non-retentive at power failure), digital setting (retentive at power failure), AI1, AI2, AI3, multi-reference, simple PLC, PID, and communication, which can be selected by setting F0-03 (0 to 9).

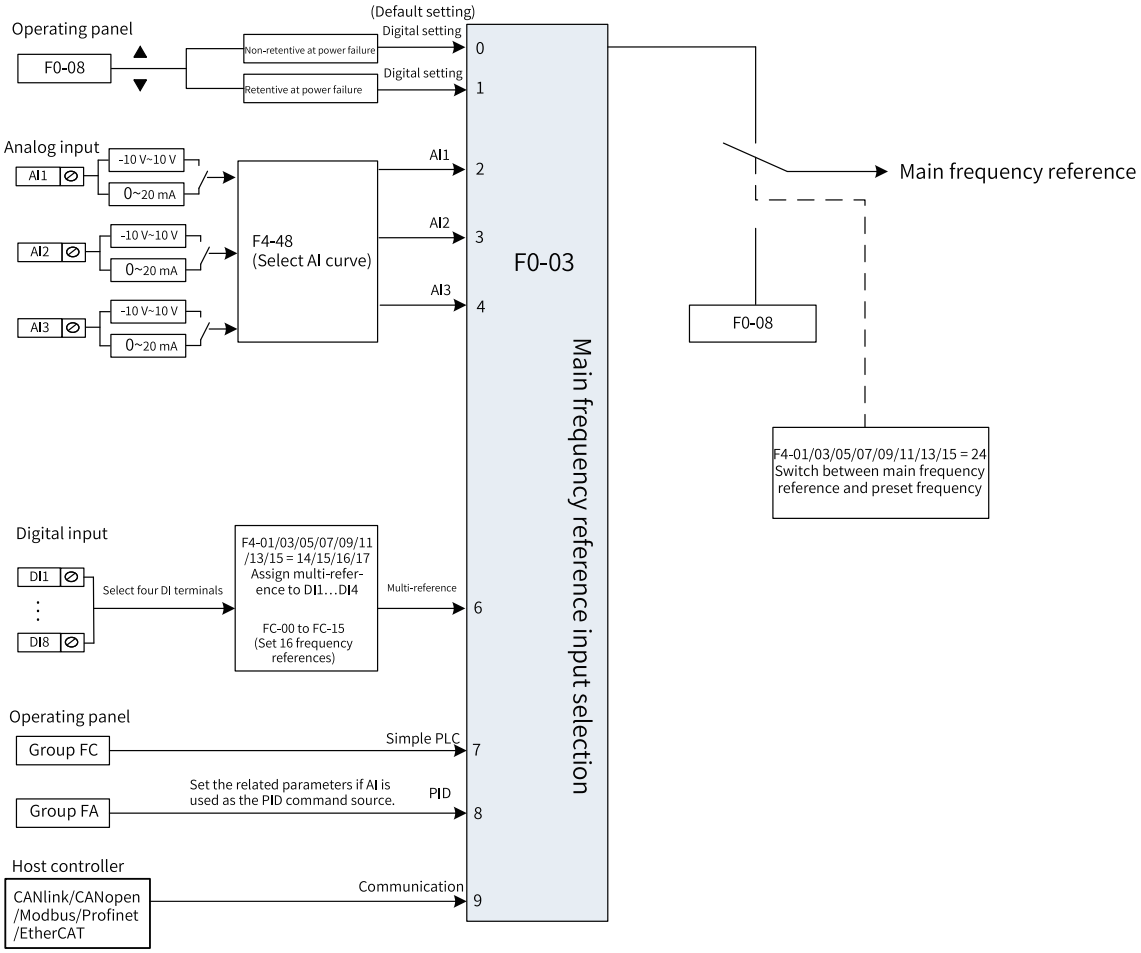


Figure 4-10 Main frequency reference selection

Para. No.	Name	Value Range	Default
F0-03	Main frequency source X	0: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, non-retentive upon power failure) 1: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, retentive upon power failure) 2: AI1 3: AI2 4: AI3 6: Multi-reference 7: Simple PLC 8: PID 9: Communication 10: Reserved	0

4.1.2.3 Operating Panel Control

There are two ways to set the main frequency by using the operating panel:

- F0-03 = 0 (non-retentive at power failure): When the AC drive is powered on again after stop or power failure, the frequency reference is restored to the preset frequency (F0-08). Frequency modifications made to the preset frequency (F0-08) by using the ∧ and ∨ keys or UP and DOWN of terminals are cleared when the AC drive stops.
- F0-03 = 1 (retentive at power failure): When the AC drive is powered on again after stop or power failure, the frequency reference is restored to the value memorized at the moment of the last power failure. Frequency modifications made to the preset frequency (F0-08) by using the ∧ and ∨ keys or UP and DOWN of terminals remain effective when the AC drive stops.

  For example, F0-08 is set to 40 Hz, and it is adjusted to 45 Hz by using the ∧ key of the operating panel. If F0-23 is set to 0 (non-retentive), the target frequency is restored to 40 Hz (value of F0-08) after the AC drive stops; if F0-23 is set to 1 (retentive), the target frequency is still 45 Hz after the AC drive stops.

Note

Distinguish this parameter from F0-23 (Retentive memory of digital setting frequency upon stop). F0-23 determines whether the frequency setting is retained or cleared after the AC drive stops. F0-23 is related only to the stop state of the AC drive, rather than power failure.

The related parameters are as follows.

Para. No.	Name	Default	Value Range
F0-08	Preset frequency	50.00 Hz	0.00 Hz to maximum frequency (F0-10)
F0-10	Maximum frequency	50.00 Hz	50.00 Hz to 600.00 Hz

Para. No.	Name	Default	Value Range
F0-23	Retention of digital setting of frequency upon stop	0	0: Non-retentive 1: Retentive

4.1.2.4 AI Control

Three analog inputs can be configured for the drive unit: AI1, AI2, and AI3. You can select the AI source (F4-25, F4-27, and F4-29) to map the analog data of the power supply unit or extension cards. The power supply unit and I/O extension cards 1 and 2 each is equipped with two AI terminals. The following table describes the characteristics of AI terminals of the power supply unit. The AI terminals of the I/O extension cards are similar.

Table 4–1 Characteristics of AI terminals of the power supply unit

Terminal	Name	Type	Input Voltage Range	Input Impedance
AI1-GND	Control board AI terminal 1	Voltage type	–10 V to +10 V DC	22 kΩ
AI2-GND	Control board AI terminal 2	Current type	0 mA to 20 mA	500 Ω

When the main frequency is to be set through analog input, AI1, AI2, or AI3 can be used. When F0-03 is set to 2, AI1 is used as the main frequency reference source; when F0-03 is set to 3, AI2 is used as the

main frequency reference source; when F0-03 is set to 4, AI3 is used as the main frequency reference source.

When an AI terminal is used as the frequency source, one among five types of AI curves can be set for the AI terminal. The AI curve defines the relationship between the analog input voltage (or current) and the corresponding setpoint.

Step	Related Parameters	Description
(Step 1) Select an AI terminal as the frequency reference source: Select the terminal for setting the frequency reference based on terminal characteristics.	F0-03 (main frequency reference source)	F0-03 = 2 Select AI1.
		F0-03 = 3 Select AI2.
		F0-03 = 4 Select AI3.
(Step 2) Select the AI hardware source: Select the AI hardware source and function.	F4-25, F4-27, F4-29	Select the analog input source. F4-25: Select the hardware source for AI1. F4-27: Select the hardware source for AI2. F4-29: Select the hardware source for AI3. The power supply unit and I/O extension cards 1 and 2 each are equipped with two AI terminals (AI1 and AI2). The mapping between the parameter values and AI hardware sources is as follows: 1: AI1 of the power supply unit 2: AI2 of the power supply unit 101: AI1 of extension card 1 102: AI2 of extension card 1 201: AI1 of extension card 2 202: AI2 of extension card 2
	Set the following parameters on the power supply unit: A1-10, A1-11 A2-10, A2-11 A3-10, A3-11	Select the analog input function, which can be voltage input, current input, or temperature input (PT100/PT1000/KTY84-130/PTC-130). A1-10 and A1-11: Input selection for AI1 and AI2 of the power supply unit A2-10 and A2-11: Input selection for AI1 and AI2 of I/O extension card 1 A3-10 and A3-11: Input selection for AI1 and AI2 of I/O extension card 2 The mapping between the parameter values and input selections is as follows: 0: Voltage input 1: Current input 2: Temperature input PT100 3: Temperature input PT1000 4: Temperature input KTY84-130 5: Temperature input PTC-130

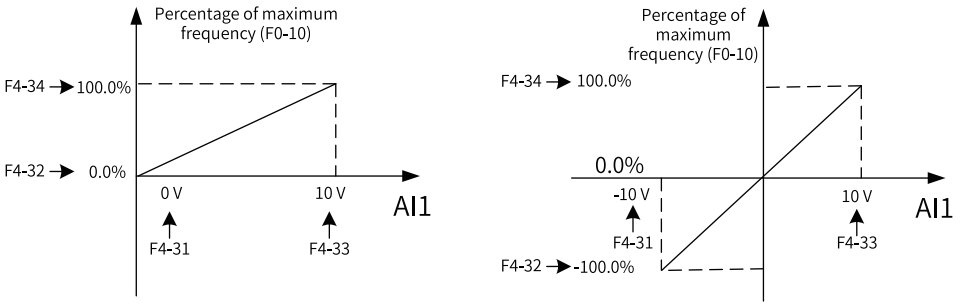
Step	Related Parameters	Description
(Step 3) Select an AI curve for the AI terminal: Select a curve and filter time for the AI terminal.	F4-48	Select the AI curve. (You can select any AI curve for an AI terminal. Typically, F4-48 is set to the default value 321. That is, curve 1 is selected for AI1, curve 2 for AI2, and curve 3 for AI3.)
	Set the following parameters on the power supply unit: A1-05, A1-06 A2-05, A2-06 A3-05, A3-06	Set the AI filter time. A1-05 and A1-06: Filter time of AI1 and AI2 of the power supply unit A2-05 and A2-06: Filter time of AI1 and AI2 of I/O extension card 1 A3-05 and A3-06: Filter time of AI1 and AI2 of I/O extension card 2
(Step 4) Set the AI curve: Set the relationship between the AI voltage/current inputs and frequency setpoints.	F4-31 to F4-34	Set curve 1.
	F4-35 to F4-38	Set curve 2.
	F4-39 to F4-42	Set curve 3.
	A6-00 to A6-07	Set curve 4.
	A6-08 to A6-15	Set curve 5.
	F4-49	Set the solution for cases where AI input is less than the minimum input reference (When AI is used as the frequency reference source, the setpoint 100% corresponds to the maximum frequency (F0-10).)

Setting AI Curve

Five types of AI curves are available. Curves 1 to 3 are two-point curves, and the related parameters are F4-31 to F4-42. Curves 4 and 5 are four-point curves, and the related parameters are in group A6.

- For the current-type AI curve, 1 mA current corresponds to 0.5 V voltage, that is, 20 mA corresponds to 10 V.
- When the analog input voltage is greater than the maximum input voltage (F4-31), the maximum input voltage is used. Similarly, when the analog input voltage is less than the minimum input voltage (F4-33), the minimum input voltage or 0.0% is used as defined by F4-49 (setting for the AI lower than the minimum input).

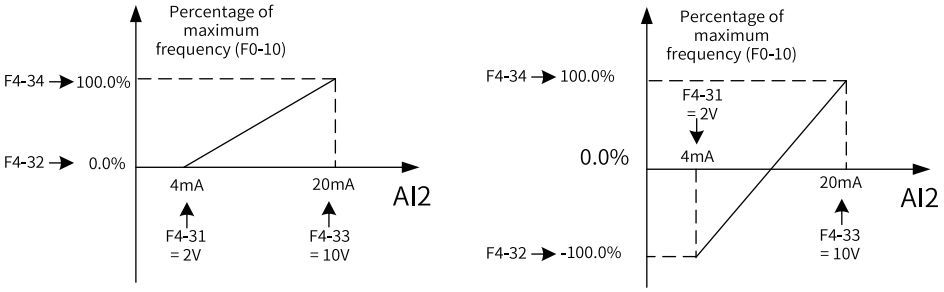
Take the setting of AI curve 1 as an example. The following figure shows the voltage-type AI curves and current-type AI curves. When the voltage-type curve is used, 4 mA to 20 mA typically corresponds to 0 Hz to 50 Hz or –50 Hz to +50 Hz. The related parameters include F4-31 to F4-34.



Setting when there are no negative frequency references

Setting when there are negative frequency references (default)

Figure 4-11 Voltage-type AI curves



Setting when there are no negative frequency references

Setting when there are negative frequency references

Figure 4-12 Current-type AI curves

Curve 2 and curve 3 are set in a similar way as curve 1. Parameters related to curve 2 are F4-35 to F4-38, and those related to curve 3 are F4-39 to F4-26.

The function of curve 4 and curve 5 is similar to that of curve 1 to curve 3. However, curve 1 to curve 3 are straight lines, while curve 4 and curve 5 are 4-point curves, which offer more flexible mapping. The x-axis of the AI curves 4 and 5 indicates the analog input voltage (or current), and the y-axis indicates the setpoint corresponding to the analog input, that is, the percentage relative to the maximum frequency (F0-10). The four points on curves 4 and 5 are the minimum input point, inflection 1, inflection 2, and maximum input point, respectively. A6-00 corresponds to the x-axis of the minimum input point, that is, the minimum analog input voltage (or minimum analog input current).

When setting curve 4 and curve 5, note that the curve's minimum input voltage, inflexion 1 voltage, inflexion 2 voltage, and maximum voltage must be in ascending order. Parameters related to curve 4 are A6-00 to A6-07, and those related to curve 5 are A6-08 to A6-15.

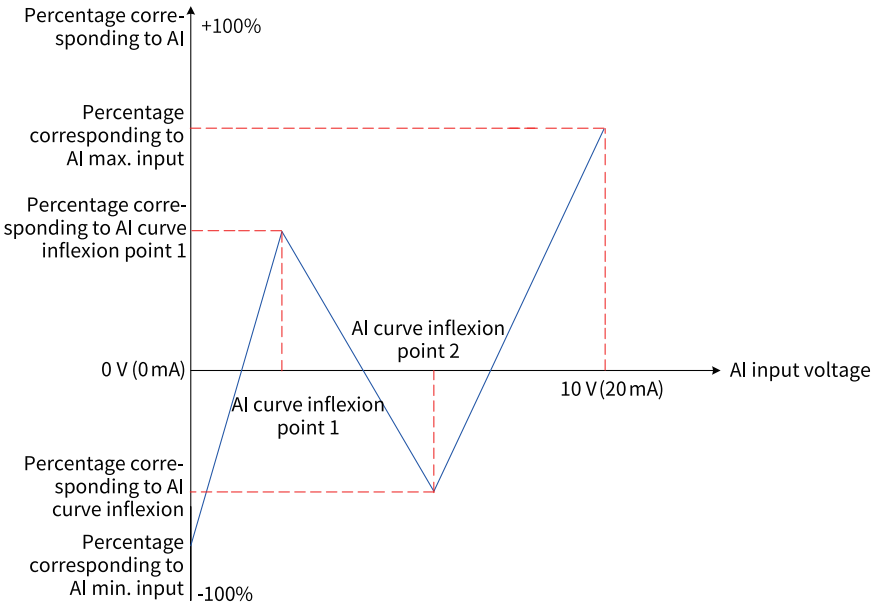


Figure 4-13 Curve 4 and curve 5

Selecting AI Curve for AI Terminal

The AI curves for AI1 and AI2 are defined by the ones and tens of F4-48. You can select any one among the five types of curves for each of the two AI terminals.

Longer AI input filter time indicates stronger anti-interference capability but slower adjustment response. Shorter filter time indicates faster adjustment response but weaker anti-interference capability. If the analog input is liable to interference, increase the filter time to stabilize the detected analog input. However, increasing the AI filter time will slow the response to analog detection. Therefore, the filter time must be set properly based on actual conditions.

Selecting AI Terminal as Frequency Reference Source

The power supply unit and I/O extension cards 1 and 2 each provide two AI terminals, which offer –10 V to +10 V voltage inputs or 0 mA to 20 mA current inputs. The following describes how to set the AI terminal as the main frequency reference source.

In this example, AI1 of the power supply unit is selected as the AI1 hardware source (F4–25 = 1), and curve 1 is selected (the ones of F4-48 is set to 1) for AI1. When the voltage-type AI1 terminal is used as the frequency source, 2 V to 10 V voltage corresponds to 10 Hz to 40 Hz frequency. The following figure shows how to set the parameters.

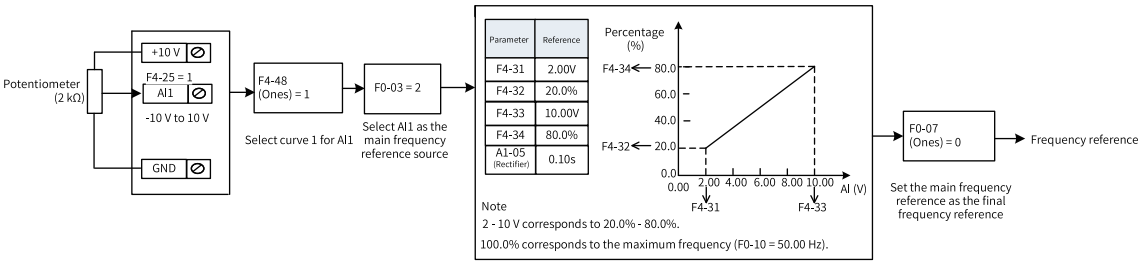


Figure 4-14 Parameter settings for using AI1 voltage input as main frequency reference

In this example, AI2 of the power supply unit is selected as the AI2 hardware source (F4–27 = 2), and curve 2 is selected (the tens of F4-48 is set to 2) for AI2. When the current-type AI2 terminal is used as the frequency source, 4 mA to 20 mA current corresponds to 0 Hz to 50 Hz frequency. The following figure shows how to set the parameters.

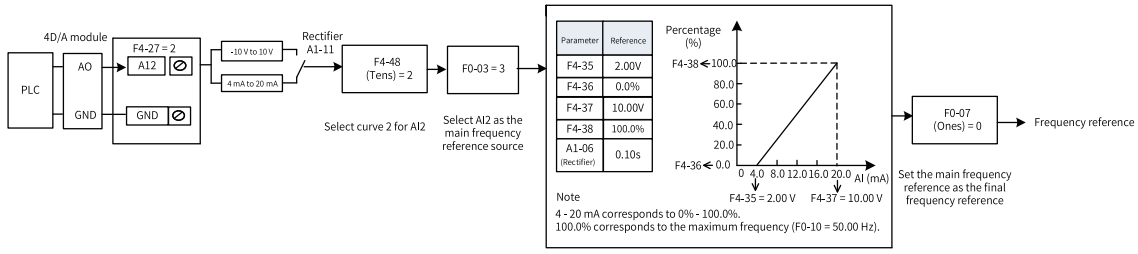


Figure 4-15 Parameter settings for using AI2 current input as main frequency reference

4.1.2.5 Multi-reference Control

When F0-03 is set to 6, multi-reference is selected as the main frequency reference source. It is suitable for applications where only several frequency values are required without the need for continuous frequency adjustment.

The AC drive supports a total of 16 running frequencies, which can be defined by different combinations of input signals of four DI terminals. You can also use less than four DI terminals, and the missing bit is considered to be 0.

The required multi-reference frequencies are defined by the multi-reference table in group FC. The following table describes the related parameters.

Para. No.	Name	Default	Value Range	Description
FC-00	Multi-reference 0	0.00%	–100.0% to +100.0%	The multi-reference value is a relative value, which is a percentage relative to the maximum frequency. The positive or negative property of the parameter value determines the running direction. If the value is negative, the AC drive runs in the reverse direction. The acceleration and deceleration time are defined by F0-17 and F0-18 by default.
FC-01	Multi-reference 1	0.00%	–100.0% to +100.0%	
FC-02	Multi-reference 2	0.00%	–100.0% to +100.0%	
FC-03	Multi-reference 3	0.00%	–100.0% to +100.0%	
FC-04	Multi-reference 4	0.00%	–100.0% to +100.0%	
FC-05	Multi-reference 5	0.00%	–100.0% to +100.0%	
FC-06	Multi-reference 6	0.00%	–100.0% to +100.0%	
FC-07	Multi-reference 7	0.00%	–100.0% to +100.0%	
FC-08	Multi-reference 8	0.00%	–100.0% to +100.0%	
FC-09	Multi-reference 9	0.00%	–100.0% to +100.0%	
FC-10	Multi-reference 10	0.00%	–100.0% to +100.0%	
FC-11	Multi-reference 11	0.00%	–100.0% to +100.0%	
FC-12	Multi-reference 12	0.00%	–100.0% to +100.0%	
FC-13	Multi-reference 13	0.00%	–100.0% to +100.0%	
FC-14	Multi-reference 14	0.00%	–100.0% to +100.0%	
FC-15	Multi-reference 15	0.00%	–100.0% to +100.0%	
FC-51	Multi-reference 0 source	0	0 to 6	0: FC-00 1: AI1 2: AI2 3: AI3 4: Reserved 5: PID 6: F0-08 (preset frequency), which can be changed by using terminal UP/DOWN

Table 4–2 Using multi-reference as the frequency reference source

Step	Related Parameters	Description	
Step 1: Select multi-reference as the frequency reference source.	F0-03	F0-03 = 6	
Step 2: Determine the number of speed references required.	None	A total of 16 speed references are supported, which are defined by using four DI terminals. The relationship between the number of speed references and the number of DI terminals is as follows: 2 speed references: 1 DI terminal (K1) 3 to 4 speed references: 2 DI terminals (K1 and K2) 5 to 8 speed references: 3 DI terminals (K1, K2, and K3) 9 to 16 speed references: 4 DI terminals (K1, K2, K3, and K4)	
Step 3: Select the DI hardware source.	F4-00/F4-02/F4-04/F4-06/F4-08/F4-10/F4-12/F4-14	Set an available external terminal as the DI hardware source.	
Step 4: Assign the multi-reference function to the DI terminal.	F4-01/F4-03/F4-05/F4-07/F4-09/F4-11/F4-13/F4-15	Multi-reference terminal K1	Set the parameter to 14.
		Multi-reference terminal K2	Set the parameter to 15.
		Multi-reference terminal K3	Set the parameter to 16.
		Multi-reference terminal K4	Set the parameter to 17.

Step	Related Parameters	Description
Step 5: Set the frequency corresponding to each speed reference.	FC-00 to FC-15	The frequency corresponding to each speed reference is set to a percentage value. 100% corresponds to the maximum frequency (F0-10).
	F0-10	When multi-reference is used as the frequency reference source, the value 100% of FC-00 to FC-15 corresponds to the maximum frequency (F0-10).

The four multi-reference terminals provide 16 state combinations, corresponding to 16 reference values, as listed in the following table.

Table 4–3 State combinations of the four multi-reference terminals

K4	K3	K2	K1	Reference	Parameter
OFF	OFF	OFF	OFF	Multi-reference 0	FC-00
OFF	OFF	OFF	ON	Multi-reference 1	FC-01
OFF	OFF	ON	OFF	Multi-reference 2	FC-02
OFF	OFF	ON	ON	Multi-reference 3	FC-03
OFF	ON	OFF	OFF	Multi-reference 4	FC-04
OFF	ON	OFF	ON	Multi-reference 5	FC-05
OFF	ON	ON	OFF	Multi-reference 6	FC-06
OFF	ON	ON	ON	Multi-reference 7	FC-07
ON	OFF	OFF	OFF	Multi-reference 8	FC-08
ON	OFF	OFF	ON	Multi-reference 9	FC-09
ON	OFF	ON	OFF	Multi-reference 10	FC-10
ON	OFF	ON	ON	Multi-reference 11	FC-11
ON	ON	OFF	OFF	Multi-reference 12	FC-12
ON	ON	OFF	ON	Multi-reference 13	FC-13
ON	ON	ON	OFF	Multi-reference 14	FC-14
ON	ON	ON	ON	Multi-reference 15	FC-15

4.1.2.6 Setting the Main Frequency Through Simple PLC

Step 1: Set F0-03 to 7 to select simple PLC as the main frequency reference.

Step 2: Set parameters FC-00...FC-15 and FC-18...FC-49 to define the running time and acceleration/ deceleration time for each reference.

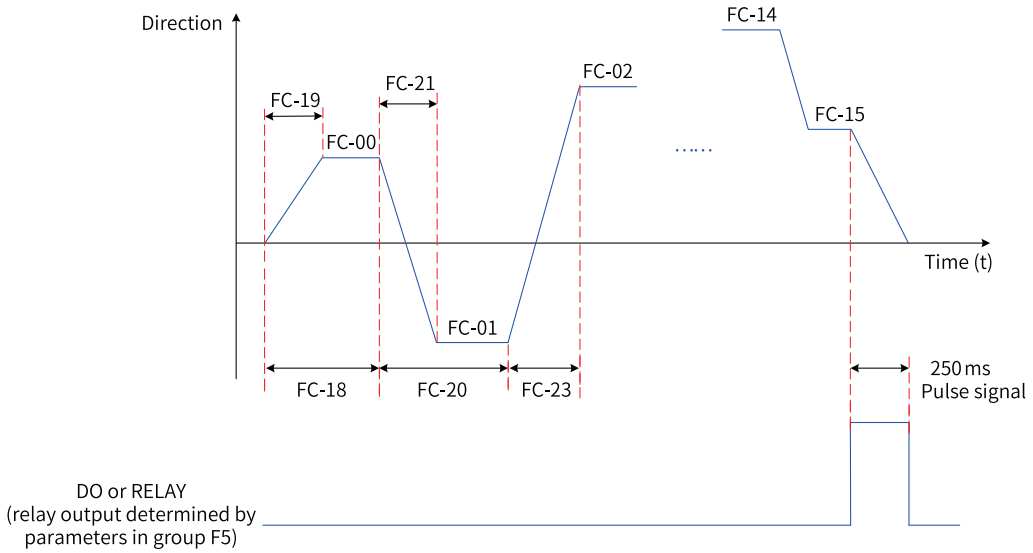


Figure 4-16 Simple PLC as the main frequency source

Step 3: Set FC-16 to select the simple PLC operation mode.

Step 4: Set FC-17 to determine whether to retain the PLC operation stage and operating frequency upon power failure or stop.

4.1.2.7 PID Control

PID control is a general process control method. PID control is used to form a closed-loop system in which each controlled variable is stabilized at the target level through proportional, integral, and differential calculation of the difference between the feedback signal and the target signal of the controlled variable. The output of PID control is used as the running frequency, which generally applies to on-site closed-loop control applications, such as constant pressure closed-loop control and constant tension closed-loop control.

- Proportional gain Kp: Once the deviation between PID output and input occurs, the PID controller adjusts the output to reduce the deviation. The speed at which the deviation decreases depends on the proportional coefficient Kp. A larger Kp tends to reduce the deviation faster, but may cause system oscillation, especially at large hysteresis. A smaller Kp indicates lower possibility of oscillation but also slower adjustment. (The value 100.0 indicates that when the difference between PID feedback and reference is 100.0%, the adjustment amplitude of the PID controller on the output frequency reference is the maximum frequency.)
- Integral time Ti: It determines the integral adjustment intensity of the PID controller. Shorter integral time indicates greater adjustment intensity. (Integral time refers to the time required for continuous adjustment of the integral regulator to reach the maximum frequency when the deviation between the PID feedback and reference is 100.0%.)
- Derivative time Td: It defines the deviation variation adjustment intensity of the PID controller. Longer derivative time indicates greater adjustment intensity. (Derivative time refers to the time within which the feedback value change reaches 100.0%, and the adjustment amplitude reaches the maximum frequency.)

Application

Step 1: Set F0-03 and F0-04 to 8 to select PID as the main frequency reference input source and auxiliary frequency input source.

Step 2: Set FA-00 to select a source of PID target reference. If FA-00 is set to 0, set FA-01 (digital setting of PID). The value 100% of this parameter corresponds to the maximum value of PID feedback.

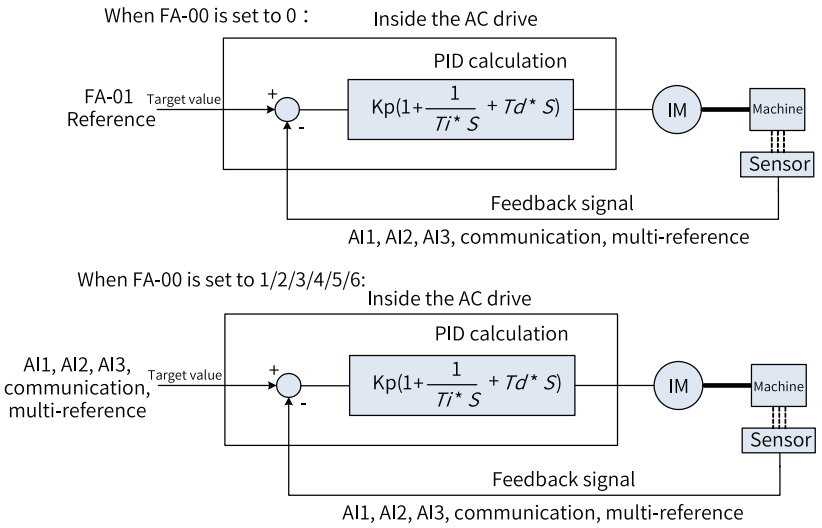


Figure 4-17 Block diagram of process PID control principle

Step 3: Set FA-02 to select a PID feedback source.

Step 4: Set FA-03 to select a PID action direction.

The following figure shows the logic of process PID control parameter configuration.

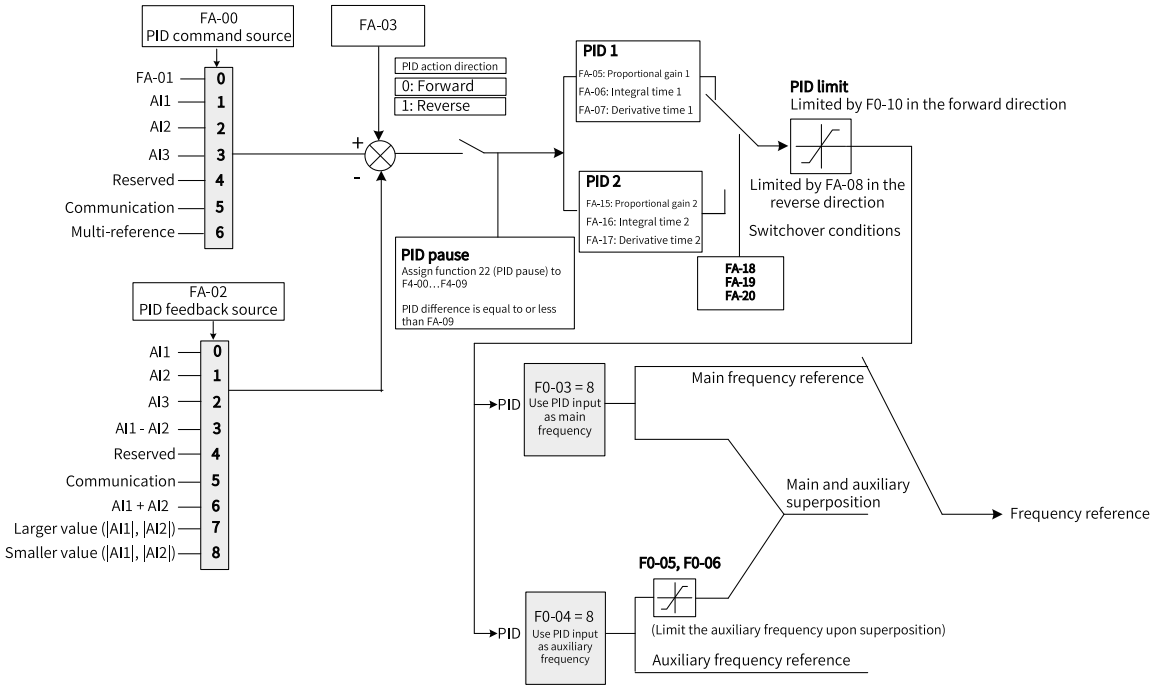


Figure 4-18 Block diagram of process PID control parameter configuration

The upper and lower limits and range of the frequency output when the PID is used as the main frequency source are described as follows (for example, when the frequency source is only PID or main + PID).

When the reverse cut-off frequency is 0 or reverse running is inhibited (that is, any of the following):

① FA-08 = 0, F8-13 = 0; ② FA-08 = 0, F8-13 = 1; ③ FA-08 ≠ 0, F8-13 = 1

Output upper limit = Frequency upper limit

Output lower limit = Frequency lower limit

Output range = Frequency lower limit to frequency upper limit (that is, F0-14 to F0-12)

When the reverse cut-off frequency is not 0 and reverse running is allowed (that is, FA-08 ≠ 0, F8-13 = 0):

Output upper limit = +Frequency upper limit, Output lower limit = –Reverse cut-off frequency

Output range = –Reverse cut-off frequency to +Frequency upper limit (–FA-08 to +F0-12)

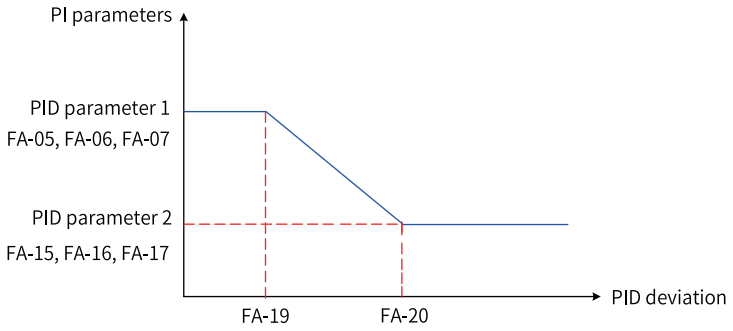


Figure 4-19 PID parameter switchover

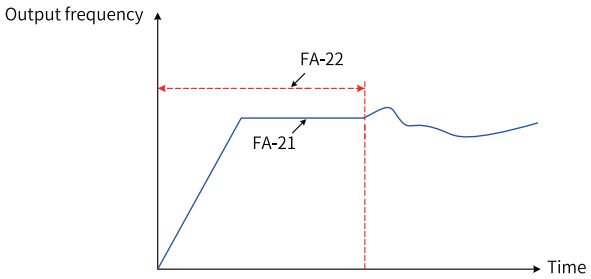


Figure 4-20 PID initial value function

4.1.2.8 Communication Control

When F0-02 is set to 2, the operation commands such as start and stop of the AC drive are set through communication (the "computer" indicator on the operating panel of the power supply unit blinks).

The AC drive supports the following five methods for communication with the host controller: Modbus, CANopen, CANlink, PROFINET, and EtherCAT, which cannot be used at the same time. The EtherCAT and PROFINET communication cards are optional, which can be selected as required. If EtherCAT or PROFINET communication is used, the corresponding communication card must be installed. CANopen, CANlink, PROFINET, and EtherCAT need to be selected according to the value of Fd-10 of the power supply unit. Modbus is always enabled.

Para. No.	Name	Default	Value Range
Fd-10	Communication type	1	1: CANopen 2: CANlink 3: Communication card mode

Application

Step 1: Set F0-03 to 9 to select communication as the main frequency reference source.

Step 2: Send a write command to the AC drive through the host controller.

The following takes the Modbus protocol as an example to describe how to set the main frequency through communication. To make the AC drive run in the reverse direction through communication, send the following write command: 01 06 20 00 00 02 03 CB.

The bytes are described as follows.

Byte	Description
01H (configurable)	AC drive address
06H	Write command
2000H	Control command communication address
02H (reverse RUN)	Control command
03CBH	CRC check

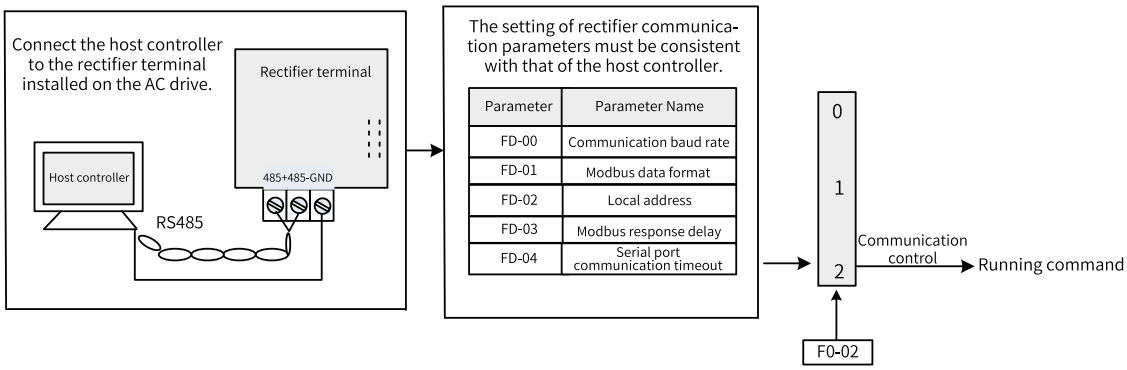


Figure 4-21 Parameter settings for using communication as the main frequency reference source

Table 4–4 Correspondence between host commands and slave responses

Host Command		Slave Response	
ADDR	01H	ADDR	01H
CMD	06H	CMD	06H
High bits of parameter address	20H	High bits of parameter address	20H
Low bits of parameter address	00H	Low bits of parameter address	00H
High bits of data content	00H	High bits of data content	00H
Low bits of data content	02H	Low bits of data content	02H
CRC high bits	03H	CRC high bits	03H
CRC low bits	CBH	CRC low bits	CBH

The range of frequency reference values written through communication by using the 1000H address is –10000 to 10000 (decimal), corresponding to the frequency range of –100.00% to +100.00%. (–100.00% corresponds to the negative maximum frequency, and +100.00% corresponds to the maximum frequency.) Assume that F0-10 (maximum frequency) is set to 50 Hz. If the frequency reference in the write command is 2710H, which is equivalent to 10000 in decimal, the actual written frequency reference is 50 Hz (50 x 100%).

4.1.2.9 Selecting Source of Auxiliary Frequency Reference

There are nine auxiliary frequency reference sources available, including digital setting (non-retentive at power failure), digital setting (retentive at power failure), AI1, AI2, AI3, multi-reference, simple PLC, PID, and communication, which can be selected by setting F0-04 (0 to 9).

When used as an independent frequency reference source, the auxiliary frequency reference source is used in the same way as the main frequency reference source. The following figure shows the block diagram. The auxiliary frequency reference source can also be used for superposition of the main and auxiliary frequency references. For details, see the "Selecting Source of Main Frequency and Auxiliary Frequency Superposition Reference" section.

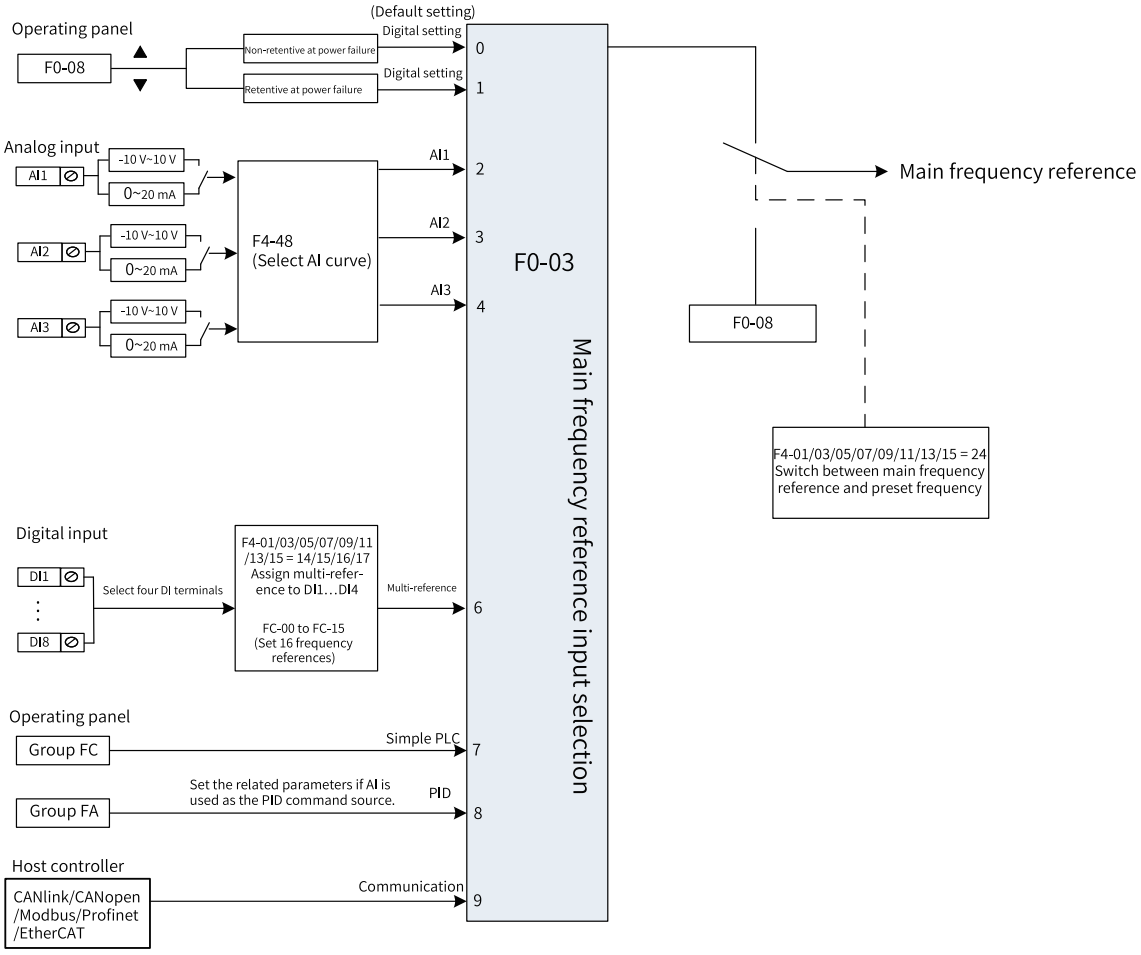


Figure 4-22 Setting auxiliary frequency reference source

Para. No.	Name	Value Range	Default
F0-04	Auxiliary frequency source Y	0: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, non-retentive upon power failure) 1: Digital setting (preset frequency (F0-08) that can be changed by pressing UP/DOWN, retentive upon power failure) 2: AI1 3: AI2 4: AI3 6: Multi-reference 7: Simple PLC 8: PID 9: Communication 10: Reserved	0

4.1.2.10 Selecting Source of Main Frequency and Auxiliary Frequency Superposition Reference

Main and auxiliary frequency reference superposition is used to set the frequency reference by combining the main frequency reference and auxiliary frequency reference. The relationship between the target frequency and the main and auxiliary frequency references is set in F0-07, which is described as follows.

Table 4–5 Relationship between target frequency and main and auxiliary frequency references

No.	Relationship Between Target Frequency and Main and Auxiliary Frequency References	
1	Main frequency reference	The main frequency reference is directly used as the target frequency.
2	Auxiliary frequency reference	The auxiliary frequency reference is directly used as the target frequency.
3	Main and auxiliary operation	There are 5 types of main and auxiliary operations: main frequency + auxiliary frequency, main frequency – auxiliary frequency, MAX (main frequency, auxiliary frequency), MIN (main frequency, auxiliary frequency), and main frequency x auxiliary frequency.
4	Frequency switchover	Any of the preceding three frequency sources selected or switched by using the DI terminal. The DI terminal must be assigned with function 23 (frequency reference switchover).

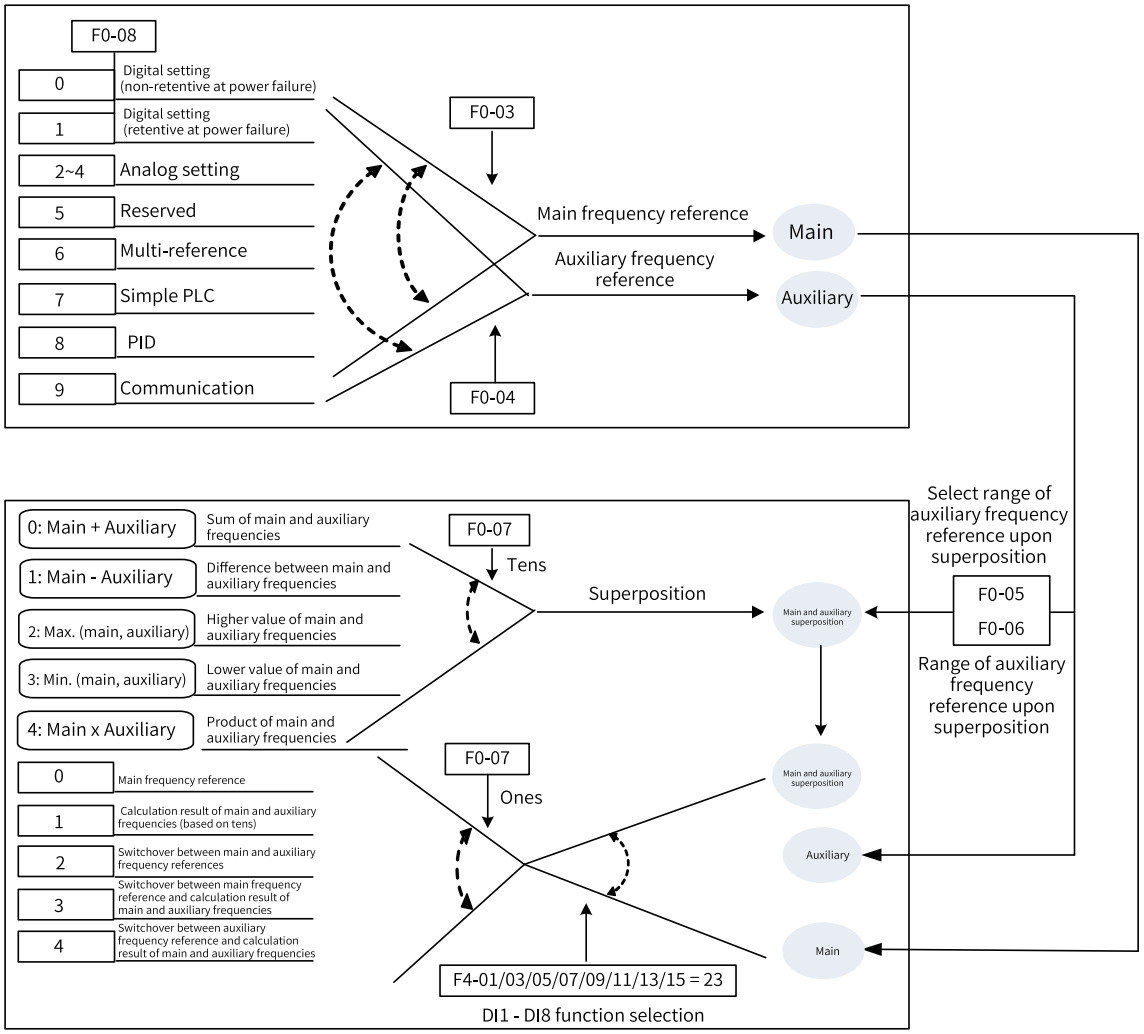


Figure 4-23 Main and auxiliary frequency reference superposition

Table 4–6 Main and auxiliary frequency reference superposition

Operation	Main Frequency Reference Source	Auxiliary Frequency Reference Source	Description
+	Digital setting	AI/Pulse/Multi-reference/Simple PLC/ Communication	1. UP/DOWN is invalid. 2. Output range: F0-08 + Auxiliary frequency reference.
	AI/Pulse/Multi-reference/Simple PLC/Communication	Digital setting	1. UP/DOWN is valid. 2. Output range: Main frequency reference + UP/ DOWN.
	Digital setting	PID	1. UP/DOWN is invalid. 2. Output range: Main frequency reference + Auxiliary frequency reference.
	PID	Digital setting	1. UP/DOWN is invalid. 2: Digital setting is forced to 0. Output range: Main frequency reference.
	AI/Multi-reference/ Simple PLC/ Communication	PID	1. UP/DOWN is invalid. 2. Output range: Main frequency reference + Auxiliary frequency reference.
	PID	AI/Pulse/Multi-reference/Simple PLC/ Communication	1. UP/DOWN is invalid. 2. Output range: Auxiliary frequency reference.
–/x/MAX/MIN	Digital setting	Digital setting	1. UP/DOWN is valid. 2. Output range: Main frequency reference + UP/ DOWN, which is the same as digital setting of the single frequency source.

Operation	Main Frequency Reference Source	Auxiliary Frequency Reference Source	Description
Single frequency source	Any	Any	1. When digital setting is used, UP/DOWN is inactive. The digital setting value is defined by F0-08. 2. When PID exists, PID is invalid. 3. When simple PLC exists, simple PLC is invalid. 4. When both the main and auxiliary frequency references are digital setting, the main frequency reference is active, the auxiliary frequency reference is inactive, and UP/DOWN is active.
	Digital setting	-	1. UP/DOWN is valid. 2. Output range: Main frequency reference + UP/DOWN. 3. UP/DOWN adjustment range: (Frequency upper limit – Main frequency value) to (Frequency lower limit – Main frequency value). 4. UP/DOWN cannot reverse the frequency direction.
	PID	-	1. The frequency lower limit is invalid. 2. The PID output range is defined by the PID output frequency upper and lower limits. 3. When reverse rotation is prohibited and the lower limit of PID output is a negative value, the lower limit of PID output is 0.
	Others		None

Para. No.	Name	Default	Value Range
F0-05	Base value of range of auxiliary frequency source Y for superposition	0	0: Relative to the maximum frequency 1: Relative to main frequency reference
F0-06	Range of auxiliary frequency source Y for superposition	100%	0% to 150%

These two parameters are only valid in the main + auxiliary operation to limit the range of the auxiliary frequency.

Para. No.	Name	Default	Value Range
F0-27	Main frequency coefficient	10.00%	0.00% to 100.00%
F0-28	Auxiliary frequency coefficient	10.00%	0.00% to 100.00%

These two parameters are only used in the main x auxiliary operation. Assume that the main frequency is Frq1 and the auxiliary frequency is Frq2.

Frq = (Frq1 x F0-27) x (Frq2 x F0-28)

4.1.2.11 Frequency Reference Limits

Frequency upper limit: Defines the maximum running frequency of the motor.

Frequency lower limit: Defines the minimum running frequency of the motor.

Maximum frequency: Defines the maximum output frequency.

Source of frequency upper limit: Defines the source of the frequency upper limit reference.

Frequency upper limit offset: Defines the offset of the frequency upper limit. This parameter is valid only when the frequency upper limit source is set to AI.

Para. No.	Name	Default	Value Range
F0-10	Maximum frequency	50.00 Hz	50.00 Hz to 600.00 Hz
F0-11	Source of frequency upper limit	0	0: Frequency upper limit reference (F0-12) 1: AI1 2: AI2 3: AI3 5: Communication 6: Multi-speed reference
F0-12	Frequency upper limit	50.00 Hz	Frequency lower limit (F0-14) to maximum frequency (F0-10)
F0-13	Frequency upper limit offset	0.00 Hz	0.00 Hz to maximum frequency (F0-10)
F0-14	Frequency lower limit	0.00 Hz	0.00 Hz to frequency upper limit (F0-12)

4.1.2.12 Action to Take When Frequency Is Below Lower Limit

The frequency lower limit defines the minimum running frequency for the motor.

If the frequency reference of the AC drive is lower than the frequency lower limit (F0-14), you need to set F8-15 to further specify the corresponding action of the AC drive, including run at frequency lower limit, stop, run at zero speed, and coast to stop.

- 0: Run at frequency lower limit
  When the running frequency is lower than the frequency lower limit, the AC drive runs at the frequency lower limit.
- 1: Stop
  When the running frequency is lower than the frequency lower limit, the AC drive stops.
- 2: Run at zero speed
  When the running frequency is lower than the frequency lower limit, the AC drive runs at zero speed.

Para. No.	Name	Default	Value Range	Description
F8-15	Action to take when frequency is below lower limit	0	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	-

4.1.3 Start/Stop Modes

4.1.3.1 Start Modes

The AC drive can be started in three modes: direct start, flying start, and pre-excitation start. You can set F6-00 to select the startup mode of the AC drive.

Direct Start

When F6-00 is set to 0, the direct start mode is adopted, which applies to most load applications.

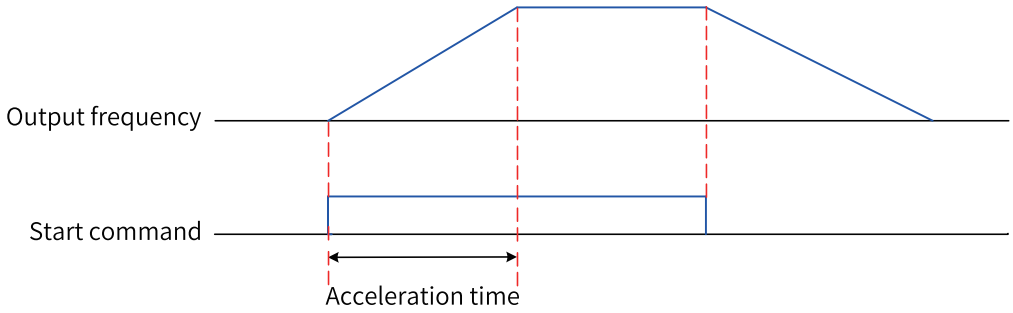


Figure 4-24 Timing diagram of direct start

Startup with startup frequency is applicable to lifting loads such as elevators and cranes.

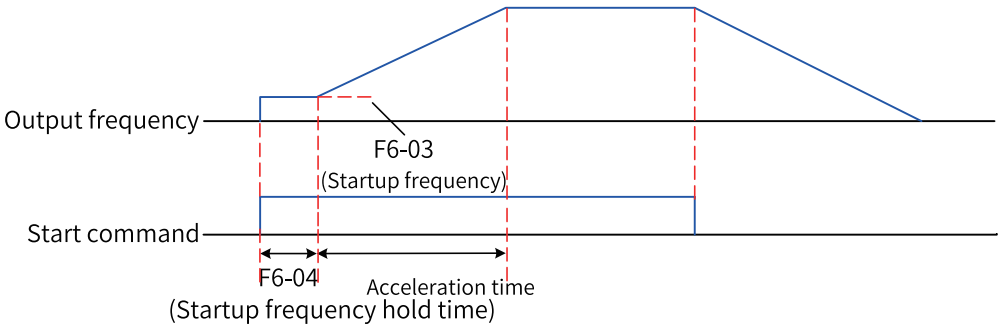


Figure 4-25 Timing diagram of startup with startup frequency

Startup with DC injection braking is applicable to load applications where the motor is likely to rotate at startup.

If the DC injection braking time is set to 0, the AC drive starts to run at the startup frequency. If the DC injection braking time is not 0, the AC drive performs DC injection braking first and then starts to run at the startup frequency. This mode applies to most small-inertia load applications where the motor is likely to rotate at startup.

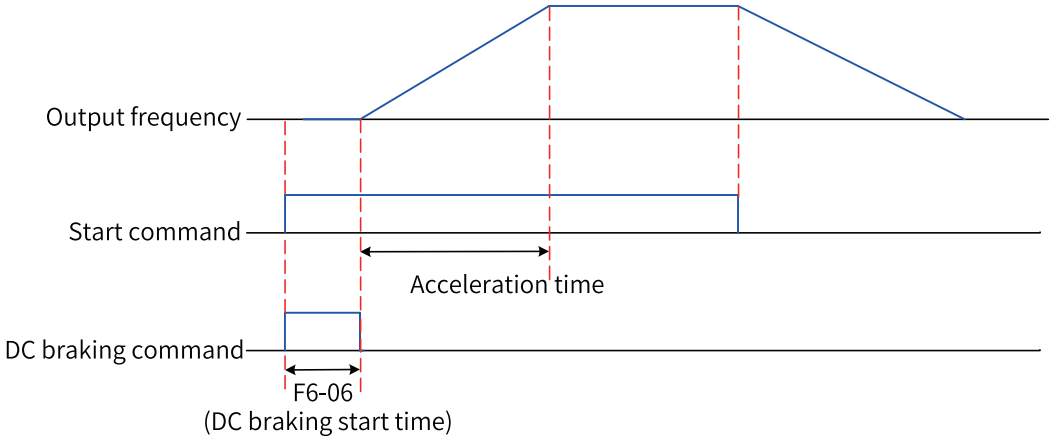
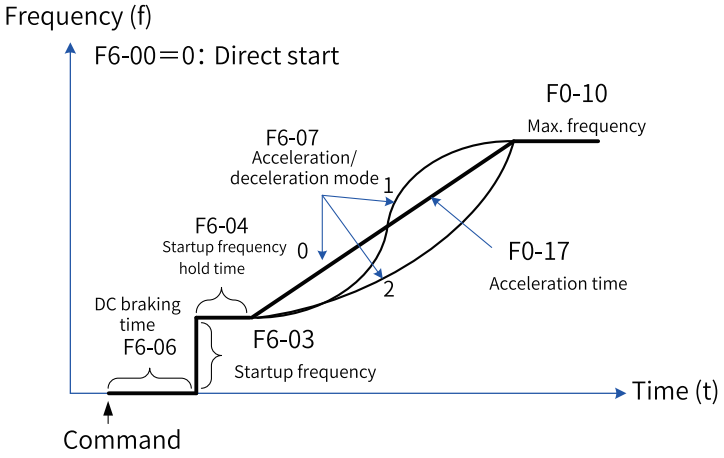


Figure 4-26 Timing diagram of startup with DC injection braking

Startup with DC injection braking is applicable to driving loads such as elevators and cranes. Startup with startup frequency is applicable to equipment drives that require burst startup under startup torque, such as cement mixers. The following figure shows the frequency curve during startup.



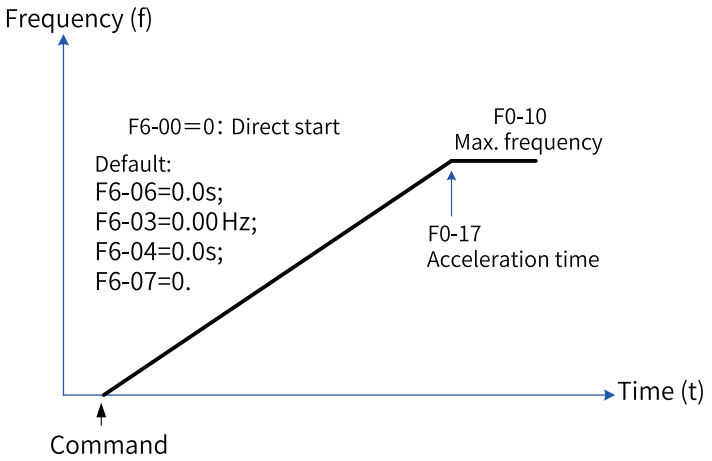


Figure 4-27 Direct start mode

Flying Start

When F6-00 is set to 1, the flying start mode is adopted. The AC drive first determines the speed and direction of the motor and then starts to run at the tracked motor frequency. This mode applies only to asynchronous motors. It is applicable when the AC drive is used to drive large-inertia machinery loads.

If the AC drive needs to be started again when the motor is still rotating due to inertia, the flying start mode can prevent overcurrent at startup. This startup mode is only valid in vector control mode. The following figure shows the frequency curve during startup.

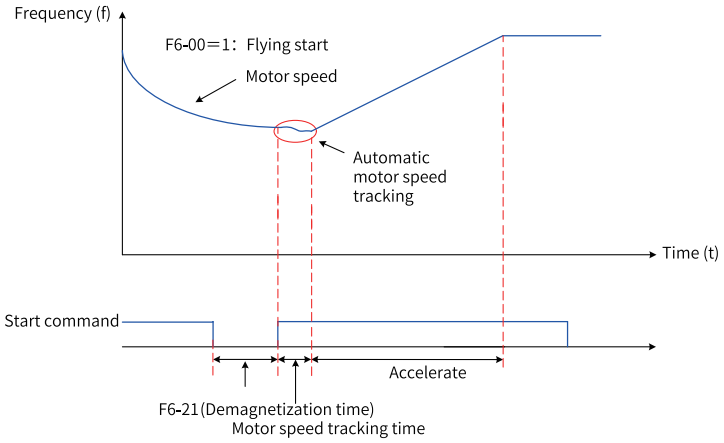


Figure 4-28 Flying start mode

Pre-excitation Start

When F6-00 is set to 2, the pre-excitation start mode is adopted. This mode is valid only for asynchronous motors in SVC control mode. Pre-excitation on the motor before startup can improve fast response of the motor and reduce the starting current. The startup timing is the same as that in startup with DC injection braking mode. The pre-excitation current is preferably 1.5 times the no-load current (F1-10), and in no case be greater than the rated current of the motor. If the pre-excitation current equals the no-load current (F1-10), the optimal pre-excitation time is 3 times the "rotor time constant". "Rotor time constant" = "Mutual inductance (F1-09) + Leakage inductance (F1-08)"/"Rotor resistance (F1-07)". The unit of mutual inductance and leakage inductance is L, and the unit of resistance is Ω. If the pre-excitation current is greater than the no-load current, the pre-excitation time can be reduced proportionally. If the pre-excitation current is less than the no-load current, the pre-excitation time can be increased proportionally.

4.1.3.2 Stop Modes

The AC drive supports two stop modes: decelerate to stop and coast to stop. You can set F6-10 to select a stop mode as required.

Para. No.	Name	Default	Value Range	Description
F6-10	Stop mode	0	0: Decelerate to stop 1: Coast to stop	0: Decelerate to stop Once the stop command takes effect, the AC drive decreases the output frequency to 0 based on the deceleration time and stops. 1: Coast to stop Once the stop command takes effect, the AC drive immediately stops output, and the motor coasts to stop under the action of mechanical inertia.
F6-11	Starting frequency of DC braking at stop	0.00 Hz	0.00 Hz to maximum frequency (F0-10)	The AC drive starts DC braking when the running frequency decreases to the value of this parameter during deceleration to stop.
F6-12	Waiting time of DC braking at stop	0.0s	0.0s to 100.0s	When the running frequency decreases to the start frequency of DC braking at stop, the AC drive stops output for a period of time and then starts DC braking. This prevents faults such as overcurrent caused due to DC braking at high speed.
F6-13	DC braking current at stop	0%	0% to 150%	A greater DC braking current indicates greater braking force. 100% corresponds to the rated motor current (the current upper limit is 80% of the rated current of the AC drive). The current upper limit can be set through F6-34, and the maximum upper limit allowed is 135% of the rated current of the AC drive.
F6-14	DC braking time at stop	0.0s	0.0s to 100.0s	This parameter indicates the hold time of DC braking. If this parameter is set to 0, DC braking is disabled.

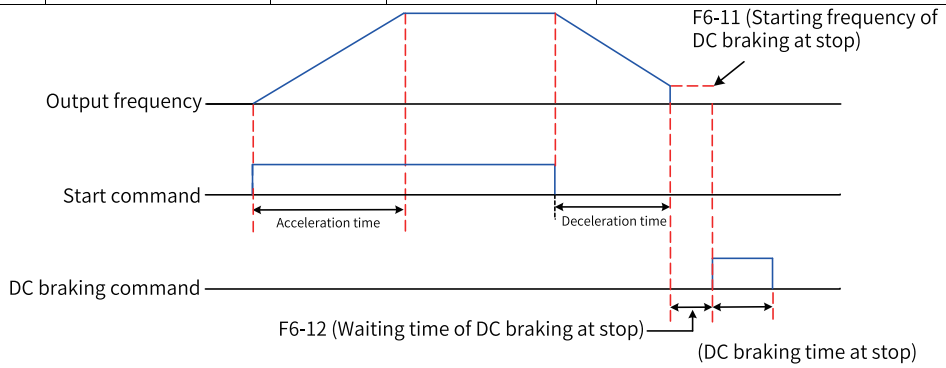


Figure 4-29 Timing diagram of DC braking during stop

Decelerate to stop

When F6-10 is set to 0, the AC drive decelerates to stop. Once the stop command takes effect, the AC drive decreases the output frequency to 0 based on the deceleration time and stops.

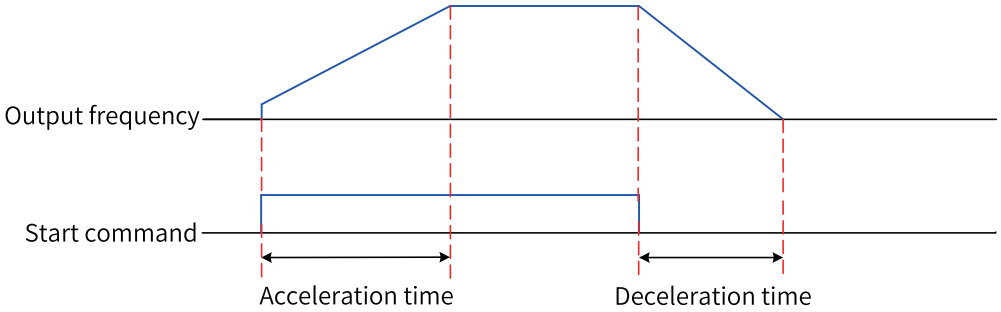


Figure 4-30 Timing diagram of decelerating to stop

Coast to stop

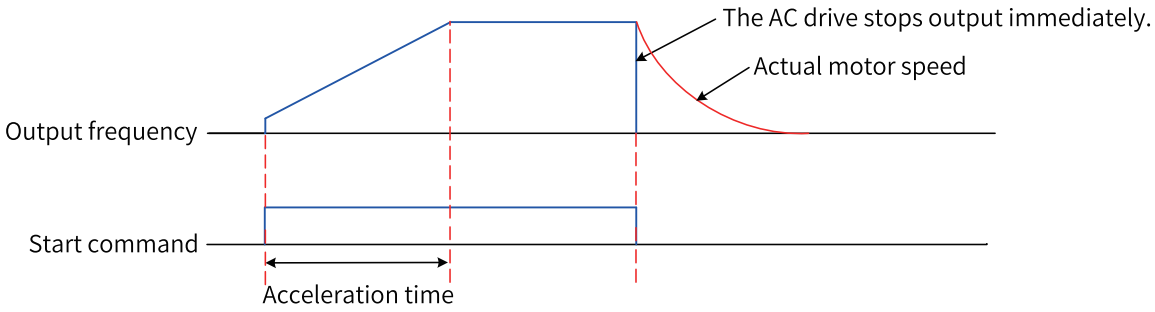


Figure 4-31 Timing diagram of coasting to stop

4.1.3.3 Acceleration/Deceleration Time

The acceleration time indicates the time required for the AC drive to accelerate from 0 Hz to F0-25 (acceleration/deceleration base frequency). The deceleration time indicates the time required for the AC drive to decelerate from F0-25 (acceleration/deceleration base frequency) to 0 Hz.

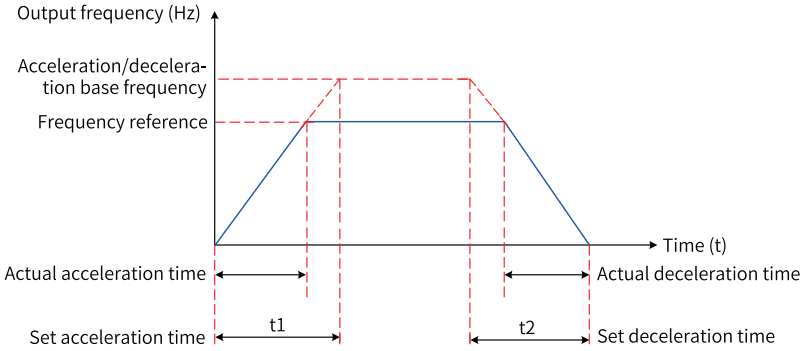


Figure 4-32 Acceleration/Deceleration time

The AC drive provides totally four groups of acceleration/deceleration time, which can be selected by using a DI terminal (assigned with function 18/19). The acceleration/deceleration time is defined by the following parameters:

Group 1: F0-17, F0-18

Group 2: F8-03, F8-04

Group 3: F8-05, F8-06

Group 4: F8-07, F8-08

Application

The following example uses DI6 and DI7 as the input switchover terminals to describe how to set the acceleration/deceleration time.

1. Set F4-10/F4-11 and F4-12/F4-13 to select DI6 and DI7 as the input switchover terminals.

Para. No.	Name	Reference	Function Description
F4-10	DI6 hardware source	001	1: DI1 of the power supply unit
F4-11	DI6 function	18	Acceleration/deceleration selection terminal 1
F4-12	DI7 hardware source	002	2: DI2 of the power supply unit
F4-13	DI7 function	19	Acceleration/deceleration selection terminal 2

2. Set the corresponding acceleration/deceleration time.

DI8 State	DI7 State	Acceleration/Deceleration Time
OFF	OFF	Group 1: F0-17, F0-18 (Acceleration time 1)
OFF	ON	Group 2: F8-03, F8-04 (Acceleration time 2. For details, see F0-17 and F0-18.)
ON	OFF	Group 3: F8-05, F8-06 (Acceleration time 3. For details, see F0-17 and F0-18.)
ON	ON	Group 4: F8-07, F8-08 (Acceleration time 4. For details, see F0-17 and F0-18.)

3. Set F0-19 (acceleration/deceleration time unit). Note that when this parameter is modified, the decimal places of the four groups of acceleration/deceleration time will change, and the corresponding acceleration/deceleration time will also change.
4. Set F6-07 (acceleration/deceleration mode) to select the frequency change mode during the start and stop process of the AC drive.

- 0: Linear acceleration/deceleration. The output frequency increases or decreases linearly.
- 1: S-curve acceleration/deceleration. When the target frequency changes dynamically in real time, the output frequency increases or decreases in real time based on the S-curve (as defined by F6-26 and F6-27). This mode is applicable to applications requiring supreme comfort and quick response in real time. F6-26 (time proportion of S-curve acceleration start segment) and F6-27 (time proportion of S-curve acceleration end segment) must be set and meet the following conditions: F6-26 + F6-27 ⩽ 100.0%.
- 2: Four-segment S-curve acceleration/deceleration. Compared with S-curve acceleration/deceleration, four curve segments of the S-curve can be set. F6-26 (time proportion of S-curve acceleration start segment), F6-27 (time proportion of S-curve acceleration end segment), F6-28 (time proportion of S-curve deceleration start segment), and F6-29 (time proportion of S-curve deceleration end segment) must be set and meet the following conditions: F6-26 + F6-27 ⩽ 100.0%; F6-28 + F6-29 ⩽ 100.0%.

4.2 Motor Configuration

4.2.1 Auto-tuning of Asynchronous Motor

Motor auto-tuning is the process by which the AC drive obtains the parameters of the controlled motor.

The following auto-tuning methods are available for asynchronous motors: static auto-tuning on some parameters of asynchronous motors, dynamic auto-tuning on all parameters of asynchronous motors, and static auto-tuning on all parameters of asynchronous motors.

Para. No.	Name	Default	Value Range	Description
F1-37	Auto-tuning	0	0: No operation	Auto-tuning is not performed.
			1: Static auto-tuning on some parameters of asynchronous motor	Auto-tuning is performed on only some motor parameters, including the stator resistance, rotor resistance, and leakage inductance.
			2: Dynamic auto-tuning on all parameters of asynchronous motor	Auto-tuning is performed on all motor parameters when the motor is running.
			3: Static auto-tuning on all parameters of asynchronous motor	Auto-tuning is performed on all motor parameters when the motor stops.

The auto-tuning effect is described as follows.

Table 4–7 Motor auto-tuning effect

Auto-tuning Method	Applicable Scenario	Auto-tuning Effect
Static auto-tuning on some parameters of asynchronous motor	Scenarios where the motor cannot be disconnected from the load and dynamic auto-tuning is not allowed	Ordinary
Dynamic auto-tuning on all parameters of asynchronous motor	Scenarios where the motor can be disconnected from the application system easily	Optimal
Static auto-tuning on all parameters of asynchronous motor	Scenarios where the motor cannot be disconnected from the load and dynamic auto-tuning on all parameters is not allowed	Good

In addition to the preceding motor auto-tuning methods, you can also input motor parameters manually.

To select the operating panel/LCD operating panel of the power supply unit as the auto-tuning operation command source, set F0-02 to 0; to select the DI terminals as the command source, set F0-02 to 1; to select communication as the command source, set F0-02 to 2.

To perform auto-tuning through communication, write the auto-tuning parameter to F1-37, and then write the operation command.

Application

The following uses the parameters of motor 1 (set F0-24 to 0 to select motor parameter group 1) as an example to describe the motor auto-tuning methods. If you need to perform auto-tuning on

parameters of motor 2, set F0-24 to 1 (motor parameter group 2). The auto-tuning method for motor 2 is similar to that for motor 1. For details about the related parameters, see group A2.

- Static auto-tuning on some parameters of asynchronous motors

Table 4–8 Static auto-tuning on some parameters of asynchronous motors

Step	Description
Step 1	Power on the AC drive, and then set F0-02 to 0 to select the operating panel/LCD operating panel/software tool as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 1 to select static auto-tuning on some parameters of the asynchronous motor, and press Enter on the operating panel. The operating panel displays:
Step 4	Press the RUN key on the operating panel or SOP20. The motor does not rotate but gets energized. The RUN indicator becomes ON. After the preceding display disappears and the operating panel returns to normal parameter display state, auto-tuning is completed. Parameters F1-06 to F1-08 are obtained.

- Dynamic auto-tuning on all parameters of asynchronous motors

  If the motor has constant output or is used for high-accuracy applications, perform dynamic auto-tuning on all parameters after disconnecting the motor from the load for optimal auto-tuning effect.

Table 4–9 Dynamic auto-tuning on all parameters of asynchronous motors

Step	Description
Step 1	Power on the AC drive, and then set F0-02 to 0 to select the operating panel/LCD operating panel/software tool as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 2 to select dynamic auto-tuning on all parameters of the asynchronous motor, and press Enter on the operating panel. The operating panel displays:
Step 4	Press the RUN key on the operating panel or SOP20. The AC drive drives the motor to accelerate/decelerate and run in the forward/reverse direction. The RUN indicator becomes ON and auto-tuning lasts for a period of time. After the preceding display disappears and the operating panel returns to normal parameter display state, auto-tuning is completed. Parameters F1-06 to F1-10 are obtained.

- Auto-tuning on all parameters of asynchronous motors with load

  If the motor cannot be disconnected from the load, perform auto-tuning on all parameters of the asynchronous motor with load, that is, static auto-tuning on all parameters of the asynchronous motor.

Table 4–10 Static auto-tuning on all parameters of asynchronous motors

Step	Description
Step 1	Power on the AC drive, and then set F0-02 to 0 to select the operating panel/LCD operating panel/software tool as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.

Step	Description
Step 3	Set F1-37 to 3 to select static auto-tuning on all parameters of the asynchronous motor, and press Enter on the operating panel. The operating panel displays:
Step 4	Press the RUN key on the operating panel or SOP20. The motor does not rotate but gets energized. The RUN indicator becomes ON. After the preceding display disappears and the operating panel returns to normal parameter display state, auto-tuning is completed. Parameters F1-06 to F1-10 are obtained.

4.2.2 Auto-tuning of Synchronous Motor

Motor auto-tuning is the process by which the AC drive obtains the parameters of the controlled motor.

The following auto-tuning methods are available for synchronous motors: static auto-tuning on some parameters of synchronous motors, dynamic auto-tuning on all parameters of synchronous motors with no load, and static auto-tuning on all parameters of synchronous motors.

Para. No.	Name	Default	Value Range	Description
F1-37	Auto-tuning	0	0: No operation	Auto-tuning is not performed.
			11: Static auto-tuning on some parameters of synchronous motor	SVC, VVC: Auto-tuning is performed on only some motor parameters, including the stator resistance, axis D inductance, and axis Q inductance. The motor does not rotate during auto-tuning.
			12: Dynamic auto-tuning on all parameters of synchronous motor with no load	Ensure that the motor has no load during auto-tuning. SVC, VVC: Auto-tuning is performed on all motor parameters, including the stator resistance, axis D inductance, axis Q inductance, and back EMF. The motor rotates during auto-tuning.
			13: Static auto-tuning on all parameters of synchronous motor	SVC, VVC: Auto-tuning is performed on only some motor parameters, including the stator resistance, axis D inductance, and axis Q inductance. The motor does not rotate during auto-tuning.

The auto-tuning effect is described as follows.

Table 4–11 Motor auto-tuning effect

Auto-tuning Method	Applicable Scenario	Auto-tuning Effect
Static auto-tuning on some parameters of synchronous motor	Scenarios where the motor cannot be disconnected from the load and dynamic auto-tuning is not allowed After auto-tuning is completed, you need to manually set the back EMF (SVC, VVC) and encoder phase sequence.	Good
Dynamic auto-tuning on all parameters of synchronous motor with no load	Scenarios where the motor can be disconnected from the application system easily	Optimal
Static auto-tuning on all parameters of synchronous motor	Scenarios where the motor cannot be disconnected from the load and is not allowed to rotate at all After auto-tuning is completed, you need to manually set the back EMF (SVC, VVC).	Ordinary

In addition to the preceding motor auto-tuning methods, you can also input motor parameters manually.

To select the operating panel/LCD operating panel of the power supply unit as the auto-tuning operation command source, set F0-02 to 0; to select the DI terminals as the command source, set F0-02 to 1; to select communication as the command source, set F0-02 to 2.

To perform auto-tuning through communication, write the auto-tuning parameter to F1-37, and then write the operation command.

Application

- Static auto-tuning on some parameters of synchronous motors

Table 4–12 Static auto-tuning on some parameters of synchronous motors

Step	Description
Step 1	Power on the AC drive, and then set F0-02 to 0 to select the operating panel/LCD operating panel/software tool as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 11 to select static auto-tuning on some parameters of the synchronous motor, and press Enter on the operating panel. The operating panel displays:
Step 4	Press the RUN key on the operating panel or SOP20. The motor gets energized. The RUN indicator becomes ON, and the auto-tuning indicator blinks. After the preceding display disappears and the operating panel returns to normal parameter display state, auto-tuning is completed. Parameters F1-06, F1-17, and F1-18 are obtained. F1-19 (SVC, VVC) needs to be set manually.

- Dynamic auto-tuning on all parameters of synchronous motors with no load

  If the motor has constant output or is used for high-accuracy applications, perform dynamic auto-tuning on all parameters after disconnecting the motor from the load for optimal auto-tuning effect.

Table 4–13 Dynamic auto-tuning on all parameters of synchronous motors

Step	Description
Step 1	Power on the AC drive, and then set F0-02 to 0 to select the operating panel/LCD operating panel/software tool as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 12 to select dynamic auto-tuning on all parameters of the synchronous motor with no load, and press Enter on the operating panel. The operating panel displays:
Step 4	Press the RUN key on the operating panel or SOP20. The motor gets energized. The RUN indicator becomes ON, and the auto-tuning indicator blinks. After the preceding display disappears and the operating panel returns to normal parameter display state, auto-tuning is completed. Parameters F1-06, F1-17, F1-18, and F1-19 are obtained.

- Static auto-tuning on all parameters of synchronous motors

  You can use this method in scenarios where the motor is not allowed to rotate at all.

Table 4–14 Static auto-tuning on all parameters of synchronous motors

Step	Description
Step 1	Power on the AC drive, and then set F0-02 to 0 to select the operating panel/LCD operating panel/software tool as the command source.
Step 2	Input motor nameplate parameters (F1-00 to F1-05) correctly.
Step 3	Set F1-37 to 13 to select static auto-tuning on all parameters of the synchronous motor, and press Enter on the operating panel. The operating panel displays:
Step 4	Press the RUN key on the operating panel or SOP20. The motor gets energized. The RUN indicator becomes ON, and the auto-tuning indicator blinks. After the preceding display disappears and the operating panel returns to normal parameter display state, auto-tuning is completed. Parameters F1-06, F1-17, and F1-18 are obtained. F1-19 (SVC, VVC) needs to be set manually.

4.3 Control Interfaces

4.3.1 Digital Input (DI)

4.3.1.1 Sources of DI Terminals

The drive unit of this product has no DI terminals and needs to map to input terminals of the power supply unit or extension card. Therefore, you need to set the DI terminal sources when the drive unit uses DI terminals.

The DI terminal source is displayed as follows when you modify related parameters on the operating panel.

Display	Description
	Ten thousands, thousands: I/O Hundreds: Serial number 0 indicates the power supply unit, 1 indicates extension card 1, 2 indicates extension card 2, and so on. Tens, ones: Hardware terminal

Example:

Para. No.	Display	Description
F4-00		DI1 of the drive unit maps to DI3 of the power supply unit.
F4-02		DI2 of the drive unit maps to DIO4 of the power supply unit. When the drive unit uses DIO1 to DIO4 of the power supply unit as the DI hardware sources, set this parameter to Io005 to Io008 directly.
F4-08		DI5 of the drive unit maps to DI8 of extension card 1.

The following table describes the parameters related to the drive unit.

Table 4–15 Parameters related to the drive unit

Para. No.	Name	Default	Value Range	Description
F4-00	DI1 hardware source	0	0: None 1: DI1 of the power supply unit 2: DI2 of the power supply unit 3: DI3 of the power supply unit 4: DI4 of the power supply unit 5: DIO1 of the power supply unit 6: DIO2 of the power supply unit 7: DIO3 of the power supply unit 8: DIO4 of the power supply unit 101: DI1 of extension card 1 102: DI2 of extension card 1 103: DI3 of extension card 1 104: DI4 of extension card 1 105: DI5 of extension card 1 106: DI6 of extension card 1 107: DI7 of extension card 1 108: DI8 of extension card 1 201: DI1 of extension card 2 202: DI2 of extension card 2 203: DI3 of extension card 2 204: DI4 of extension card 2 205: DI5 of extension card 2 206: DI6 of extension card 2 207: DI7 of extension card 2 208: DI8 of extension card 2	This parameter defines the source of the input terminal.
F4-02	DI2 hardware source	0		
F4-04	DI3 hardware source	0		
F4-06	DI4 hardware source	0		
F4-08	DI5 hardware source	0		
F4-10	DI6 hardware source	0		
F4-12	DI7 hardware source	0		
F4-14	DI8 hardware source	0		

The value range of the parameters in the preceding table changes automatically.

1. If extension cards 1 and 2 are not connected, non-existent hardware resources are skipped automatically when parameters are set on the local operating panel, and a write failure will be reported when the parameters are set to non-existent hardware resources at the background or by using an external operating panel
   For example, if extension card 1 is not connected, the value of F4-00 (DI1 hardware source) will jump directly from 008 to 201 when you press the UP key.
2. For the same drive unit, the values of the parameters in the preceding table cannot be duplicate (that is, different DIs cannot use the same hardware source). If a hardware source has been selected,

it is skipped automatically when other parameters are set on the local operating panel, and a write failure is reported when this hardware source is assigned to other parameters at the background or by using an external operating panel.
For example, if F4-00 (DI1 hardware source) is set to 002, pressing the UP key will automatically skip 002 to 003 when you set F4-02 (DI2 hardware source).

3. If one device in a device group selects a DIO of the power supply unit as the input terminal (DI) source, the DO terminals of all devices in the group cannot select this DIO as the hardware source. If a DIO has been selected as the hardware source of a DI, this DIO is automatically skipped when you set hardware resources for DOs on the local operating panel, and a write failure occurs when this DIO is selected as the hardware source of a DO at the background or by using an external operating panel.
Similarly, if one device in a device group selects a DIO of the power supply unit as the output terminal (DO/RO) source, the DI terminals of all devices in the group cannot select this DIO as the hardware source. If a DIO has been selected as the hardware source of a DO, this DIO is automatically skipped when you set hardware resources for DIs on the local operating panel, and a write failure occurs when this DIO is selected as the hardware source of a DI at the background or by using an external operating panel.

   For example:

   If F4-00 (DI1 hardware source) is set to 005, pressing the UP key will automatically skip 001 to 002 when you set F5-02 (DO2/RO2 hardware source).

   If F5-00 (DO1/RO1 hardware source) is set to 001, pressing the UP key will automatically skip 005 to 006 when you set F4-00 (DI1 hardware source).

4.3.1.2 Functions of DI Terminals

The AC drive is equipped with eight multi-function DI terminals, each of which can be assigned with a DI function. Note that the functions of the eight DIs of the same device cannot be duplicate.

Table 4–16 DI-related parameters

Para. No.	Name	Default	Value Range	Description
F4-01	DI1 function	1	0 to 63	For details about DI1 terminal function selection, see *"Table 4–17 DI function description" on page 462*.
F4-03	DI2 function	4		
F4-05	DI3 function	12		
F4-07	DI4 function	13		
F4-09	DI5 function	0		
F4-11	DI6 function	0		
F4-13	DI7 function	0		
F4-15	DI8 function	0		
F4-19	DI1 delay	0.0s	0.0s to 3600.0s	These parameters define the delay of the DI terminal state change. The delay setting function is available only for DI1, DI2, and DI3 currently.
F4-20	DI2 delay	0.0s	0.0s to 3600.0s	
F4-21	DI3 delay	0.0s	0.0s to 3600.0s	

Para. No.	Name	Default	Value Range	Description
F4-22	DI active mode selection 1	00000	0: Active high 1: Active low Ones: DI1 active mode Tens: DI2 active mode Hundreds: DI3 active mode Thousands: DI4 active mode Ten thousands: DI5 active mode	When active high is selected, the DI terminal is active when connected to COM and inactive when disconnected from COM. When active low is selected, the DI terminal is inactive when connected to COM and active when disconnected from COM.
F4-23	DI active mode selection 2	00000	0: Active high 1: Active low Ones: DI6 active mode Tens: DI7 active mode Hundreds: DI8 active mode Thousands: Reserved Ten thousands: Reserved	

Table 4–17 DI function description

Setpoint	Function	Description
0	Invalid	Set 0 for reserved terminals to avoid malfunction.
1	1: Forward RUN (FWD) or operation command	In the case of two-wire mode 1 (F4-17 = 0), forward run applies. In the case of two-wire mode 2 (F4-17 = 1), the operation command applies.
2	Reverse RUN (REV) or running direction	In the case of three-wire mode 1 (F4-17 = 2), reverse run applies. In the case of three-wire mode 2 (F4-17 = 3), the running direction applies.
3	Three-wire operation control	The operation mode of the AC drive is three-wire operation control. To set a running command through the terminal, set F4-17 (terminal control mode) to 2 (three-wire mode 1) or 3 (three-wire mode 2), and set this parameter to 3.
4	Forward jog (FJOG)	The operation mode of the AC drive is forward jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.
5	Reverse jog (RJOG)	The operation mode of the AC drive is reverse jog. The jog frequency, jog acceleration time, and jog deceleration time are described in F8-00, F8-01, and F8-02, respectively.
6	Terminal UP	The terminal is used to increase the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the key is pressed and held. When this terminal is inactive, it works as if the key is released.
7	Terminal DOWN	The terminal is used to decrease the frequency when the frequency is set through the terminal. When this terminal is active, it works as if the key is pressed and held. When this terminal is inactive, it works as if the key is released.

Setpoint	Function	Description
8	UP and DOWN setting clear (terminal, operating panel)	When the main frequency is set through the operating panel and this function is selected, the frequency set through the and keys on the operating panel or terminal UP/DOWN (6 or 7) can be cleared and the frequency reference will be reset to the value of F0-08.
9	Fault reset (RESET)	The terminal is used to reset faults of the AC drive. Remote fault reset can be implemented by using this function.
10	External fault NO input	When the terminal is active, the AC drive reports E15.01 upon receiving an external signal.
11	External fault NC input	When the terminal is active, the AC drive reports E15.02 upon receiving an external signal.
12	User-defined fault 1	When E27.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).
13	User-defined fault 2	When E28.00 is reported, the AC drive will take measures according to the value of F9-51 (fault protection action).
14	Multi-reference terminal 1	The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four terminals.
15	Multi-reference terminal 2	
16	Multi-reference terminal 3	
17	Multi-reference terminal 4	
18	Acceleration/deceleration selection terminal 1	Totally four groups of acceleration/deceleration time can be selected through state combinations of these two terminals.
19	Acceleration/deceleration selection terminal 2	
20	Acceleration/Deceleration inhibition	The terminal is used to keep the AC drive at the current running frequency regardless of changes of the external input frequency (unless a stop command is received).
21	Command source switchover terminal 1	When the operation command is set through the terminal (F0-02 = 1), this function can implement switchover between terminal control and operating panel control. When the operation command is set through communication (F0-02 = 2), this function can implement switchover between communication control and operating panel control.
22	Command source switchover terminal 2	The terminal is used for switchover between terminal control and communication control. If terminal control is used, the system switches to communication control when the terminal is active. If communication control is used, the system switches to terminal control when the terminal is active.
23	Frequency source switchover	The terminal is used to switch between two frequency reference sources according to F0-07 (frequency reference superposition).
24	Switchover between main frequency source X and preset frequency	The terminal is used to switch from the main frequency to the preset frequency (F0-08).
25	Switchover between auxiliary frequency source Y and preset frequency	The terminal is used to switch from the auxiliary frequency to the preset frequency (F0-08).
26	Frequency modification enable	When the terminal is active, the frequency can be modified. When the terminal is inactive, the frequency cannot be modified.
27	Counter input	In the count process, a count pulse is input when the terminal is active.
28	Counter reset	In the count process, the counter status is cleared when the terminal is active.

Setpoint	Function	Description
29	Length count input	In the fixed length process, the length count is input when the terminal is active.
30	Length reset	In the fixed length process, the length is cleared when the terminal is active.
31	PID pause	The terminal is used to suspend PID control temporarily, so that the AC drive keeps the current output frequency with no more PID tuning on the frequency source.
32	PID integral pause	The integral adjustment function pauses when the terminal is active. However, the proportional and derivative adjustment functions are still valid.
33	PID parameter switchover	If PID parameters are switched by using the DI terminal (FA-18 = 1), the PID parameters FA-05 to FA-07 are used when the terminal is inactive, and the PID parameters FA-15 to FA-17 are used when the terminal is active.
34	PID action direction reversal	The terminal is used to reverse the direction set by FA-03 (PID action direction).
35	Torque control disable	In torque control mode, the system switches to speed control when this terminal is active. The system switches back to the torque control mode when the terminal becomes inactive.
36	Switchover between speed control and torque control	The terminal is used to switch between speed control and torque control. When A0-00 (speed/torque control mode) is set to 0, the torque control mode is used when the terminal is active, and the speed control mode is used when the terminal is inactive. When A0-00 (speed/torque control mode) is set to 1, the torque control mode is used when the terminal is inactive, and the speed control mode is used when the terminal is active.
38	Flying start	The AC drive starts in flying start mode.
39	Immediate DC braking	The AC drive switches to the DC braking state directly.
40	Deceleration DC braking	The terminal is used to make the AC drive decelerate to the start frequency of DC braking during stop (F6-11) and then enter the DC braking state.
41	External stop terminal 1	When the running command source is the operating panel (F0-02 = 0), this terminal is used to stop the AC drive.
42	External stop terminal 2	The terminal is used to make the AC drive decelerate to stop in any control mode (operating panel, terminal, or communication control). In this case, the deceleration time is fixed to deceleration time 4 (F8-08).
43	Running pause	When the terminal is active, the AC drive decelerates to stop with all running parameters memorized (such as the PLC, wobble, and PID parameters). When the terminal is inactive, the AC drive resumes its status before stop.
44	Coast to stop	When the terminal is active, the AC drive stops output, and the motor coasts to stop under the action of mechanical inertia.

Setpoint	Function	Description
45	Emergency stop	When the system is in the emergency state, the AC drive decelerates according to the deceleration time for emergency stop set in F8-59, and it decelerates according to the minimum unit time when the deceleration time for emergency stop is 0s in V/f mode. The input terminal does not need to be in the closed state continuously. Even if it is closed for only an instant, an emergency stop will be performed immediately. Different from general deceleration, the emergency stop action prevents the AC drive from restarting even if the emergency stop input terminal is opened after the deceleration time for emergency stop expires and the run signal is still valid on the AC drive terminal. To restart the AC drive in this case, disconnect the running terminal and input the run command.
46	Motor terminal selection	The terminal is used to select the motor. When the terminal is active, motor 2 is selected. When the terminal is inactive, motor 1 is selected.
47	Current running duration clear	The terminal is used to clear the current running duration of the AC drive. If the current running duration is less than the setpoint (greater than 0) of F8-57 (current running time threshold) and the terminal is active during this process, the current running duration is cleared. If the current running duration is greater than the setpoint (greater than 0) of F8-57 and the terminal is active, the current running duration is not cleared.
48	Switchover between two-wire and three-wire control	The terminal is used to switch between two-wire and three-wire control. If F4-17 is set to 0 (two-wire mode 1), the AC drive switches to three-wire mode 1 when the terminal is active. If F4-17 is set to 1 (two-wire mode 2), the AC drive switches to three-wire mode 2 when the terminal is active. If F4-17 is set to 2 (three-wire mode 1), the AC drive switches to two-wire mode 1 when the terminal is active. If F4-17 is set to 3 (three-wire mode 2), the AC drive switches to two-wire mode 2 when the terminal is active.
49	PLC state reset	The terminal is used to restore the AC drive to the initial state of the simple PLC.
50	Wobble pause	In the wobble process, when this terminal is active, the wobble function is paused (the AC drive outputs at the center frequency).
54 to 63	Reserved	-

4.3.2 Digital Output (DO)

4.3.2.1 Sources of DO Terminals

The drive unit of this product has no DO terminals and needs to map to output terminals of the power supply unit or extension card. Therefore, you need to set the DO terminal sources when the drive unit uses DO/RO terminals.

The DO terminal source is displayed in a way similar to that shown in *"4.3.1.1 Sources of DI Terminals" on page 458* when you modify related parameters on the operating panel. There are some differences in the selection of DIOs of the power supply unit, which are described as follows.

Para. No.	Display	Description
F5-00		D0/RO1 of the drive unit maps to DIO1 of the power supply unit.
F5-02		D0/RO2 of the drive unit maps to relay RO1 of the power supply unit.

Table 4–18 Related parameters

Para. No.	Name	Default	Value Range	Description
F5-00	DO1/RO1 hardware source	0	0: None 1: DIO1 of the power supply unit 2: DIO2 of the power supply unit 3: DIO3 of the power supply unit 4: DIO4 of the power supply unit 5: RO1 of the power supply unit 101: DO1/RO1 of extension card 1 102: DO2/RO2 of extension card 1 103: DO3/RO3 of extension card 1 104: DO4/RO4 of extension card 1 105: DO5/RO5 of extension card 1 106: DO6/RO6 of extension card 1 107: DO7/RO7 of extension card 1 108: DO8/RO8 of extension card 1 201: DO1/RO1 of extension card 2 202: DO2/RO2 of extension card 2 203: DO3/RO3 of extension card 2 204: DO4/RO4 of extension card 2 205: DO5/RO5 of extension card 2 206: DO6/RO6 of extension card 2 207: DO7/RO7 of extension card 2 208: DO8/RO8 of extension card 2	This parameter defines the hardware source of the output terminal.
F5-02	DO2/RO2 hardware source	0		
F5-04	DO3/RO3 hardware source	0		
F5-06	DO4/RO4 hardware source	0		
F5-08	DO5/RO5 hardware source	0		

The value range of the parameters in the preceding table changes automatically. For details, see *"4.3.1.1 Sources of DI Terminals" on page 458*.

4.3.2.2 Functions of DO Terminals

The AC drive is equipped with 5 multi-function digital output terminals. F5-01 to F5-09 define the functions of the DO/RO terminals to indicate various working states and alarms of the AC drive. There are a total of about 40 functions available to fulfill specific automatic control requirements.

Table 4–19 DO-related parameters

Para. No.	Name	Default	Value Range	Description
F5-01	DO1/RO1 function	2	0 to 50	For details about DO terminal function selection, see *"Table 4–20 DO function description" on page 467*.
F5-03	DO2/RO2 function	5		
F5-05	DO3/RO3 function	0		
F5-07	DO4/RO4 function	0		
F5-09	DO5/RO5 function	0		
F5-10	DO1/RO1 output delay	0.0s	0.0s to 3600.0s	These parameters define the delay of the DO/RO terminal state change.
F5-11	DO2/RO2 output delay	0.0s	0.0s to 3600.0s	
F5-12	DO3/RO3 output delay	0.0s	0.0s to 3600.0s	
F5-13	DO4/RO4 output delay	0.0s	0.0s to 3600.0s	
F5-14	DO5/RO5 output delay	0.0s	0.0s to 3600.0s	
F5-15	DO/RO active mode	00000	0: Positive logic 1: Negative logic Ones: DO1/RO1 Tens: DO2/RO2 Hundreds: DO3/RO3 Thousands: DO4/RO4 Ten thousands: DO5/RO5	0: Positive logic (same as NO contact) The DO/RO terminal is active when it is internally connected to the COM terminal. The DO/RO terminal is inactive when it is disconnected from the COM terminal. 1: Negative logic (same as NC contact) The DO/RO terminal is active when it is disconnected from the COM terminal. The DO/RO terminal is inactive when it is internally connected to the COM terminal.

Table 4–20 DO function description

Setpoint	Function	Description
0	No output	The output terminal has no function.
1	AC drive running	The terminal outputs an "active" signal when the AC drive is running with output frequency (which can be 0).
2	Ready to run	The terminal outputs an "active" signal when the AC drive is ready for running without any fault after power-on.
3	Fault output 1 (stop upon fault)	When the AC drive coasts to stop or decelerates to stop upon a fault, the DO terminal outputs an "active" signal after the AC drive stops completely.
4	Fault output 2	When the AC drive coasts to stop or decelerates to stop upon a fault (undervoltage excluded), the DO terminal outputs an "active" signal after the AC drive stops completely.
5	Fault output 3	When the AC drive coasts to stop or decelerates to stop upon a fault (undervoltage excluded), the DO terminal outputs an "active" signal.
6	Exception output (direct output upon fault or alarm)	When the AC drive has a fault or alarm, the DO/RO terminal outputs an "active" signal.

Setpoint	Function	Description
7	Motor overload pre-warning	The AC drive determines whether the motor load exceeds the overload pre-warning threshold according to the overload pre-warning coefficient (F9-02) before performing the protection action. The terminal outputs an "active" signal when the overload pre-warning threshold is exceeded.
8	AC drive overload pre-warning	The terminal outputs an "active" signal 10s before the AC drive performs overload protection.
9	Motor over-temperature pre-warning	The terminal outputs an "active" signal when the motor temperature reaches the threshold defined by F9-58, F9-60, or F9-62 (motor overtemperature pre-warning threshold).
10	AC drive load loss output	The terminal outputs an "active" signal when load loss occurs.
11	Undervoltage state output	The terminal outputs an "active" signal when undervoltage occurs on the AC drive.
12	Output overcurrent	The DO/RO terminal outputs an "active" signal when the output current of the AC drive remains higher than F8-40 (output overcurrent threshold) for longer than F8-41 (output overcurrent detection delay).
13	Frequency-level detection FDT1 output	When the running frequency is higher than the detected value, the DO/RO terminal outputs an "active" signal. When the running frequency is lower than the result of the detected value minus the FDT hysteresis value, the "active" signal is canceled. For details, see the description of F8-22 and F8-23.
14	Frequency-level detection FDT2 output	When the running frequency is higher than the detected value, the DO/RO terminal outputs an "active" signal. When the running frequency is lower than the result of the detected value minus the FDT hysteresis value, the "active" signal is canceled. For details, see the description of F8-24 and F8-25.
15	Frequency reach	The DO/RO terminal outputs an "active" signal when the running frequency of the AC drive is within a certain range (target frequency ±setpoint of F8-26).
16	Frequency 1 reach output	The DO/RO terminal outputs an "active" signal when the running frequency of the AC drive is within the frequency detection range of F8-27 (detection value 1 for frequency reach). The frequency detection range is as follows: (F8-27–F8-28) to (F8-27+F8-28).
17	Frequency 2 reach output	The DO/RO terminal outputs an "active" signal when the running frequency of the AC drive is within the frequency detection range of F8-30 (detection value 2 for frequency reach). The frequency detection range is as follows: (F8-30–F8-31) to (F8-30+F8-31).
18	Frequency upper limit reach	The terminal outputs an "active" signal when the running frequency reaches the frequency upper limit (F0-12).
19	Frequency lower limit reach (output even at stop)	The terminal outputs an "active" signal when the running frequency reaches the frequency lower limit (F0-14). The terminal also outputs the "active" signal when the AC drive stops.
20	Frequency lower limit reach (no output at stop)	If F8-15 (running mode when frequency reference lower than lower limit) is set to 1 (stop), the terminal outputs an "inactive" signal no matter whether the running frequency reaches the frequency lower limit. If F8-15 (running mode when frequency reference lower than lower limit) is set to 0 (run at frequency lower limit) or 2 (run at zero speed), the terminal outputs an "active" signal when the running frequency reaches the frequency lower limit.
21	Timing reach output	When the timing function (F8-46) is enabled, the terminal outputs an "active" signal when the current operation time of the AC drive reaches the set timing duration. The timing duration is defined by F8-47 and F8-48.

Setpoint	Function	Description
22	Accumulative power-on time reach	The terminal outputs an "active" signal when the accumulative power-on time of the AC drive (F7-12) exceeds the value of F8-19 (accumulative power-on time reach).
23	Accumulative running time reach	The terminal outputs an "active" signal when the accumulative running time of the AC drive exceeds the value of F8-20 (accumulative running time threshold).
24	Current running time reach	The terminal outputs an "active" signal when the current operation time of the AC drive exceeds the value of F8-57 (current running time threshold).
25	Zero current state	The DO/RO terminal outputs an "active" signal when the output current of the AC drive is within the zero-current range for longer than F8-39 (zero current detection delay). The zero current detection range is 0 to (F8-38 x F1-03).
26	Current 1 reach output	The DO/RO terminal outputs an "active" signal when the output current of the AC drive is within the detection range of F8-42 (detection level of current 1). The current detection range is (F8-42–F8-43) x F1-03 (rated motor current) to (F8-42+F8-43) x F1-03.
27	Current 2 reach output	The DO/RO terminal outputs an "active" signal when the output current of the AC drive is within the detection range of F8-44 (detection level of current 2). The current detection range is (F8-44–F8-45) x F1-03 (rated motor current) to (F8-44+F8-45) x F1-03.
28	IGBT temperature reach	The terminal outputs an "active" signal when the IGBT heatsink temperature (F7-07) reaches the value of F8-51 (IGBT temperature reach).
29	Reference count value reach	The terminal outputs an "active" signal when the count value reaches the value of Fb-08.
30	Designated count value reach	The terminal outputs an "active" signal when the count value reaches the value of Fb-09.
31	Length reach	The terminal outputs an "active" signal when the detected actual length exceeds the value of Fb-05.
32	Frequency limit reach	The terminal outputs an "active" signal when the frequency reference exceeds the frequency upper or lower limit, and the output frequency of AC drive reaches the upper or lower limit.
33	Torque limit reach	The terminal outputs an "active" signal when the output torque of the AC drive reaches the toque limit in speed control mode.
34	AI1 input limit exceeded	The terminal outputs an "active" signal when the AI1 input is higher than the value of F8-49 (AI1 input voltage upper limit) or lower than the value of F8-50 (AI1 input voltage lower limit).
35	AI1 > AI2	The terminal outputs an "active" signal when the AI1 input is higher than the AI2 input.
36	PLC cycle completed	The terminal outputs a pulse signal with a width of 250 ms when the simple PLC completes one cycle.
37	Communication control	Whether the terminal is active or inactive is determined by the setpoint in communication address 0x2001.
38	STO-EDM	The DO terminal outputs an "active" signal when STO is triggered.
40	Running at zero speed (no output at stop)	The terminal outputs an "active" signal when the output frequency of the AC drive is 0 during running. When the AC drive stops, the signal becomes "inactive".
41	Running at zero speed (output at stop)	The terminal outputs an "active" signal when the output frequency of the AC drive is 0 during running. When the AC drive stops, the signal is still "active".

Setpoint	Function	Description
43	Reverse running	The terminal outputs an "active" signal when the AC drive runs in the reverse direction.
44	Process 1	-
45	Process 2	-
46	Process 3	-
47	Process 4	-
48	Process 5	-
49	Process 6	-
50	Process 7	-

4.3.1 Virtual Digital Input (VDI)

VDI terminals have the same functions as DI terminals and can be used for multi-function digital inputs.

VDI has three sources:

- A1-06. You can directly set A1-06 to make the DI active. It is mainly applicable to communication scenarios, in which physical DIs are not used and DI functions are implemented by writing to A1-06. The ones place of A1-06 corresponds to VDI1, the tens position of A1-06 corresponds to VDI2, and so on.
- DO/RO state. The AC drive has five DO/RO terminals. DO/RO1 corresponds to VDI1, DO/RO2 corresponds to VDI2, and so on.
- DI state. DI1 corresponds to VDI1, DI2 corresponds to VDI2, and so on.

The following examples illustrate how to use the VDI.

Example 1: A1-05 (VDI1 active state source) is set to 00001 (DO/RO state). To enable the AC drive to report a fault alarm and stop when the AI1 input exceeds the upper or lower limit, set as follows.

Step	Setting Parameters
1	Assign VDI1 with function "user-defined fault 1" (A1-00 = 12).
2	Assign DO/ RO1 with function "AI input limit exceeded" (F5-01 = 34).
3	Set the VDI1 active state source to DO state (A1-05 = 00001).

After the setting, when the AI1 input exceeds the upper or lower limit, the DO/RO1 terminal outputs an ON signal. In this case, VDI1 becomes active and the AC drive receives user-defined fault 1 through VDI1. Then the AC drive reports E27.00 and stops.

Example 2: To use the VDI to implement the emergency stop function without physical DIs in a communication scenario, set as follows:

Step	Setting Parameters
1	Assign VDI1 with function "emergency stop" (A1-00 = 45).
2	Set the VDI1 active state source to the parameter (A1-05 = 00000).
3	Change the value of the ones place of A1-06 through communication.

After the setting, the emergency stop function can be implemented when the ones place of A1-06 is set to 1 through communication.

Table 4–21 Related parameters

Para. No.	Name	Default	Value Range	Description
A1-00	VDI1 function	0	0 to 60	VDI1 to VDI5 can be used as multi-functional DIs. The functions 0 to 60 are the same as those of common DIs. For details, see *"4.3.1.2 Functions of DI Terminals" on page 461*.
A1-01	VDI2 function	0	0 to 60	
A1-02	VDI3 function	0	0 to 60	
A1-03	VDI4 function	0	0 to 60	
A1-04	VDI5 function	0	0 to 60	
A1-05	VDI active state source	00000	0: A1-06 1: DO state 2: DI state Ones: VDI1 Tens: VDI2 Hundreds: VDI3 Thousands: VDI4 Ten thousands: VDI5	Three ways of setting VDI status are available and can be selected by using A1-05. When it is set to 0, the VDI state is determined by the binary bit of A1-06. When it is set to 1, the VDI state is determined by the state (active or inactive) of the corresponding DO/RO. VDIx is uniquely bound to DOx/ROx (x ranges from 1 to 5). When it is set to 2, the VDI state is determined by the state (active or inactive) of the corresponding DI. VDIx is uniquely bound to DIx (x ranges from 1 to 5).
A1-06	VDI state	00000	0: Inactive 1: Active Ones: VDI1 Tens: VDI2 Hundreds: VDI3 Thousands: VDI4 Ten thousands: VDI5	-

4.3.4 Analog or Temperature Input (AI)

4.3.4.1 Sources of Analog or Temperature Input Terminals

The AC drive itself has no analog or temperature input and needs to map to analog or temperature inputs of the power supply unit or extension card. Therefore, you need to set the analog or temperature input sources when the drive unit uses analog inputs or temperature sensors.

The analog or temperature input source is displayed as follows when you modify related parameters on the operating panel.

Display	Description
	Ten thousands, thousands: I/O Hundreds: Serial number 0 indicates the power supply unit, 1 indicates extension card 1, 2 indicates extension card 2, and so on. Tens, ones: Hardware terminal

Example:

Para. No.	Display	Description
F4-25		AI1 of the drive unit maps to analog or temperature input AI1 of the power supply unit.
F4-27		AI2 of the drive unit maps to analog or temperature input AI2 of extension card 1.

Table 4–22 Related parameters

Para. No.	Name	Default	Value Range	Description
F4-25	AI1 hardware source	0	0: None 1: AI1 of the power supply unit 2: AI2 of the power supply unit 101: AI1 of extension card 1 102: AI2 of extension card 1 201: AI1 of extension card 2 202: AI2 of extension card 2	This parameter defines the analog/temperature input source.
F4-27	AI2 hardware source	0		
F4-29	AI3 hardware source	0		

The value range of the parameters in the preceding table changes automatically. For details, see *"4.3.1.1 Sources of DI Terminals" on page 458*.

4.3.4.2 Functions of Analog or Temperature Input Terminals

You can configure three analog inputs for the drive unit and map the analog data of the power supply unit or extension cards by selecting the analog or temperature input sources. Analog data values and analog functions (voltage, current, or temperature) are received through the internal bus.

You can set the filter time and analog input functions of the two analog inputs of the power supply unit, and you can also set those of the external extension cards.

Table 4–23 Parameters of the power supply unit (A1 - I/O extension card of the power supply unit)

Para. No.	Name	Default	Value Range	Description
A1-05	AI1 filter time	0.01s	0.00 to 10.00s	This parameter defines the AI input filter time of the power supply unit, which is 0.1s by default. It is set based on the response requirements and field signal interference. Decrease this filter time if fast response is required, and increase it if field interference is strong.
A1-06	AI2 filter time	0.01s	0.00 to 10.00s	
A1-10	AI1 input	0	0: Voltage input 1: Current input 2: Temperature input PT100 3: Temperature input PT1000 4: Temperature input KTY84-130 5: Temperature input PTC-130	This parameter defines the AI input function of the power supply unit.
A1-11	AI2 input	0		

Table 4–24 Parameters of the power supply unit (A2 - I/O extension card 1)

Para. No.	Name	Default	Value Range	Description
A2-05	AI1 filter time	0.01s	0.00 to 10.00s	This parameter defines the AI input filter time of extension card 1, which is 0.1s by default. It is set based on the response requirements and field signal interference. Decrease this filter time if fast response is required, and increase it if field interference is strong.
A2-06	AI2 filter time	0.01s	0.00 to 10.00s	
A2-10	AI1 input	0	0: Voltage input 1: Current input 2: Temperature input PT100 3: Temperature input PT1000 4: Temperature input KTY84-130 5: Temperature input PTC-130	This parameter defines the AI input function of extension card 1.
A2-11	AI2 input	0		

Table 4–25 Parameters of the power supply unit (A3 - I/O extension card 2)

Para. No.	Name	Default	Value Range	Description
A3-05	AI1 filter time	0.01s	0.00 to 10.00s	This parameter defines the AI input filter time of extension card 2, which is 0.1s by default. It is set based on the response requirements and field signal interference. Decrease this filter time if fast response is required, and increase it if field interference is strong.
A3-06	AI2 filter time	0.01s	0.00 to 10.00s	
A3-10	AI1 input	0	0: Voltage input 1: Current input 2: Temperature input PT100 3: Temperature input PT1000 4: Temperature input KTY84-130 5: Temperature input PTC-130	This parameter defines the AI input function of extension card 2.
A3-10	AI2 input	0		

Note the following:

- When the drive unit requires analog voltage inputs, set the power supply unit parameters (parameters in the preceding tables) related to the hardware source defined by F4-25, F4-27, or F4-29 to 0 (voltage input).
- When the drive unit requires analog current inputs, set the power supply unit parameters (parameters in the preceding tables) related to the hardware source defined by F4-25, F4-27, or F4-29 to 1 (current input).
- When the drive unit requires temperature sensors, set the power supply unit parameters (parameters in the preceding tables) related to the hardware source defined by F4-25, F4-27, or F4-29 to 2/3/4/5 (temperature sensor input, the value varies according to the sensor type).
- The power supply unit can monitor the voltage values received by itself, extension card 1, and extension card 2 through U2-12, U2-13, U3-12, and U3-13.
- The drive unit can monitor the AI voltage values through U0-09, U0-10, and U0-11, monitor temperature values measured by the PT/KTY temperature sensor through U0-51, U0-52, and U0-53, and monitor the AI input function through U0-91, U0-92, and U0-93.

4.3.4.3 Functions of AI Terminals

When an AI is used as an DI, the AI state is high level if the input voltage is higher than 7 V and is low level if the input voltage is lower than 3 V. The AI is in hysteresis state if the input voltage is between 3 V and 7 V. The following figure shows the relationship between AI input voltages and DI states.

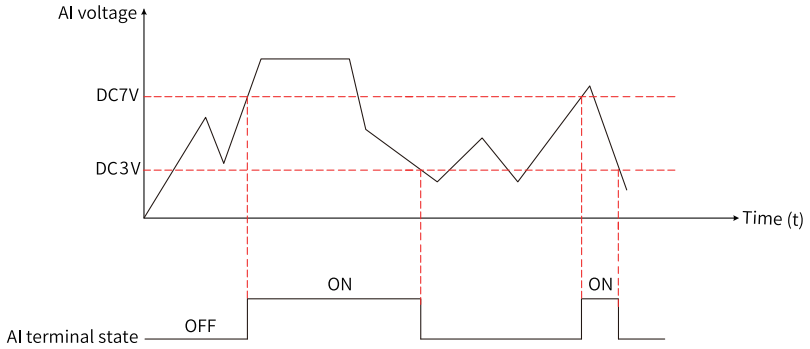


Figure 4-33 Relationship between AI input voltages and DI states

Table 4–26 Related parameters

Para. No.	Name	Default	Value Range	Description
A1-07	Function selection for AI1 used as DI	0	0 to 60	Function setting of the AI used as DI is the same as that of DIs. Functions 0 to 60 are set in the same way as normal DIs.
A1-08	Function selection for AI2 used as DI	0	0 to 60	
A1-09	Function selection for AI3 used as DI	0	0 to 60	
A1-10	AI active mode (used as DI)	000	0: Active high 1: Active low Ones: AI1 Tens: AI2 Hundreds: AI3	If the AI terminal is active high, it is active when the corresponding bit of A1-10 is set to 0 and inactive when that bit of A1-10 is set to 1. If the AI terminal is active low, it is inactive when the corresponding bit of A1-10 is set to 0 and active when that bit of A1-10 is set to 1.

4.4 Control Performance

4.4.1 V/f Curve Reference

Table 4–27 Straight-line, multi-point, and square V/f curve reference parameters

Para. No.	Name	Default	Value Range	Description
F3-00	V/f curve reference	0	0: Straight-line V/f curve 1: Multi-point V/f curve 2: Square V/f curve 3: 1.2-power V/f curve 4: 1.4-power V/f curve 6: 1.6-power V/f curve 8: 1.8-power V/f curve 10: V/f complete separation mode 11: V/f half separation mode	0: Straight-line V/f curve Below the rated frequency, the output voltage of the AC drive changes linearly with the output frequency. This curve is applicable to general mechanical drive applications such as large-inertia fan acceleration, punch presses, centrifuges, and water pumps. 1: Multi-point V/f curve The range of the frequency points is 0.00 Hz to the rated motor frequency. The range of the voltage points is 0.0% to 100.0%, which corresponds to the range of 0 V to the rated motor voltage. The multi-point V/f curve references are typically determined based on load characteristics of the motor. Ensure that the following conditions are met: F3-03 ⩽ F3-05 ⩽ F3-07. 2: Square V/f curve Below the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 2-power curve. This curve is applicable to applications with light loads that seldom change, such as fans and water pumps. 3: 1.2-power V/f curve Below the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 1.2-power curve. 4: 1.4-power V/f curve Below the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 1.4-power curve. 6: 1.6-power V/f curve Below the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 1.6-power curve. 8: 1.8-power V/f curve Below the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 1.8-power curve. 10: V/f complete separation mode The output frequency and output voltage of the AC drive are independent of each other. The output frequency is determined by the frequency source, and the output voltage is determined by voltage source for V/f separation. This curve is generally applicable to scenarios such as motor torque control. 11: V/f half separation mode In this mode, the voltage (V) is proportional to the frequency (f). The relationship between V and f can be set by the voltage source, and it is also related to the rated motor voltage and rated motor frequency in group F1. Assuming that the voltage source input is X (X ranges from 0 to 100%), the relationship between V and f is as follows: V/f = 2 x X x (Rated motor voltage)/(Rated motor frequency).

Para. No.	Name	Default	Value Range	Description
F3-01	Torque boost	Model dependent	0.0 to 30.0 0.0%: Automatic torque boost	The torque boost function generally applies to the AC drive at low frequency. The output torque of the AC drive in V/f control mode is proportional to the frequency. Under the condition of low frequency, the torque is very low when the motor is running at a low speed. In this case, you can set this parameter to increase the output voltage of the AC drive, thereby increasing the current and output torque. Do not set this parameter to a large value, otherwise, overload protection may be triggered.
F3-02	Cutoff frequency of torque boost	50.00 Hz	0.00 Hz to maximum frequency	When the running frequency reaches the cutoff frequency of torque boost, the torque boost function is disabled.
F3-03	Multi-point V/f frequency 1	0.00 Hz	0.00 Hz to F3-05	-
F3-04	Multi-point V/f voltage 1	0.0%	0.0% to 100.0%	
F3-05	Multi-point V/f frequency 2	0.00 Hz	F3-03 to F3-07	
F3-06	Multi-point V/f voltage 2	0.0%	0.0% to 100.0%	
F3-07	Multi-point V/f frequency 3	0.00 Hz	F3-05 to F1-04 (Rated motor frequency)	
F3-08	Multi-point V/f voltage 3	0.0%	0.0% to 100.0%	

Straight-line V/f Curve

The following figure shows the general constant-torque straight-line V/f curve.

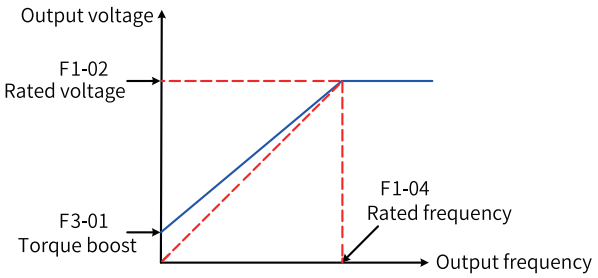


Figure 4-34 General constant-torque straight-line V/f curve

Below the rated frequency, the output voltage changes linearly with the frequency. This curve is applicable to general mechanical drive applications such as large-inertia fan acceleration, punch presses, centrifuges and water pumps.

Multi-point V/f Curve

The following figure shows a user-defined multi-point V/f curve.

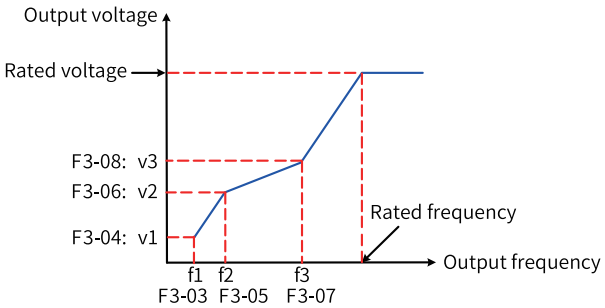


Figure 4-35 User-defined multi-point V/f curve

The multi-point V/f curve is defined by F3-03 to F3-08. The range of the frequency points is 0.00 Hz to the rated motor frequency. The range of the voltage points is 0.0% to 100%, which corresponds to the range of 0 V to the rated motor voltage. The multi-point V/f curve references are typically determined based on load characteristics of the motor. Ensure that the following conditions are met: F3-03 ⩽ F3-05 ⩽ F3-07. To ensure correct setting, this AC drive has restrictions on the relationship between the upper and lower limits of the frequency points F3-03, F3-05, and F3-07. F3-07, F3-05, and F3-03 must be set in order.

Square V/f Curve

The following figure shows the variable-torque square V/f curve.

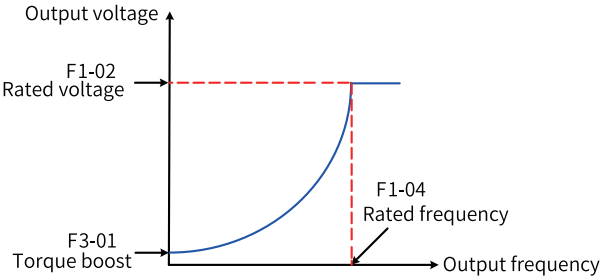


Figure 4-36 Variable-torque square V/f curve

Below the rated frequency, the output voltage changes with the output frequency of the AC drive according to the 2-power curve. This curve is applicable to applications with light loads that seldom change, such as fans and water pumps.

Table 4–28 V/f separation curve parameters

Para. No.	Name	Default	Value Range	Description
F3-13	Voltage source for V/f separation	0	0: Digital setting (F3-14) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Multi-reference 6: Simple PLC 7: PID 8: Communication Note: 100.0% corresponds to the rated motor voltage.	This parameter sets the target voltage in V/f separation mode. 0: Digital setting (F3-14) The V/f separation voltage is set by F3-14 (voltage digital setting of V/f separation). 1: AI1 The V/f separation voltage is input with current or voltage signals through the AI1 terminal. The frequency is calculated according to the preset AI curve. 2: AI2 The V/f separation voltage is input with current or voltage signals through the AI2 terminal. The frequency is calculated according to the preset AI curve. 3: AI3 The V/f separation voltage is input with current or voltage signals through the AI3 terminal. The frequency is calculated according to the preset AI curve. The AC drive has two AI terminals by default, and the AI3 terminal needs to be provided through the I/O extension card. 5: Multi-reference In multi-reference mode, different combinations of DI terminal states correspond to different reference values. The four multi-reference terminals can provide 16 state combinations, corresponding to 16 reference values (percentage x maximum frequency) of parameters in group FC. 6: Simple PLC The V/f separation voltage is set by simple PLC. For details, see the function description of simple PLC. 7: PID The V/f separation voltage is set by PID. For details, see the PID function description. 8: Communication The main frequency is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to implement communication with the host controller. This mode applies to remote control or centralized control systems of multiple equipment.
F3-14	Voltage digital setting for V/f separation	0 V	0 V to rated motor voltage (F1-02)	The reference value is between 0 V and the rated voltage. In V/f half separation mode, the output voltage is twice the reference value.
F3-15	Voltage rise time of V/f separation	0.0s	0.0s to 1000.0s Note: This parameter indicates the time required for the voltage to change from 0 V to the rated motor voltage.	This parameter indicates the time required for the output voltage to rise from 0 to the V/f separation voltage reference. In V/f half separation mode, this parameter is invalid, and the voltage rise time is the same as that set by F0-17.

Para. No.	Name	Default	Value Range	Description
F3-16	Voltage fall time of V/f separation	0.0s	0.0s to 1000.0s Note: This parameter indicates the time required for the voltage to change from 0 V to the rated motor voltage.	This parameter indicates the time required for the output voltage to fall from the V/f separation voltage reference to 0. In V/f half separation mode, this parameter is invalid, and the voltage fall time is the same as that set by F0-18.
F3-17	Stop mode for V/f separation	0	0: The frequency and voltage decrease to 0 independently 1: The frequency decreases to 0 after the voltage decreases to 0	0: The frequency and voltage decrease to 0 independently 1: The frequency decreases to 0 after the voltage decreases to 0

The voltage rise time of V/f separation indicates the time required for the voltage to rise from 0 to the rated motor voltage. See t1 in the following figure.

The voltage fall time of V/f separation indicates the time required for the voltage to fall from rated motor voltage to 0. See t2 in the following figure.

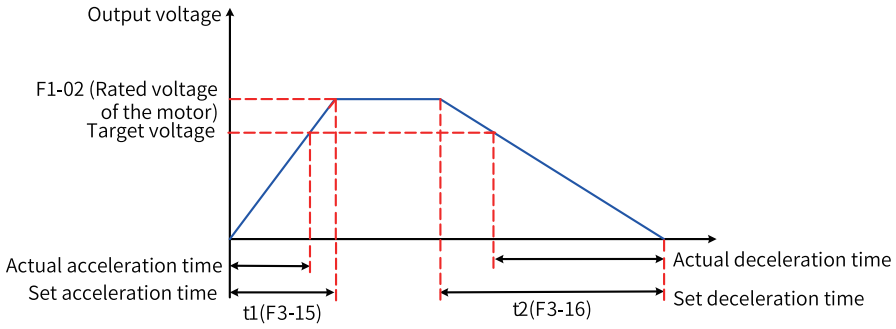


Figure 4-37 Schematic diagram of V/f separation

4.4.2 Output Current (Torque) Limit

During acceleration, operation at constant speed, or deceleration, if the current exceeds the overcurrent stall action current (default: 150%, indicating 1.5 times the rated AC drive current), the current limit mechanism is activated. In this case, the output frequency decreases until the current drops below the overcurrent stall action current. Then, the output frequency increases toward the target frequency. Therefore, the acceleration is prolonged. If the actual acceleration time cannot meet your requirement, increase the value of overcurrent stall action current (F3-18) accordingly.

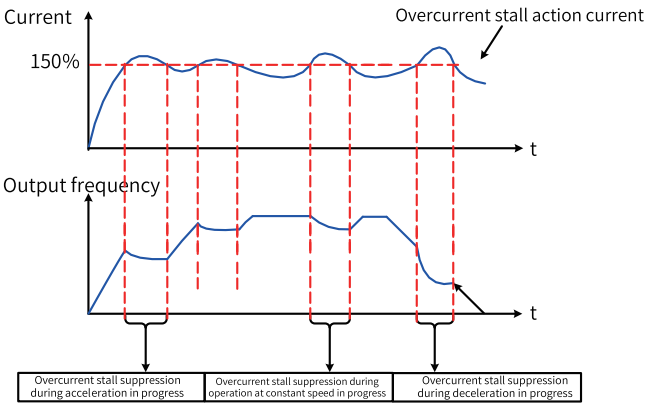


Figure 4-38 Overcurrent stall action

Table 4–29 Related parameters

Para. No.	Function	Default	Value Range	Description
F3-18	V/f overcurrent stall action current	150%	50% to 200%	When the motor current reaches this value, the AC drive starts the overcurrent stall function. The default value is 150%, corresponding to 1.5 times the rated current of the AC drive.
F3-19	V/f overcurrent stall selection	1	0: Disabled 1: Enabled	Used to enable/disable the V/f overcurrent stall function.
F3-20	V/f overcurrent stall suppression gain	20	0 to 100	When the current exceeds the overcurrent stall action current, the overcurrent stall function is enabled and the output frequency decreases. After the current falls below the overcurrent stall action current, the output frequency increases to the target frequency, which prolongs the actual acceleration automatically. A greater value of this parameter means better suppression effect.
F3-21	Compensation coefficient of V/f speed multiplying overcurrent stall action current	50%	50% to 200%	This parameter is used to reduce the overcurrent stall action current during high-speed operation. It is invalid when set to 50%. The recommended value for F3-18 in the field-weakening range is 100%.

When the frequency is high, motor drive current is small, and overcurrent stall action current can result in greater motor speed dip compared with situations when the frequency is below the rated level. To improve motor running performance, lower the overcurrent stall action current for situations when the frequency is above the rated level. This helps to improve acceleration performance and prevent motor stall in high-frequency applications with large load inertia multiple field weakening requirements, such as centrifuges.

When the frequency is above the rated level, overcurrent stall action current = (fn/fs) x k x LimitCur

In the formula, fs is the running frequency, fn is the rated motor frequency, k is the value of F3-21 (compensation coefficient of speed multiplying overcurrent stall action current), and LimitCur is the value of F3-18 (overcurrent stall action current).

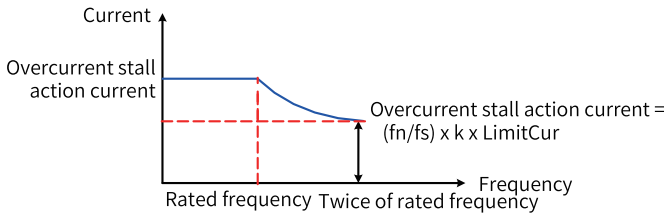


Figure 4-39 Speed multiplying overcurrent stall action current

Note

For high-power motors with carrier frequency below 2 kHz, lower the overcurrent stall action current. Otherwise, the pulse-by-pulse current limit function is enabled before the overcurrent stall prevention function as ripple current increases, resulting in insufficient torque output.

4.4.3 Overvoltage Stall Suppression

When the bus voltage exceeds the overvoltage stall suppression action voltage (F3-22), the motor becomes regenerative (motor speed > output frequency). In this case, overvoltage stall suppression is triggered to prevent overvoltage trips by adjusting the output frequency to extend the deceleration time. If the actual deceleration time cannot satisfy the requirement, increase the overexcitation gain as appropriate.

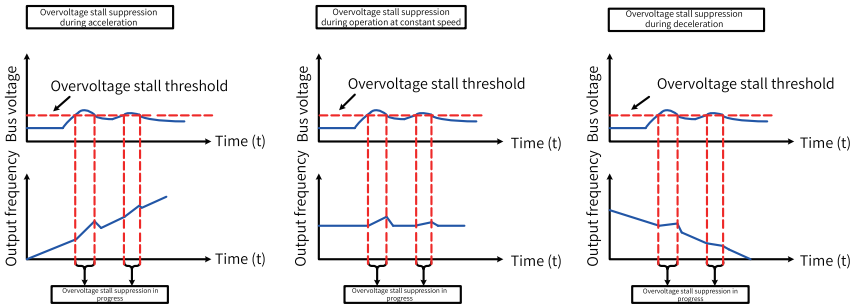


Figure 4-40 Overvoltage stall suppression action

Para. No.	Name	Default	Value Range	Description
F3-22	V/f overvoltage stall suppression action voltage	770.0 V	200.0 V to 2000.0 V	The function of F3-22 is similar to that of F9-04.
F3-23	V/f overvoltage stall suppression	1	0: Disabled 1: Enabled	0: Disabled 1: Enabled (default)
F3-24	Frequency gain for V/f overvoltage stall suppression	30	0 to 100	Increasing F3-24 will improve the bus voltage control effect, but the output frequency will fluctuate. If the output frequency fluctuates greatly, reduce F3-24 as appropriate.
F3-25	Voltage gain for V/f overvoltage stall suppression	30	0 to 100	This parameter is used to suppress the bus voltage. Increasing the parameter value reduces the overshoot of the bus voltage.

Para. No.	Name	Default	Value Range	Description
F3-26	Frequency rise threshold during overvoltage stall suppression	5 Hz	0 Hz to 50 Hz	The running frequency may increase when overvoltage stall suppression is enabled. This parameter limits the rise of the running frequency.
F3-10	V/f overexcitation gain	64	0 to 200	A larger overexcitation gain indicates better suppression effect. When a braking resistor, braking unit, or energy feedback unit is used, set this parameter to 0. Otherwise, overcurrent may occur during operation.
F3-11	V/f oscillation suppression gain	Model dependent	0 to 100	A larger oscillation gain indicates better suppression effect.

Note

Observe the following requirements when using the braking resistor or energy feedback unit.

- Set F3–10 (Overexcitation gain) to 0. Failure to comply may lead to overcurrent during operation.
- Set F3–23 (Overvoltage stall selection) to 0. Failure to comply may prolong the deceleration time.

4.4.4 Speed Loop

The speed loop PI parameters are divided into two groups: low speed and high speed. When the running frequency is lower than switchover frequency 1 (F2-02), the speed loop PI is adjusted by F2-00 and F2-01. When the running frequency is higher than switchover frequency 2 (F2-05), the speed loop PI is adjusted by F2-03 and F2-04. When the running frequency is between switchover frequency 1 and switchover frequency 2, PI parameters are obtained from linear switchover between the two groups of PI parameters, as shown in the following figure.

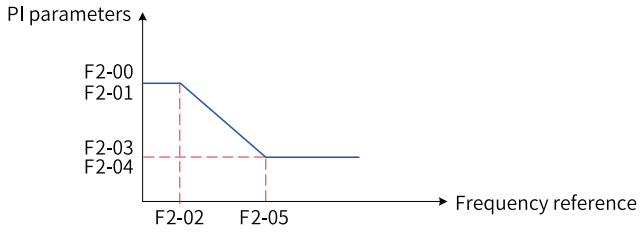


Figure 4-41 Speed loop PI parameters

By setting the proportional gain and integral time of the speed regulator, you can adjust the dynamic response to speed changes in vector control.

Increasing the proportional gain or reducing the integral time can speed up dynamic response of the speed loop. However, excessively large proportional gain or excessively short integral time may cause system oscillation.

If the factory defaults cannot meet the requirements, make fine adjustments based on the default values. Increase the proportional gain first to ensure that the system does not oscillate, and then reduce the integral time to ensure that the system has quick response and small overshoot.

Note

Improper PI parameter settings may lead to a high overshoot. Even worse, overvoltage may occur when overshoot drops.

Increasing the value of F2-07 can improve motor stability, but this may also slow dynamic response. Decreasing it will bring faster system response but also motor oscillation if the value is too small. No adjustment is required under normal circumstances.

Para. No.	Name	Default	Value Range	Description
F2-00	Low-speed speed loop Kp	30	1 to 200	This parameter indicates the speed loop PID control parameter Kp, which affects the response to the motor speed. A greater the Kp value indicates higher adjustment sensitivity and adjustment intensity. A smaller the Kp value indicates lower adjustment sensitivity and adjustment intensity. The low-speed speed loop Kp is used in the case of low speed.
F2-01	Low-speed speed loop Ti	0.500s	0.001s to 10.000s	The reciprocal of the speed loop integral time constant is the integral gain. The speed loop integral time constant affects the steady-state speed error of the motor and the stability of the speed loop system. Increasing the speed loop integral time constant slows down the response of the speed loop. In this case, increase the speed loop proportional gain to shorten the response time of the speed loop. The low-speed speed loop Ti is used in the case of low speed.
F2-02	Switchover frequency 1	5.00 Hz	0.00 to F2-05	The speed loop PI parameters are divided into two groups: low speed and high speed. When the running frequency is lower than switchover frequency 1 (F2-02), the speed loop PI is adjusted by F2-00 and F2-01. When the running frequency is higher than switchover frequency 2 (F2-05), the speed loop PI is adjusted by F2-03 and F3-04. When the running frequency falls between switchover frequency 1 and switchover frequency 2, PI parameters are obtained from linear switchover between the two groups of PI parameters. The value of this parameter must be smaller than F2-05 (switchover frequency 2).
F2-03	High-speed speed loop Kp	20	1 to 200	This parameter indicates the speed loop PID control parameter Kp, which affects the response to the motor speed. A greater the Kp value indicates higher adjustment sensitivity and adjustment intensity. A smaller the Kp value indicates lower adjustment sensitivity and adjustment intensity. The high-speed speed loop Kp is used in the case of high speed.
F2-04	High-speed speed loop Ti	1.00s	0.01s to 10.00s	The reciprocal of the speed loop integral time constant is the integral gain. The speed loop integral time constant affects the steady-state speed error of the motor and the stability of the speed loop system. Increasing the speed loop integral time constant slows down the response of the speed loop. In this case, increase the speed loop proportional gain to shorten the response time of the speed loop. The high speed loop Ti is used in the case of high speed.

Para. No.	Name	Default	Value Range	Description
F2-05	Switchover frequency 2	10.00 Hz	F2-02 to the maximum frequency	The speed loop PI parameters are divided into two groups: low speed and high speed. When the running frequency is lower than switchover frequency 1 (F2-02), the speed loop PI is adjusted by F2-00 and F2-01. When the running frequency is higher than switchover frequency 2 (F2-05), the speed loop PI is adjusted by F2-03 and F3-04. When the running frequency falls between switchover frequency 1 and switchover frequency 2, PI parameters are obtained from linear switchover between the two groups of PI parameters. The value of this parameter must be smaller than F2-05 (switchover frequency 2).
F2-07	Speed feedback filter time	0.004s	0.000s to 0.100s	In SVC control mode (F0-01 = 0), the speed loop feedback filter time is valid. You can improve the stability of the motor by adjusting this parameter. Increasing the speed loop feedback filter time can enhance motor stability but slow down dynamic response. Decreasing it will bring faster dynamic response. An excessively small parameter value may lead to motor oscillation. Generally, the motor stability meets requirements, and no adjustment is required.

4.4.5 Vector Control Slip Auto-tuning

In vector control mode (F0-01 = 0), this parameter is used to adjust the speed stability accuracy of the motor. For example, when the running frequency of the motor is lower than the output frequency of the AC drive, you can increase the value of this parameter.

Note: No adjustment is required under normal circumstances.

Para. No.	Name	Default	Value Range	Description
F2-06	VC slip compensation gain	100%	50% to 200%	In SVC control mode, this parameter is used to adjust the speed stability accuracy of the motor. For example, when the running frequency of the motor is lower than the output frequency of the AC drive, you can increase the value of this parameter.

4.4.6 Over-Excitation in Vector Control Mode

For high-inertia loads, vector control over-excitation can speed up the motor deceleration. A larger over-excitation gain means better improvement. However, vector control over-excitation increases the output current of the AC drive.

Para. No.	Function	Default	Value Range	Description
F2-08	VC deceleration over-excitation gain	64	0 to 200	-

4.4.7 Torque Upper Limit

In SVC mode, the torque upper limit is set as follows:

Para. No.	Name	Default	Value Range	Description
F2-09	Torque upper limit source in speed control (motoring)	0	0: F2-10 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication 6: MIN (AI1, AI2) 7: MAX (AI1, AI2)	0: F2-10 The torque upper limit in speed control mode is set by F2-10 (digital setting of torque upper limit in speed control). 1: AI1 The torque upper limit is input with the current or voltage signal through the AI1 terminal. The frequency is calculated according to the preset AI curve. 2: AI2 The torque upper limit is input with the current or voltage signal through the AI2 terminal. The frequency is calculated according to the preset AI curve. 3: AI3 The torque upper limit is input with the current or voltage signal through the AI3 terminal. The frequency is calculated according to the preset AI curve. 5: Communication The main frequency is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to implement communication with the host controller. This mode applies to remote control or centralized control systems of multiple equipment. 6: MIN (AI1, AI2) The torque upper limit in speed control mode is the smaller value between AI1 and AI2 inputs. 7: MAX (AI1, AI2) The torque upper limit in speed control mode is the larger value between AI1 and AI2 inputs.
F2-10	Torque upper limit reference in speed control (motoring)	150.0%	0.0% to 200.0%	The torque upper limit under motoring state takes the rated current of the AC drive as the base value.

Para. No.	Name	Default	Value Range	Description
F2-11	Torque upper limit source in speed control (generating)	0	0: F2-10 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 8: F2-12	0: F2-10 The torque upper limit in speed control mode is set by F2-10 (digital setting of torque upper limit in speed control). 1: AI1 The torque upper limit is input with the current or voltage signal through the AI1 terminal. The frequency is calculated according to the preset AI curve. 2: AI2 The torque upper limit is input with the current or voltage signal through the AI2 terminal. The frequency is calculated according to the preset AI curve. 3: AI3 The torque upper limit is input with the current or voltage signal through the AI3 terminal. The frequency is calculated according to the preset AI curve. 5: Communication The main frequency is set through communication. The running frequency is input through remote communication. The AC drive must be equipped with a communication card to implement communication with the host controller. This mode applies to remote control or centralized control systems of multiple equipment. 6: MIN (AI1, AI2) The torque upper limit in speed control mode is the smaller value between AI1 and AI2 inputs. 7: MAX (AI1, AI2) The torque upper limit in speed control mode is the larger value between AI1 and AI2 inputs. 8: F2-12 The torque upper limit in speed control mode is set by F2-12 (torque upper limit reference in speed control (generating)).
F2-12	Torque upper limit reference in speed control (generating)	150.0%	0.0% to 200.0%	The torque upper limit under generating state takes the rated current of the AC drive as the base value.

There are eight torque upper limit sources available in speed control mode. In motoring state, the torque upper limit source is determined by F2-09; in generating state, the torque upper limit source is defined by F2-11.

In speed control mode, if F2-11 is set to 1 to 8, the torque upper limit differs in motoring state and generating state. The torque upper limit FS in motoring state is defined by F2-10, and that in generating state is defined by F2-12, as shown in the following figure.

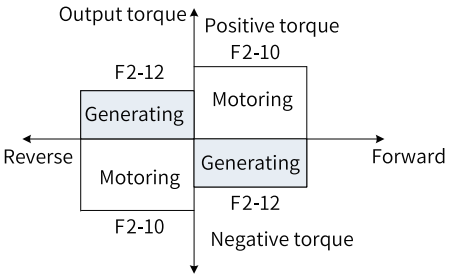


Figure 4-42 Torque upper limit in speed control mode

Description	Para. No.	Name	Default	Value Range
-	F2-53	Power limit during generating	0	0: Disabled 1: Enabled
-	F2-54	Power upper limit during generating	Model dependent	0.0% to 200.0%

For scenarios with cam load, quick acceleration/deceleration, and sudden unloading in which braking resistors are not used, enabling power limit during generating can effectively reduce bus voltage overshoot during motor braking so as to prevent overvoltage. F2-54 (power upper limit during generating) is a percentage relative to the rated motor power. If overvoltage still occurs after power limit during generating is enabled, decrease the value of F2-54.

4.4.8 Torque Control

Para. No.	Name	Default	Value Range	Description
A0-00	Speed/Torque control mode	0	0: Speed control 1: Torque control	Two control modes are provided in SVC mode: speed control and torque control.
A0-01	Torque reference source	0	0: Digital setting (A0-03) 1: AI1 2: AI2 3: AI3 4: Reserved 5: Communication (1000H) 6: MIN (AI1, AI2) 7: MAX (AI1, AI2)	Used to set the torque setting command. There are a total of eight torque setting modes.

Para. No.	Name	Default	Value Range	Description
A0-03	Torque digital setting	100.0%	–200.0% to +200.0%	This parameter defines digital setting of the torque in torque control mode. The torque reference is a relative value. The value 100.0% corresponds to the rated torque of the AC drive. (The output torque of the AC drive can be viewed by using U0-07, where the value 100% corresponds to the rated torque of the AC drive. The output torque of the motor can be viewed by using U0-06, where the value 100% corresponds to the rated torque of the motor.) The value range is –200.0% to +200.0%, indicating that the maximum torque is twice the rated torque. When the torque reference is a positive value, the AC drive runs in the forward direction. When it is a negative value, the AC drive runs in the reverse direction.
A0-04	Torque filter time	0.000s	0 to 5.000s	This parameter defines the torque filter time.
A0-05	Speed limit digital setting	0.0%	–120.0% to +120.0%	-
A0-07	Acceleration time (torque)	1.00s	0.00s to 650.00s	-
A0-08	Deceleration time (torque)	1.00s	0.00s to 650.00s	-
A0-09	Speed limit reference source	0	0: A0-05 1: Frequency source	-
A0-10	Speed limit offset	5.00	0 to maximum frequency (F0-10)	-
A0-11	Effective mode of speed limit offset	1	0: Bidirectional offset effective 1: Uni-directional offset effective	-
A0-12	Acceleration time (frequency)	1.0s	0.0 to 6500.0s	-
A0-13	Deceleration time (frequency)	1.0s	0.0 to 6500.0s	-
A0-14	Torque mode switchover	1	0: Not switched 1: Switched to speed mode upon stop 2: Target torque changed to 0 upon stop	-

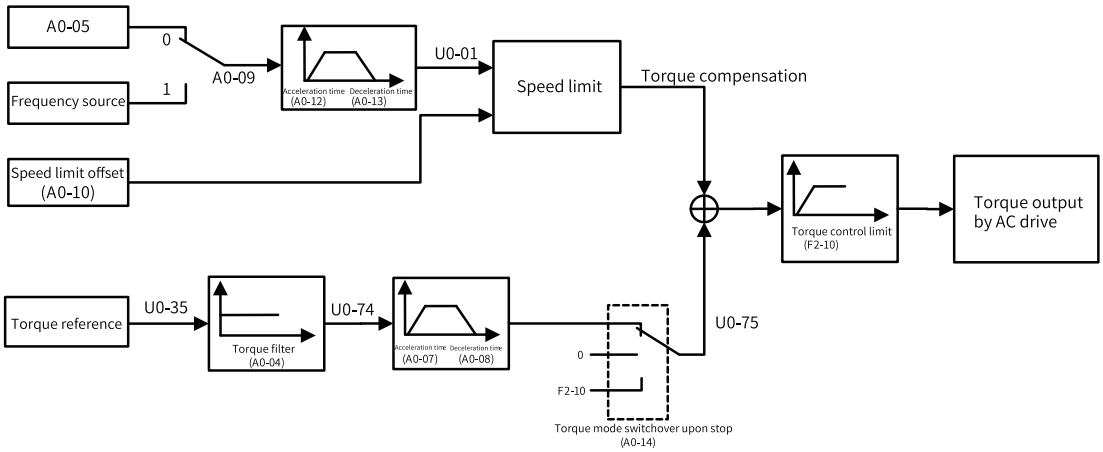


Figure 4-43 Torque control system diagram

1. Selecting speed/torque control mode (A0-00)
   The speed or torque control mode is defined by A0-00.

   The AC drive has two digital input functions related to torque control: "torque control disable" (function 35) and "switchover between speed control and torque control" (function 36). The two DI terminals work with A0-00 to implement switchover between speed control and torque control.

   When the terminal assigned with function 36 (switchover between speed control and torque control) is inactive, the control mode is determined by A0-00; when it is active, the control mode is reverse to A0-00.

   When the terminal assigned with function 35 (torque control disable) is active, the AC drive always runs in speed control mode.

2. Setting torque reference in torque control (A0-01, A0-03)
   A0-01 defines the torque reference source. There are a total of eight torque reference sources available.

   The torque reference is a relative value. 100.0% corresponds to the rated motor torque. (The output torque of the motor can be viewed by using U0-06, where the value 100% corresponds to the rated torque of the motor.) The value range is –200.0% to +200.0%, indicating that the maximum torque of the AC drive is twice the rated torque of the motor.

3. Setting the frequency upper limit in torque control (A0-05, A0-09, A0-10, A0-11)
   In torque control mode, the frequency upper limit can be set by A0-05 or the frequency source and switched by A0-09.

4. Setting the acceleration/deceleration time for the frequency upper limit in A0-12 (acceleration time)/A0-13 (deceleration time)
   In torque control mode, if the load torque is smaller than the output torque of the motor, the motor speed keeps rising. Therefore, to prevent accidents such as runaway in the mechanical system, the motor speed must be controlled within a proper range. That is, the frequency upper limit must be set in torque control mode.

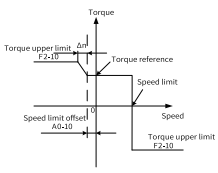
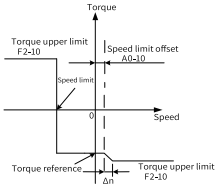
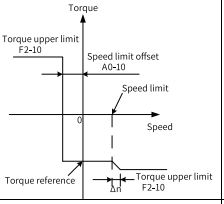
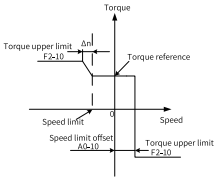
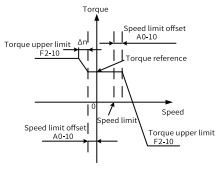
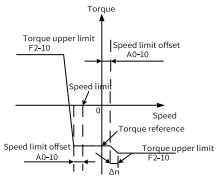
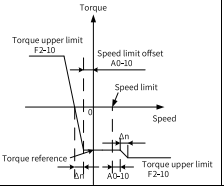
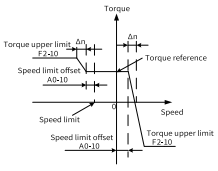
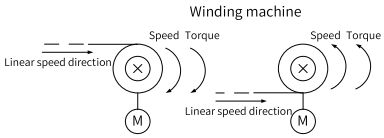
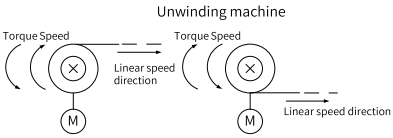
5. Setting torque acceleration/deceleration time in torque control (A0-07, A0-08)
   In torque control mode, the difference between the output torque of the motor and the torque of the load determines the speed change rate of the motor and load. The motor speed may change quickly,

which may result in too strong noise or mechanical stress. Setting the acceleration and deceleration time properly in torque control mode can ensure smooth change of the motor speed. The torque acceleration/deceleration time corresponds to the time required for the torque to increase from 0 to the value defined by A0-03.

However, do not set the torque acceleration/deceleration time in scenarios in which the startup torque is small. For scenarios where rapid torque response is required, set the torque acceleration/ deceleration time to 0.00s.

For example, two motors are rigidly connected to drive the same load. To ensure balanced load distribution, set one AC drive as the master in speed control and the other as the slave in torque control. The slave receives the master's output torque as the torque command and must follow the master rapidly. In this case, the acceleration/deceleration time of the slave in torque control is set to 0.00s.

Table 4–30 Speed limit/speed limit offset

Item	Operation Conditions			
Operation command	Forward RUN	Forward RUN	Forward RUN	Forward RUN
Torque reference direction	+	-	-	+
Speed limit direction	+	-	+	-
Normal running direction	Forward RUN	Reverse RUN	Forward RUN	Reverse RUN
Uni-directional speed limit offset (A0-11 = 1)				
Bidirectional speed limit offset (A0-11 = 0)				
Application				

4.4.9 Current Loop

Current loop PI parameters for vector control are divided into low-speed and high-speed groups. These parameters can be automatically obtained through auto-tuning on all parameters of asynchronous motor and generally do not need to be modified.

The dimension of the current loop integral regulator is integral gain rather than integral time. A large current loop PI gain may result in oscillation of the entire control loop. In the case of severe current oscillation or torque fluctuation, manually reduce the PI proportional gain or integral gain.

Para. No.	Function	Default	Value Range	Description
F2-13	Low-speed current loop Kp adjustment	1.0	0.1 to 10.0	The value is obtained automatically through motor auto-tuning.
F2-14	Low-speed current loop Ki adjustment	1.0	0.1 to 10.0	
F2-15	High-speed current loop Kp adjustment	1.0	0.1 to 10.0	
F2-16	High-speed current loop Ki adjustment	1.0	0.1 to 10.0	

4.4.10 Improving Performance of Field-Weakening Range

Para. No.	Function	Default	Value Range	Description
F2-21	Maximum output voltage coefficient	105%	100% to 110%	Indicates the boost capacity on the basis of maximum voltage of the AC drive. Increasing F2-21 improves the maximum loading capacity in motor field-weakening range, but increases motor current ripple and motor temperature. Decreasing F2-21 weakens the maximum loading capacity in motor field-weakening range, but reduces motor current ripple and motor temperature. Generally, this parameter needs no adjustment.

4.4.11 Auxiliary Control

Para. No.	Name	Default	Value Range	Description
A5-00	DPWM switchover frequency upper limit	12.00 Hz	0 to maximum frequency (F0-10)	The AC drive supports two PWM modes: CPWM and DPWM. When the running frequency is higher than A5-00 (switchover frequency), the DPWM mode is used. When the running frequency is lower than A5-00 (switchover frequency), the CPWM mode is used. The DPWM mode can improve the AC drive efficiency, and the CPWM mode can reduce the motor noise. Increasing the value of this parameter to the maximum frequency will reduce the motor noise.
A5-01	PWM modulation mode	0	0: Asynchronous modulation 1: Synchronous modulation	Current output oscillation or high harmonics can occur if the carrier frequency divided by the running frequency is less than 10. In this case, you can use the synchronous modulation mode to reduce current harmonics. 0: Asynchronous modulation In this mode, the carrier frequency and signal wave frequency are not synchronized. The carrier frequency usually remains unchanged. The carrier ratio changes with the signal wave frequency. 1: Synchronous modulation In this mode, the carrier frequency and signal wave frequency are synchronized. The carrier frequency and signal frequency change simultaneously, and the carrier ratio remains unchanged. Therefore, the number of transverse SPWM pulses formed in one cycle is fixed, and the equivalent sine wave has good symmetry.
A5-03	Random PWM depth	0	0: Random PWM inactive 1 to 10: Random PWM depth	If the motor noise is strong, setting A5-03 to a non-zero value can suppress the motor noise. A larger value indicates better noise suppression effect. However, an excessively high value may affect motor control. Therefore, set this parameter to 1 at the beginning of commissioning and then increase it by 1 each time as required.

4.4.12 Synchronous Motor PMVVC

Para. No.	Name	Value Range	Default	Description
F0-01	Motor 1 control mode	0: SVC 2: V/f control 5: PMVVC control (for synchronous motors only)	0	-
F1-24	Number of motor pole pairs	0 to 65535	2	-
F3-01	Torque boost	0.0%: Automatic torque boost 0.1% to 30.0%	Model dependent	The torque boost function generally applies to the AC drive at low frequency. The output torque of the AC drive in V/f control mode is proportional to the frequency. Under the condition of low frequency, the torque is very low when the motor is running at a low speed. In this case, you can set this parameter to increase the output voltage of the AC drive, thereby increasing the current and output torque. Do not set this parameter to a large value, otherwise, overload protection may be triggered.
A9-40	Low-speed closed-loop current selection (for VVC)	0: Disabled 1: Enabled	0	-
A9-41	Low-speed closed-loop current (for VVC)	30% to 200% (rated motor current as the base value)	50%	-
A9-42	Oscillation suppression damping coefficient (for VVC)	0 to 500	100%	-
A9-43	Initial position compensation angle (for VVC)	0 to 5	0	-

4.4.13 Wobble Control Function

With the wobble control function, the output frequency of the AC drive wobbles up and down around the frequency reference (F0-07). This function is applicable to industries such as textile and chemical fiber and winding and unwinding applications.

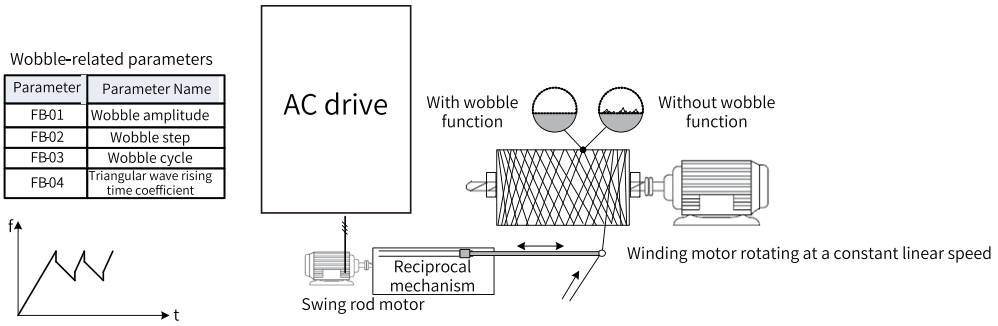


Figure 4-44 Application scenario of the wobble function

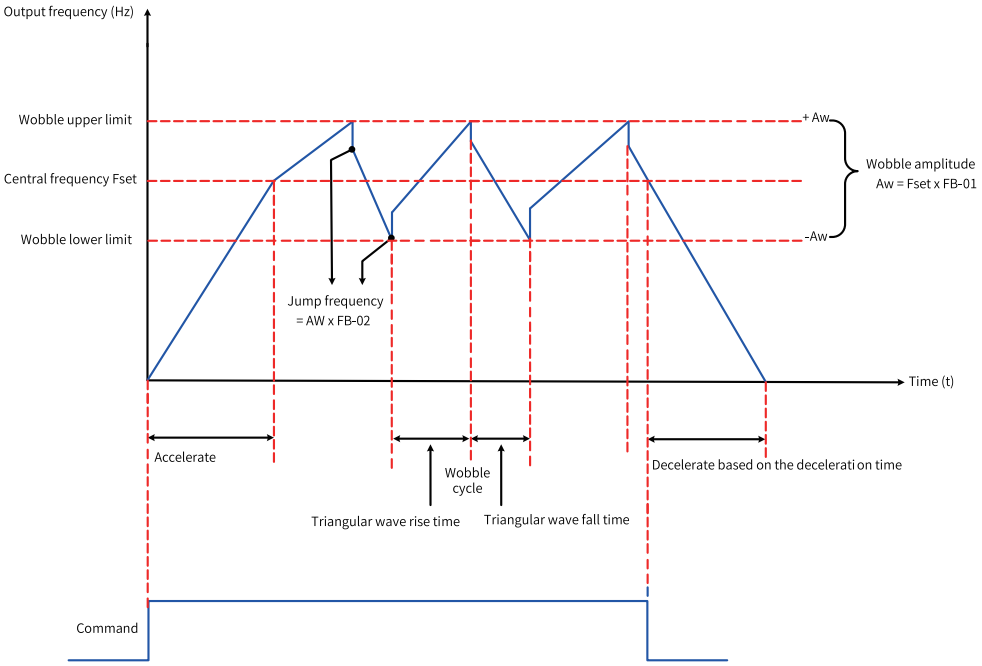


Figure 4-45 Schematic diagram of the wobble function

Table 4–31 Related parameters

Para. No.	Name	Default	Value Range	Description
Fb-00	Swing setting mode	0	0: Relative to the center frequency 1: Relative to the maximum frequency	0: Relative to center frequency (F0-07, frequency reference superposition). This mode applies to variable swing systems, in which the swing changes with the center frequency (frequency reference). 1: Relative to the maximum frequency (F0-10, maximum frequency). This mode applies to fixed swing systems, in which the swing is a fixed value calculated based on the maximum frequency.
Fb-01	Wobble amplitude	0.0%	0.0% to 100.0%	When Fb-01 is set to 0, the swing is 0, indicating that the wobble function is disabled.

Para. No.	Name	Default	Value Range	Description
Fb-02	Wobble step	0.0%	0.0% to 50.0%	This parameter determines the swing and startup frequency. The wobble running frequency is limited by the frequency upper limit and frequency lower limit.
Fb-03	Wobble cycle	10.0s	0.1s to 3000.0s	This parameter defines the time of a complete wobble cycle.
Fb-04	Triangular wave rise time coefficient	50.0%	0.1% to 100.0%	This parameter defines the percentage of the triangular wave rise time relative to the wobble cycle (Fb-03).

1. Calculation of the swing
   When Fb-00 is set to 0 (relative to center frequency): Swing AW = Frequency reference (F0-07) x Wobble amplitude (Fb-01).

   When Fb-00 is set to 1 (relative to maximum frequency): Swing AW = Maximum frequency (F0-10) x Wobble amplitude (Fb-01).

2. Calculation of the startup frequency
   When the wobble function is enabled, the startup frequency is the value relative to the swing. That is, Startup frequency = Swing AW x Wobble step (Fb-02).

   When Fb-00 is set to 0 (relative to center frequency), the startup frequency is a variable.

   When Fb-00 is set to 1 (relative to maximum frequency), the startup frequency is a fixed value.

3. Calculation of the triangular wave rise/fall time
   Triangular wave rise time = Fb-03 (wobble cycle) x Fb-04 (triangular wave rise time coefficient) (unit: s)

   Triangular wave fall time = Fb-03 (wobble cycle) x [1 – Fb-04 (triangular wave rise time coefficient)] (unit: s)

   (Wobble cycle = Triangular wave rise time + Triangular wave fall time)

4.4.14 Fixed Length Control Function

The AC drive supports fixed length control. Length pulses can be sampled by a DI terminal assigned with function 29 (length count input).

Para. No.	Name	Default	Value Range	Description
FB-05	Reference length	1000 m	0 m to 65535 m	This parameter specifies the length value to be controlled in fixed length control mode.
FB-06	Actual length	0 m	0 m to 65535 m	The actual length is a monitored value. Actual length (Fb-06) = Number of pulses sampled by DI/Number of pulses per meter (Fb-07).
FB-07	Number of pulses per meter	100.0	0.1 to 6553.5	This parameter indicates the number of pulses output per meter. The length pulses are sampled by a DI terminal assigned with function 29 (length count input).

In the following figure, the actual length is a monitored value. Actual length (Fb-06) = Number of pulses sampled by DI/Number of pulses per meter (Fb-07). When the actual length (Fb-06) exceeds the reference length (Fb-05), the relay or DO terminal (function 31) outputs the "length reach" ON signal. During fixed length control, length reset can be implemented by a multi-function DI terminal (function 30). For details, see the following figure.

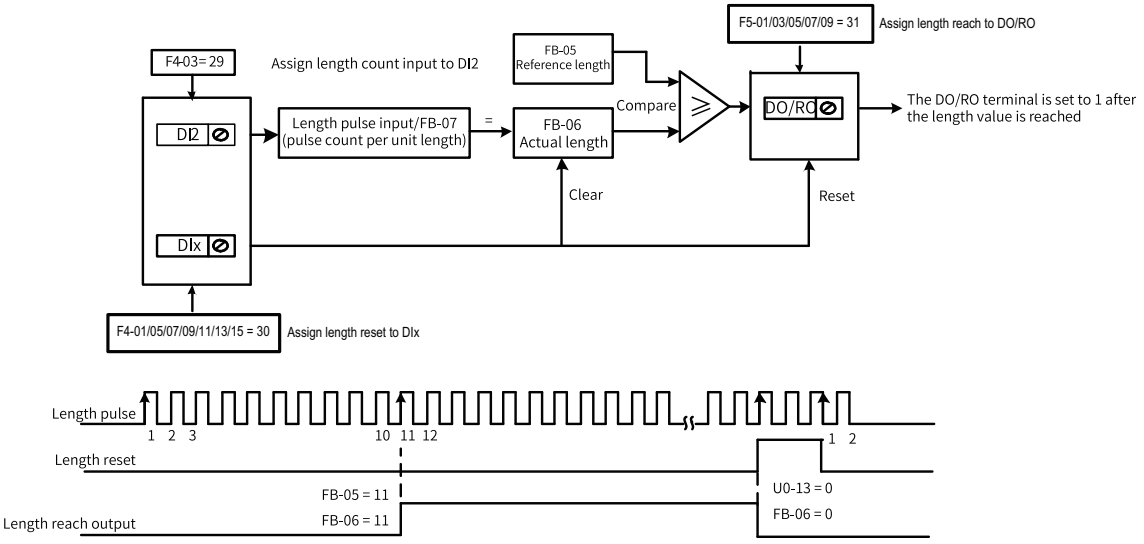


Figure 4-46 Schematic diagram of fixed length control

Para. No.	Name	Reference	Function Description
F4-03	DI2 function selection	29	Length count input
F4-01, F4-05, F4-07, F4-09, F4-11, F4-13, and F4-15 (any one)	DI1 to DI8 function selection (any one)	30	Length reset
F5-01, F5-03, F5-05, F5-07, and F5-09 (any one)	DO/RO terminal function selection (any one)	31	Length reach

Only length can be calculated according to the number of pulses but the rotation direction cannot be identified in fixed length control mode. An automatic stop system can be implemented by connecting the output length reach T/A-T/B signal of the relay to the stop input terminal.

4.4.15 Counting Function

If the count values need to be collected by DI terminals, assign function 27 (counter input) to the DI terminal.

Para. No.	Name	Default	Value Range	Description
Fb-08	Reference count value	1000	1 to 65535	When the count value reaches Fb-08, the DO terminal outputs an active signal indicating that the reference count value is reached.
Fb-09	Designated count value	1000	1 to 65535	When the count value reaches Fb-09, the DO terminal outputs an active signal indicating that the designated count value is reached. Fb-09 must be less than or equal to Fb-08 (reference count value).

In the following figure, the count values need to be collected by a DI terminal, and therefore the DI terminal is assigned with function 27 (counter input). When the count value reaches Fb-08, the DO terminal outputs an "ON" signal indicating that the reference count value is reached. When the count value reaches Fb-09, the DO terminal outputs an "ON" signal indicating that the designated count value is reached.

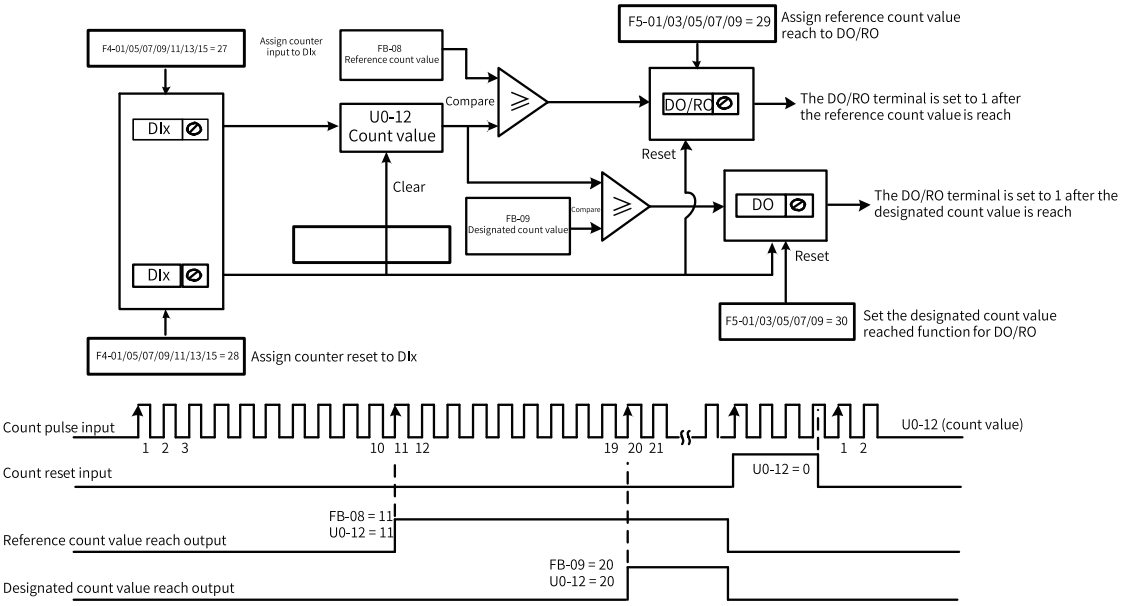


Figure 4-47 Schematic diagram of the counting function

Para. No.	Name	Reference	Function Description
F4-01, F4-05, F4-07, F4-09, F4-11, F4-13, and F4-15 (any one)	DI1 to DI8 function selection (any one)	27	Counter input
F4-01, F4-05, F4-07, F4-09, F4-11, F4-13, and F4-15 (any one)	DI1 to DI8 function selection (any one)	28	Counting reset
F5-01, F5-03, F5-05, F5-07, and F5-09 (any one)	DO/RO terminal function selection (any one)	29	Reference count value reach
F5-01, F5-03, F5-05, F5-07, and F5-09 (any one)	DO/RO terminal function selection (any one)	30	Designated count value reach

- A DO/RO terminal cannot be assigned with both the "reference count value reach" function and the "designated count value reach" function.
- The counter keeps counting when the AC drive is in the running/stop state until the reference count value is reached.
- The count value is retentive at power failure.
- An automatic stop system can be implemented by feeding the output count value reach signal of the DO/RO to the AC drive stop input terminal.

4.4.16 PID Adjustment Methods

This section describes general rules for PID parameter adjustment, which can be used as reference for adjusting closed-loop control PID parameters (FA-05 to FA-07, and FA-15 to FA-17) and speed loop PI parameters (F2-00, F2-01, F2-03, and F2-04).

1. In case of slow response, increase Kp.

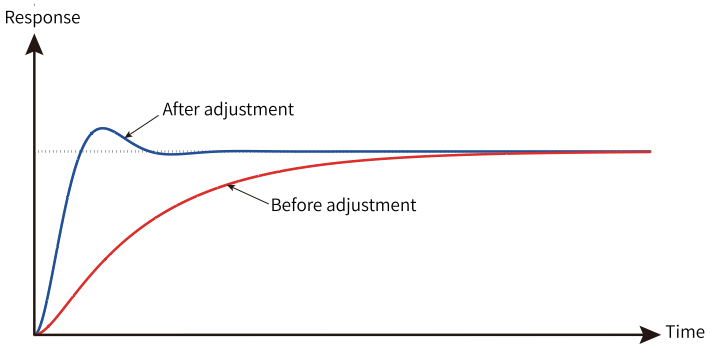


Figure 4-48 Response-time trend after increasing Kp

2. In case of frequent oscillation, reduce Kp.

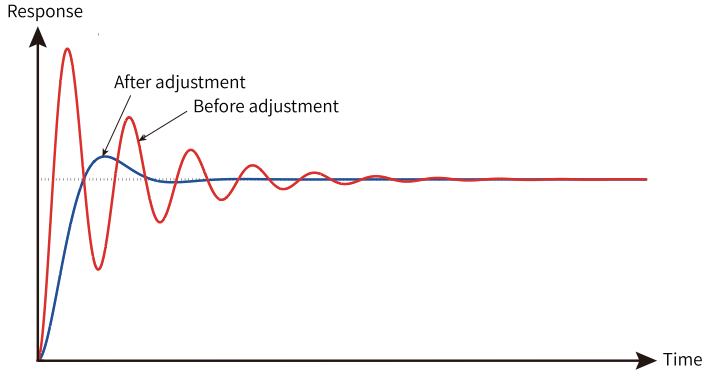


Figure 4-49 Response-time trend after decreasing Kp

3. In case of large overshoot and slow fluctuation, increase Ti.

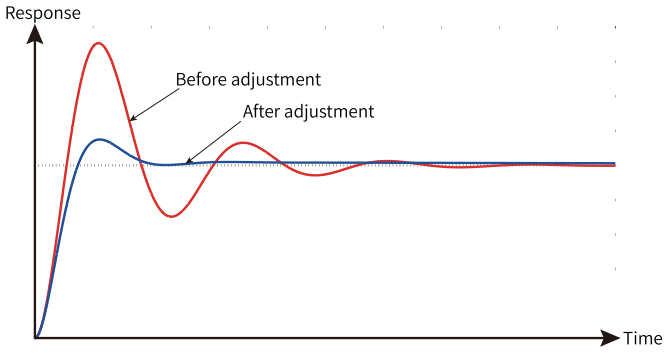


Figure 4-50 Response-time trend after increasing Ti

4. In case of large static difference and slow response at load fluctuation, increase Kp or decrease Ti.

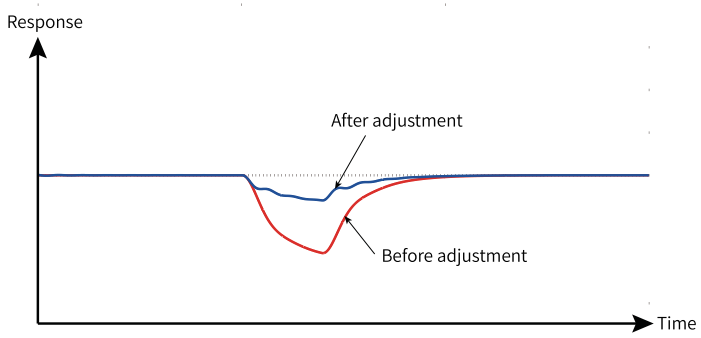


Figure 4-51 Response-time trend after increasing Kp at load fluctuation

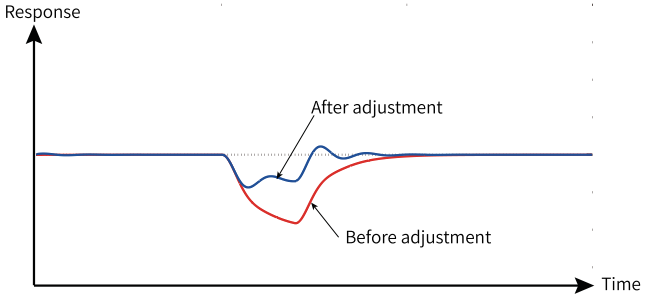


Figure 4-52 Response-time trend after decreasing Ti at load fluctuation

5. The system stability can be improved by incorporating derivative time Td properly (excessive proportion may cause interference and oscillation).

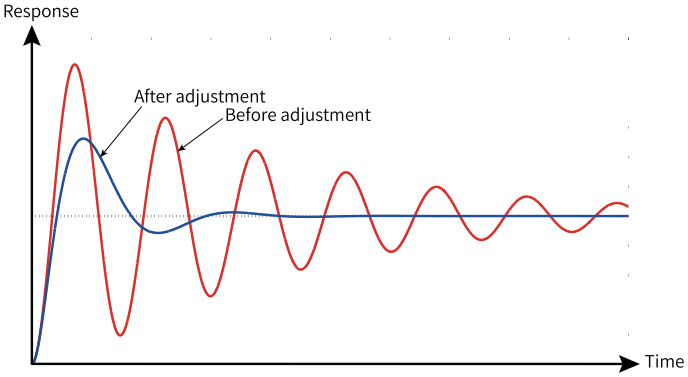


Figure 4-53 Response-time trend after incorporating Td

4.5 Application Control

4.5.1 Jog Running

In some applications, the AC drive needs to run at low speed temporarily to facilitate equipment testing. In this case, jog running applies. If jog running is adopted, F6-00 must be set to 0 (direct start) and F6-10 must be set to 0 (decelerate to stop). The following figure shows the relationship between the output frequency and acceleration/deceleration time during jog running.

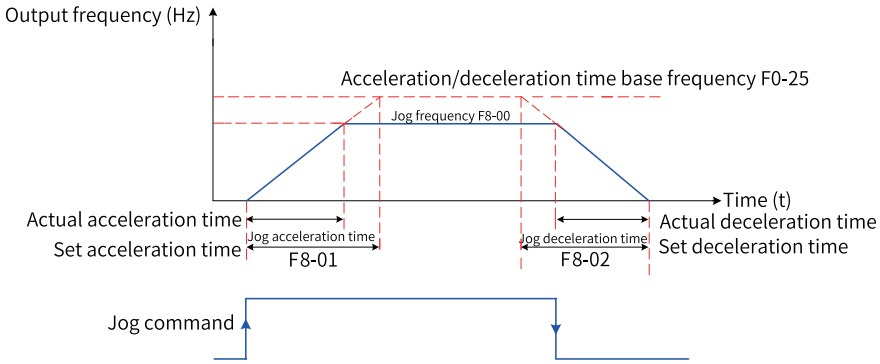


Figure 4-54 Schematic diagram of jog running

Related Parameters

Para. No.	Name	Default	Value Range	Description
F0-02	Operation command source	0	0: Operating panel control 1: Terminal I/O control 2: Communication control	-
F0-25	Acceleration/ Deceleration time base frequency	1	0: Maximum frequency (F0-10) 1: Target frequency 2: 100 Hz	-
F7-01	MF.K key function	0	0: MF.K key disabled 1: Switchover between operating panel control and remote control (terminal I/O control or communication control) 2: Switchover between forward and reverse run 3: Forward jog 4: Reverse jog	-
F8-00	Jog frequency	2.00 Hz	0 to maximum frequency (F0-10)	-
F8-01	Jog acceleration time	20.0s	0.0s to 6500.0s	-
F8-02	Jog deceleration time	20.0s	0.0s to 6500.0s	-
F8-14	Reverse running	0	0: Reverse running allowed 1: Reverse running inhibited	-
F8-37	Jog preferred	0	0: Disabled 1: Enabled	-

Application

The following introduces how to set parameters related to jog running by taking implementation of jog running using the operating panel as an example.

Table 4–32 Setting parameters related to jog running

Step	Forward Jog	Reverse Jog
1	Set F7-01 to 3 to assign the forward jog function to the MF.K key.	Set F7-01 to 4 to assign the reverse jog function to the MF.K key. Set F8-14 to 0 to allow reverse running.
2	Set F0-02 to 0 to select the operating panel as the command source.	Set F0-02 to 0 to select the operating panel as the command source.
3	Set F8-00 (jog frequency), F8-01 (jog acceleration time), and F8-02 (jog deceleration time) properly.	Set F8-00 (jog frequency), F8-01 (jog acceleration time), and F8-02 (jog deceleration time) properly.
4	Press down the MF.K key when the AC drive is in stop status. The drive starts to jog in the forward direction. Release the MF.K key. The AC drive decelerates to stop.	In stop status, press down the key. The drive starts to jog in the reverse direction. After you release the MF.K key, the AC drive decelerates to stop.

4.5.2 Frequency Detection

4.5.2.1 Multi-speed Reference

In multi-reference mode, different combinations of DI terminal states correspond to different frequency references.

Table 4–33 Using multi-reference as the frequency reference source

Step	Related Parameters	Description
Step 1: Select multi-reference as the frequency reference source.	F0-03	F0-03 = 6
Step 2: Determine the number of speed references required.	None	A total of 16 speed references are supported, which are defined by using four DI terminals. The relationship between the number of speed references and the number of DI terminals is as follows: 2 speed references: 1 DI terminal (K1) 3 to 4 speed references: 2 DI terminals (K1 and K2) 5 to 8 speed references: 3 DI terminals (K1, K2, and K3) 9 to 16 speed references: 4 DI terminals (K1, K2, K3, and K4)
Step 3: Select the DI hardware source.	F4-00/F4-02/F4-04/F4-06/F4-08/ F4-10/F4-12/F4-14	Set an available external terminal as the DI hardware source.
Step 4: Assign the multi-reference function to the DI terminal.	F4-01/F4-03/F4-05/F4-07/F4-09/ F4-11/F4-13/F4-15	Multi-reference terminal K1: Set the parameter to 14.
		Multi-reference terminal K2: Set the parameter to 15.
		Multi-reference terminal K3: Set the parameter to 16.
		Multi-reference terminal K4: Set the parameter to 17.
Step 5: Set the frequency corresponding to each speed reference.[Note]	FC-00 to FC-15	The frequency corresponding to each speed reference is set to a percentage value. 100% corresponds to the maximum frequency (F0-10).
	F0-10	When multi-reference is used as the frequency reference source, the value 100% of FC-00 to FC-15 corresponds to the maximum frequency (F0-10).

[Note] The four multi-reference terminals provide 16 state combinations, corresponding to 16 reference values, as listed in the following table.

Table 4–34 State combinations of the four multi-speed reference terminals

K4	K3	K2	K1	Reference	Percentage Relative to Max. Frequency
OFF	OFF	OFF	OFF	Multi-reference 0	FC-00
OFF	OFF	OFF	ON	Multi-reference 1	FC-01
OFF	OFF	ON	OFF	Multi-reference 2	FC-02
OFF	OFF	ON	ON	Multi-reference 3	FC-03
OFF	ON	OFF	OFF	Multi-reference 4	FC-04
OFF	ON	OFF	ON	Multi-reference 5	FC-05
OFF	ON	ON	OFF	Multi-reference 6	FC-06
OFF	ON	ON	ON	Multi-reference 7	FC-07
ON	OFF	OFF	OFF	Multi-reference 8	FC-08
ON	OFF	OFF	ON	Multi-reference 9	FC-09
ON	OFF	ON	OFF	Multi-reference 10	FC-10
ON	OFF	ON	ON	Multi-reference 11	FC-11
ON	ON	OFF	OFF	Multi-reference 12	FC-12
ON	ON	OFF	ON	Multi-reference 13	FC-13
ON	ON	ON	OFF	Multi-reference 14	FC-14
ON	ON	ON	ON	Multi-reference 15	FC-15

4.5.2.2 Frequency Detection (FDT)

This function sets the detection value of the output frequency as well as the hysteresis value upon output cancellation. The hysteresis value is valid only during deceleration. Hysteresis does not occur in detection during acceleration. The following figure shows the frequency detection function.

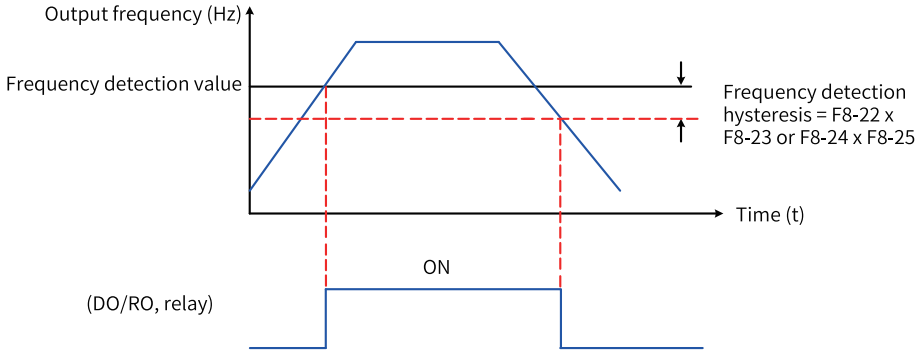


Figure 4-55 Schematic diagram of frequency detection

Table 4–35 Parameters related to frequency detection

Para. No.	Name	Default	Value Range	Description
F8-22	Frequency detection value (FDT1)	50.00 Hz	0 to maximum frequency (F0-10)	When the running frequency is higher than the frequency detection value (FDT1), the DO/RO terminal outputs an active signal; when the running frequency is lower than the result of the frequency detection value (FDT1) minus the frequency detection hysteresis (FDT1), the DO/RO terminal outputs an inactive signal. The valid value range is 0.00 Hz to F0-10 (maximum frequency).
F8-23	Frequency detection hysteresis rate (FDT1)	2.5 Hz	0.00 Hz to F8-22	When the running frequency is higher than F8-22, the DO/RO terminal outputs an active signal. When the running frequency is lower than a specific value (F8-22 minus F8-23), the DO/RO terminal outputs an inactive signal.
F8-24	Frequency detection value (FDT2)	50.00 Hz	0 to maximum frequency (F0-10)	When the running frequency is higher than the frequency detection value (FDT2), the DO/RO terminal outputs an active signal; when the running frequency is lower than the result of the frequency detection value (FDT2) minus the frequency detection hysteresis (FDT2), the DO/RO terminal outputs an inactive signal. The valid value range is 0.00 Hz to F0-10 (maximum frequency).
F8-25	Frequency detection hysteresis rate (FDT2)	2.5 Hz	0.00 Hz to F8-24	When the running frequency is higher than F8-24, the DO/RO terminal outputs an active signal. When the running frequency is lower than a specific value (F8-24 minus F8-25), the DO/RO terminal outputs an inactive signal.

4.5.2.3 Vibration Suppression

The jump frequency enables the AC drive to avoid any frequency at which a mechanical resonance may occur. The AC drive supports two frequency jump points. If both are set to 0, the frequency jump function is disabled.

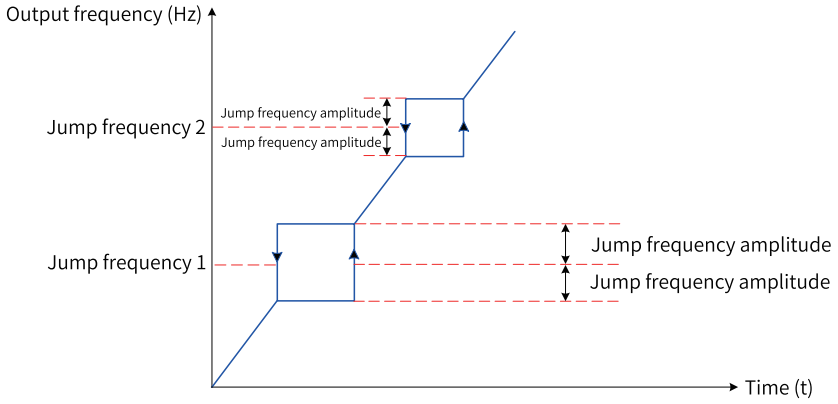


Figure 4-56 Jump frequency

As shown in the preceding figure, during acceleration, when the running frequency increases to a value that is close to the jump frequency, the AC drive runs for a period at the current frequency and then skips over the jump frequency. The jump range is twice the value of F8-11 (jump frequency amplitude).

During deceleration, when the running frequency decreases to a value that is close to the jump frequency, the AC drive runs for a period at the current frequency and then skips over the jump frequency. The jump range is twice the value of F8-11 (jump frequency amplitude).

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-09	Jump frequency 1	0.00 Hz	0.00 to maximum frequency (F0-10)	The jump frequency enables the AC drive to avoid any frequency at which a mechanical resonance may occur. This parameter defines the first jump frequency. If it is set to 0, the first jump frequency is canceled.
F8-10	Jump frequency 2	0.00 Hz	0.00 to maximum frequency (F0-10)	The jump frequency enables the AC drive to avoid any frequency at which a mechanical resonance may occur. This parameter defines the second jump frequency. If it is set to 0, the second jump frequency is canceled.
F8-11	Jump frequency amplitude	0.00 Hz	0.00 Hz to 5.00 Hz	During acceleration, when the running frequency increases to a value that is close to the jump frequency, the AC drive runs for a period at the current frequency and then skips over the jump frequency. The jump range is twice the value of F8-11 (jump frequency amplitude). During deceleration, when the running frequency decreases to a value that is close to the jump frequency, the AC drive runs for a period at the current frequency and then skips over the jump frequency. The jump range is twice the value of F8-11 (jump frequency amplitude).
F8-12	Jump frequency selection during acceleration/ deceleration	0	0: Inactive 1: Active	This parameter defines whether the jump frequency is active during acceleration/ deceleration. When it is inactive, the AC drive continues to run at the running frequency when the running frequency is near the jump frequency during acceleration and deceleration. When it is active, the AC drive skips over the jump frequency when the running frequency is near the jump frequency during acceleration and deceleration. The jump range is twice the value of F8-11 (jump frequency amplitude).

4.5.2.4 Reverse Frequency Inhibition

F8-14 defines reverse frequency inhibition. The following figure shows the schematic diagram of reverse frequency inhibition.

F0-09 defines the running direction of the motor. You can change the rotation direction of the motor by modifying this parameter without changing the motor wiring. Modifying this parameter is equivalent to exchanging any two of the motor's U, V, W wires.

Note

After the parameter is initialized, the original rotation direction of the motor is resumed. Exercise cautions when using this function if motor rotation direction change is prohibited after system commissioning is complete.

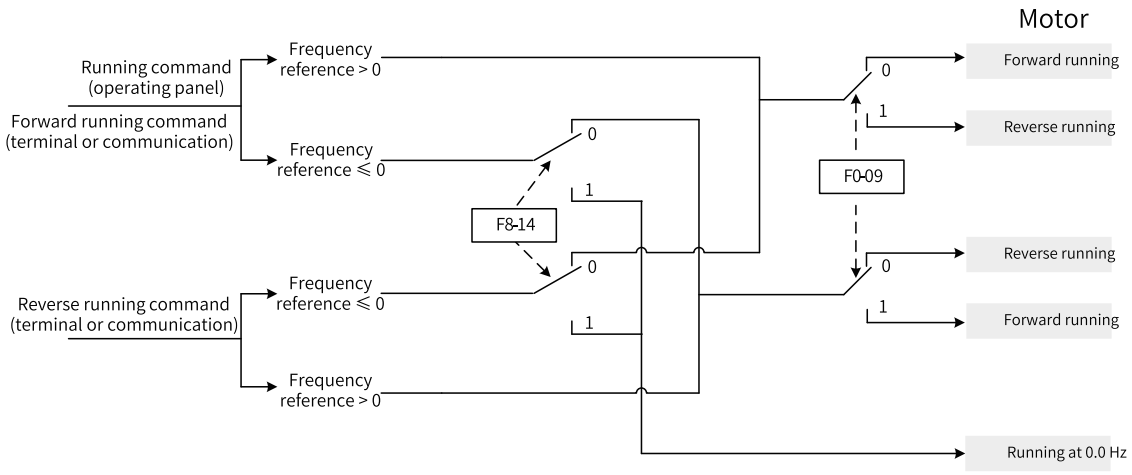


Figure 4-57 Reverse frequency inhibition

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-14	Reverse running	0	0: Reverse running allowed 1: Reverse running inhibited	When F8-14 is active, the motor runs at zero frequency when a reverse run command is input to the AC drive.
F0-09	Running direction	0	0: Default direction 1: Direction opposite to the default direction	You can change the rotation direction of the motor by modifying this parameter without changing the motor wiring. Modifying this parameter is equivalent to exchanging any two of the motor's U, V, W wires.

4.5.2.5 Frequency Detection Range

F8-26 defines the frequency detection range. The following figure shows the timing diagram of the frequency detection range.

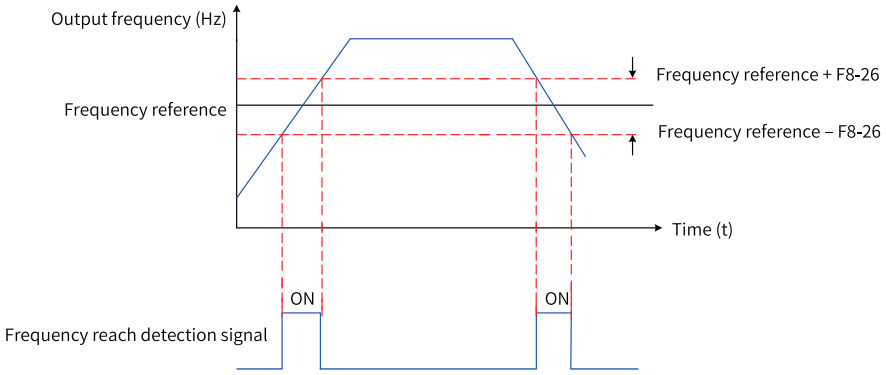


Figure 4-58 Timing diagram of the frequency detection range

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-26	Frequency Detection Range	0.00 Hz	0.00 Hz to maximum frequency	The DO terminal outputs an active signal when the running frequency of the AC drive is within the specified range (frequency reference±F8-26).

4.5.2.6 Acceleration/Deceleration Time Switchover Frequency

This function enables selection of different acceleration/deceleration time based on the running frequency during running of the AC drive.

The following figure shows the schematic diagram of acceleration/deceleration time switchover. During acceleration, if the running frequency is lower than F8-35, acceleration time 2 is selected; if it is higher than F8-35, acceleration time 1 is selected. During deceleration, if the running frequency is higher than F8-36, deceleration time 1 is selected; if it is lower than F8-36, deceleration time 2 is selected.

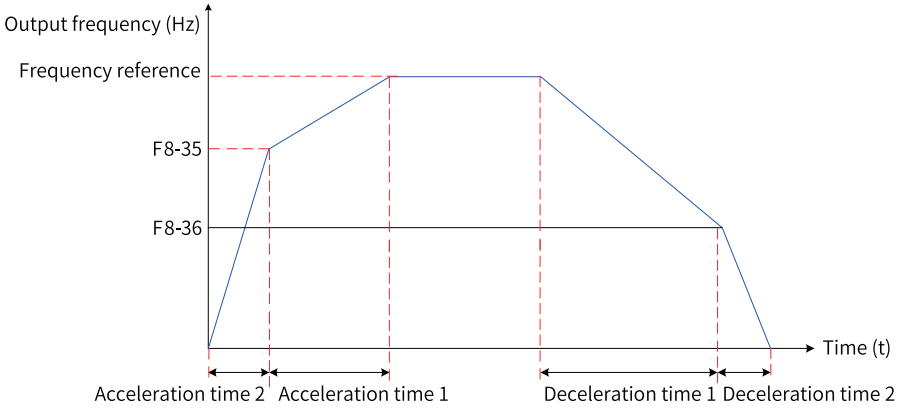


Figure 4-59 Acceleration/Deceleration time switchover

This function is available only when motor 1 is selected (F0-24 = 0) and the DI terminal is not assigned with function 18 (acceleration/deceleration time selection terminal 1) or 19 (acceleration/deceleration time selection terminal 2).

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-35	Switchover frequency of acceleration time 1 and acceleration time 2	0.00 Hz	0 to maximum frequency (F0-10)	This function is used to switch the acceleration/deceleration time based on the running frequency range when the AC drive is running. This function is available only when motor 1 is selected (F0-24 = 0) and the DI terminal is not assigned with function 18 (acceleration/deceleration time selection terminal 1) or 19 (acceleration/deceleration time selection terminal 2). The valid value range is 0.00 Hz to F0-10 (maximum frequency).
F8-36	Switchover frequency of deceleration time 1 and deceleration time 2	0.00 Hz	0 to maximum frequency (F0-10)	

4.5.2.7 Detection Value for Frequency Reach

The DO/RO terminal outputs an active signal when the running frequency of the AC drive is within the range of detection value for frequency reach±frequency detection range.

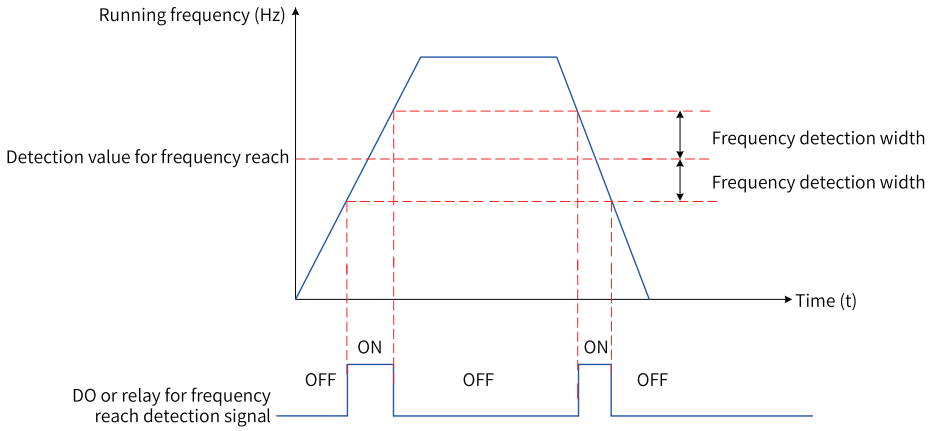


Figure 4-60 Frequency reach detection

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-27	Detection value 1 for frequency reach	50.00 Hz	0 to maximum frequency (F0-10)	When the running frequency of the AC drive is within the frequency detection range, the DO/RO terminal outputs an active signal. The valid value range is 0.00 Hz to F0-10 (maximum frequency).
F8-28	Detection frequency 1 for frequency reach	2.50 Hz	0.00 to F8-27	Frequency detection range = (Detection value 1 for frequency reach)±(Detection frequency 1 for frequency reach). That is, the frequency detection range is calculated using (F8-27)±(F8-28).

Para. No.	Name	Default	Value Range	Description
F8-29	Detection mode for frequency reach 1	0	0: Always detect 1: Not detect during acceleration/ deceleration	This parameter defines the frequency 1 reach detection mode. When it is set to 0, the DO/RO terminal outputs an active signal if the detection condition is met. When it is set to 1, the DO/RO terminal does not output an active signal during acceleration and deceleration even if the detection condition is met.
F8-30	Detection value 2 for frequency reach	50.00 Hz	0 to maximum frequency (F0-10)	When the running frequency of the AC drive is within the frequency detection range, the DO/RO terminal outputs an active signal. The valid value range is 0.00 Hz to F0-10 (maximum frequency).
F8-31	Detection frequency 2 for frequency reach	2.50 Hz	0.00 to F8-28	Frequency detection range = (Detection value 2 for frequency reach)±(Detection frequency 2 for frequency reach). That is, the frequency detection range is calculated using (F8-30)±(F8-31).
F8-32	Detection mode for frequency reach 2	1	0: Always detect 1: Not detect during acceleration/ deceleration	This parameter defines the frequency 1 reach detection mode. When it is set to 0, the DO terminal outputs an active signal if the detection condition is met. When it is set to 1, the DO terminal does not output an active signal during acceleration and deceleration even if the detection condition is met.

4.5.3 Current Detection

4.5.3.1 Zero Current Detection

When the output current of the AC drive is lower than or equal to F8-38 (zero current detection level) for longer than the time defined by F8-39 (zero current detection delay), the DO terminal outputs an active signal.

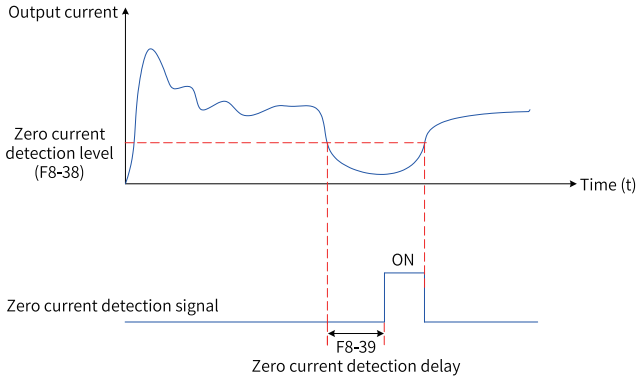


Figure 4-61 Zero current detection

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-38	Zero current detection level	5.0%	0.0% to 300.0% (rated motor current)	When the output current of the AC drive is lower than or equal to F8-38 (zero current detection level) for longer than the time defined by F8-39 (zero current detection delay), the DO terminal outputs an active signal.
F8-39	Zero current detection delay	0.10s	0.00s to 600.00s	

4.5.3.2 Output Overcurrent Threshold

When the output current of the AC drive is higher than F8-40 (output current threshold) for longer than the time defined by F8-41 (output overcurrent detection delay), the DO terminal outputs an active signal.

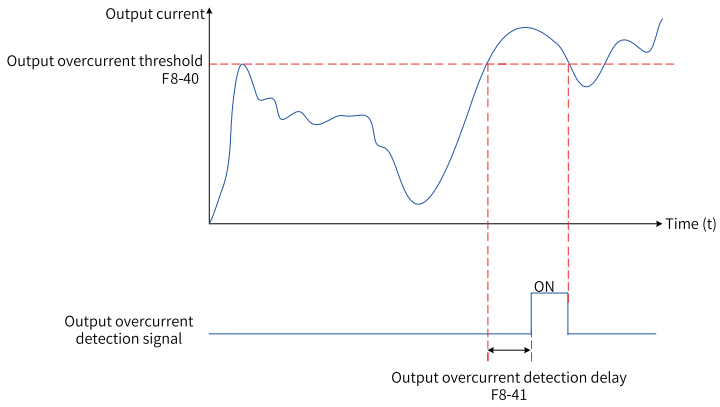


Figure 4-62 Output overcurrent threshold

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-40	Output overcurrent threshold	200.0%	0.0% (no detection) 0.1% to 300.0% (rated motor current)	When the output current of the AC drive is higher than F8-40 (output current threshold) for longer than the time defined by F8-41 (output overcurrent detection delay), the DO terminal outputs an active signal.
F8-41	Output overcurrent detection delay	0.00s	0.00s to 600.00s	

4.5.3.3 Detection Level of Current

When the output current of the AC drive is within the range of (detection level of current±detection width of current) x (rated motor current), the DO terminal outputs an active signal.

The AC drive provides two groups of current detection level and width parameters. The following figure shows the timing diagram.

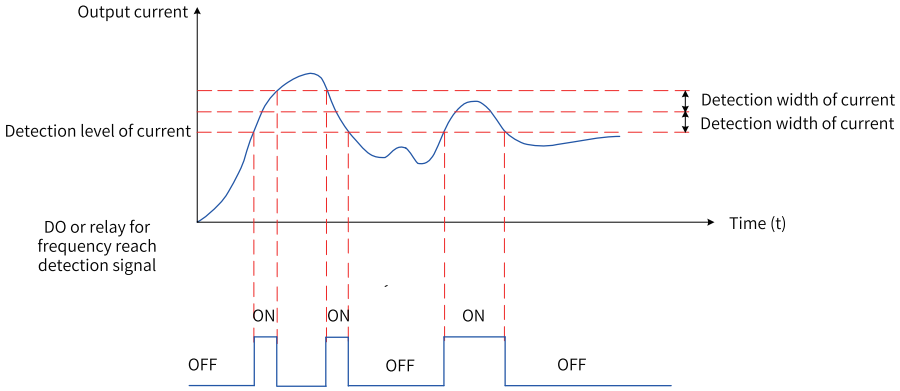


Figure 4-63 Current detection timing diagram

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-42	Detection level of current 1	100.0%	0.0% to 300.0% (rated motor current)	When the output current of the AC drive is within the range of [F8-42 (detection level of current 1)±F8-43 (detection width of current 1)] x F1-03 (rated motor current), the DO terminal outputs an active signal.
F8-43	Detection width of current 1	0.0%	0.0% to 300.0% (rated motor current)	Detection width of current 1 = F8-43 (detection width of current 1) x F1-03 (rated motor current)
F8-44	Detection level of current 2	100.0%	0.0% to 300.0% (rated motor current)	When the output current of the AC drive is within the range of [F8-44 (detection level of current 2)±F8-45 (detection width of current 2)] x F1-03 (rated motor current), the DO terminal outputs an active signal.
F8-45	Detection width of current 2	0.0%	0.0% to 300.0% (rated motor current)	Detection width of current 2 = F8-45 (detection width of current 2) x F1-03 (rated motor current)

4.5.2 FWD/REV Switchover Dead-zone Time

FWD/REV switchover dead-zone time (F8-13) indicates the transition time at 0 Hz output during transition between forward running and reverse running of the AC drive.

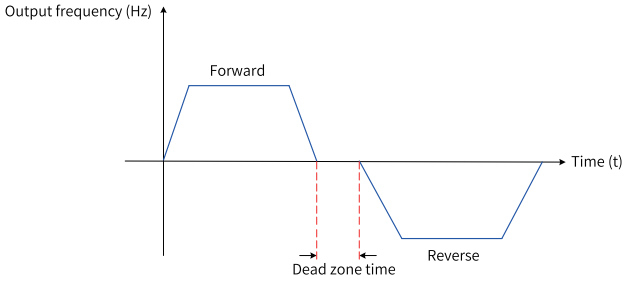


Figure 4-64 FWD/REV switchover dead-zone time

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-13	FWD/REV switchover dead-zone time	0.0s	0.0s to 3000.0s	This parameter defines the transition time at 0 Hz output during transition between forward running and reverse running.

4.5.3 Timing Function

The AC drive starts timing from 0 each time it starts. When the timing duration defined by F8-48 is reached, the AC drive stops automatically and the DO terminal outputs an active signal. The remaining timing duration can be viewed through U0-20.

- The DO terminal outputs an active signal when the accumulative power-on time of the AC drive (F7-12) exceeds F8-19 (accumulative power-on time threshold).
- The DO terminal outputs an active signal when the accumulative running time of the AC drive (F7-09) exceeds F8-20 (accumulative running time threshold).

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-19	Accumulative power-on time threshold	0 h	0 h to 65000 h	This parameter defines the accumulative power-on time threshold of the AC drive. The DO terminal outputs an active signal when F7-12 (accumulative power-on time) exceeds F8-19 (accumulative power-on time threshold).
F8-20	Accumulative running time threshold	0 h	0 h to 65000 h	This parameter defines the accumulative running time threshold of the AC drive. The DO terminal outputs an active signal when F7-09 (accumulative running time) exceeds F8-20 (accumulative running time threshold).
F8-46	Timing function	0	0: Disabled 1: Enabled	If F8-46 (timing function) is set to 1, the DO terminal outputs an active signal when the current operation time of the AC drive reaches the specified timing duration. The timing duration is defined by F8-47 and F8-48.

Para. No.	Name	Default	Value Range	Description
F8-47	Timing duration source	0	0: F8-48 1: AI1 2: AI2	When it is set to 0, the timing duration is set by F8-48. When it is set to 1, the timing duration = (AI1 voltage/10 V) x F8-48. 100% of analog input corresponds to the value of F8-48. When it is set to 2, the timing duration = (AI2 voltage/10 V) x F8-48. 100% of analog input corresponds to the value of F8-48.
F8-48	Timing duration	0.0 min	0.0 min to 6500.0 min	The timing duration is defined by F8-47 and F8-48.

4.5.4 AI1 Voltage Upper/Lower Limit

Para. No.	Name	Default	Value Range	Description
F8-49	AI1 input voltage lower limit	3.10 V	0.00 V to F8-50	When the AI1 input voltage is higher than F8-50 or lower than F8-49, the DO terminal outputs an active signal indicating "AI1 input limit exceeded".
F8-50	AI1 input voltage upper limit	6.80 V	F8-49 to 10.00 V	

4.5.5 IGBT Temperature

Para. No.	Name	Default	Value Range	Description
F8-51	IGBT temperature reach	75°C	0°C to 100°C	When the IGBT heatsink temperature reaches the value of F8-51, the DO/RO terminal outputs an active signal.
F7-07	Heatsink temperature of IGBT	-	–20.0°C to +120.0°C	Heatsink temperature of the IGBT

4.5.6 Cooling Fan Control

Para. No.	Name	Default	Value Range	Description
F8-52	Cooling fan control	0	0: Forward running during drive running 1: Forward running continuously 2: Forward and reverse running continuously 3: Forward and reverse running during drive running	Single-axis drive unit and axis 1 of dual-axis drive unit: F8-52 = 0: The fan works when the AC drive is running. When the AC drive stops, the fan works if the heatsink temperature is higher than 42°C and stops if the heatsink temperature is lower than 42°C. F8-52 = 1: The fan keeps rotating in the forward direction after power-on. F8-52 = 2: The fan keeps working after power-on. It rotates in the forward direction for 600s and then in the reverse direction for 200s, and repeats the cycle. F8-52 = 3: The fan works during drive running. When the AC drive is running, the fan rotates in the forward direction for 600s and then in the reverse direction for 200s, and repeats the cycle. When the AC drive stops, if the heatsink temperature is higher than 42°C, the fan rotates in the forward direction for 600s and then in the reverse direction for 200s, and repeats the cycle; if the heatsink temperature is lower than 42°C, the fan stops. Axis 2 of dual-axis drive unit: F8-52 is not editable. The default value is 0, that is, the fan rotates in the forward direction when axis 2 of the dual-axis drive unit is running.

4.6 Faults and Protection

4.6.1 Startup Protection

Set F8-21 (F8-21 = 1) to enable the startup protection of the AC drive. This helps to avoid unexpected motor running at power-on or fault reset.

Startup protection can be used in the following scenarios:

- If the running command is valid when the AC drive is powered on (for example, an input terminal is ON before power-on), the AC drive does not respond to the command. The AC drive responds only after the running command is canceled and becomes valid again.

- If the running command is valid when the AC drive fault is reset, the AC drive does not respond to the running command. The startup protection can be disabled only after the running command is canceled.

Related Parameters

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F8-21	Startup protection	0	0: Disabled 1: Enabled	This helps to avoid unexpected motor running at power-on or fault reset.

4.6.2 Undervoltage and Fast Current Limit Protection

When the bus voltage is lower than the value of A5-06, the AC drive reports a fault.

Related Parameters

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
A5-04	Fast current limit	1	0: Disabled 1: Enabled	This function is used to minimize the overcurrent faults, ensuring normal running of the AC drive. It is recommended to disable this function in hoist applications such as cranes.
A5-06	Undervoltage threshold	Three-phase 400 V: 350.0 V Single-phase 200 V: 200.0 V	150.0 V to 455.0 V	If the bus voltage is lower than the value of A5-06 when the AC drive is running, the AC drive reports E09.00. If the bus voltage is lower than the value of A5-06 when the AC drive stops, the AC drive reports A09.00.

4.6.3 Output Phase Loss Protection

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-06	Output phase loss detection before startup	0	0: Disabled 1: Enabled	It takes about several seconds to detect output phase loss during running. In low-frequency running application or application where risks exist in start with phase loss, this function enables quick detection output phase loss during startup. In applications which have strict requirements on start time, do not use this function.
F9-48	Fault protection action selection 1	10050	Ones position: Motor overload (E11) 0: Coast to stop 1: Decelerate to stop 2: Restart upon fault 4: Alarm 5: Canceled Tens position: Reserved 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled Hundreds position: Output phase loss (E13) 0: Coast to stop 1: Decelerate to stop 2: Special action 4: Alarm 5: Canceled Thousands position: IGBT overheat (E14) 0: Coast to stop Ten thousands position: External equipment fault (E15) 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled	The fault protection actions are set through the ones, tens, hundreds, thousands, and ten thousands positions of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 2: Restart upon fault The AC drive restarts upon fault. 4: Alarm The AC drive continues to run. 5: Canceled The fault detection is disabled.

4.6.4 Overheat Protection

Related Parameters

Para. No.	Name	Default	Value Range	Description
F9-57	Motor overheat protection threshold 1	110°C	0°C to 200°C	When the motor temperature measured by the sensor connected to the hardware source mapped to AI1 exceeds the value of F9-57 (motor overheat protection threshold 1), the AC drive reports a motor overtemperature fault (E45.00) and acts according to F9-53 (fault protection action selection 6).
F9-58	Motor overheat pre-warning threshold 1	90°C	0°C to 200°C	When the motor temperature measured by the sensor connected to the hardware source mapped to AI1 exceeds the value of F9-58 (motor overheat pre-warning threshold 1) and the function of the DO terminal is set to 9 (motor overtemperature), the DO terminal outputs an active signal.
F9-59	Motor overheat protection threshold 2	110°C	0°C to 200°C	When the motor temperature measured by the sensor connected to the hardware source mapped to AI2 exceeds the value of F9-59 (motor overheat protection threshold 2), the AC drive reports a motor overtemperature fault (E45.00) and acts according to F9-53 (fault protection action selection 6).
F9-60	Motor overheat pre-warning threshold 2	90°C	0°C to 200°C	When the motor temperature measured by the sensor connected to the hardware source mapped to AI2 exceeds the value of F9-60 (motor overheat pre-waring threshold 2) and the function of the DO terminal is set to 9 (motor overtemperature), the DO terminal outputs an active signal.
F9-61	Motor overheat protection threshold 3	110°C	0°C to 200°C	Motor overheat protection threshold 3 When the motor temperature measured by the sensor connected to the hardware source mapped to AI3 exceeds the value of F9-61 (motor overheat protection threshold 3), the AC drive reports a motor overtemperature fault (E45.00) and acts according to F9-53 (fault protection action selection 6).
F9-62	Motor overheat pre-warning threshold 3	90°C	0°C to 200°C	Motor overheat pre-warning threshold 3 When the motor temperature measured by the sensor connected to the hardware source mapped to AI3 exceeds the value of F9-62 (motor overheat pre-waring threshold 3) and the function of the DO terminal is set to 9 (motor overtemperature), the DO terminal outputs an active signal.

4.6.5 Overload Protection

To effectively protect motors with different loads, set the overload protection gain of motors based on their overload capacity. The motor overload protection curve is an inverse time delay curve, as shown in the following figure.

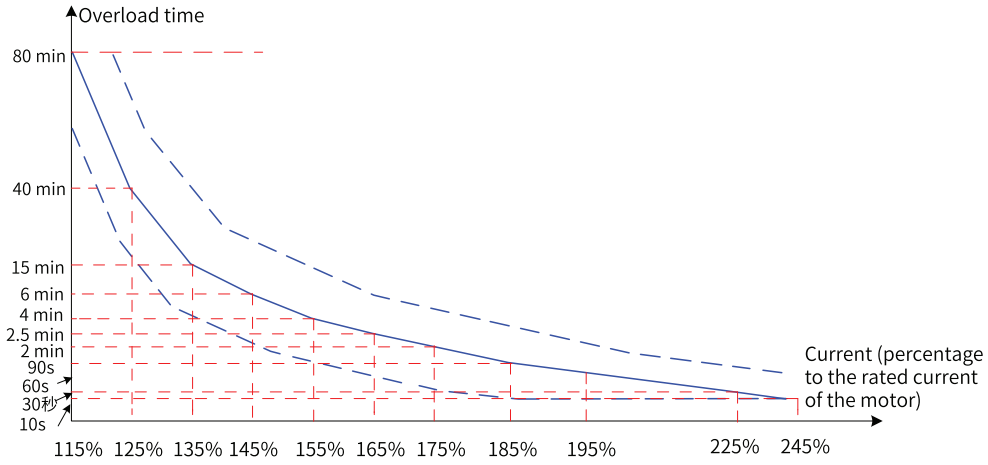


Figure 4-65 Inverse time delay curve of protection

When the running current reaches 175% of the rated motor current and the motor runs at this level for 2 minutes, or when the running current reaches 115% of the rated motor current and the motor runs at this level for 80 minutes, the motor overload fault (E11.00) is reported.

1. Example 1

   If the rated motor current is 100 A, when the running current reaches 125 A (125% of 100 A) and the motor runs at 125 A for 40 minutes, the AC drive reports the motor overload fault (E11.00).

Note

The maximum overload time is 80 minutes and the minimum overload time is 10 seconds.

2. Example 2

   The AC drive reports a motor overload fault after the motor runs for 2 minutes at 150% of the rated current. As shown in the overload curve, 150% (I) of the rated current falls between 145% (I1) and 155% (I2) of the rated current. The overload fault reporting time for 145% of the rated current is 6 minutes (T1), and that for 155% of the rated current is 4 minutes (T2). Therefore, the overload fault reporting time for 150% of the rated current is 5 minutes by default. The calculation is as follows.

   “T = T1 + (T2 – T1) x (I – I1) / (I2 – I1) = 4 + (6 – 4) x (150% – 145%) / (155% – 145%) = 5 (minutes)”

   To report the overload fault after the motor runs continuously for 2 minutes at 150% of the rated current, set the motor overload protection gain according to the following calculation: F9-01 = Desired overload protection time/Default overload protection time = 2/5 = 0.4.

Caution

Set F9–01 properly based on the actual overload capacity of the motor. Note that setting F9–01 to an excessively high value may easily result in motor damage caused by overtemperature without warning.

When the motor overload detection level reaches the set motor overload pre-warning coefficient, the DO or fault relay outputs the motor overload pre-warning signal. The motor overload pre-warning coefficient is the percentage of time during which the motor runs continuously without reporting an overload fault.

For example, if the motor overload protection gain is set to 1.00 and the motor overload pre-warning coefficient is set to 80%, when the motor running current reaches 145% of the rated motor current and the motor runs at this level for 4.8 minutes (80% x 6), the DO terminal or fault relay outputs the motor overload pre-warning signal.

The motor overload pre-warning function enables the AC drive to send a warning signal to the control system through the DO before motor overload protection starts. The pre-warning coefficient is used to determine how early to send the pre-warning signal before the motor overload protection starts. The larger the value is, the later the pre-warning signal is sent. When the accumulative output current of the AC drive is greater than the overload time (value Y of the motor overload protection inverse time delay curve) multiplied by the motor overload pre-warning coefficient (F9-02), the multi-functional DO terminal of the AC drive outputs a motor overload pre-warning signal. When F9-02 is set to 100%, the motor overload pre-warning and motor overload protection are performed simultaneously.

Related Parameters

Para. No.	Name	Default	Value Range	Description
F9-00	AC drive overload protection	0	0: Disabled 1: Enabled	This parameter specifies whether to enable or disable the motor overload protection function. The AC drive determines whether the motor is overloaded according to the inverse time delay curve. When motor overload is detected, the AC drive will report an overload fault. 0: Disabled The motor overload protection function is disabled. If this parameter is set to 0, install a thermal relay before the motor for protection starts. 1: Enabled The motor overload protection function is enabled.
F9-01	Motor overload protection gain	1.00	0.20 to 10.00	The motor overload protection gain is calculated according to the percentage of time during which the motor runs continuously at a certain overload threshold without reporting an overload fault. It is used to adjust the actual overload fault report time of the AC drive when motor overload occurs.
F9-02	Motor overload pre-warning coefficient	80%	50% to 100%	The motor overload pre-warning coefficient is calculated according to the percentage of time during which the motor runs continuously at a certain overload threshold without reporting overload pre-warning. A pre-warning signal is sent to the control system through DO before motor overload protection starts. This signal is used to determine how early to send the pre-warning signal before the motor overload protection starts. The larger the value is, the later the pre-warning signal is sent. When the accumulative output current of the AC drive is greater than the overload time (value Y of the motor overload protection inverse time delay curve) multiplied by the motor overload pre-warning coefficient (F9-02), the multi-functional DO terminal of the AC drive outputs a motor overload pre-warning signal.

4.6.6 Load Loss Protection

Set the ten thousands position of F9-51 to enable load loss detection. When the output current of the AC drive falls below F9-68 (Load loss detection level) for longer than the value of F9-69 (Load loss detection time), the AC drive performs load loss protection action.

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-51	Fault protection action 4	51111	-	The fault protection actions are set through the ones, tens, hundreds, thousands, and ten thousands positions of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The AC drive continues to run. 5: Canceled The fault detection is disabled.
F9-68	Load loss detection level	10.0%	0.0% to 100.0%	When the output current of the AC drive falls below F9-68 (Load loss detection level) for longer than the time set by F9-69 (Load loss detection time), the AC drive performs load loss protection action (selected through F9-49).
F9-69	Load loss detection time	1.0s	0.1s to 60.0s	

4.6.7 Speed Error Protection

The excessive speed error detection function is valid when the SVC mode is selected for the AC drive (F0-01 = 1).

When the detected motor speed is different from the frequency reference and the difference is larger than the value of F9-73 (Detection level of speed error) for longer than the time set by F9-74 (Detection time of speed error), the AC drive reports the excessive speed deviation fault (E42.00) and acts as selected by F9-50 (Fault protection action selection).

If F9-73 (Detection level of speed error) is set to 0.0% or F9-74 (Detection time of speed error) is set to 0.0s, the excessive speed error detection function is s disabled.

Related Parameters

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-73	Detection level of excessive speed deviation	20.0%	0.0% to 50.0% (maximum frequency)	-
F9-74	Detection time of excessive speed deviation	5.0s	0.0s to 60.0s	

4.6.8 Power Dip Ride-Through Function

The power dip ride-through function enables the system to run continuously at occurrence of instantaneous power loss. When an instantaneous power loss occurs, the AC drive keeps the motor in the power generation state to keep the bus voltage at a value around the "Threshold of power dip ride-through function enabled", preventing the AC drive from stopping due to undervoltage, as shown in the following figure.

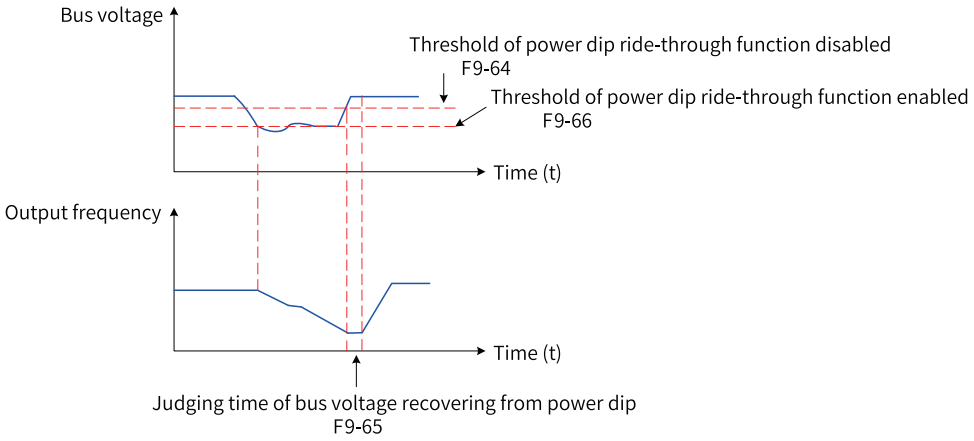


Figure 4-66 Power dip ride-through

In the bus voltage constant control mode, when line voltage recovers, the AC drive output frequency increases gradually to the target frequency based on the acceleration time. In the decelerate to stop mode, when the line voltage recovers, the AC drive decelerates to 0 Hz and stops. The AC drive will start again only when a new startup command is received.

Related Parameters

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-63	Power dip ride-through function selection	0	0: Disabled 1: Decelerate 2: Decelerate to stop	The function enables the AC drive to run continuously at occurrence of instantaneous power loss. When an instantaneous power loss occurs, the AC drive keeps the motor in the power generation state to keep the bus voltage at a value around the "Threshold of power dip ride-through function enabled", preventing the AC drive from stopping due to undervoltage. 0: Disabled The power dip ride-through function is disabled. 1: Bus voltage constant control When a power loss occurs, the bus voltage is retained at a value around the "Threshold of power dip ride-through function enabled". In this mode, when the line voltage recovers, the AC drive accelerates to the target frequency based on the acceleration time. 2: Decelerate to stop When a power loss occurs, the AC drive decelerates to stop. In this mode, when the line voltage recovers, the AC drive decelerates to 0 Hz and stops. The AC drive will start again only when a new startup command is received. "Bus voltage constant control" is applicable to large-inertia applications such as fan, water pump and centrifuge. "Decelerate to stop" is applicable to the textile industry.
F9-64	Threshold of power dip ride-through function disabled	8.5%	8.0% to 10.0%	Used to set the threshold of power dip ride-through function disabled for the AC drive. 100% corresponds to 540 V. This value is slightly lower than the bus voltage before power loss. Upon power loss, the bus voltage is maintained at about F9-66 (Threshold of power dip ride-through function enabled). When the power supply recovers, the bus voltage rises from F9-66 (Threshold of power dip ride-through function enabled) to F9-64 (Threshold of power dip ride-through function disabled). During this period, the output frequency of the AC drive keeps decreasing until the bus voltage reaches F9-64 (Threshold of power dip ride-through function disabled).
F9-65	Judging time of bus voltage recovering from power dip	0.5s	0.0 to 100.0s	Used to set the time required for the bus voltage to rise from F9-64 (Threshold of power dip ride-through function disabled) to the voltage before power loss.

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-66	Threshold of power dip ride-through function enabled	80%	60% to 100%	Used to set the voltage level at which the bus voltage is maintained upon power loss. When a power loss occurs, the bus voltage is retained at a value around F9-66 (Threshold of power dip ride-through function enabled).
F9-75	Power dip ride-through gain	0 to 100	40	This parameter is valid only in bus voltage constant control (F9-59 = 1). If undervoltage occurs frequently during power dip ride-through, increase the power dip ride-through gain and coefficient.
F9-76	Power dip ride-through integral	0 to +100	30	
F9-77	Deceleration time of power dip ride-through	0 to 300.0s	20.0s	This parameter is valid only for the decelerate to stop mode (F9-59 = 2). When the bus voltage is lower than the value of F9-62, the AC drive decelerates to stop. The deceleration time is determined by this parameter instead of F0-18.

4.6.9 Fault Reset

AC drive hardware fault (E01), EEPROM fault (E21), short-circuit to ground fault (E23), and STO-BUFFER fault (E47.05) cannot be reset automatically or manually. They can only be reset after power down. The fault protection action is performed after the fault auto reset times is reached.

Relevant Parameters

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-09	Fault auto reset times	0	0 to 20	Used to set the fault auto reset times of the AC drive when automatic fault reset is selected for the AC drive. If the reset times exceed the value of this parameter, the AC drive will remain in the faulty state.
F9-10	DO action during auto fault reset	1	0: Not act 1: Act	Used to decide whether the DO (assigned with function 3) acts during the fault auto reset if the fault auto reset function is selected.
F9-11	Auto fault reset interval	1.0s	0.1s to 100.0s	Used to set the delay of auto reset after the AC drive reports a fault.

4.6.10 Fault Protection Action Selection

The faults of this product are divided into five grades, and the serious grades of faults from high to low are: coast to stop, decelerate to stop, restart upon fault, alarm, and fault cancellation.

When alarm is selected as the fault protection action, the operating panel displays Axx.xx, such as "A16.02".

When cancellation is selected as the fault protection action, no prompt will be displayed when the corresponding fault occurs, so be careful when using this setting.

Related Parameters

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-47	Fault protection action selection 0	500	Ones position: E2/E3/E4 0: Coast to stop 2: Restart upon fault Tens position: E5/E6/E7 0: Coast to stop 2: Restart upon fault Hundreds position: Reserved 5: Canceled Thousands position: E9 0: Coast to stop 2: Restart upon fault Ten thousands position: E10 0: Coast to stop 2: Restart upon fault	The fault protection actions are set through the ones, tens, hundreds, thousands, and ten thousands positions of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 2: Restart upon fault The AC drive will restart upon faults. 4: Alarm The AC drive continues to run. 5: Canceled The fault detection is disabled.
F9-48	Fault protection action selection 1	10050	Ones position: E11 0: Coast to stop 1: Decelerate to stop 2: Restart upon fault 4: Alarm 5: Canceled Tens position: Reserved 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled Hundreds position: E13 0: Coast to stop 1: Decelerate to stop 2: Restart upon fault 4: Alarm 5: Canceled Thousands position: E14 0: Coast to stop Ten thousands position: E15 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled	The fault protection actions are set through the ones, tens, hundreds, thousands, and ten thousands positions of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 2: Restart upon fault The AC drive will restart upon faults. 4: Alarm The AC drive continues to run. 5: Canceled The fault detection is disabled.

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-49	Fault protection action selection 2	00050	Ones position: E16 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled Tens position: Reserved 5: Canceled Hundreds position: Reserved 0: Coast to stop Thousands position: E19 0: Coast to stop 4: Alarm 5: Canceled Ten thousands position: Reserved 5: Canceled	The fault protection actions are set through the ones, tens, hundreds, thousands, and ten thousands positions of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 2: Restart upon fault The AC drive will restart upon faults. 4: Alarm The AC drive continues to run. 5: Canceled The fault detection is disabled.
F9-50	Fault protection action selection 3	25000	Ones position: E21 0: Coast to stop Tens position: E22 0: Coast to stop Hundreds position: E23 0: Coast to stop 5: Canceled Thousands position: Reserved 5: Canceled Ten thousands position: E25 2: Special action 5: Canceled	The fault protection actions are set through the ones, tens, hundreds, thousands, and ten thousands positions of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 2: Special action The AC drive will stop according to the stop command sent by the power supply unit. 4: Alarm The AC drive continues to run. 5: Canceled The fault detection is disabled.

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-51	Fault protection action selection 4	51111	Ones position: E26 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled Tens position: E27 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled Hundreds position: E28 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled Thousands position: E29 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled Ten thousands position: E30 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled	The fault protection actions are set through the ones, tens, hundreds, thousands, and ten thousands positions of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The AC drive continues to run. 5: Canceled The fault detection is disabled.

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-52	Fault protection action selection 5	00101	Ones position: E31 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled Tens position: Reserved 5: Canceled Hundreds position: Reserved 5: Canceled Thousands position: E42 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled Ten thousands position: E43 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled	The fault protection actions are set through the ones, tens, hundreds, thousands, and ten thousands positions of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The AC drive continues to run. 5: Canceled The fault detection is disabled.
F9-53	Fault protection action selection 6	05500	Ones position: E45 0: Coast to stop 1: Decelerate to stop 4: Alarm 5: Canceled Tens position: Reserved 5: Canceled Hundreds position: Reserved 5: Canceled Thousands position: Reserved 5: Canceled Ten thousands position: E80 0: Coast to stop 1: Decelerate to stop 5: Canceled	The fault protection actions are set through the ones, tens, hundreds, thousands, and ten thousands positions of this parameter. 0: Coast to stop The AC drive coasts to stop. 1: Decelerate to stop The AC drive decelerates to stop. 4: Alarm The AC drive continues to run. 5: Canceled The fault detection is disabled.

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-54	Frequency for continuing to run upon fault	0	0: Current running frequency 1: Frequency reference 2: Frequency upper limit 3: Frequency lower limit 4: Backup frequency upon abnormality	Used to select the frequency when the AC drive is faulty. If a fault occurs during the running of the AC drive and the fault protection action is set to "Continue to run", the AC drive displays A** and continues to run at the frequency set by F9-54.
F9-55	Backup frequency upon abnormality	100.0%	0.0% to 100.0%	Used to set the backup frequency of the AC drive upon fault. If a fault occurs during the running of the AC drive and the fault protection action is set to "Run at the backup frequency" (F9-54 = 4), the AC drive displays A** and continues to run at the backup frequency.

4.6.11 Short-circuit to Ground Detection

Parameter No.	Parameter Name	Default Value	Setting Range	Parameter Description
F9-07	Detection of short-circuit to ground	1	0: No detection 1: Detection upon power-on	Used to enable or disable the short-circuit to ground detection function.

4.7 STO Safety Function

4.7.1 Standards Compliance

- European directives
  - Low Voltage Directive 2014/35/EU, EN 61800-5-1 standard
  - EMC Directive 2014/30/EU, EN 61800-3 standard
  - Machinery Directive 2006/42/EC (functional safety)
- Safety standards

Table 4–36 Safety standards

Item	Standards Compliance
Mechanical and electrical safety	ISO 13849-1: 2015 IEC 60204-1: 2016
Functional safety	IEC 61508: 2010, parts 1–7 IEC 62061: 2015 IEC 61800-5-2: 2016
Electromagnetic compatibility (EMC)	IEC 61326-3-1

- Safety performance

Table 4–37 Safety performance

Item	Standard	Performance Indicator
Safety integrity level (SIL)	IEC 61508 IEC 62061	SIL3 SILCL3
Probability of failure per hour (PFH)	IEC 62061 IEC 61508	PFH = 1.94 x 10^{-9}[1/h] PFH = 1.10 x 10^{-9}[1/h]
Performance level (PL)	ISO 13849-1	PL e (Cat 3)
Mean time to dangerous failure (MTTFd)	ISO 13849-1	MTTFd: High
Diagnostic coverage (DC)	ISO 13849-1	DCave: Medium
Stop category	IEC 60204-1	Stop category 0
Service time	IEC 61508	5 years
Hardware fault tolerance	IEC 61508	1
Systematic capability	IEC 61508	3
Application mode	IEC 61508	High requirements mode
Response time	-	20 ms

4.7.2 Specifications

- The product complies with the overvoltage category II requirements set in IEC 61800-5-1:2016 in terms of electrical safety.
- The environmental test requirements comply with IEC 61800-5-1:2016.
- The AC drive complies with the following EMC standards: IEC 61800-3:2017, IEC 61326-3-1, and IEC 61800-5-2.

Table 4–38 Environment and operation requirements

Item	Description
Ambient/Storage temperature	0 to 55°C/–20°C to +70°C
Ambient/Storage humidity	20% to 95% RH (non-condensing)
Vibration	*"Table 4–39 Vibration" on page 530*
IP rating/Pollution degree (PD)	IP 20; PD 2: No corrosive or explosive gases; no contact with water, oil, or chemicals; no dust, salt, or iron filings
Altitude	Not higher than 3000 m
Cooling mode	Clean air (natural convection)
Others	No static electricity, no strong electromagnetic field, no magnetic field, and no radioactivity

Table 4–39 Vibration

Item	Test Condition
Test reference	See IEC 60068-2-6 4.6.
Condition	EUT is powered on and works properly.
Motion mode	Sinusoidal
Amplitude/Acceleration rate	-
10 Hz ⩽ f ⩽ 57 Hz	0.075 mm amplitude
57 Hz < f ⩽ 150 Hz	1 g

Item	Test Condition
Vibration duration	10 times on each of the three mutually perpendicular axes
Axis	X, Y, Z
Installation	According to the manufacturer's specifications

4.7.3 Installation

Before use, configure the two independent inputs STO1/STO2 as two-channel inputs for the STO function.

For devices with the STO function, if the STO function is not required, STO1/STO2 can be connected to 24V at the same time to ensure normal operation of the devices.

4.7.4 Terminals and Connection

Terminal Arrangement and Definitions

The STO function is integrated in the drive unit, and its terminal arrangement and definitions are as follows.

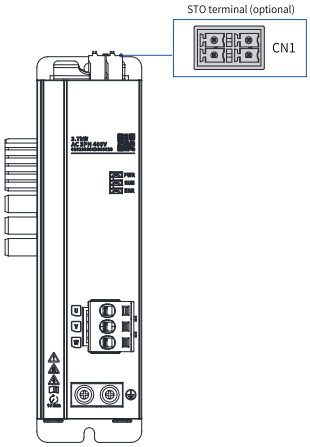


Figure 4-67 STO terminal arrangement of the drive unit (single-axis)

Table 4–40 STO terminal (optional) description of the drive unit (single-axis)

Appearance	Terminal Code	Terminal Name	Specifications
STO2 STO1 2GND 1GND	STO1	STO channel 1 power supply+	24 V input
	1GND	STO channel 1 power supply-	
	STO2	STO channel 2 power supply+	
	2GND	STO channel 2 power supply-	

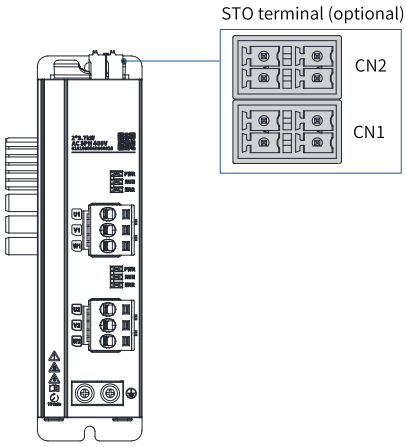
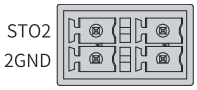


Figure 4-68 STO terminal arrangement of the drive unit (dual-axis)

Table 4–41 STO terminal (optional) description of the drive unit (dual-axis)

Appearance	Terminal Code	Terminal Name	Specifications
	STO1	STO channel 1 power supply+	24 V voltage input, voltage fluctuation range ± 10%
	1GND	STO channel 1 power supply-	
	STO2	STO channel 2 power supply+	
	2GND	STO channel 2 power supply-	

Electrical Specifications and Connection of the Input Circuit

- Specifications

Table 4–42 Specifications

Signal	Input state	Description
STO1	"1" or "H"	The AC drive works normally.
	"0" or "L"	The STO function is enabled.
STO2	"1" or "H"	The AC drive works normally.
	"0" or "L"	The STO function is enabled.

- Electrical characteristics

Table 4–43 Electrical characteristics of safety input signals

Item	Feature	Description
Voltage range	24 VDC (±15%)	-
Input current	4 mA (Typ.)	Value of each channel
Logic level standard	"0" < 3 V, "1" > 15 V	-
Digital input impedance	5.78 kΩ	-

- Connection example

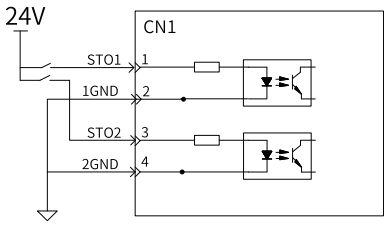


Figure 4-69 Connection example

EMC Requirements

1. To avoid short circuits between two adjacent conductors, shielded cables can be used with shielded layers connected to the connection protection ground, or flat wires can be used with a ground wire inserted between each signal conductor.
2. SFTP or STP is recommended.
3. Secure and ground the cable shroud with conductive metal sheets.

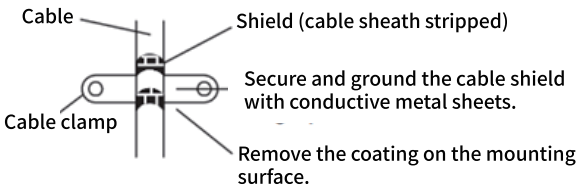


Figure 4-70 Cable clamp

4. The maximum cable length allowed between the AC drive and safety switch is 30 m.

4.7.5 Commissioning, Running, and Maintenance Requirements

Basic Requirements

- Technicians must be trained to understand the requirements and principles for the design and operation of safety-related systems.
- Execution and maintenance personnel must be trained on the requirements and principles for the design and operation of safety-related systems.
- Operation personnel must be trained to understand the requirements and principles for the design and operation of safety-related systems.
- If any safety-related circuit on the control board does not work, which is irreparable, the control board must be replaced.

Commissioning List

IEC 61508, EN IEC 62061 and EN ISO 13849 require the equipment to pass acceptance tests to verify the operation of safety functions. Acceptance testing must be performed at the following stages:

- Initial startup of the safety function
- After any changes related to safety functions (wiring, assembly, settings, or other related operations)
- After any maintenance work related to safety functions is completed

Acceptance testing of safety functions must be performed by personnel with safety function expertise and must be documented and signed by the testers. Technicians and operation/maintenance/repair personnel must be trained to understand the requirements and principles for the design and operation of safety-related systems.

The signed acceptance test report must be kept in the log of the equipment. The report shall include documentation of start-up activities and test results, fault reports, and troubleshooting records. Any new acceptance tests due to changes or maintenance shall be recorded in the log.

Table 4–44 Acceptance test checklist

Step	Test	Result
1	Ensure that the AC drive can run and stop freely during commissioning.	
2	Stop the AC drive (if running), turn off the input power, and isolate the AC drive from the power cable through a disconnecter.	
3	Check the STO circuit connection according to the circuit diagram.	
4	Check that the shield of the STO input cable is grounded to the drive frame.	
5	Turn off the disconnecter and connect the power supply.	
	When the motor stops, test the STO 1 channel signal: Set STO1 and STO2 to H. Issue an AC drive stop command (if running) and wait for the motor shaft to stop. Enable the STO function by disconnecting (low state or open circuit) the STO 1 channel input signal and issue a start command for the AC drive. Make sure the motor stays still and the AC drive display shows "STO".	
	The STO1 channel signal is restored and the fault is cleared. Use the ON/RUN command of the AC drive, and check that the motor works normally.	
	When the motor stops, test the STO 2 channel signal: Set STO1 and STO2 to H. Issue an AC drive stop command (if running) and wait for the motor shaft to stop. Enable the STO function by disconnecting (low state or open circuit) the STO 2 channel input signal and issue a start command for the AC drive. Make sure the motor stays still and the AC drive display shows "E47.02".	
	The STO2 channel signal is restored and the fault is cleared. Use the ON/RUN command of the AC drive, and check that the motor works normally.	

Step	Test	Result
6	When the motor is running, test the STO 1 channel signal: Set STO1 and STO2 to H. Start the AC drive and check that the motor runs normally. Enable the STO function by disconnecting (low state or open circuit) the STO 1 channel input signal. Make sure the motor stops, reset the fault and try to start the AC drive. Make sure the motor stays still and the AC drive display shows "E47.02".	
	The STO1 channel signal is restored and the fault is cleared. Use the ON/RUN command of the AC drive, and check that the motor works normally.	
	When the motor is running, test the STO 2 channel signal: Set STO1 and STO2 to H. Start the AC drive and check that the motor runs normally. Enable the STO function by disconnecting (low state or open circuit) the STO 2 channel input signal. Make sure the motor stops and the drive trips. Reset the fault and try to start the AC drive. Make sure the motor stays still and the AC drive display shows "E47.02".	
	The STO2 channel signal is restored and the fault is cleared. Use the ON/RUN command of the AC drive, and check that the motor works normally.	
7	Record and sign the acceptance test report to prove that the safety function is safe and the equipment can be put into operation.	

Special Requirements

To achieve SIL 3 performance level E (Cat3), the AC drive must be powered off every 3 months and powered on again for startup diagnosis.

4.7.6 Safety Function and Monitoring

Description of Safety Function

Safety torque off (STO) is a safety function that complies with IEC 61800-5-2:2016. This product is integrated with the STO function. The STO function disables the power semiconductor control signal at the drive output end to prevent the AC drive from generating torque at the motor shaft end. The STO function blocks the output of PWM signals to the power layer of the AC drive through external redundant hardware terminals STO1 and STO2, thus preventing the movement of the motor. These two + 24VDC signals must be active to enable normal operation of the AC drive. If either or both of them are at low level simultaneously, the PWM signal will be blocked in the next 20 ms.

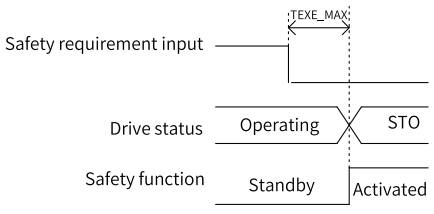


Figure 4-71 Safety function

Table 4–45 STO function

STO1 input	STO2 input	PWM signal
H	H	Normal
L	H	Disabled
H	L	Disabled
L	L	Disabled

Table 4–46 STO description

Item	Description
Definition	Used to cut off the power of the engine.
Description	The STO function enables the equipment to safely enter a torque-free state and prevents accidental start-up. If the STO function is activated when the motor is running, the motor gradually stops.
Safety state	Used to disable the PWM gating signal of the AC drive.
Operation mode	High requirements or continuous mode

Example of Safety Function

Direct stop with stop category 0 and STO

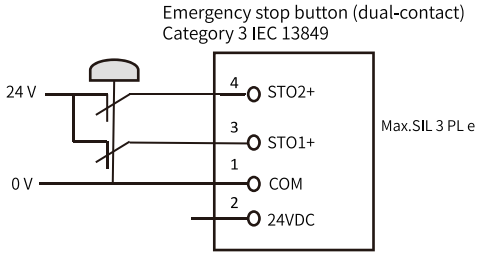


Figure 4-72 Example of safety function

Safety Function Monitoring

The LED display displays the selected mode, status, and fault code of the AC drive, as listed in the table below.

Table 4–47 Fault codes related to the STO function

Fault Code	State	Description
ST0	External request to activate the STO function	STO1/STO2 are all in the "Low" state.
E47.02	STO1/STO2 state inconsistent	Only one of STO1 and STO2 is in 'Low' state. The states of STO1 and STO2 are inconsistent.
E47.03	Activated STO diagnostic	OV/UV of 5 V power supply is detected.
E47.04	Activated STO diagnostic	The STO input circuit is abnormal.
E47.05	Activated STO diagnostic	The STO blocking output chip is abnormal.

Exiting the STO State

F9-13 can be set to select the safe state exiting mode when the AC drive enters the safety state through the STO function.

- When F9-13 is set to 0, the manual reset mode is used (default state).

When all the following conditions are met at the same time, the safety state can be cleared and the AC drive resumes normal operation.

1. The input state of STO must be "high" for both channels.
2. The AC drive is manually reset to clear the STO state.

- When F9-13 is set to 1, the automatic reset mode is used.
  When the following condition is met, the safety state can be cleared and the AC drive resumes normal operation.

  The input state of STO must be "high" for both channels.

4.7.7 Troubleshooting

See the following table for the causes and solutions of failures. If the problem cannot be solved through the solutions in the following table, contact the agent or Inovance for technical support.

Table 4–48 Fault causes and solutions

Fault Code	Possible Cause	Solution
ST0	STO1/STO2 is not connected to 24 V input voltage.	Connect STO1 and STO2 to 24 V input voltage signals.
E47.02	The input states of STO1 and STO2 are inconsistent.	1 Ensure that STO1 and STO2 voltage disconnection requests are triggered at the same time. 2 The input circuit is abnormal. After disconnecting the 24 V signal, an STO input signal is still in "High" state. In this case, contact the agent or Inovance for technical support.
E47.03	OV/UV of 5 V power supply is detected.	Recover the 5 V power supply to normal state. Contact the agent or Inovance for technical support.
E47.04	The STO input circuit is abnormal.	Contact the agent or Inovance for technical Support.
E47.05	The STO pre-charge circuit is faulty.	Contact the agent or Inovance for technical support.

4.7.8 Preventive Measures

This section describes the information required before starting operation. Before operation, read the following safety precautions, risk assessment information, and restriction information, and use the safety features only after you have properly understood all the information.

Safety Measures

Carefully read and observe the following important precautions when using safety features:

- The STO function is not a substitute for the emergency stop (E-stop) function. If no other measures are taken and the power supply cannot be cut off in case of emergency, the high voltage parts of motors and AC drives are still live, which brings the risk of electric shock or other risks caused by electricity. Therefore, the maintenance of electrical parts of the AC drives or motors can be implemented only after the AC drive system is isolated from the main power supply.
- STO may be used as an integral part of an E-stop system, depending on the standards and requirements for a particular application. However, it is mainly used for a dedicated safety control layout to prevent hazards, not as the E-stop function.

- An E-stop is often provided in a machine to enable the operators to take action to prevent accidents when they see a hazard in an unexpected situation.
- The design requirement for an E-stop differs from that of a safety interlock. Generally, the E-stop is required to be independent from any complex or intelligent control. It may use purely electromechanical devices to either disconnect the power or initiate a controlled rapid stop using other means such as dynamic or regenerative braking.

Note

When using a permanent-magnet motor, reluctance motor, or non-salient induction motor, there is a small possibility that a fault in the drive power stage could result in a momentary alignment torque in the motor, even if the STO function has been correctly activated. The drive system can produce an alignment torque which maximally rotates the motor shaft by up to 180° electrical, for a permanent magnet motor, or 90° electrical, for a non-salient pole induction motor or reluctance motor. This possible failure mode must be allowed for in the machine design.

The motor could rotate by a maximum of 360°/p (where p is the number of pole pairs).

The design of safety-related systems requires specialist knowledge. To ensure that a complete control system is safe， it is necessary for the whole system to be designed according to recognized safety principles. The use of individual sub-systems such as drives with Safe Torque Off functions, which are intended for safety-related applications, does not in itself ensure that the complete system is safe.

- In case of emergency stop, the STO function can be used to stop the AC drive. In normal operating mode, the STO function is not recommended to stop the AC drive. If the STO function is used to stop a running AC drive, the AC drive will stop gradually. If this is unacceptable, the system should use a correct mode to stop the AC drive rather than stopping the STO function.

The above safety precautions are the application guidance for the STO function, and also the design guidance for safety systems of mechanical control.

Note

It is the responsibility of the designer of the end product or application to ensure safety and compliance with relevant regulations.

Risk Assessment

- When the STO function is used, a risk assessment of the drive system must be carried out in advance to ensure compliance with the standard safety integrity level.
- Even when the STO function is in use, there may be some residual risks. Therefore, safety must always be considered when conducting risk assessment.
- The motor will rotate when external forces (such as gravity on the vertical axis) are applied during use of the STO function. A separate mechanical brake must be used to secure the motor.
- If the drive fails, the motor can work within 180°, ensuring safety even in dangerous situations.
- The number of revolutions and movement distance for each type of motor are listed as follows.
  - Maximum revolution of the rotating motor: 1/6 (rotation angle of motor shaft)
  - Maximum revolution of the traction motor: 1/20 (rotation angle of motor shaft)

- Maximum distance of the linear servo motor: 30 mm

4.8 Monitoring

The monitoring function enables you to view the AC drive state in the LED display area on the operating panel. You can monitor AC drive status in the following two ways:

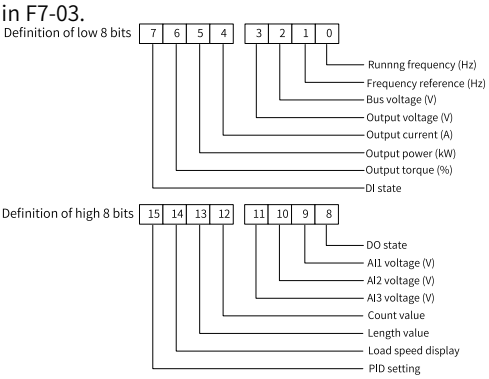
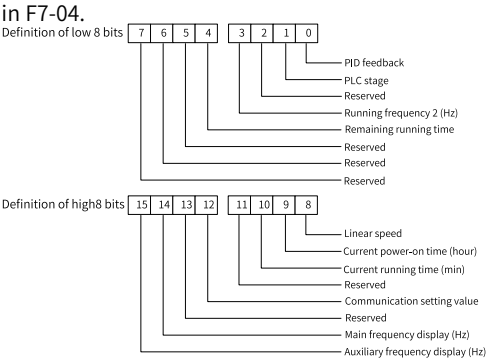
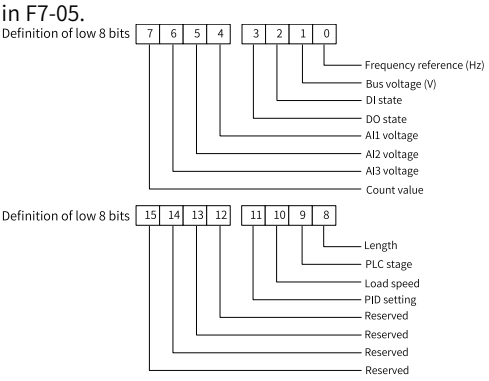
1. In the stop or running state, you can view multiple state parameters by pressing on the operating panel to switch between bytes of F7-03, F7-04, and F7-05.
   In the running state, 32 running state parameters are available. You can select whether to display a parameter by setting the corresponding binary bit of F7-03 (LED display 1 in running state) and F7-04 (LED display 2 in running state). In the stop state, 13 stop state parameters are available. You can select whether to display a parameter by setting the corresponding binary bit of F7-05 (LED display in stop state).

   For example, to view the running frequency, bus voltage, output voltage, output current, output power, and PID reference on the panel, perform the following operations:

   Set corresponding bits to 1 according to the mapping between each byte of F7-03 (LED display in running state) and the preceding parameters. Convert the binary number to a hexadecimal equivalent, and set the hexadecimal number in F7-03. For details about the conversion, see the following table. Then you can press on the operating panel and switch between bytes of F7-03 to view the related parameter values.

   You can view other monitoring parameters in the same way. The following table describes the mapping between the monitoring parameters and bytes of F7-03, F7-04, and F7-05.

Table 4–49 Mapping between monitoring parameters and bytes of F7-03, F7-04, and F7-05

Para. No.	Name	Default	Value Range	Description
F7-03	LED display 1 in running state	1F	0000 to FFFF	To display a parameter during running, set the corresponding bit to 1, convert the binary number to a hexadecimal equivalent, and set it in F7-03. 
F7-04	LED display 2 in running state	0	0000 to FFFF	To display a parameter during running, set the corresponding bit to 1, convert the binary number to a hexadecimal equivalent, and set it in F7-04. 
F7-05	LED display in stop state	33	0000 to FFFF	To display a parameter upon stop, set the corresponding bit to 1, convert the binary number to a hexadecimal equivalent, and set it in F7-05. 

Note

When the AC drive is powered on again after power-off, the parameters selected before power-off are displayed.

The monitoring parameters corresponding to each bit in F7-03, F7-04, and F7-05 do not completely correspond to all the monitoring parameters in group U0. If parameters to be monitored cannot be found in F7-03, F7-04 and F7-05, view them in group U0.

The following describes how to convert a binary number into a hexadecimal equivalent.

Divide the binary number into groups of 4 digits from right to left. Each digit group corresponds to a hexadecimal number. If the MSB is not the fourth bit, add 0s. Then, convert the divided binary bits into the decimal equivalent. 0000 to 1111 correspond to 0 to 15 in decimal and 0 to F in hexadecimal. Convert the decimal number into the hexadecimal equivalent according to the mapping between decimal and hexadecimal. (See the following table.)

For example, the binary number 011 1101 1111 1001 can be divided into 0011 1101 1111 1001. According to the following table, its hexadecimal equivalent is 3DF9.

Table 4–50 Converting a binary number into the hexadecimal equivalent

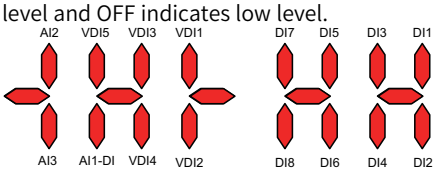
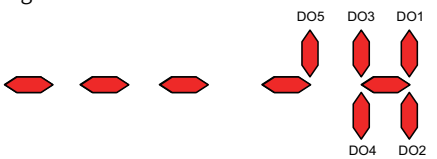
Binary	Decimal	Hexadecimal
1111	15	F
1110	14	E
1101	13	D
1100	12	C
1011	11	B
1010	10	A
1001	9	9
1000	8	8
111	7	7
110	6	6
101	5	5
100	4	4
11	3	3
10	2	2
1	1	1
0	0	0

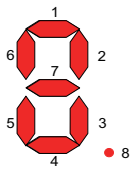
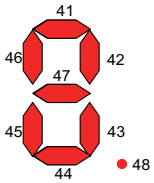
2. To view monitoring parameters, select group U0 on the operating panel. *"Table 4–51 Monitoring parameters in group U0" on page 541*The displayed monitoring parameters are read-only.

Table 4–51 Monitoring parameters in group U0

Para. No.	Name	Basic Unit	Value Range	Description
U0-00	Running frequency (Hz)	0.01 Hz	0.00 Hz to target frequency	Absolute value of the running frequency of the AC drive
U0-01	Frequency reference (Hz)	0.01 Hz	0.00 Hz to target frequency	Absolute value of the frequency reference of the AC drive
U0-02	Bus voltage (V)	0.1 V	0.0 V to 3000.0 V	Bus voltage of the AC drive
U0-03	Output voltage (V)	1 V	0 V to 1140 V	Output voltage of the AC drive during running
U0-04	Output current (A)	0.01 A	0.00 A to 655.35 A	Output current of the AC drive during running
U0-05	Output power (kW)	0.1 kW	0.0 kW to 3276.7 kW	Output power of the AC drive during running
U0-06	Output torque (%)	0.10%	–200.0% to +200.0%	Output torque of the AC drive during running. The percentage base is the rated motor torque.

Para. No.	Name	Basic Unit	Value Range	Description
U0-07	DI state	1	-	Input state of the DI terminal of the AC drive Bit0: DI1 Bit1: DI2 Bit2: DI3 Bit3: DI4 Bit4: DI5 Bit5: DI6 Bit6: DI7 Bit7: DI8 Bit8: VDI1 Bit9: VDI2 Bit10: VDI3 Bit11: VDI4 Bit12: VDI5 Bit13: AI1-DI Bit14: AI2-DI Bit15: AI3-DI
U0-08	DO/RO state	1	-	Output state of the DO/RO terminal of the AC drive Bit0: DO1/RO1 Bit1: DO2/RO2 Bit2: DO3/RO3 Bit3: DO4/RO4 Bit4: DO5/RO5
U0-09	AI1 voltage (V)	0.01 V	–10.00 V to 10.00 V	Voltage (V) of the current AI1
U0-10	AI2 voltage (V)	0.01 V	–10.00 V to 10.00 V	Voltage (V) of the current AI2
U0-11	AI3 voltage (V)	0.01 V	–10.00 V to 10.00 V	Voltage (V) of the current AI3
U0-12	Count value	1	1 to 65535	Count value in the count function
U0-13	Length value	1	1 to 65535	Length value in the fixed length function
U0-14	Load speed display	Defined by F8-63	0 to rated motor speed	Load speed
U0-15	PID reference	1	0 to 65535	PID reference = PID reference (percentage) x FA-04 (PID reference feedback range)
U0-16	PID feedback	1	0 to 65535	PID feedback = PID feedback (percentage) x FA-04 (PID reference feedback range)
U0-17	PLC stage	1	0 to 15	16 speeds in total
U0-19	Feedback speed (Hz)	0.01 Hz	0.00 Hz to maximum frequency	-
U0-20	Remaining runtime	0.1 min	0.0 min to 6500.0 min	Remaining runtime during timed running
U0-21	AI1 voltage after gain and offset	0.01 V	–10.00 V to 10.00 V	Voltage (V) of AI1 after gain and offset
U0-22	AI2 voltage after gain and offset	0.01 V	–10.00 V to 10.00 V	Voltage (V) of AI2 after gain and offset

Para. No.	Name	Basic Unit	Value Range	Description
U0-23	AI3 voltage after gain and offset	0.01 V	–10.00 V to 10.00 V	Voltage (V) of AI3 after gain and offset
U0-24	Linear speed	1 m/min	0 m/min to 65535 m/min	
U0-25	Current power-on time	1 min	0 min to 65000 min	Duration (min) from power-on to the current time
U0-26	Current running time	0.1 min	0.0 min to 6500.0 min	Duration (min) from power-on to the current time
U0-28	Communication	0.01%	–100.00% to 100.00%	Data written through the communication address 0x1000. The percentage base is determined by the value set in address 0x1000.
U0-30	Main frequency X display	0.01 Hz	0.00 Hz to 500.00 Hz	Main frequency (Hz) of the AC drive
U0-31	Auxiliary frequency Y display	0.01 Hz	0.00 Hz to 500.00 Hz	Auxiliary frequency (Hz) of the AC drive
U0-33	Synchronous motor rotor position	0.19°	0.0° to 359.9°	-
U0-35	Target torque	0.10%	–200.0% to +200.0%	Current torque upper limit. The percentage base is the rated motor torque.
U0-37	Power factor angle	0.1°	0.0° to 6553.5°	Current power factor angle
U0-39	Target voltage upon V/f separation	1 V	0 V to target voltage	Target output voltage in V/f separation mode
U0-40	Output voltage upon V/f separation	1 V	0 V to output voltage	Current actual output voltage in V/f separation mode
U0-41	DI state display	1	0 to 65535	State of the DI terminal: ON indicates high level and OFF indicates low level. 
U0-42	DO/RO state display	1	0 to 65535	State of the DO/RO terminal: ON indicates high level and OFF indicates low level. 

Para. No.	Name	Basic Unit	Value Range	Description
U0-43	DI function state display 1	1	0 to 65535	Validity of terminal functions 1 to 40. The operating panel has five LEDs, which indicate functions 1–8, 9–16, 17–24, 25–32, and 33–40 respectively from right to left. Each LED displays selection of eight functions, as shown in the following figure. ON indicates high level and OFF indicates low level. 
U0-44	DI function state display 2	1	0 to 65535	Validity of terminal functions 41 to 59. The operating panel has five LEDs, which indicate functions 41–48, 49–56, and 57–59 respectively from right to left. Each LED displays selection of eight functions, as shown in the following figure. ON indicates high level and OFF indicates low level. 
U0-45	Fault code	1	0 to 51	Fault code of the AC drive
U0-46	Fault subcode	1	0 to 51	Fault subcode of the AC drive
U0-47	Drive unit temperature	1°C	-20°C to 120°C	Heatsink temperature of the IGBT
U0-48	Voltage received through PTC channel 1	0.001 V	-	Voltage (V) received from the power supply unit when AI1 is used for temperature sensor input
U0-49	Voltage received through PTC channel 2	0.001 V	-	Voltage (V) received from the power supply unit when AI2 is used for temperature sensor input
U0-50	Voltage received through PTC channel 3	0.001 V	-	Voltage (V) received from the power supply unit when AI3 is used for temperature sensor input
U0-51	PTC1 temperature	1°C	-	Temperature (°C) calculated when AI1 is used for temperature sensor input
U0-52	PTC2 temperature	1°C	-	Temperature (°C) calculated when AI2 is used for temperature sensor input
U0-53	PTC3 temperature	1°C	-	Temperature (°C) calculated when AI3 is used for temperature sensor input
U0-54	Motor speed	1 RPM	-	Current motor speed (RPM)
U0-55	Station number auto allocated	1	-	Station number that is automatically assigned

Para. No.	Name	Basic Unit	Value Range	Description
U0-56	Identified axis type	1	1 to 3	Axis type identified by the AC drive 1: Single axis 2: Dual-axis 1 3: Dual-axis 2
U0-57	Reserved	-	-	-
U0-61	AC drive operation status word 1	1	-	AC drive operation status word 1 1: Forward running 2: Reverse running 3: Stop 4: Auto-tuning 5: Faulty
U0-64	Special protocol status word	1	-	AC drive operation status word 2 Bit1 to Bit0: Running status Bit2: Jog enabled or not Bit4 to Bit3: Running direction state Bit3 to Bit7: Reserved Bit8: Main frequency set by communication Bit9: Main frequency set by AI Bit10: Command source from communication Bit11 to Bit15: Reserved
U0-68	AC drive operation status word 2	1	-	AC drive operation status word 2 Bit0: Running status Bit1: Forward/Reverse state Bit2: Whether a fault occurs Bit3: Whether the output frequency reaches the frequency reference Bit4: Communication normal flag Bit5 to Bit7: Reserved Bit8 to Bit15: Fault code
U0-78	AC drive rated current	0.1 A	0.0 A to AC drive rated current	Rated current (A) of the AC drive
U0-79	AC drive power	0.1 kW	0.0 kW to rated AC drive power	Rated power (kW) of the AC drive
U0-81	Local LED status	1	-	LED status of the drive unit Bit0: RUN indicator Bit1: Fault indicator
U0-88	Alarm code	1	-	Alarm code of the AC drive
U0-89	Alarm subcode	1	-	Alarm subcode of the AC drive
U0-90	Fan speed percentage reference	1%	-	Current speed reference of the fan

Para. No.	Name	Basic Unit	Value Range	Description
U0-91	PTC1 mode	1	-	AI1 input type 0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PT130 input
U0-92	PTC2 mode	1	-	AI2 input type 0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PT130 input
U0-93	PTC3 mode	1	-	AI3 input type 0: Voltage input 1: Current input 2: PT100 input 3: PT1000 input 4: KTY84 input 5: PT130 input
U0-95	STO initialization flag	1	-	STO initialization flag 0: Initialization failed 1: Initialization succeeded
U0-96	STO status word monitoring	1	-	STO internal status word monitoring
U0-97	STO model	1	-	Flag used for identifying STO models 0: Non-STO model 1: STO model
U0-98	STO AD sampling value	1	-	AD value of the supply voltage of the STO circuit
U0-99	STO internal execution flag	1	-	Execution flag of the STO internal detection program

4.9 User Configuration

4.9.1 Local Parameter Backup

The local parameter backup function is set in FP-06 and FP-07 of the power supply unit. The operating panel displays "-CPY-" during parameter backup. When the set AC drive axis number does not exist or the power supply unit has a communication exception during backup, the AC drive reports E32.00.

Related Parameters

Para. No.	Name	Default	Value Range	Description
FP-06	Local parameter backup mode	1	0: Back up all parameters 1: Back up non-motor parameters	Parameters to be backed up
FP-07	Local parameter backup operation	0	Ones: Axis number 1 to 8 Tens: Backup operation 1: Read 2: Write	Axis (1 to 8) to be backed up and backup type

4.9.2 User-defined Parameters

Group FE consists of user-defined parameters (FE-00 to FE-29). Users can define commonly used parameters for easier check and modification. Up to 30 user-defined parameters are supported.

If F0.00 is displayed, the corresponding user-defined parameter is empty. In the user-defined parameter mode, the displayed parameters are defined by FE-00 to FE-31, and the sequence is consistent with that in group FE. The parameters are skipped if the displayed value is F0.00.

Related Parameters

Para. No.	Name	Default	Value Range	Description
FP-03	Display of user parameters	11	Ones: Display of user-defined parameter group 0: Hide 1: Display Tens: Display of user-modified parameter group 0: Hide 1: Display	-

Para. No.	Name	Default	Value Range	Description
FE-00	User-defined parameter 0	F0-01	F0-00 to FP-xx A0-00 to Ax-xx U0-xx to U0-xx U3-00 to U3-xx	-
FE-01	User-defined parameter 1	F0-02		-
FE-02	User-defined parameter 2	F0-03		-
FE-03	User-defined parameter 3	F0-07		-
FE-04	User-defined parameter 4	F0-08		-
FE-05	User-defined parameter 5	F0-17		-
FE-06	User-defined parameter 6	F0-18		-
FE-07	User-defined parameter 7	F3-00		-
FE-08	User-defined parameter 8	F3-01		-
FE-09	User-defined parameter 9	F4-00		-
FE-10	User-defined parameter 10	F4-01		-
FE-11	User-defined parameter 11	F4-02		-
FE-12	User-defined parameter 12	F5-04		-
FE-13	User-defined parameter 13	F5-07		-
FE-14	User-defined parameter 14	F6-00		-
FE-15	User-defined parameter 15	F6-10		-
FE-16	User-defined parameter 16	F0-00		-
FE-17	User-defined parameter 17	F0-00		-
FE-18	User-defined parameter 18	F0-00		-
FE-19	User-defined parameter 19	F0-00		-
FE-20	User-defined parameter 20	F0-00		-
FE-21	User-defined parameter 21	F0-00		-
FE-22	User-defined parameter 22	F0-00		-
FE-23	User-defined parameter 23	F0-00		-
FE-24	User-defined parameter 24	F0-00		-
FE-25	User-defined parameter 25	F0-00		-
FE-26	User-defined parameter 26	F0-00		-
FE-27	User-defined parameter 27	F0-00		-
FE-28	User-defined parameter 28	F0-00		-
FE-29	User-defined parameter 29	F0-00		-

4.9.3 Hibernation and Wakeup

The hibernation function is also known as the sleep function. When the frequency reference is lower than or equal to the hibernation frequency (F8-56) during running, the AC drive enters the hibernation state and coasts to stop after the hibernation delay (F8-57) elapses.

Parameters related to the hibernation and wakeup function include the wakeup frequency, hibernation frequency, and hibernation time. Generally, the wakeup frequency (F8-54) should be higher than or equal to the hibernation frequency (F8-56). The hibernation and wakeup function is disabled if both the wakeup frequency and hibernation frequency are set to 0.00 Hz.

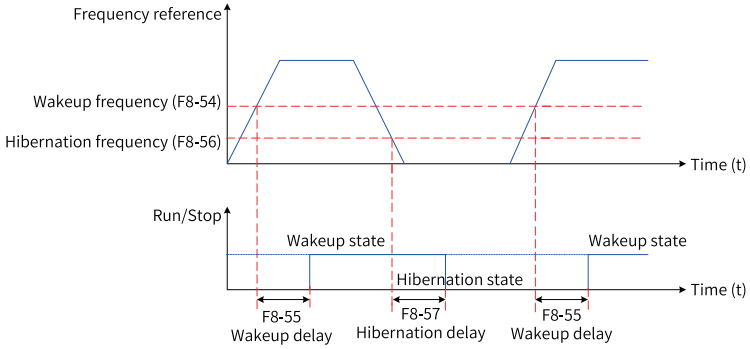


Figure 4-73 Hibernation and wakeup

Related Parameters

Para. No.	Name	Default	Value Range	Description
F8-54	Wakeup frequency	0.00 Hz	Hibernation frequency (F8-56) to maximum frequency (F0-10)	In hibernation state, when the frequency reference is equal to or higher than F8-54 (wakeup frequency) and the current running command is valid, the AC drive starts directly after the delay set by F8-55 (wakeup delay) elapses.
F8-55	Wakeup delay	0.0s	0.0s to 6500.0s	
F8-56	Hibernation frequency	0.00 Hz	0.00 Hz to wakeup frequency (F8-54)	When the frequency reference is lower than or equal to F8-56 (hibernation frequency) during running, the AC drive enters the hibernation state and coasts to stop after the time defined by F8-57 (hibernation delay) elapses.
F8-57	Hibernation delay	0.0s	0.0s to 6500.0s	

4.9.4 Current Running Time Threshold

Para. No.	Name	Default	Value Range	Description
F8-58	Current running time threshold	0.0 min	0.0 min to 6500.0 min	When the current running duration reaches the value of F8-58, the DO terminal outputs an active signal. Only the current running duration counts. The previous running duration is not included.
F8-60	Deceleration time for emergency stop	Model dependent	0.0s to 6500.0s	F8-60 is added to define the emergency stop deceleration time. The AC drive decelerates according to the set deceleration time when the terminal emergency stop function is triggered. When the deceleration time is 0s in V/f mode, the AC drive decelerates according to the minimum unit time.

List of Fault Codes

The following faults may occur during the use of the AC drive. Troubleshoot the faults according to the solutions described in the following table.

Table –52 Fault codes

Fault Name	Display	Possible Cause	Solution	Fault Type
STO product model identification error	E01.06	The hardware is faulty.	Check the AC drive nameplate to confirm whether the AC drive has the STO function. If not, contact the technical support personnel.	Axis fault
AC drive axis type identification setting error	E01.07	The hardware is faulty.	Check the AC drive nameplate to confirm the axis type (single-axis or dual-axis) of the AC drive.	Axis fault
Overcurrent during acceleration	E02.04	1 A grounding fault or short circuit exists in the output circuit of the AC drive. 2 The SVC control mode is adopted, and motor auto-tuning is not performed. 3 The set acceleration time is too short. 4 The overcurrent stall suppression setting is improper. 5 The customized torque boost or V/f curve is improper. 6 The motor is started while rotating. 7 The AC drive suffers external interference.	1 Check the motor and the relay contactor and make sure that they are not short-circuited. 2 Set the motor parameters according to the motor nameplate and perform motor auto-tuning. 3 Increase the acceleration time (F0-17). 4 Ensure that overcurrent stall suppression (F3-19) is enabled.The overcurrent stall action current (F3-18) is too high. Adjust it to a value between 120% and 160%.The overcurrent stall suppression gain (F3-20) is too low. Adjust it to a value between 20 and 40. 5 Adjust the customized torque boost or V/f curve. 6 Enable the flying start function or start the AC drive after the motor stops. 7 Check whether the fault current reaches the overcurrent stall suppression current (F3-18) by viewing the fault log. If not, the fault is possibly caused by external interference. In this case, find out the external interference source and rectify the fault.If no external interference source is found, the drive board or Hall device may be faulty. In this case, contact the manufacturer for replacement.	Axis fault
	E02.05			Axis fault
	E02.06			Axis fault

Fault Name	Display	Possible Cause	Solution	Fault Type
Overcurrent during deceleration	E03.04	1 A grounding fault or short circuit exists in the output circuit of the AC drive. 2 The SVC control mode is adopted, and motor auto-tuning is not performed. 3 The set deceleration time is too short. 4 The overcurrent stall suppression setting is improper. 5 The power supply unit is not provided with a braking unit and no braking resistor is installed. 6 The AC drive suffers external interference.	1 Check the motor and make sure that the motor is not short-circuited or open-circuited. 2 Set the motor parameters according to the motor nameplate and perform motor auto-tuning. 3 Increase the deceleration time (F0-18). 4 Ensure that overcurrent stall suppression (F3-19) is enabled.The overcurrent stall action current (F3-18) is too high. Adjust it to a value between 120% and 150%.The overcurrent stall suppression gain (F3-20) is too low. Adjust it to a value between 20 and 40. 5 Replace the power supply unit with one that has a braking unit and install a braking resistor. 6 Check whether the fault current reaches the overcurrent stall suppression current (F3-18) by viewing the fault log. If not, the fault is possibly caused by external interference. In this case, find out the external interference source and rectify the fault.If no external interference source is found, the drive board or Hall device may be faulty. In this case, contact the manufacturer for replacement.	Axis fault
	E03.05			Axis fault
	E03.06			Axis fault
Overcurrent at constant speed	E04.04	1 A grounding fault or short circuit exists in the output circuit of the AC drive. 2 The SVC control mode is adopted, and motor auto-tuning is not performed. 3 The overcurrent stall suppression setting is improper. 4 The AC drive power rating is too low. 5 The AC drive suffers external interference.	1 Check the motor and make sure that the motor is not short-circuited or open-circuited. 2 Set the motor parameters according to the motor nameplate and perform motor auto-tuning. 3 Ensure that overcurrent stall suppression (F3-19) is enabled.The overcurrent stall action current (F3-18) is too high. Adjust it to a value between 120% and 150%.The overcurrent stall suppression gain (F3-20) is too low. Adjust it to a value between 20 and 40. 4 During stable running, if the running current exceeds the rated motor current or rated output current of the AC drive, replace the AC drive with one of higher power rating. 5 Check whether the fault current reaches the overcurrent stall suppression current (F3-18) by viewing the fault log. If not, the fault is possibly caused by external interference. In this case, find out the external interference source and rectify the fault.If no external interference source is found, the drive board or Hall device may be faulty. In this case, contact the manufacturer for replacement.	Axis fault
	E04.05			Axis fault
	E04.06			Axis fault

Fault Name	Display	Possible Cause	Solution	Fault Type
Overvoltage during acceleration	E05.00	The input grid voltage is too high.	Adjust the input grid voltage to the normal range.	Axis fault
		An external force drives the motor during acceleration.	Cancel the external force or install a braking resistor. The maximum rise frequency during overvoltage stall suppression (F3-26) is too low. Adjust it to a value between 5 Hz and 15 Hz when an external force is applied.	
		The overvoltage stall suppression parameters are set improperly.	Ensure that the overvoltage stall suppression function (F3-23) is enabled. The overvoltage stall suppression voltage (F3-22) is too high. Adjust it to a value between 700 V and 770 V. The overvoltage stall suppression frequency gain (F3-24) is too low. Adjust it to a value between 30 and 50.	
		The power supply unit is not provided with a braking unit and no braking resistor is installed.	Replace the power supply unit with one that has a braking unit and install a braking resistor.	
		The acceleration time is too short.	Increase the acceleration time (F0-17).	
Overvoltage during deceleration	E06.00	The overvoltage stall suppression parameters are set improperly.	Ensure that the overvoltage stall suppression function (F3-23) is enabled. The overvoltage stall suppression voltage (F3-22) is too high. Adjust it to a value between 700 V and 770 V. The overvoltage stall suppression frequency gain (F3-24) is too low. Adjust it to a value between 30 and 50.	Axis fault
		An external force drives the motor during deceleration.	Cancel the external force or install a braking resistor. The maximum rise frequency during overvoltage stall suppression (F3-26) is too low. Adjust it to a value between 5 Hz and 15 Hz when an external force is applied.	
		The deceleration time is too short.	Increase the deceleration time (F0-18).	
		The power supply unit is not provided with a braking unit and no braking resistor is installed.	Replace the power supply unit with one that has a braking unit and install a braking resistor.	

Fault Name	Display	Possible Cause	Solution	Fault Type
Overvoltage at constant speed	E07.00	The overvoltage stall suppression parameters are set improperly.	Ensure that the overvoltage stall suppression function (F3-23) is enabled. The overvoltage stall suppression voltage (F3-22) is too high. Adjust it to a value between 700 V and 770 V. The overvoltage stall suppression frequency gain (F3-24) is too low. Adjust it to a value between 30 and 50.	Axis fault
		An external force drives the motor during running.	Cancel the external force or install a braking resistor. The maximum rise frequency during overvoltage stall suppression (F3-26) is too low. Adjust it to a value between 5 Hz and 15 Hz when an external force is applied.	
	E07.01	The bus voltage of the single-phase AC drive is too high.	Check whether the bus voltage of the single-phase AC drive exceeds 410.0 V.	Axis fault
Undervoltage	E09.00	An instantaneous power failure occurs.	Enable the power dip ride-through function (F9-63).	Axis fault
		The input voltage of the AC drive is beyond the specified range.	Adjust the input voltage of the AC drive to the normal range.	
		The bus voltage is abnormal.	Contact the technical support personnel.	
		The power supply unit, the drive board of the drive unit, or the control board of the drive unit is abnormal.	Contact the technical support personnel.	
AC drive overload	E10.00	The load is too heavy or motor stalling occurs.	Reduce the load and check the motor and mechanical conditions.	Axis fault
		The AC drive power rating is too low.	Replace the AC drive with one of higher power rating.	
		The SVC control mode is adopted, and motor auto-tuning is not performed.	Set the motor parameters according to the motor nameplate and perform motor auto-tuning.	
		The control mode is V/f control.	Reduce the torque boost (F3-01) reference in decrements of 1.0%, or set it to 0 (auto torque boost).	
Motor overload	E11.00	F9-01 (motor overload protection gain) is set improperly.	Set F9-01 correctly. Increase its value to prolong the motor overload time.	Axis fault
		The load is too heavy or motor stalling occurs.	Reduce the load and check the motor and mechanical conditions.	

Fault Name	Display	Possible Cause	Solution	Fault Type
Input voltage exception	E12.01	Input voltage phase loss	Check the three-phase power supply and make sure that it is normal. Check the input cables and make sure that they are not broken. Check the input terminals and make sure that they are properly connected.	Power supply unit fault
	E12.04	The input three-phase voltage is too high.	Ensure that the input voltage does not exceed the rated value: Three-phase 380 V models: 576 V Single-phase 220 V models: 288 V	Power supply unit fault
Output phase loss	E13.00	The motor is faulty.	Check the motor for open circuit.	Axis fault
		The cable connecting the AC drive and the motor is abnormal.	Check the cable between the AC drive and the motor.	
		The three-phase outputs of the AC drive are unbalanced when the motor is running.	Check whether the motor three-phase winding is normal. If not, eliminate the fault.	
		The drive board or the IGBT is abnormal.	Contact the technical support personnel.	
IGBT overheat	E14.00	The ambient temperature is too high.	Lower the ambient temperature.	Power supply unit fault
		The air filter is blocked.	Clean the air filter.	
		The fan is damaged.	Replace the fan.	
		The thermistor of the IGBT is damaged.	Contact the technical support personnel.	
		The IGBT is damaged.	Contact the technical support personnel.	
External device fault	E15.01	An external fault signal is input through multi-functional DI (NO).	Eliminate the external fault, ensure that the mechanical condition allows restart (F8-21), and reset the operation.	Axis fault
	E15.02	An external fault signal is input through the multi-functional DI (NC).	Eliminate the external fault, ensure that the mechanical condition allows restart (F8-21), and reset the operation.	Axis fault

Fault Name	Display	Possible Cause	Solution	Fault Type
Communication fault	E16.01	Modbus communication timeout	Check whether the Modbus master sends data within the set timeout period. Check whether the RS485 circuit is disconnected or suffers interference.	Axis fault
	A16.02	The protective cover for the connector is not installed.	Install the protective cover on the connector of the rightmost drive unit.	Axis fault
	E16.03	Station number allocation fails.	Power on all equipment. If the fault persists, replace the AC drive.	Axis fault
	E16.04	Continuous frame loss occurs on the extension card.	Ensure that the extension card is connected properly. Check whether F9-67 is set too low.	Axis fault
	E16.11	CANopen communication timeout	EtherCAT is disconnected. Make sure that the CAN communication cable is connected properly. Check parameters Fd-15 to Fd-17 to eliminate possible interference.	Axis fault
	E16.12	The PDO mapping configured by CANopen is inconsistent with the actual communication mapping.	The EtherCAT mapping is inconsistent with the PDO mapping. Check the PDO mapping parameters in group AF to make sure that the PDO configuration is correct.	Axis fault
	E16.13	Data exchange from the power supply unit to the drive unit times out.	Check whether the power supply unit works properly. If the power supply unit is faulty, contact the technical support personnel.	Axis fault
	E16.14	Data exchange from the power supply unit to the drive unit is abnormal.	The power supply unit is faulty. Contact the technical support personnel.	Axis fault
	E16.21	CANlink heartbeat times out.	Check that the CAN communication cable is correctly connected. Check parameters Fd-15 to Fd-17 to eliminate possible interference.	Axis fault
	E16.22	A CANlink station number conflict occurs.	Change duplicate CAN station numbers in the network to different ones by using Fd-13.	Axis fault
	E16.52	The EEPROM of the EtherCAT communication card is faulty.	1 If the programming or upgrading of the communication card fails, program the communication card again. 2 If this fault occurs during normal use, replace the communication card.	Axis fault
	E16.53	The slave control chip of the EtherCAT communication card is faulty.	1 If the programming or upgrading of the communication card fails, program the communication card again. 2 If this fault occurs during normal use, replace the communication card.	Axis fault
	E16.55	The EtherCAT system parameters are incorrect.	When the master station goes wrong, check whether it sends the sync frame (FD-78). If not, make sure that TPDO and RPDO have been configured for the master PDO. If the master PDO is configured correctly, check the network port status (Fd-72 to Fd-77) and make sure that the communication cable is connected properly.	Axis fault
	E16.71	The master station goes offline during operation of the communication card.	Check whether the connection between the communication card and PLC is in poor contact. Make sure that they are properly connected.	Axis fault
		The internal slave station	Check whether the connection between the	

Fault Name	Display	Possible Cause	Solution	Fault Type
Motor auto-tuning fault	E19.02 E19.04	Auto-tuning on the synchronous motor magnetic pole position angle fails.	Check whether the motor is disconnected or output phase loss occurs.	Axis fault
	E19.05	Auto-tuning on the synchronous motor magnetic pole initial position angle fails.	Increase the synchronous motor initial position angle detection current (F2-29).	Axis fault
	E19.06 E19.07 E19.08	Auto-tuning on the stator resistance fails.	Ensure that the motor is connected properly. Ensure that the rated motor current (F1-03) is set according to the motor nameplate.	Axis fault
	E19.09 E19.10	Auto-tuning on the asynchronous motor transient leakage inductance fails.	The motor is not connected or output phase loss occurs. Ensure that the motor is connected properly or the motor is disconnected from the load.	Axis fault
	E19.12	The auto-tuning times out.	The motor is not connected or output phase loss occurs. Ensure that the motor is connected properly or the motor is disconnected from the load.	Axis fault
	E19.13			Axis fault
	E19.14			Axis fault
	E19.15			Axis fault
	E19.16			Axis fault
	E19.17			Axis fault
	E19.19			Axis fault
	E19.20	Auto-tuning on the zero position angle of the no-load synchronous motor times out.	Check the Z feedback signal.	Axis fault
	E19.22			Axis fault
	E19.23	Auto-tuning on the synchronous motor pole position fails.	Ensure that the rated motor current (F1-03) is set according to the motor nameplate. Decrease the synchronous motor initial position angle detection current (F2-29).	Axis fault
	E19.24	Auto-tuning on the asynchronous motor transient leakage inductance fails.	The AC drive power rating is too low. Select an AC drive of proper power rating according to the motor power.	Axis fault
EEPROM read-write fault	E21.01	EEPROM read-write is abnormal.	For parameters written to EEPROM through communication, check the RAM addresses of the parameters. For the RAM address mapping of parameters, see "Parameter Address Rules". If the EEPROM chip is damaged, contact the manufacturer to replace the main control board.	Axis fault
	E21.02			Axis fault
	E21.03			Axis fault
	E21.04			Axis fault

Fault Name	Display	Possible Cause	Solution	Fault Type
Motor auto-tuning error	E22.00	The stator resistance obtained through auto-tuning exceeds the allowed range.	Check whether the rated motor voltage and current are correctly set, and set F1-02 (rated motor voltage) and F1-03 (rated motor current) according to the motor nameplate. Perform auto-tuning after the motor stops.	Axis fault
	E22.01	The rotor resistance of the asynchronous motor obtained through auto-tuning exceeds the allowed range.		Axis fault
	E22.02	The no-load current and mutual inductance of the asynchronous motor obtained through auto-tuning exceed the allowed range. If such an alarm is generated, the AC drive calculates no-load current and mutual inductance based on known parameters, which may be different from the optimal values.	Set motor parameters in group F1 according to the motor nameplate. Before auto-tuning, ensure that the motor has no load.	Axis fault
	E22.03	The back EMF of the synchronous motor obtained through auto-tuning exceeds the allowed range.	Ensure that the rated motor voltage (F1-02) is set according to the motor nameplate. Before auto-tuning, ensure that the motor has no load.	Axis fault

Fault Name	Display	Possible Cause	Solution	Fault Type
Short circuit to ground	E23.00	The motor is short circuited to the ground.	Check the motor cables and motor for short circuit to ground.	Axis fault
	E23.01	A hardware overcurrent fault occurs during short-to-ground detection upon power-on.		
	E23.02	A hardware overvoltage fault occurs during short-to-ground detection upon power-on.		
	E23.03	A great risk is detected during short-to-ground detection upon power-on.		
	E23.04	A lower bridge overcurrent fault occurs during short-to-ground detection before startup.		
	E23.05	A bus overcurrent fault occurs during short-to-ground detection before startup.		
	E23.06	A lower bridge and bus overcurrent fault occurs during short-to-ground detection before startup.		
Power supply unit fault	E25.00	The power supply unit is faulty.	Eliminate the power supply unit faults, such as input phase loss and overtemperature. Check the terminal configuration of the power supply unit. If any one of the following functions is selected, a fault is reported when there is no feedback signal: 1: Operation enable 2: Incoming circuit breaker feedback 3: Auxiliary circuit breaker feedback 4: Residual current device feedback If any one of the following functions is selected, a fault is reported when the terminal is active: 6: Drive unit running prohibited 7: Drive unit coast-to-stop 8: Drive unit stop according to the preset mode	Axis fault
Accumulative running time reach	E26.00	The accumulative running time reaches the reference.	Clear the record through parameter initialization.	Axis fault

Fault Name	Display	Possible Cause	Solution	Fault Type
User-defined fault 1	E27.00	The signal of user-defined fault 1 is input through the multi-functional DI terminal. The signal of user-defined fault 1 is input through virtual I/O.	Reset.	Axis fault
User-defined fault 2	E28.00	The signal of user-defined fault 2 is input through the multi-functional DI terminal. The signal of user-defined fault 2 is input through virtual I/O.	Reset.	Axis fault
Accumulative power-on time reach	E29.00	The accumulative power-on time reaches the reference.	Clear the record through parameter initialization.	Axis fault
Load loss	E30.00	The running current of the AC drive is lower than that set by F9-68.	Check whether the load is disconnected or the setting of F9-68 and F9-69 satisfies actual running conditions.	Axis fault
PID feedback loss during running	E31.00	The PID feedback is lower than that set by FA-26.	Check the PID feedback signal or set FA-26 properly.	Axis fault
Local parameter backup failure	E32.00	An exception occurs during local parameter backup.	Check whether the backed-up drive unit station numbers exceeds the quantity of drive units installed.	Power supply unit fault
Excessive speed deviation	E42.00	Motor auto-tuning is not performed.	Perform motor auto-tuning.	Axis fault
		F9-73 and F9-74 are set incorrectly.	Set F9-73 and F9-74 correctly based on actual conditions.	Axis fault
Motor overtemperature	E45.00	The temperature sensor is connected loosely.	Check the temperature sensor connection. Re-connect the temperature sensor if necessary.	Axis fault
		The motor temperature is too high.	Increase the carrier frequency or take other heat dissipation measures to cool the motor.	Axis fault
		The motor overtemperature protection thresholds (F9-57, F9-59, and F9-61) are too low.	Increase the motor overtemperature protection thresholds (90°C to 100°C for common motors).	Axis fault

Fault Name	Display	Possible Cause	Solution	Fault Type
STO fault	STO	STO1 and STO2 signals are disconnected simultaneously.	Check the wiring of STO1 and STO2.	Axis fault
	E47.02	STO1 and STO2 signals are disconnected separately.	Check the wiring of STO1 and STO2.	Axis fault
	E47.03	Undervoltage or overvoltage occurs on the STO circuit.	Contact the technical support personnel.	Axis fault
	E47.04	The STO circuit input subsystem is abnormal.	Contact the technical support personnel.	Axis fault
	E47.05	The STO blocking output chip is abnormal.	Contact the technical support personnel.	Axis fault
Braking unit fault	E61.01	The braking transistor is short-circuited at stop.	Check whether the resistance and power of the braking resistor are too low. Check whether the braking resistor is short-circuited.	Power supply unit fault
	E61.02	Braking transistor open circuit occurs.	Contact the technical support personnel.	Power supply unit fault
	E61.03	The braking transistor is short-circuited during running.	Check whether the resistance and power of the braking resistor are too low. Check whether the braking resistor is short-circuited.	Power supply unit fault
Fan fault	E80.00	The fan is faulty.	Ensure that the fan on the drive unit is connected properly. Ensure that the fan rotates freely.	Axis fault

Fault Name	Display	Possible Cause	Solution	Fault Type
Hardware I/O resource loss	A99.01	The selected DI hardware resource does not exist.	Ensure that the power supply unit and extension cards are firmly installed. Check parameters F4-00 to F4-15 of the drive unit to ensure that no non-existing DI hardware resource is selected.	Axis fault
	A99.02	The selected DO/RO hardware resource does not exist.	Ensure that the power supply unit and extension cards are firmly installed. Check the DO/RO hardware resources of the drive unit to ensure that no non-existing DO/RO hardware resource is selected.	Axis fault
	A99.03	The selected AI hardware resource does not exist.	Ensure that the power supply unit and extension cards are firmly installed. Check parameters F4-25 to F4-29 of the drive unit to ensure that no non-existing AI hardware resource is selected.	Axis fault
	A99.04	The selected DI and DO/RO hardware resources do not exist.	Ensure that the power supply unit and extension cards are firmly installed. Check the drive unit according to the solutions to A99.01 and A99.02.	Axis fault
	A99.05	The selected DI and AI hardware resources do not exist.	Ensure that the power supply unit and extension cards are firmly installed. Check the drive units according to the troubleshooting measures for A99.01 and A99.03.	Axis fault
	A99.06	The selected DO/RO and AI hardware resources do not exist.	Ensure that the power supply unit and extension cards are firmly installed. Check the drive units according to the troubleshooting measures for A99.02 and A99.03.	Axis fault
	A99.07	The selected DI, DO/RO, and AI hardware resources do not exist.	Ensure that the power supply unit and extension cards are firmly installed. Check the drive unit according to the solutions to A99.01, A99.02, and A99.03.	Axis fault

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