



# HD30-ES/ES1 Series

## Escalator Controller

User Manual

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V1.2 2019.06

## **FOREWORD**

Thank you for purchasing HD30-ES/ES1 series escalator controller manufactured by Shenzhen Hpmont Technology Co., Ltd.

This User Manual introduces HD30-ES/ES1 controller's installation wiring, parameter setting, commissioning guide, troubleshooting and daily maintenance etc. Before using the product, please read through this User Manual carefully.

Please use this manual together with the User Manual of HD30 Series Vector Control Inverter.

## Version and Revision Records

Time: 2019/6

Version: V1.2

Revised chapter	Revised contents
	<ul style="list-style-type: none"><li data-bbox="277 355 658 375">• The product name changed to Escalator Controller</li></ul>

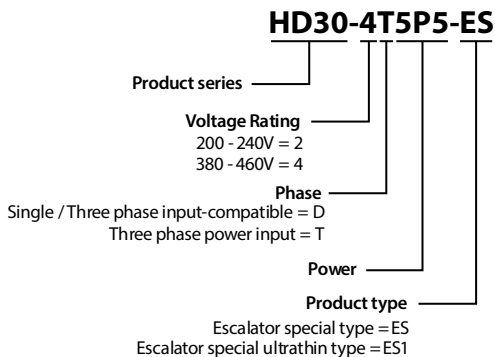
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## Chapter 1 Product Information

### 1.1 Model



### 1.2 Rated Value

The details of external dimension, please refer to section 1.3 Dimensions and Weight, on page 2.

Model	Motor (kW)	Rated Capacity (kVA)	Rated Input Current (A)	Rated Output Current (A)	Size
<b>HD30-ES series</b>					
HD30-2T3P7-ES	3.7	5.9	19	17	F2
HD30-2T5P5-ES	5.5	8.5	28	25	F3
HD30-2T7P5-ES	7.5	11	35	32	F4
HD30-2T011-ES	11	16	47	45	F5
HD30-2T015-ES	15	21	62	55	F5
HD30-2T018-ES	18.5	24	77	70	F5
HD30-2T022-ES	22	30	92	80	F6
HD30-2T030-ES	30	39	113	110	F6
HD30-2T037-ES	37	49	156	130	F6
HD30-4T2P2-ES	2.2	3.4	7.3	5.1	F1
HD30-4T3P7-ES	3.7	5.9	11.9	9.0	F2
HD30-4T5P5-ES	5.5	8.5	15	13	F2
HD30-4T7P5-ES	7.5	11	19	17	F3
HD30-4T011-ES	11	16	28	25	F3
HD30-4T015-ES	15	21	35	32	F4
HD30-4T018-ES	18.5	24	39	37	F4
HD30-4T022-ES	22	30	47	45	F5
HD30-4T030-ES	30	39	62	60	F5
HD30-4T037-ES	37	49	77	75	F6
HD30-4T045-ES	45	59	92	90	F6

Model	Motor (kW)	Rated Capacity (kVA)	Rated Input Current (A)	Rated Output Current (A)	Size
HD30-4T055-ES	55	72	113	110	F6
HD30-4T075-ES	75	100	156	152	F7
HD30-4T090-ES	90	116	180	176	F7
HD30-4T110-ES	110	138	214	210	F7

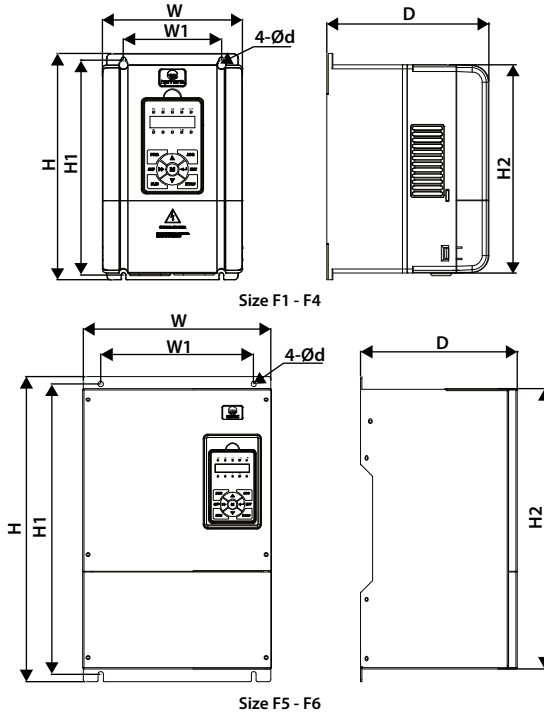
**HD30-ES1 series**

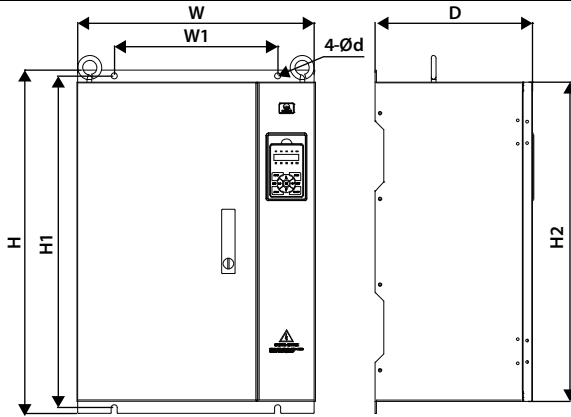
HD30-2D5P5-ES1	5.5	8.5	60 / 28 <sup>(1)</sup>	25	FA
HD30-2T7P5-ES1	7.5	11	35	32	
HD30-4T5P5-ES1	5.5	8.5	15	13	
HD30-4T7P5-ES1	7.5	11	19	17	
HD30-4T011-ES1	11	16	28	25	
HD30-4T015-ES1	15	21	35	32	

(1): Value before / is for single-phase model, value after / is for three-phase model.

### 1.3 Dimensions and Weight

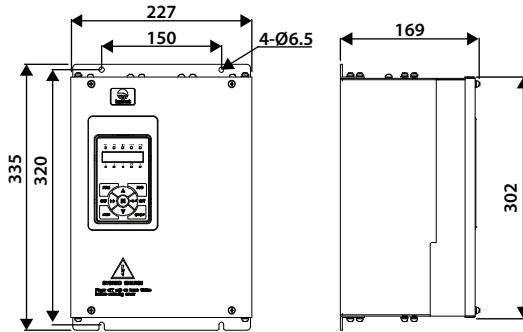
HD30-ES (2.2 - 110kW) corresponding mode of size, please refer to section 1.2 Rated Value, page 1, The dimensions are as shown in Table 1-1.





Size F7

HD30-ES1 (5.5 - 15kW) only have one structure, as following figure.



Size FA

Table 1-1 HD30-ES/ES1 dimension and weight

Size	Dimension (mm)			Mounting Size (mm)				GW (kg)
	W	H	D	W1	H1	H2	d	
F1	135	241	162	91	226	220	5	2.4
F2	165	266	190	115	253	245	5	4.4
F3	200	299	210	146	286	280	5	5.8
F4	235	353	222	167	337	330	7	8.2
F5	290	469	240	235	445	430	8	20.4
F6	380	598	290	260	576	550	10	48
F7	500	721	330	343	696	670	12	80
FA	227	335	169	150	320	302	6.5	9.7



## 1.4 Peripheral Accessories Selection

### 1.4.1 Wiring Specifications of Input and Output

The AC supply to controller must be installed with suitable protection against overload and short-circuits, i. e. MCCB (molded case circuit breaker) or equivalent device.

The recommended specification of MCCB, contactor & cables are shown as Table 1-3.

The size of ground wire should accord with the requirement in 4.3.5.4 of IEC61800-5-1, as shown in Table 1-2.

Table 1-2 Sectional area of ground protective conductor

Sectional Area S of Phase Conductor (Supply Cable) While Installing (mm <sup>2</sup> )	S ≤ 2.5	2.5 < S ≤ 16	16 < S ≤ 35	S > 35
Min. Sectional Area Sp of Relative Protective Conductor (Ground Cable) (mm <sup>2</sup> )	2.5	5	16	S/2

Table 1-3 HD30-ES/ES1 input and output wiring options

Model	MCCB (A)	Contactor (A)	Supply Cable (mm <sup>2</sup> )	Motor Cable (mm <sup>2</sup> )	Ground Cable (mm <sup>2</sup> )	Size
HD30-ES series						
HD30-2T3P7-ES	40	32	4	4	4	F2
HD30-2T5P5-ES	63	40	6	6	6	F3
HD30-2T7P5-ES	63	40	10	10	10	F4
HD30-2T011-ES	100	63	16	16	16	F5
HD30-2T015-ES	125	100	25	16	16	F5
HD30-2T018-ES	160	100	35	35	16	F5
HD30-2T022-ES	200	125	35	35	16	F6
HD30-2T030-ES	200	125	50	50	25	F6
HD30-2T037-ES	250	160	50	50	25	F6
HD30-4T2P2-ES	16	10	1.5	1	2.5	F1
HD30-4T3P7-ES	25	16	2.5	1.5	2.5	F2
HD30-4T5P5-ES	32	25	4	2.5	4	F2
HD30-4T7P5-ES	40	32	4	4	4	F3
HD30-4T011-ES	63	40	6	6	6	F3
HD30-4T015-ES	63	40	10	10	10	F4
HD30-4T018-ES	100	63	10	10	10	F4
HD30-4T022-ES	100	63	16	16	16	F5
HD30-4T030-ES	125	100	25	25	16	F5
HD30-4T037-ES	160	100	35	35	16	F6
HD30-4T045-ES	200	125	35	35	16	F6
HD30-4T055-ES	200	125	50	50	25	F6
HD30-4T075-ES	250	160	50	50	25	F7
HD30-4T090-ES	250	160	95	70	50	F7
HD30-4T110-ES	350	350	120	120	50	F7

Model	MCCB (A)	Contactur (A)	Supply Cable (mm <sup>2</sup> )	Motor Cable (mm <sup>2</sup> )	Ground Cable (mm <sup>2</sup> )	Size
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HD30-ES1 series

HD30-2D5P5-ES1	125 / 63 <sup>(1)</sup>	100 / 40 <sup>(1)</sup>	25 / 6 <sup>(1)</sup>	6	16 / 6 <sup>(1)</sup>	FA
HD30-2T7P5-ES1	63	40	10	10	10	
HD30-4T5P5-ES1	32	25	4	2.5	4	
HD30-4T7P5-ES1	40	32	4	4	4	
HD30-4T011-ES1	63	40	6	6	6	
HD30-4T015-ES1	63	40	10	10	10	

(1): Value before / is for single-phase model, value after / is for three-phase model.

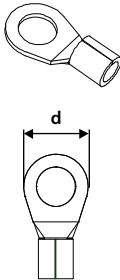
### 1.4.2 Power Terminal Lug

Select the lug of power terminal according to the size of terminal, screw size and max. outer diameter of lug. Refer to Table 1-4.

Take the round terminal as an example.

Table 1-4 Selection of power terminal lug

Structure	Screw	Torque (N. M)	Allow the Maximum Diameter of the Eard (mm)
F1	M3.5	0.8 - 1.2	7
F2	M4	1.2 - 1.5	9.9
F3	M5	2.5 - 3.0	12
F4	M5	2.5 - 3.0	12
F5	M6	4.0 - 5.0	15.5
F6	M8	9.0 - 10.0	24
F7	M10	17.6 - 22.5	30
FA	M5	2.5 - 3.0	12



### 1.5 Brake Unit and Brake Resistor Selection

The maximum brake current of brake unit HDBU-4T150 is 150A. If required, please place order in advance.

Braking unit and braking resistor selection as shown in Table 1-5.

Table 1-5 The braking unit and braking resistor selection

Model	Motor	HDBU	Minimum Resistance Value	Minimum Power
HD30-ES series				
HD30-2T3P7-ES	3.7 kW	Built-in	30 Ω	1.2 kW
HD30-2T5P5-ES	5.5 kW	Built-in	25 Ω	1.8 kW
HD30-2T7P5-ES	7.5 kW	Built-in	15 Ω	2.4 kW
HD30-2T011-ES	11 kW	Optional	12 Ω	3.6 kW
HD30-2T015-ES	15 kW	Optional	10 Ω	4.5 kW
HD30-2T018-ES	18.5 kW	Optional	8Ω	6 kW

Model	Motor	HDBU	Minimum Resistance Value	Minimum Power
HD30-2T022-ES	22 kW	Optional	7 Ω	7.5 kW
HD30-2T030-ES	30 kW	Optional	6 Ω	9 kW
HD30-2T037-ES	37 kW	Optional	5 Ω	12 kW
HD30-4T2P2-ES	2.2 kW	Built-in	100 Ω	750 W
HD30-4T3P7-ES	3.7 kW	Built-in	80 Ω	1.2 kW
HD30-4T5P5-ES	5.5 kW	Built-in	60 Ω	1.8 kW
HD30-4T7P5-ES	7.5 kW	Built-in	45 Ω	2.4 kW
HD30-4T011-ES	11 kW	Built-in	40 Ω	3.6 kW
HD30-4T015-ES	15 kW	Built-in	25 Ω	4.5 kW
HD30-4T018-ES	18.5 kW	Built-in	20 Ω	6 kW
HD30-4T022-ES	22 kW	Optional	18 Ω	7.5 kW
HD30-4T030-ES	30 kW	Optional	15 Ω	9 kW
HD30-4T037-ES	37 kW	Optional	12 Ω	12 kW
HD30-4T045-ES	45 kW	Optional	10 Ω	13.5 kW
HD30-4T055-ES	55 kW	Optional	9 Ω	16.5 kW
HD30-4T075-ES	75 kW	HDBU-4T150	6 Ω	22.5 kW
HD30-4T090-ES	90 kW	HDBU-4T150	6 Ω	27 kW
HD30-4T110-ES	110 kW	HDBU-4T150	6 Ω	33 kW

## HD30-ES1 series

HD30-2D5P5-ES1	5.5 kW	Built-in	25 Ω	1.8 kW
HD30-2T7P5-ES1	7.5 kW	Built-in	15 Ω	2.4 kW
HD30-4T5P5-ES1	5.5 kW	Built-in	60 Ω	1.8 kW
HD30-4T7P5-ES1	7.5 kW	Built-in	45 Ω	2.4 kW
HD30-4T011-ES1	11 kW	Built-in	40 Ω	3.6 kW
HD30-4T015-ES1	15 kW	Built-in	25 Ω	4.5 kW

**Note:**

1. Please select braking resistor based on the above table.  
Bigger resistor can protect the braking system in fault condition, but oversized resistor may bring a capacity decrease, lead to over voltage protection.
2. The braking resistor should be mounted in a ventilated metal housing to prevent inadvertent contact during it works, for the temperature is high.

## 1.6 Reactor Selection

Table 1-6 Reactor selection

Model	AC Input Reactor		AC Output Reactor		DC Reactor Selection	
	Model	Parameter (mH/A)	Model	Parameter (mH/A)	Model	Parameter (mH/A)
HD30-4T037-ES	HD-AIL-4T037	0.19-75	HD-AOL-4T037	0.08-80	HD-DCL-4T037	0.35-100
HD30-4T045-ES	HD-AIL-4T045	0.16-90	HD-AOL-4T045	0.06-100	HD-DCL-4T045	0.29-120
HD30-4T055-ES	HD-AIL-4T055	0.13-115	HD-AOL-4T055	0.04-125	HD-DCL-4T055	0.23-150
HD30-4T075-ES	HD-AIL-4T075	0.093-150	HD-AOL-4T075	0.035-160	HD-DCL-4T075	0.17-200
HD30-4T090-ES	HD-AIL-4T090	0.08-180	HD-AOL-4T090	0.03-200	HD-DCL-4T090	0.14-240
HD30-4T110-ES	HD-AIL-4T110	0.067-210	HD-AOL-4T110	0.02-225	HD-DCL-4T110	0.12-290



## Chapter 2 Detailed Function Introduction

This chapter provide user with detail function introduction of HD30-ES/ES1. The rest of function, please refer to HD30 Series Vector Control Inverter.

### 2.1 Commissioning Cautions

Commissioning Cautions	
1	When controller need to automatically normally or slowly run according to the photoelectric signal, please enable escalator application expanding (F00.05 = 3). When controller running according to the order of PLC, please disable escalator application expanding (F00.05 = 0).
2	When the uplink terminal of controller is valid and escalator is running downward, any two phase of motor wires can be reversed.
3	The upper photoelectric switch only works on controller down running, the lower photoelectric switch works only on controller up running.
4	<p>The following conditions are required to alternate between variable frequency and power frequency.</p> <ul style="list-style-type: none"> <li>• Whether it is V/f control or open loop vector control, both need rotary auto-tuning. Otherwise, the alternation effect is poor.</li> <li>• Power frequency &lt; switching frequency from variable frequency to power frequency (F19.35, F19.36) ≤ Maximum output frequency.</li> <li>• Before alternation between power frequency and variable frequency, please confirm d00.19 = 0 (positive sequence: L1/R pull ahead L2/S, L2/S pull ahead L3/T).</li> <li>• When d00.19 = 1 (negative sequence: L1/R pull ahead L3/T, L3/T pull ahead L2/S), reverse any two phase.</li> <li>• Otherwise, when DI terminal select No.65 (alternation from variable frequency to power frequency), it will happen fault E0037 (input phase dislocation error).</li> <li>• Please guarantee the consistency of phase sequence between variable frequency output and power frequency output, otherwise, motor might be damaged.</li> <li>• When switch between variable frequency and power frequency, the phase sequence of up contact should be consistent with the output phase of controller. That is to say, L1-R, L2-S, L3-T; The phase sequence of down power frequency contact should keep the same with up contact. Exchange the phase sequence between L2 and L3, that is L1-R, L3-S, L2-T.</li> </ul>

## 2.2 F00: Basic Parameters

Ref. Code	Function Description	Setting Range [Default]
F00.05	<b>Extended application capabilities</b>	0 - 3 [0]
	0/1/2: Without extended application function. 3: Escalator application function.	
F00.27	<b>Starting rotate speed tracking selection</b>	0,1 [0]
	0: Determine base on input terminal No.82 function. <ul style="list-style-type: none"> <li>Please refer to F15.00 - F15.05 terminal No.82 function instruction.</li> </ul> 1: Processed by internal logic of controller. <ul style="list-style-type: none"> <li>Only under the state of switching from power frequency to variable frequency, start with rotate tracking.</li> <li>When F00.27 = 1, input terminal No.82 function is invalid.</li> </ul>	

## 2.3 F02: Start and Stop Control Parameters

Ref. Code	Function Description	Setting Range [Default]
F02.00	<b>Start mode selection</b>	0x00 - 0x22 [0x10]
	<b>Ten: Conditions of validity of run command</b> 0: Bypassed. 1: During stop process, don't respond to run command, and block the base. After complete stop, detect whether there is run command. 2: During stop process, don't respond to run command, and block the base. After complete stop, detect the present run command. Record the running statuses during stop process.	
F02.20	<b>Inspection running frequency</b>	0.00 - upper limit [10.00Hz]
F02.21	<b>Normal running frequency</b>	0.00 - upper limit [50.00Hz]
F02.22	<b>Keeping time of normal running</b>	0.0 - 6000.0 [40.0s]
	F02.20 define the running frequency of no passengers ride escalator, F02.21 define the running frequency of passengers are riding escalator. When photoelectric signal is invalid, the relationship between normal running keeping time and photoelectric switch signal as following figure.	
F02.23	<b>Pre-excitation time</b>	0.00 - 0.50 [0.50s]
	Pre-excitation effect: Build motor magnetic flux before motor rotate, obtain faster accelerating ability. Suggest set the value of F02.10 bigger than 0.10s. <ul style="list-style-type: none"> <li>Only F00.01 = 2 (without PG vector control) valid.</li> <li>F02.23 = 0.00s, pre-excitation is invalid.</li> </ul>	

## 2.4 F03: Acc. and Dec. Parameters

Ref. Code	Function Description	Setting Range [Default]
F03.18	<b>Dec. time after block the base</b>	0.1 - 10.0 [2.0s]

## 2.5 F15: Digital I/O Terminal Parameters

Ref. Code	Function Description	Setting Range [Default]
F15.00	DI1 terminal function	0 - 87 [2]
F15.01	DI2 terminal function	0 - 87 [0]
F15.02	DI3 terminal function	0 - 87 [0]
F15.03	DI4 terminal function	0 - 87 [0]
F15.04	DI5 terminal function	0 - 87 [0]
F15.05	DI6 terminal function	0 - 87 [0]
	<p>65: Signal of switching from variable frequency to power frequency.</p> <p>66: Unused.</p> <p>67: Feedback signal of variable frequency contact (Normal close contact).</p> <p>68: Feedback signal of power frequency contact (Normal close contact).</p> <p>82: Power frequency running signal terminal.</p> <ul style="list-style-type: none"> <li>• Start with rotary speed tracking when this signal is valid, start base on the setting of F02.00 when this signal is invalid.</li> <li>• Rotary speed tracking start, if this function is not selected.</li> </ul> <p>83: Upper photoelectric switch detection terminal.</p> <ul style="list-style-type: none"> <li>• After this terminal is valid, enter normal running when down running.</li> </ul> <p>84: Lower photoelectric switch detection terminal.</p> <ul style="list-style-type: none"> <li>• After this terminal is valid, enter normal running when up running.</li> </ul>	
F15.18	DO1 terminal function	0 - 42 [2]
F15.19	DO2 terminal function	0 - 42 [0]
F15.20	RLY1 relay function	0 - 42 [31]
	<p>39: Target frequency is normal running frequency.</p> <p>40: Variable frequency contact output.</p> <p>41: Forward running, power frequency contact output.</p> <p>42: Reverse running, power frequency contact output.</p>	



## 2.6 F19: Function-boost Parameters

### Auto current limiting function (F19.20 - F19.21)

Auto current limiting function is used to limit the load current in real time smaller than the auto current limiting threshold (F19.21). Therefore the controller will not trip due to surge current. This function is especially suitable for applications with big load inertia or big change of load.

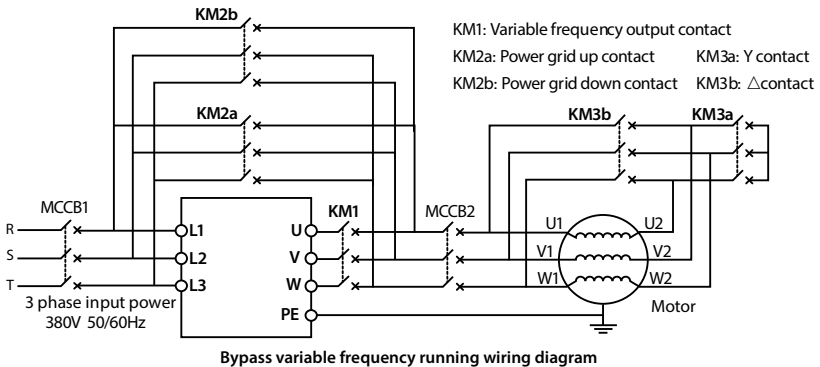
In auto current limiting process, the controller's output frequency may change; Therefore, it is recommended not to enable this function when stable output frequency is required.

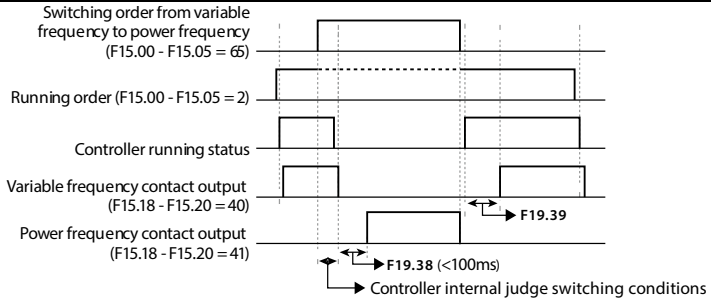
Ref. Code	Function Description	Setting Range [Default]
F19.20	<b>Automatic current limiting gain</b>	0 - 1000 [500]
	When the output current of controller over F19.21 auto-current-limit level. Controller automatically adjust output frequency for suppressing the increase of output current. So avoid over-current protection. According to the actual load, properly adjust auto-limit-current gain. <ul style="list-style-type: none"> <li>Auto-limit-current gain is set too small, it can't suppress the increase of output current.</li> <li>Auto-limit-current gain is set too big, it can cause the output frequency fluctuation. And lead to whole system fluctuation.</li> </ul>	
F19.21	<b>Automatic current limit level</b>	20.0 - 200.0 [150%]
	The current threshold for automatic current-limit actions is defined as a percentage of the controller's rated current.	

### Switching function between power frequency and variable frequency (F19.35 - F19.43)

If want escalator running under by pass frequency conversion mode, please wiring base on the responding phase sequence of following figure strictly.

Power grid up	KM2a close, KM1 and KM2b open
Power grid down	KM2B close, KM1 and KM2a open
Frequency conversion running	KM1 close, KM2a and KM2b open
Star / Triangle start	Only power frequency star / triangle start directly, need to connect KM3a and KM3b





Switching logic diagram between power frequency and variable frequency

Ref. Code	Function Description	Setting Range [Default]
F19.35	Up running, the alternation frequency from variable frequency to power frequency	0.00 - upper limit [51.00Hz]
F19.36	Down running, the alternation frequency from variable frequency to power frequency	0.00 - upper limit [51.00Hz]
F19.37	Alternation angle range	0.0 - 60.0 [10.0°]
F19.38	Delay time switch from variable frequency to power frequency.	0 - 2000 [20ms]
F19.39	Delay time switch from power frequency to variable frequency.	0 - 2000 [200ms]
F19.40	Power on in instant, effective ways of switching signal between power frequency and variable frequency	0,1 [0]
	0: Rising-edge valid. 1: Electric level valid.	
F19.41	Enable input phase dislocation detection	0,1 [0]
	0: Enable. 1: Shielded.	
F19.42	Detection time of variable frequency contact fault	0 - 2000 [1000ms]
F19.43	Detection time of power frequency contact fault	0 - 2000 [1000ms]



## Chapter 3 Troubleshooting

When the controller fails, the operation panel fault alarm display screen, while the fault relay action, the controller to stop output, the motor free stop.

After a fault alarm, you should log the fault in detail and troubleshoot and clear it with reference to Table 3-1. For technical support, contact your supplier or call Shenzhen Hpmont Technology Co., Ltd. directly.

After the fault is removed, you can reset the fault in the following ways:

1. Operation panel reset.
2. External reset terminal (DI terminal set to No.46 function) reset.
3. Communication failure reset.
4. Turn the controller off completely before powering on again.

**Table 3-1 Fault alarm contents and countermeasures**

Fault		Fault Reasons	Counter-measures
-Lu-	DC bus undervoltage	<ul style="list-style-type: none"> <li>• At the beginning of powering on and at the end of powering off</li> <li>• Input voltage is too low</li> <li>• Improper wiring leads to undervoltage of hardware</li> </ul>	<ul style="list-style-type: none"> <li>• It is normal status of powering on and powering off</li> <li>• Please check input power voltage</li> <li>• Please check wiring and wire the controller properly</li> </ul>
E0001	Controller output overcurrent (in Acc. process)	<ul style="list-style-type: none"> <li>• Improper connection between controller and motor</li> </ul>	<ul style="list-style-type: none"> <li>• Connect the controller and motor properly</li> </ul>
E0002	Controller output overcurrent (in Dec. process)	<ul style="list-style-type: none"> <li>• Improper motor parameters</li> <li>• The rating of the used controller is too small</li> </ul>	<ul style="list-style-type: none"> <li>• Please set correct motor parameters (F08.00 - F08.04, F13.01 - F13.05)</li> <li>• Select controller with higher rating</li> </ul>
E0003	Controller output overcurrent (in constant speed process)	<ul style="list-style-type: none"> <li>• Acc. / Dec. time is too short</li> <li>• Instant stop occurs, the running motor is restarted</li> </ul>	<ul style="list-style-type: none"> <li>• Please set proper Acc. time and Dec. time (F03.01 - F03.08)</li> <li>• Please set start mode to be speed tracking (F02.00 = 2)</li> </ul>
E0004	DC bus over voltage (in Acc. process)	<ul style="list-style-type: none"> <li>• Input voltage is too high</li> <li>• Deceleration time is too short</li> </ul>	<ul style="list-style-type: none"> <li>• Please check power input</li> <li>• Please set a proper value for Dec. time (F03.02, F03.04, F03.06, F03.08)</li> </ul>
E0005	DC bus over voltage (in Dec. process)	<ul style="list-style-type: none"> <li>• Improper wiring leads to overvoltage of hardware</li> <li>• Instant stop occurs, the running motor is restarted</li> </ul>	<ul style="list-style-type: none"> <li>• Please check wiring and wire the controller properly</li> </ul>
E0006	DC bus over voltage (in constant speed process)	<ul style="list-style-type: none"> <li>• Improper selection of the braking devices</li> </ul>	<ul style="list-style-type: none"> <li>• Please set start mode to be speed tracking (F02.00 = 2)</li> <li>• Select according to the recommended braking devices of user manual</li> </ul>
E0007	Stall overvoltage	<ul style="list-style-type: none"> <li>• Bus voltage is too high</li> <li>• The setting of stall overvoltage is too low</li> </ul>	<ul style="list-style-type: none"> <li>• Please check power input or the function of brake</li> <li>• Set the value of stall overvoltage properly</li> </ul>

Fault		Fault Reasons	Counter-measures
E0008	Fault of power module	<ul style="list-style-type: none"> <li>• Short circuit between phases output</li> <li>• Short circuit to the ground</li> <li>• Output current is too high</li> <li>• Power module is damaged</li> </ul>	<ul style="list-style-type: none"> <li>• Please check the connection and connect the wire properly</li> <li>• Please check the connection and connect the wire properly</li> <li>• Please check the connection and mechanism</li> <li>• Please contact the supplier for repairing</li> </ul>
E0009	Heatsink overheat	<ul style="list-style-type: none"> <li>• Ambient temperature is too high</li> <li>• Controller external ventilation is not good</li> <li>• Fan fault</li> <li>• Fault occurs to temperature detection circuit</li> </ul>	<ul style="list-style-type: none"> <li>• Please use controller with higher power capacity</li> <li>• Improve the ventilation around the controller</li> <li>• Replace the cooling fan</li> <li>• Please seek technical support</li> </ul>
E0010	Fault of braking unit	<ul style="list-style-type: none"> <li>• Circuit fault of braking unit</li> </ul>	<ul style="list-style-type: none"> <li>• Please seek technical support</li> </ul>
E0011	CPU fault	<ul style="list-style-type: none"> <li>• CPU abnormal</li> </ul>	<ul style="list-style-type: none"> <li>• Please detect at power on after completely power outage</li> <li>• Please seek technical support</li> </ul>
E0012	Parameters auto-tuning fault	<ul style="list-style-type: none"> <li>• Parameter auto-tuning is time out</li> </ul>	<ul style="list-style-type: none"> <li>• Please check the motor's connection</li> <li>• Input the correct motor parameters (F08.00 - F08.04, F13.01 - F13.05)</li> <li>• Please seek technical support</li> </ul>
E0013	Contactors is not actuated	<ul style="list-style-type: none"> <li>• Contactor fault</li> <li>• Fault of control circuit</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the contactor</li> <li>• Please seek technical support</li> </ul>
E0014	Fault of current detection circuit	<ul style="list-style-type: none"> <li>• Current detection circuit is damaged</li> </ul>	<ul style="list-style-type: none"> <li>• Please contact the supplier for repairing</li> </ul>
E0015	Fault of input phase	<ul style="list-style-type: none"> <li>• For three-phase input controller, input phase loss fault occurs to power input</li> </ul>	<ul style="list-style-type: none"> <li>• Please check the three-phase power input</li> <li>• Please seek technical support</li> </ul>
E0016	Fault of output phase	<ul style="list-style-type: none"> <li>• Output phase disconnection or loss</li> <li>• Heavy imbalance of controller's three-phase load</li> </ul>	<ul style="list-style-type: none"> <li>• Please check the connection between controller and motor</li> <li>• Please check the quality of motor</li> </ul>
E0017	Controller overload	<ul style="list-style-type: none"> <li>• Acc. time is too short</li> <li>• Improper setting of V/f curve or torque boost leads to over current</li> <li>• Instant power-off occurs, the running motor is restarted</li> <li>• Mains supply voltage is too low</li> <li>• Motor load is too high</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust Acc. time (F03.01, F03.03, F03.05, F03.07)</li> <li>• Adjust V/f curve (F09.00 - F09.06) or torque boost (F09.07, F09.08)</li> <li>• Please set start mode to be speed tracking (F02.00 = 2)</li> <li>• Please check mains supply voltage</li> <li>• Please use controller with proper power rating</li> </ul>
E0018	Controller output is unloaded	<ul style="list-style-type: none"> <li>• Load disappeared or comes down suddenly</li> <li>• Parameters are not set properly</li> </ul>	<ul style="list-style-type: none"> <li>• Please check load and mechanical transmission devices</li> <li>• Please set the parameters properly (F20.03 - F20.05)</li> </ul>

Fault		Fault Reasons	Counter-measures
E0019	Motor overload	<ul style="list-style-type: none"> <li>• Improper setting of V/f curve</li> <li>• Mains supply voltage is too low</li> <li>• Normal motor runs for a long time with heavy load at low speed</li> <li>• Motor's overload protection factor is not set properly</li> <li>• Motor runs with blocked torque or load is too heavy</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust the setting of V/f curve (F09.00 - F09.06)</li> <li>• Check the power input</li> <li>• Please use special motor if the motor needs to operate for a long time with heavy load</li> <li>• Please properly set the overload protection factor of the motor</li> <li>• Please check the load and mechanical transmission devices</li> </ul>
E0020	Motor overheat	<ul style="list-style-type: none"> <li>• Motor overheat</li> <li>• The setting of motor parameters is incorrect</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce the load; Repair or replace the motor; Increase the Acc. / Dec. time (F03.01 - F03.08)</li> <li>• Set the motor parameter (F08.00 - F08.04, F13.01 - F13.05)</li> </ul>
E0021	Access fault of Control board EEPROM	<ul style="list-style-type: none"> <li>• Memory circuit fault of control board EEPROM</li> </ul>	<ul style="list-style-type: none"> <li>• Please contact the supplier for repairing</li> </ul>
E0022	Access fault of keypad EEPROM	<ul style="list-style-type: none"> <li>• Memory circuit fault of keypad EEPROM</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the keypad</li> <li>• Please contact the supplier for repairing</li> </ul>
E0023	Fault setting of parameters	<ul style="list-style-type: none"> <li>• The power rating between motor and controller is too different</li> <li>• Improper setting of motor parameters</li> </ul>	<ul style="list-style-type: none"> <li>• Select an controller with suitable power rating</li> <li>• Please set correct value of motor parameters (F08.00 - F08.04, F13.01 - F13.05)</li> </ul>
E0024	Fault of external equipment	<ul style="list-style-type: none"> <li>• Fault terminal of external equipment operates</li> </ul>	<ul style="list-style-type: none"> <li>• Please check external equipment</li> </ul>
E0025	PID reference loss	<ul style="list-style-type: none"> <li>• Analogue reference signal is smaller than F20.12</li> <li>• Analogue input circuit fault</li> </ul>	<ul style="list-style-type: none"> <li>• Please check the connection</li> <li>• Please seek technical support</li> </ul>
E0026	PID feedback loss	<ul style="list-style-type: none"> <li>• Analogue setting signal is smaller than F20.14</li> <li>• Analogue input circuit fault</li> </ul>	<ul style="list-style-type: none"> <li>• Please check the connection</li> <li>• Please seek technical support</li> </ul>
E0027	PID feedback out of limiting	<ul style="list-style-type: none"> <li>• Analogue setting signal is bigger than F20.16</li> <li>• Analogue input circuit fault</li> </ul>	<ul style="list-style-type: none"> <li>• Please check the connection</li> <li>• Please seek technical support</li> </ul>
E0028	SCI communication time-out	<ul style="list-style-type: none"> <li>• Connection fault of Communication cable</li> <li>• Disconnected or not well connected</li> </ul>	<ul style="list-style-type: none"> <li>• Please check the connection</li> </ul>
E0029	SCI communication error	<ul style="list-style-type: none"> <li>• Connection fault of Communication cable</li> <li>• Disconnected or not well connected</li> <li>• Communication setting error</li> <li>• Communication data error</li> </ul>	<ul style="list-style-type: none"> <li>• Please check the connection</li> <li>• Please check the connection</li> <li>• Please correctly set the communication format (F17.00) and the baud rate (F17.01)</li> <li>• Send the data according to MODBUS protocol</li> </ul>

Note: E0022 not affect normal running.

Fault		Fault Reasons	Counter-measures
E0035	Variable frequency contact abnormal	<ul style="list-style-type: none"><li>Variable frequency contact fault</li><li>The wiring of variable frequency contact feedback signal is incorrect</li></ul>	<ul style="list-style-type: none"><li>Replace variable frequency contact.</li><li>Properly wire the feedback signal of variable frequency contact, or cancel variable frequency contact feedback signal on DI terminal (No.67 function)</li></ul>
E0036	Power frequency contact abnormal	<ul style="list-style-type: none"><li>Power frequency contact fault</li><li>The wiring of power frequency contact feedback signal is incorrect</li></ul>	<ul style="list-style-type: none"><li>Replace power frequency contact.</li><li>Properly wire the feedback signal of power frequency contact, or cancel power frequency contact feedback signal DI terminal function (No.68 function)</li></ul>
E0037	Input phase sequence error	<ul style="list-style-type: none"><li>Phase sequence of three-phase input error</li></ul>	<ul style="list-style-type: none"><li>Exchange any two input phase of the three-phase input</li></ul>

## Appendix A Parameters

### Attributes are Changed:

“\*\*“: It denotes that the value of this parameter is the actual value which cannot be modified.

“x“: It denotes that the setting of this parameter cannot be modified when the controller is in run status.

“o“: It denotes that the setting of this parameter can be modified when the controller is in run status.

“-“: The same as the mapping functional parameter.

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
<b>d00: Status Display Parameters</b>						
d00.00	Series of the controller	30ES			*	
d00.01	Software version of the control board	00.00 - 99.99			*	
d00.03	Special software version of the control board	00.00 - 99.99			*	
d00.05	Software version of the keypad	00.00 - 99.99			*	
d00.06	Custom series No.	0 - 9999			*	
d00.07	Motor and control mode	Unit: Display the current driving motor 0: Motor 1 1: Motor 2  Ten: Control mode 0: V/f control without PG 2: Vector control without PG			*	
d00.08	Rated current of the controller	5.5kW or below type: 0.01A 7.5kW or above type: 0.1A			*	
d00.10	Controller status	Bit0: Controller fault Bit1: Run / stop Bit2: Forward / Reverse Bit3: Zero speed runnin Bit5&Bit4: Acc. / Dec. / constant Bit7: DC braking Bit8: Parameter auto-tuning Bit10: Speed limiting value Bit11: Control mode Bit12: Stall overvoltage Bit13: Current limiting			*	
d00.11	Master setting frequency source	0 - 13			*	
d00.12	Master setting frequency	0.01 - 400.00Hz			*	
d00.13	Auxiliary setting frequency	0.01 - 400.00Hz			*	
d00.14	Setting frequency	0.01 - 400.00Hz			*	



Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
d00.15	Reference frequency (after Acc. / Dec.)	0.01 - 400.00Hz			*	
d00.16	Output frequency	0.01 - 400.00Hz			*	
d00.17	Setting speed	0 - 60000rpm			*	
d00.18	Running speed	0 - 60000rpm			*	
d00.20	Output voltage	0 - 999V			*	
d00.21	Output current	Actual value, unit is 0.1A			*	
d00.22	Torque given	-250.0 - 250.0% (motor rated torque)			*	
d00.23	Output torque	0 - 300.0% (motor rated torque)			*	
d00.24	Output power	Actual value, unit is 0.1kW			*	
d00.25	DC bus voltage	0 - 999V			*	
d00.26	Potentiometer input voltage of the keypad	0.0 - 100.0%			*	
d00.27	AI1 input voltage	0.0 - 100.0%			*	
d00.28	AI1 input voltage (after disposal)	0.0 - 100.0%			*	
d00.29	AI2 input voltage	-100.0 - 100.0%			*	
d00.30	AI2 input voltage (after disposal)	-100.0 - 100.0%			*	
d00.31	AI3 input voltage	-100.0 - 100.0%			*	
d00.32	AI3 input voltage (after disposal)	-100.0 - 100.0%			*	
d00.33	AI4 input voltage	-100.0 - 100.0%			*	
d00.34	AI4 input voltage (after disposal)	-100.0 - 100.0%			*	
d00.35	DI6 terminal pulse input frequency	0 - 50000Hz			*	
d00.36	AO1 output	0.0 - 100.0%			*	
d00.37	AO2 output	0.0 - 100.0%			*	
d00.38	High-speed output pulse frequency	0 - 50000Hz			*	
d00.39	Heatsink temperature	0.0 - 999.9°C			*	
d00.40	Setting line speed	0 - max output line speed			*	
d00.41	Reference line speed	0 - max output line speed			*	
d00.44	Process PID reference	-100.0 - 100.0%			*	
d00.45	Process PID feedback	-100.0 - 100.0%			*	
d00.46	Process PID tolerance	-100.0 - 100.0%			*	
d00.47	Process PID integral item	-100.0 - 100.0%			*	
d00.48	Process PID output	-100.0 - 100.0%			*	
d00.49	External counting value	0 - 9999			*	
d00.50	Input terminal status	Bit0 - Bit8 corresponding to DI1 - DI9			*	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		0: Input terminal disconnect with common terminal 1: Input terminal connect with common terminal				
d00.51	Output terminal status	Bit0 - Bit1 corresponding to DO1 - DO2 Bit2 - Bit5 corresponding to RLY1 - RLY4  0: Output terminal disconnect with common terminal 1: Output terminal connect with common terminal			*	
d00.52	MODBUS communication status	0: Normal 1: Communication timeout 4: Incorrect data frame content			*	
d00.53	Actual length	0 - 65535m			*	
d00.54	Total length	0 - 65535km			*	
d00.55	Total time at power-on	0 - 65535h			*	
d00.56	Total time at operation	0 - 65535h			*	
d00.57	High bit of motor total energy consumption	0 - 65535k kW.h			*	
d00.58	Low bit of motor total energy consumption	0.0 - 999.9kW.h			*	
d00.59	High bit of energy con. at this time running	0 - 65535k kW.h			*	
d00.60	Low bit of energy con. at this time running	0.0 - 999.9kW.h			*	
d00.61	Present fault	0 - 100 <i>100: Means undervoltage</i>			*	
<b>F00: Basic Parameter</b>						
F00.00	Control mode selection	0: Speed control 1: Torque control	0	1	×	
F00.01	Motor 1 control mode selection	0: V/f control without PG 2: Vector control without PG	0	1	×	
F00.02	Controller type setting	0: G type 1: P type	0	1	×	
F00.03	Motor selection	0: Motor 1 1: Motor 2	0	1	×	
F00.04	HD30 general extension option selection	0: Option is invalid 1: HD30-EIO is valid 3: HD30-PIO is valid	1	1	×	
F00.05	Extended application function	0/1/2: Without extended application function 3: Escalator extended application	0	1	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F00.06	Controller max. output frequency	50.00 - 400.00Hz	51.00Hz	0.01Hz	×	
F00.07	Upper limit of operation frequency setting source	0: Digital setting (F00.08) 1: Analogue input AI setting 2: Terminal pulse setting	0	1	×	
F00.08	Upper limit of operation frequency	0.00Hz - F00.06	51.00Hz	0.01Hz	×	
F00.09	Lower limit of operation frequency	0.00Hz - F00.08	0.00Hz	0.01Hz	×	
F00.10	Frequency setting sources selection	0: Display panel digital setting 1: Terminal digital setting 2: SCI communication setting 3: AI analogue setting 4: Terminal pulse setting	0	1	○	
F00.11	Command setting source selection	0: Display panel running source 1: Terminal running source 2: SCI communication running source	0	1	×	
F00.12	Function selection of the multi-function key	0: Switch the keypad running direction 1: Switch local and remote control 2: Multi-function key is invalid	2	1	○	
F00.13	Starting frequency digital setting	0.00Hz - upper limit	50.00Hz	0.01Hz	○	
F00.14	Frequency setting control	Unit: Frequency setting save selection at power outage 0: Not stored when power down 1: Storage when power down  Ten: Frequency setting control selection at stop 0: Set frequency at stop 1: Set the frequency to F00.13 when stopping  Hundred: Communication setting frequency storage selection 0: Not stored when power down 1: Storage when power down  Thousand: Switch the frequency channel to the analogue selection 0: Not saved 1: Save	1001	1	○	
F00.15	Jog operation frequency digital setting 1	0.00Hz - upper limit	5.00Hz	0.01Hz	○	
F00.16	Interval of jog operation	0.0 - 100.0s	0.0s	0.1s	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F00.18	Anti-reverse operation	0: Reverse operation is permitted 1: Reverse operation is prohibited	0	1	×	
F00.19	Dead time of direction switch	0.0 - 3600.0s	0.0s	0.1s	○	
F00.20	Key enable of optional keypad	0: Enabled 1: Disabled	0	1	○	
F00.21	Dormant function selection	0: Disabled 1: Enabled	0	1	×	
F00.22	Dormancy wake up time	0.0 - 6000.0s	1.0s	0.1s	○	
F00.23	Wake up frequency	0.00Hz - upper limit	0.0Hz	0.00Hz	×	
F00.24	Sleep delay time	0.0 - 6000.0s	1.0s	0.1s	○	
F00.25	Sleep frequency	0.00Hz - upper limit	0.00Hz	0.01Hz	×	
F00.26	Reserved				*	
F00.27	Selection of start with rotary speed tracking	0: Determine base on N0.82 input terminal function 1: Deal by the internal logic of controller	0	1	×	
<b>F01: Protection of Parameters</b>						
F01.00	User's password	00000 - 65535	0	1	○	
F01.01	Menu mode selection	Unit: 0: Full menu mode 1: Checking menu mode (Only different from factory setting parameters can be displayed)  Ten: 0: Does not lock the parameter mapping relationship of Group U and Group F 1: Lock the parameter mapping relationship of Group U and Group F  Hundred: 0: After password protection, Group F and U parameters can be read 1: After password protection, Group F and U parameters are prohibited from reading	010	1	○	
F01.02	Function code parameter initialization (Parameters download)	0: No operation 1: Restore to factory settings 2,3: Download the keypad EEPROM parameter 1/2 to the current function code settings 4: Clear fault information	0	1	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		5,6: Download the keypad EEPROM parameter 1/2 to the current function code settings (including the motor parameters)				
F01.03	Display panel EEPROM parameter initialization (Parameter upload)	0: No operation 1,2: Upload the current function code settings to the keypad EEPROM parameter 1/2	0	1	○	
<b>F02: Start and Stop Control Parameters</b>						
F02.00	Start method selection	Unit: 0: From the DWELL frequency to start 1: Brake first and then start from DWELL frequency 2: Start after speed tracking  Ten: Conditions of validity for run command. 0: No processing 1: During stop process, don't respond to run command, and block the base. After complete stop, detect whether there is run command. 2: During stop process, don't respond to run command, and block the base. After complete stop, detect the present run command. Record the running statuses during stop process	0x10	1	×	
F02.01	Starting delay time	0.00 - 10.00s	0.00s	0.01s	×	
F02.02	Start DWELL frequency setting	0.00Hz - upper limit	0.00Hz	0.01Hz	×	
F02.03	Retention time of starting DWELL frequency	0.00 - 10.00s	0.00s	0.01s	×	
F02.04	DC braking current setting	0 - 100% (controller's rated current)	50%	1%	×	
F02.05	DC braking time at start	0.00 - 60.00s	0.50s	0.01s	×	
F02.13	Stop mode selection	0: Decelerate to stop 1: Coast to stop 2: Decelerate to stop with DC braking	0	1	×	
F02.14	DWELL frequency setting at stop	0.00Hz - upper limit	0.00Hz	0.01Hz	×	
F02.15	Retention time of DWELL frequency at stop	0.00 - 10.00s	0.00s	0.01s	×	
F02.16	DC braking initial frequency at stop	0.00 - 50.00Hz	0.50Hz	0.01Hz	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F02.17	DC braking waiting time at stop	0.00 - 10.00s	0.00s	0.01s	×	
F02.18	DC braking time at stop	0.00 - 60.00s	0.50s	0.01s	×	
F02.19	Jog control mode	0: The jog functions of start and stop mode etc are invalid 1: The jog functions of start and stop mode etc are enabled	0	1	×	
F02.20	Inspection running frequency	0.00Hz - upper limit	10.00Hz	0.01Hz	○	
F02.21	Normal running frequency	0.00Hz - upper limit	50.00Hz	0.01Hz	○	
F02.22	Keeping time of normal running	0.0 - 6000.0s	40.0s	0.1s	○	
F02.23	Pre-excitation time	0.00 - 0.50s	0.50s	0.01s	×	
<b>F03: Acc. / Dec. Parameters</b>						
F03.00	Acc. / Dec. mode selection	0: Linear Acc. or Dec. 1: S-curve Acc. or Dec.	0	1	○	
F03.01	Acc. time 1	0.1 - 6000.0s	15kW and below: 10.0s  18.5 - 55 kW: 30.0s  75kW and above: 60.0s	0.1s	○	
F03.02	Dec. time 1	0.1 - 6000.0s		0.1s	○	
F03.03	Acc. time 2	0.1 - 6000.0s		0.1s	○	
F03.04	Dec. time 2	0.1 - 6000.0s		0.1s	○	
F03.05	Acc. time 3	0.1 - 6000.0s		0.1s	○	
F03.06	Dec. time 3	0.1 - 6000.0s		0.1s	○	
F03.07	Acc. time 4	0.1 - 6000.0s		0.1s	○	
F03.08	Dec. time 4	0.1 - 6000.0s		0.1s	○	
F03.09	Switching frequency of Acc. time 2 and time 1	0.00Hz - upper limit	0.00Hz	0.01Hz	×	
F03.10	Switching frequency of Dec. time 2 and time 1	0.00Hz - upper limit	0.00Hz	0.01Hz	×	
F03.11	S-curve characteristic time at starting Acc.	0.00 - 2.50s	0.20s	0.01s	○	
F03.12	S-curve characteristic time at ending Acc.	0.00 - 2.50s	0.20s	0.01s	○	
F03.13	S-curve characteristic time at starting Dec.	0.00 - 2.50s	0.20s	0.01s	○	
F03.14	S-curve characteristic time at ending Dec.	0.00 - 2.50s	0.20s	0.01s	○	
F03.15	Acc. time of jog operation	0.1 - 6000.0s	6.0s	0.1s	○	
F03.16	Dec. time of jog operation	0.1 - 6000.0s	6.0s	0.1s	○	
F03.17	Dec. time of emergency stop	0.1 - 6000.0s	10.0s	0.1s	○	
F03.18	Dec. time after blocking the base	0.1 - 10.0s	2.0s	0.1s	○	
<b>F04: Process PID Control</b>						
F04.00	Process PID control selection	0: PID control is disabled	0	1	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		1: PID control is enabled				
F04.01	Reference source selection	0: Digital reference 1: AI analogue reference 2: Terminal pulse reference	0	1	×	
F04.02	Feedback source selection	0: AI analogue feedback 1: Terminal pulse feedback 2: AI1 given	0	1	×	
F04.03	Setting digital reference	-100.0 - 100.0%	50.0%	0.1%	○	
F04.04	Proportional gain (P1)	0.0 - 100.0	20.0	0.1	○	
F04.05	Integral time (I1)	0.01 - 10.00s	1.00s	0.01s	○	
F04.06	Integral upper limit	0.0 - 100.0%	50.0%	0.1%	○	
F04.07	Differential time (D1)	0.00 - 10.00s <i>0.00: The differential is disabled</i>	0.00s	0.01s	○	
F04.08	Differential amplitude limit value	0.0 - 100.0%	50.0%	0.1%	○	
F04.09	Sampling cycle (T)	0.01 - 50.00s	0.10s	0.01s	○	
F04.10	Bias limit	0.0 - 20.0% (reference)	0.0%	0.1%	○	
F04.11	PID regulator upper limit source selection	0: Set by F04.13 1: Set by AI analogue value 2: Set by terminal pulse input	0	1	×	
F04.12	PID regulator lower limit source selection	0: Set by F04.14 1: Set by AI analogue value 2: Set by terminal pulse input	0	1	×	
F04.13	PID regulator upper limit value	0.00Hz - upper limit	50.00Hz	0.01Hz	×	
F04.14	PID regulator lower limit value	0.00Hz - upper limit	0.00Hz	0.01Hz	×	
F04.15	PID regulator characteristic	0: Positive 1: Negative	0	1	×	
F04.17	PID output filter time	0.01 - 10.00s	0.05s	0.01s	○	
F04.18	PID output reverse selection	0: PID regulation disable reverse (When PID output is negative, 0 is the limit) 1: PID regulation enable reverse (When F00.18 = 1 disable reverse, 0 is the limit)	0	1	×	
F04.19	PID output reverse frequency's upper limit	0.00Hz - upper limit	50.00Hz	0.01Hz	×	
F04.20	Proportional gain (P2)	0.0 - 1000.0	10.0	0.1	○	
F04.21	Pulse of each turn	1 - 9999	1024	1	○	
F04.22	Diameter	1 - 5000	1	1	○	
F04.23	PID differential method	0: Position differential 1: Incremental differential	0	1	×	
<b>F05: External Reference Curve Parameters</b>						

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F05.00	External reference curve selection	Unit: AI1 characteristic curve selection Ten: AI2 characteristic curve selection Hundred: AI3 characteristic curve selection Thousand: AI4 characteristic curve selection Ten thousand: Pulse input characteristic curve selection  0: Line 1 1: Line 2 2: Polyline 3: No treatment	33333	1	×	
F05.01	Minimum reference of line 1	0.0% - F05.03	0.0%	0.1%	○	
F05.02	Minimum reference corresponding value of line 1	0.0 - 100.0%	0.0%	0.1%	○	
F05.03	Maximum reference of line 1	F05.01 - 100.0%	100.0%	0.1%	○	
F05.04	Maximum reference corresponding value of line 1	0.0 - 100.0%	100.0%	0.1%	○	
F05.05	Minimum reference of line 2	0.0% - F05.07	0.0%	0.1%	○	
F05.06	Minimum reference corresponding value of line 2	0.0 - 100.0%	0.0%	0.1%	○	
F05.07	Maximum reference of line 2	F05.05 - 100.0%	100.0%	0.1%	○	
F05.08	Maximum reference corresponding value of line 2	0.0 - 100.0%	100.0%	0.1%	○	
F05.09	Maximum reference of polyline	F05.11 - 100.0%	100.0%	0.1%	○	
F05.10	Maximum reference corresponding value of polyline	0.0 - 100.0%	100.0%	0.1%	○	
F05.11	Inflection point 2 reference of polyline	F05.13 - F05.09	100.0%	0.1%	○	
F05.12	Inflection point 2 corresponding value	0.0 - 100.0%	100.0%	0.1%	○	
F05.13	Inflection point 1 reference of polyline	F05.15 - F05.11	0.0%	0.1%	○	
F05.14	Inflection point 1 corresponding value	0.0 - 100.0%	0.0%	0.1%	○	
F05.15	Minimum reference of polyline	0.0% - F05.13	0.0%	0.1%	○	
F05.16	Minimum reference corresponding value of polyline	0.0 - 100.0%	0.0%	0.1%	○	
F05.17	Skip frequency 1	F00.09 - upper limit	0.00Hz	0.01Hz	○	



Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F05.18	Skip frequency 2	F00.09 - upper limit	0.00Hz	0.01Hz	○	
F05.19	Skip frequency 3	F00.09 - upper limit	0.00Hz	0.01Hz	○	
F05.20	Range of skip frequency	0.00 - 30.00Hz	0.00Hz	0.01Hz	○	
F05.21	Jog operation frequency digital setting 2	0.00 - upper limit	5.00Hz	0.01Hz	○	
F05.22	Operation panel potentiometer curve selection	0: Straight line 1 1: Straight line 2 2: Polyline 3: No treatment	3	1	×	
<b>F06: MS Speed and Simple PLC</b>						
F06.00	Multi-step frequency command 1	F00.09 - upper limit	3.00Hz	0.01Hz	○	
F06.01	Multi-step frequency command 2	F00.09 - upper limit	6.00Hz	0.01Hz	○	
F06.02	Multi-step frequency command 3	F00.09 - upper limit	9.00Hz	0.01Hz	○	
F06.03	Multi-step frequency command 4	F00.09 - upper limit	12.00Hz	0.01Hz	○	
F06.04	Multi-step frequency command 5	F00.09 - upper limit	15.00Hz	0.01Hz	○	
F06.05	Multi-step frequency command 6	F00.09 - upper limit	18.00Hz	0.01Hz	○	
F06.06	Multi-step frequency command 7	F00.09 - upper limit	21.00Hz	0.01Hz	○	
F06.07	Multi-step frequency command 8	F00.09 - upper limit	24.00Hz	0.01Hz	○	
F06.08	Multi-step frequency command 9	F00.09 - upper limit	27.00Hz	0.01Hz	○	
F06.09	Multi-step frequency command 10	F00.09 - upper limit	30.00Hz	0.01Hz	○	
F06.10	Multi-step frequency command 11	F00.09 - upper limit	33.00Hz	0.01Hz	○	
F06.11	Multi-step frequency command 12	F00.09 - upper limit	36.00Hz	0.01Hz	○	
F06.12	Multi-step frequency command 13	F00.09 - upper limit	39.00Hz	0.01Hz	○	
F06.13	Multi-step frequency command 14	F00.09 - upper limit	42.00Hz	0.01Hz	○	
F06.14	Multi-step frequency command 15	F00.09 - upper limit	45.00Hz	0.01Hz	○	
F06.15	Simple PLC control selection	0: No PLC operation 1: Enabling PLC operation	0	1	×	
F06.16	Simple PLC operation mode selection	Unit: PLC operation mode selection 0: Stop after single cycle operation 1: Maintain the final value after single cycle of PLC operation	0000	1	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		2: Cycle operation  Ten: PLC operation restart mode selection after pause 0: Start from step 1 1: Continue to operate from the step where the controller pauses 2: Continue to operate at the frequency when the controller pauses  Hundred: Save the PLC status after power failure 0: Not be saved 1: Saved  Thousand: Time unit selection of the PLC step 0: Second (s) 1: Minute (m)				
F06.17	Setting of PLC step 1	Unit: PLC running frequency	000	1	○	
F06.19	Setting of PLC step 2	selection	000	1	○	
F06.21	Setting of PLC step 3	0: Multi- step frequency command	000	1	○	
F06.23	Setting of PLC step 4	1: Depend on F00.10	000	1	○	
F06.25	Setting of PLC step 5		000	1	○	
F06.27	Setting of PLC step 6	Ten: Operation direction selection of PLC at different step	000	1	○	
F06.29	Setting of PLC step 7	0: Forward	000	1	○	
F06.31	Setting of PLC step 8	1: Reverse	000	1	○	
F06.33	Setting of PLC step 9	2: Depend on run command	000	1	○	
F06.35	Setting of PLC step 10		000	1	○	
F06.37	Setting of PLC step 11	Hundred: Acc. / Dec. time selection of PLC at different steps	000	1	○	
F06.39	Setting of PLC step 12	0: Acc. / Dec. time 1	000	1	○	
F06.41	Setting of PLC step 13	1: Acc. / Dec. time 2	000	1	○	
F06.43	Setting of PLC step 14	2: Acc. / Dec. time 3	000	1	○	
F06.45	Setting of PLC step 15	3: Acc. / Dec. time 4	000	1	○	
F06.18	Running time of step 1	0.0 - 3276.7	5.0	0.1	○	
F06.20	Running time of step 2	0.0 - 3276.7	0.0	0.1	○	
F06.22	Running time of step 3	0.0 - 3276.7	0.0	0.1	○	
F06.24	Running time of step 4	0.0 - 3276.7	0.0	0.1	○	
F06.26	Running time of step 5	0.0 - 3276.7	0.0	0.1	○	
F06.28	Running time of step 6	0.0 - 3276.7	0.0	0.1	○	
F06.30	Running time of step 7	0.0 - 3276.7	0.0	0.1	○	
F06.32	Running time of step 8	0.0 - 3276.7	0.0	0.1	○	
F06.34	Running time of step 9	0.0 - 3276.7	0.0	0.1	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F06.36	Running time of step 10	0.0 - 3276.7	0.0	0.1	○	
F06.38	Running time of step 11	0.0 - 3276.7	0.0	0.1	○	
F06.40	Running time of step 12	0.0 - 3276.7	0.0	0.1	○	
F06.42	Running time of step 13	0.0 - 3276.7	0.0	0.1	○	
F06.44	Running time of step 14	0.0 - 3276.7	0.0	0.1	○	
F06.46	Running time of step 15	0.0 - 3276.7	0.0	0.1	○	
<b>F07: Wobble Operation Parameters</b>						
F07.00	Wobble operation selection	0: Disabled 1: Enabled	0	1	×	
F07.01	Wobble operation mode	Unit: Start mode of wobble operation 0: Auto start (according to F07.03) 1: Manual start  Ten: Wobble operation amplitude 0: Relative to the wobble central frequency 1: Relative to the maximum output frequency  Hundred: Restart mode of wobble operation 0: The controller restarts the wobble operation as per the recorded frequency and direction when it stops last time 1: The controller restarts the wobble operation from 0Hz  Thousand: Save the wobble operation parameters at power outage 0: Saved 1: Not be saved	0000	1	×	
F07.02	Preset wobble frequency	0.00Hz - upper limit	0.00Hz	0.01Hz	×	
F07.03	Holding time of preset wobble frequency	0.0 - 999.9s	0.0s	0.1s	×	
F07.04	Wobble amplitude	0.0 - 50.0%	0.0%	0.1%	×	
F07.05	Jump frequency	0.0 - 50.0%	0.0%	0.1%	×	
F07.06	Wobble operation cycle	0.1 - 999.9s	10.0s	0.1s	×	
F07.07	Rising time of triangle wave	0.0 - 100.0% (F07.06)	50.0%	0.1%	×	
<b>F08: Asyn. Motor 1 Parameters</b>						
F08.00	Rated power of motor 1	0.2 - 500.0kW	Depend on controller	0.1kW	×	
F08.01	Rated voltage of motor 1	0 - 999V		1V	×	
F08.02	Rated current of motor 1	5.5kw and below: 0.01-99.99A		0.1A	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		Above 5.5 kW: 0.1-999.9A		0.01A		
F08.03	Rated frequency of motor 1	1.0 - 400.0Hz	50.0Hz	0.1Hz	×	
F08.04	Rated speed of motor 1	1 - 24000rpm	Depend on controller	1rpm	×	
F08.06	Parameter auto-tuning of motor 1	0: Auto-tuning is disabled 1: Stationary auto-tuning 2: Rotary auto-tuning 3: Motor stator resistance measurement	0	1	×	
F08.07	Stator resistance of motor 1	5.5kW below: 0.00 - 99.99Ω	Depend on controller	0.01Ω	×	
		7.5 - 75kW: 0.000 - 9.999Ω		0.001Ω		
		90kW and above: 0.0000 - 0.9999Ω		0.0001Ω		
F08.08	Rotor resistance of motor 1	5.5kW below: 0.00 - 99.99Ω	Depend on controller	0.01Ω	×	
		7.5 - 75kW: 0.000 - 9.999Ω		0.001Ω		
		90kW and above: 0.0000 - 0.9999Ω		0.0001Ω		
F08.09	Leakage inductance of motor 1	5.5kW below: 0.0 - 5000.0mH	Depend on controller	0.1mH	×	
		7.5 - 75kW: 0.00 - 500.00mH		0.01mH		
		90kW and above: 0.000 - 50.000 mH		0.001 mH		
F08.10	Mutual inductance of motor 1	5.5kW below: 0.0 - 5000.0mH	Depend on controller	0.1mH	×	
		7.5 - 75kW: 0.00 - 500.00mH		0.01mH		
		90kW and above: 0.000 - 50.000 mH		0.001 mH		
F08.11	Idling exciting current of motor 1	5.5kW and below: 0.0 - 999.9A	Depend on controller	0.1A	×	
		5.5kW above: 0.00 - 99.99A		0.01A		
F08.12	Motor 1 core saturation coefficient 1	0.00 - 1.00	1.00	0.01	×	
F08.13	Motor 1 core saturation coefficient 2	0.00 - 1.00	1.00	0.01	×	
F08.14	Motor 1 core saturation coefficient 3	0.00 - 1.00	1.00	0.01	×	
F08.15	Motor 1 core saturation coefficient 4	0.00 - 1.00	1.00	0.01	×	
F08.16	Motor 1 core saturation coefficient 5	0.00 - 1.00	1.00	0.01	×	
<b>F09: V/f Control Parameters</b>						
F09.00	V/f curve selection of motor 1	0: Line 1: Square curve 2: 1.2 exponential curve 3: 1.7 exponential curve 4: User-defined curve	0	1	×	
F09.01	V/f frequency value F3 of motor 1	F09.03 - 100.0%	0.0%	0.1%	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F09.02	V/f voltage value V3 of motor 1	F09.04 - 100.0%	0.0%	0.1%	×	
F09.03	V/f frequency value F2 of motor 1	F09.05 - F09.01	0.0%	0.1%	×	
F09.04	V/f voltage value V2 of motor 1	F09.06 - F09.02	0.0%	0.1%	×	
F09.05	V/f frequency value F1 of motor 1	0.0% - F09.03	0.0%	0.1%	×	
F09.06	V/f voltage value V1 of motor 1	0.0% - F09.04	0.0%	0.1%	×	
F09.07	Torque boost of motor 1	0.0 - 30.0% <i>0.0: Auto torque boost</i>	45kW and below: 2.0%  55 - 110kW controller: 1.0%	0.1%	×	
F09.08	Cut-off point used for manual torque boost of motor 1	0.0 - 50.0% (F08.03)	25.0%	0.1%	○	
F09.09	Slip compensation gain of motor 1	0.0 - 300.0%	0.0%	0.1%	○	
F09.10	Slip compensation filter time of motor 1	0.01 - 10.00s	0.10s	0.01s	○	
F09.11	Slip compensation limitation of motor 1	0.0 - 250.0%	200.0%	0.1%	×	
F09.12	Compensation constant of motor 1	0.000 - 9.999kW	Depend on controller	0.001kW	×	
F09.14	AVR function of motor 1	0: Disabled 1: Enabled all the time 2: Disabled in Dec. process	1	1	○	
F09.15	Motor 1 low frequency suppression shock coefficient	0 - 200	50	1	○	
F09.16	Motor 1 high frequency suppression shock coefficient	0 - 200	20	1	○	
F09.17 - F09.18 Reserved					*	
<b>F10: Motor 1 Vector Control Speed-loop Parameters</b>						
F10.00	Speed control proportional gain 1 of motor 1	0.1 - 200.0	10.0	0.1	○	
F10.01	Speed control integral time 1 of motor 1	0.00 - 10.00s	0.20s	0.01s	○	
F10.02	Speed control proportional gain 2 of motor 1	0.1 - 200.0	10.0	0.1	○	
F10.03	Speed control integral time 2 of motor 1	0.00 - 10.00s	0.20s	0.01s	○	
F10.04	Speed-loop PI switching frequency 1 of motor 1	0.00 - 50.00 Hz	10.00Hz	0.01Hz	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F10.05	Speed-loop PI switching frequency 2 of motor 1	0.00 - 50.00 Hz	15.00Hz	0.01Hz	○	
F10.06	Speed-loop integral limitation of motor 1	0.0 - 200.0% (F08.02)	180.0%	0.1%	○	
F10.07	Speed-loop differential time of motor 1	0.00 - 1.00s <i>0.00: Not the speed-loop differential</i>	0.00s	0.01s	○	
F10.08	Speed-loop output filter time of motor 1	0.000 - 1.000s <i>0.000: The speed-loop filter is disabled</i>	0.010s	0.001s	○	
F10.09	Motor 1 torque limit lock selection	0: Do not lock 1: All of the torque limit is same with FWD electric torque limit	0	1	×	
F10.10	Motor 1 torque limit channel	Unit: Forward rotation electric torque limit channel Ten: Reverse electric torque limit channel Hundred: Forward rotation torque limit channel Thousand: Reverse rotation torque limit channel  0: Number limit 1: Analog input limit 2: Terminal pulse limit	0000	1	○	
F10.11	Motor torque limitation when motor 1 is forward	0.0 - 200.0% (F08.02)	180.0%	0.1%	○	
F10.12	Motor torque limitation when motor 1 is reverse	0.0 - 200.0% (F08.02)	180.0%	0.1%	○	
F10.13	Recreated torque limitation when motor 1 is forward	0.0 - 200.0% (F08.02)	180.0%	0.1%	○	
F10.14	Recreated torque limitation when motor 1 is reverse	0.0 - 200.0% (F08.02)	180.0%	0.1%	○	
<b>F11: Motor 1 Vector Control Current Loop Parameter</b>						
F11.00	Motor 1 current loop KP	1 - 2000	1200	1	○	
F11.01	Motor 1 current loop KI	1 - 1000	200	1	○	
F11.02	Motor 1 current loop output filter times	0 - 31	3	1	○	
F11.03	Motor 1 current loop feedforward enabled	0: Feedforward is prohibited 1: Enable feedforward	1	1	×	
F11.04	Motor 1 excitation boost setting	0.0 - 30.0%	0.0%	0.1%	○	
F11.05	Motor 1 field orientation optimization setting	Unit: Field orientation angle correction enable 0: Field orientation correction is forbidden	00	1	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		1: Enables magnetic field orientation correction  Ten: Mutual inductance projections enabled 0: Disable mutual inductance based on flux calculation 1: Enable mutual inductance based on flux calculation				
<b>F13: Asyn. Motor 2 Parameters</b>						
F13.00	Control mode selection of motor 2	0: V/f control without PG 2: Vector control without PG	0	1	×	
F13.01	Rated power of motor 2	0.2 - 500.0kW	Depend on controller	0.1kW	×	
F13.02	Rated voltage of motor 2	0 - 999V		1V	×	
F13.03	Rated current of motor 2	5.5kW above: 0.0 - 999.9A 5.5kW or below: 0.00 - 99.99A		0.01A 0.1A	×	
F13.04	Rated frequency of motor 2	1.0 - 400.0Hz	50.0Hz	0.1Hz	×	
F13.05	Rated speed of motor 2	1 - 24000rpm	Depend on controller	1pm	×	
F13.07	Parameter auto-tuning of motor 2	0: Auto-tuning is disabled 1: Stationary auto-tuning 2: Rotary auto-tuning 3: Motor stator resistance measurement	0	1	×	
F13.08	Stator resistance of motor 2	5.5kW below: 0.00 - 99.99Ω 7.5 - 75kW: 0.000 - 9.999Ω 90kW and above: 0.0000 - 0.9999Ω	Depend on controller	0.01Ω 0.001Ω 0.0001Ω	×	
F13.09	Rotor resistance of motor 2	5.5kW below: 0.00 - 99.99Ω 7.5 - 75kW: 0.000 - 9.999Ω 90kW and above: 0.0000 - 0.9999Ω	Depend on controller	0.01Ω 0.001Ω 0.0001Ω	×	
F13.10	Leakage inductance of motor 2	5.5kW below: 0.0 - 5000.0mH 7.5 - 75kW: 0.00 - 500.00mH 90kW and above: 0.000 - 50.000 mH	Depend on controller	0.1mH 0.01mH 0.001 mH	×	
F13.11	Mutual inductance of motor 2	5.5kW below: 0.0 - 5000.0mH 7.5 - 75kW: 0.00 - 500.00mH 90kW and above: 0.000 - 50.000 mH	Depend on controller	0.1mH 0.01mH 0.001 mH	×	
F13.12	Idling exciting current of motor 2	5.5kW and below: 0.0 - 999.9A 5.5kW above: 0.00 - 99.99A	Depend on controller	0.01A 0.1A	×	
F13.13	Motor 2 core saturation coefficient 1	0.00 - 1.00	1.00	0.01	×	
F13.14	Motor 2 core saturation coefficient 2	0.00 - 1.00	1.00	0.01	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F13.15	Motor 2 core saturation coefficient 3	0.00 - 1.00	1.00	0.01	×	
F13.16	V/f curve selection of motor 2	0: Line 1: Square curve 2: 1.2 exponential curve 3: 1.7 exponential curve 4: User-defined curve	0	1	×	
F13.17	V/f frequency value F3 of motor 2	F13.19 - 100.0%	0.0%	0.1%	×	
F13.18	V/f voltage value V3 of motor 2	F13.20 - 100.0%	0.0%	0.1%	×	
F13.19	V/f frequency value F2 of motor 2	F13.21 - F13.17	0.0%	0.1%	×	
F13.20	V/f voltage value V2 of motor 2	F13.22 - F13.18	0.0%	0.1%	×	
F13.21	V/f frequency value F1 of motor 2	0.0% - F13.19	0.0%	0.1%	×	
F13.22	V/f voltage value V1 of motor 2	0.0% - F13.20	0.0%	0.1%	×	
F13.23	Torque boost of motor 2	0.0 - 30.0% <i>0.0: Auto torque boost</i>	45kW and below: 2.0%  55 - 110 kW controller: 1.0%	0.1%	×	
F13.24	Cut-off point used for manual torque boost of motor 2	0.0 - 50.0% (F13.04)	25.0%	0.1%	○	
F13.25	Slip compensation gain of motor 2	0.0 - 300.0%	0.0%	0.1%	○	
F13.26	Slip compensation filter time of motor 2	0.01 - 10.00s	0.10s	0.01s	○	
F13.27	Slip compensation limitation of motor 2	0.0 - 250.0%	200.0%	0.1%	×	
F13.28	Compensation constant of motor 2	0.000 - 9.999kW	Depend on controller	0.001kW	×	
F13.30	AVR function of motor 2	0: Disabled 1: Enabled all the time 2: Disabled in Dec. process	1	1	○	
F13.31	Motor 2 low frequency suppression shock coefficient	0 - 200	50	1	○	
F13.32	Motor 2 high frequency suppression shock coefficient	0 - 200	20	1	○	
F13.35	Speed control proportional gain 1 of motor 2	0.1 - 200.0	10.0	0.1	○	



Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F13.36	Speed control integral time 1 of motor 2	0.00 - 10.00s	0.20s	0.01s	○	
F13.37	Speed control proportional gain 2 of motor 2	0.1 - 200.0	10.0	0.1	○	
F13.38	Speed control integral time 2 of motor 2	0.00 - 10.00s	0.20s	0.01s	○	
F13.39	Speed-loop PI switching frequency 1 of motor 2	0.00 - 50.00Hz	10.00Hz	0.01Hz	○	
F13.40	Speed-loop PI switching frequency 2 of motor 2	0.00 - 50.00Hz	15.00Hz	0.01Hz	○	
F13.41	Speed-loop integral limitation of motor 2	0.0 - 200.0% (F13.03)	180.0%	0.1%	○	
F13.42	Speed-loop differential time of motor 2	0.00 - 1.00s <i>0.0: Not the speed-loop differential</i>	0.00s	0.01s	○	
F13.43	Speed-loop output filter time of motor 2	0.000 - 1.000s <i>0.000: The speed-loop filter is disabled</i>	0.010s	0.001s	○	
F13.44	Motor 2 torque limit lock selection	0: Do not lock 1: All of the torque limit is same with FWD electric torque limit	0	1	×	
F13.45	Motor 2 torque limit channel	Unit: Forward rotation electric torque limit channel Ten: Reverse electric torque limit channel Hundred: Forward rotation torque limit channel Thousand: Reverse rotation torque limit channel  0: Number limit 1: Analog input limit 2: Terminal pulse limit	0000	1	○	
F13.46	Motor torque limitation when motor 2 is forward	0.0 - 200.0% (F13.03)	180.0%	0.1%	○	
F13.47	Motor torque limitation when motor 2 is reverse	0.0 - 200.0% (F13.03)	180.0%	0.1%	○	
F13.48	Recreated torque limitation when motor 2 is forward	0.0 - 200.0% (F13.03)	180.0%	0.1%	○	
F13.49	Recreated torque limitation when motor 2 is reverse	0.0 - 200.0% (F13.03)	180.0%	0.1%	○	
F13.50	Motor 2 current loop KP	1 - 2000	1200	1	○	
F13.51	Motor 2 current loop KI	1 - 1000	200	1	○	
F13.52	Motor 2 current loop output filter times	0 - 31	3	1	○	
F13.53	Motor 2 core saturation coefficient 4	0.00 - 1.00	1.00	0.01	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F13.54	Motor 2 core saturation coefficient 5	0.00 - 1.00	1.00	0.01	×	
F13.55	Motor 2 current loop feedforward enabled	0: Feedforward is prohibited 1: Enable feedforward	1	1	×	
F13.56	Motor 2 excitation boost setting	0.0 - 30.0%	0.0%	0.1%	○	
F13.57	Motor 2 field orientation optimization setting	Unit: Field orientation angle correction enable 0: Field orientation correction is forbidden 1: Enables magnetic field orientation correction  Ten: Mutual inductance projections enabled 0: Disable mutual inductance based on flux calculation 1: Enable mutual inductance based on flux calculation	00	1	×	
<b>F15: Digital I/O Terminal Parameters</b>						
F15.00	DI1 function	0: Unused 1: Controller enabled 2: FWD function 3: REV function 4: Three-wire operation mode 5,6,7: Frequency source selection 1, 2, 3	2	1	×	
F15.01	DI2 function	8: The frequency source switch to analogue setting 9,10: Run command source selection 1,2 11: Switch to terminal control mode 12: External stop command input	0	1	×	
F15.02	DI3 function	13 - 16: Multi-step frequency terminal 1 - 4 17: Frequency ramp (UP) 18: Frequency ramp (DN) 19: Clearing auxiliary frequency setting	0	1	×	
F15.03	DI4 function	20,21: Command control input for forward / reverse jog 1 (JOGF1/ JOGR1) 22,23: Command control input for forward / reverse jog 2 (JOGF2/ JOGR2) 24: Jog 1 command control input	0	1	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F15.04	DI5 function	25: Jog 1 direction control input <i>Remark: When select 20 and 21, the functions 24 and 25 are invalid</i> 26: Acc. / Dec. time selection terminals 1 27: Acc. / Dec. time selection terminals 2 28: Acc. / Dec. mode selection 29: Acc. / Dec. prohibition 30: Switch to ordinary running mode	0	1	×	
F15.05	DI6 function	31: Reset the stop status of PLC operation 32: Pausing the process PID 33: Disabling the process PID 34: Holding PID integral 35: Clearing PID integral 36: Switch to wobble operation 37: Reset the wobble operating status	0	1	×	
F15.06	DI7 (option terminal) function	38: DC braking start while stopping 39: External pause signal (normally-open input) 40: External pause signal (normally-closed input) 41: Coast to stop (normally-open input) 42: Coast to stop (normally-closed input)	0	1	×	
F15.07	DI8 (option terminal) function	43: Emergency stop 44: External fault signal (normally-open input) 45: External fault signal (normally-closed input) 46: External reset (RST) input 47: Switch between motor 1 and motor 2 48: Timing function input 49: Clearing the length	0	1	×	
F15.08	DI9 (option terminal) function	50: Clearing the counter to zero 51: Counter's triggering signal input 52: Length counting input (only DI6) 53: Pulse frequency input (only DI6) 54: Main and auxiliary frequency source switching 56: Speed control / torque control switching	0	1	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F15.09	DI10 (option terminal) function	57: Torque control torque polarity switching 59: PID parameter switch 65: Switching signal from variable frequency to power frequency 66: Reversed 67: Feedback signal of variable frequency contactor (Normally closed contacts)	0	1	×	
F15.10	DI11 (option terminal) function	68: Feedback signal of power frequency contact (Normally closed contacts) 82: Power frequency running signal terminal 83: Detection terminal of upper photoelectric switch	0	1	×	
F15.11	DI12 (option terminal) function	84: Detection terminal of under photoelectric switch 85: Pausing PLC operation 86: Terminal stop DC braking 87: Frequency setting channel selection 4	0	1	×	
F15.12	Acc. / Dec. rate of UP/DN terminal	0.00 - 99.99Hz/s	1.00Hz/s	0.01Hz/s	×	
F15.13	Terminal detecting interval	0: 2ms 1: 4ms 2: 8ms	0	1	○	
F15.14	Terminal detecting filter number	0 - 10000	2	1	○	
F15.15	Terminal input positive and negative logic setting	Bit0 - Bit8 is corresponding to DI1 - DI9 Bitx: Dly terminal input positive and negative logic  0: Positive logic 1: Negative logic	000	1	○	
F15.16	FWD / REV operation mode	0: Two-wire operation mode 1 1: Two-wire operation mode 2 2: Three-wire operation mode 1 3: Three-wire operation mode 2	0	1	×	
F15.17	Terminal operating selection due to fault of external equipment	0: Coast to stop 1: Emergency stop 2: Decelerate to stop 3: Continue to run	0	1	×	
F15.18	DO1 function	0: Unused 1: Controller ready 2: Controller is running (RUN) 3: Controller is forward running	2	1	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F15.19	DO2 function	4: Controller is reverse running 5: Controller is DC braking 6: Controller is in zero-frequency status 7: Controller is in zero-frequency running 9,10: Frequency detection threshold (FDT1, FDT2) 11: Frequency arriving signal (FAR) 12: Limitation of upper limit of frequency	0	1	○	
F15.20	RLY1 function	14: Limitation of upper / lower limits of wobble frequency 15: Simple PLC operating status indication 16: Simple PLC pausing indication 17: Simple PLC cycle completion indication 18: Completion of simple PLC operation stages	31	1	○	
F15.21	RLY2 (extension relay) function	19: Completion of simple PLC operation 20: Output data from SCI communication 21: Preset operating time out 22: Timing function output 23: Preset counting value reach 24: Indicating counting value reach 25: Setting length arrive	0	1	○	
F15.22	RLY3 (extension relay) function	26: Indication of motor 1 and motor 27: Analog input overrun output 29: Undervoltage lock-up signal (LU) 30: Overload signal (OL) 31: Controller fault 32: External fault 33: Controller auto-reset fault 35: Dormancy instruction function 36: The system is running	0	1	○	
F15.23	RLY4 (extension relay) function	38: High-frequency output (only DO2) 39: Target frequency is normal running frequency 40: Variable frequency contact output. 41: Power frequency contact output of forward running 42: Power frequency contact output of reverse running	0	1	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F15.24	Output terminal positive and negative logic selection	Bit0 - Bit2 is corresponding to DO1 - DO2 Bit2 - Bit5 is corresponding to RLY1 - RLY4 Bitx: DOy and RLYy output logic  0: Positive logic 1: Negative logic	000	1	○	
F15.25	ON side delay time of timing function	0.00 - 300.00s	0.00s	0.01s	○	
F15.26	OFF side delay time of timing function	0.00 - 300.00s	0.00s	0.01s	○	
F15.27	FAR range	0.00 - 100.00Hz	2.50Hz	0.01Hz	○	
F15.28	Zero-frequency operation threshold	0.00Hz - F00.06	0.00Hz	0.01Hz	○	
F15.29	Zero-frequency hysteresis	0.00Hz - F00.06	0.00Hz	0.01Hz	○	
F15.30	FDT1 detection mode	0: Detect according to the reference frequency 1: Detect according to the output frequency	0	1	○	
F15.31	FDT1 level	0.00Hz - F00.06	50.00Hz	0.01Hz	○	
F15.32	FDT1 lag	0.00Hz - F00.06	1.00Hz	0.01Hz	○	
F15.33	FDT2 detection mode	0: Detect according to the reference frequency 1: Detect according to the output frequency	0	1	○	
F15.34	FDT2 level	0.00Hz - F00.06	50.00Hz	0.01Hz	○	
F15.35	FDT2 lag	0.00Hz - F00.06	1.00Hz	0.01Hz	○	
F15.36	Preset operating time	0 - 65535h <i>0: Preset operating time is disabled</i>	0h	1h	○	
F15.37	Preset counting value arriving	F15.38 - 9999	0	1	○	
F15.38	Specified counting value arriving	0 - F15.37	0	1	○	
F15.43	Terminal output delay	0.0 - 100.0s	0.0s	0.1s	○	
<b>F16: Analogue I/O Terminal Parameters</b>						
F16.00	Display panel with potentiometer function selection	0: Unused 1: Upper limit frequency setting source 2: Frequency setting source 3: Auxiliary frequency reference 4: Process PID reference 5: Process PID feedback 6: Process PID regulating upper limit	0	1	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F16.01	Al1 function	7: Process PID regulating lower limit 8: Motor overheating signal input 9: Motor 1 forward rotation torque limit 10: Motor 1 reverse electric torque limit	2	1	×	
F16.02	Al2 function	11: Motor 1 forward regeneration rotation torque limit 12: Motor 1 reverse regeneration rotation torque limit 13: Torque command given	5	1	×	
F16.03	Al3 function	15: Torque control up limit frequency 16: Motor 2 Forward rotation electrical torque limit 17: Motor 2 reverse rotation electrical torque limit	0	1	×	
F16.04	Al4 function	18: Motor 2 Forward regeneration torque limit 19: Motor 2 reverse regeneration torque limit	0	1	×	
F16.05	Al1 bias	-100.0 - 100.0%	0.0%	0.1%	○	
F16.08	Al2 bias	-100.0 - 100.0%	0.0%	0.1%	○	
F16.11	Al3 bias	-100.0 - 100.0%	0.0%	0.1%	○	
F16.14	Al4 bias	-100.0 - 100.0%	0.0%	0.1%	○	
F16.06	Al1 gain	-10.00 - 10.00	1.00	0.01	○	
F16.09	Al2 gain	-10.00 - 10.00	1.00	0.01	○	
F16.12	Al3 gain	-10.00 - 10.00	1.00	0.01	○	
F16.15	Al4 gain	-10.00 - 10.00	1.00	0.01	○	
F16.07	Al1 filtering time	0.01 - 10.00s	0.05s	0.01s	○	
F16.10	Al2 filtering time	0.01 - 10.00s	0.05s	0.01s	○	
F16.13	Al3 filtering time	0.01 - 10.00s	0.05s	0.01s	○	
F16.16	Al4 filtering time	0.01 - 10.00s	0.05s	0.01s	○	
F16.17	Maximum input pulse frequency	0 - 50000Hz	10000Hz	1Hz	○	
F16.18	Input pulse filtering time	0.01 - 10.00s	0.20s	0.01s	○	
F16.19	AO1 function	0: Unused 1: Output frequency (0 - max. output frequency) 2: Reference frequency (0 - max. output frequency) 3: Motor speed (0 - maximum output frequency corresponding to speed)	2	1	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F16.20	AO2 function	4: Output current (0 - twice motor's rated current) 5: Output current (0 - twice motor's rated current) 6: Torque command(0 - 3times motor rated torque) 10: Output torque (0 - 3 times motor's rated torque) 11: Output voltage (0 - 1.2 times controller's rated voltage) 12: Bus voltage (0 - 2.2 times controller's rated voltage)	0	1	○	
F16.21	High-speed pulse output function	13: Output power (0 - twice motor's rated power) 14: AI1 input (0 - 10V) 15: AI2 input (-10 - 10V / 0 - 20mA) 16: AI3 input (-10 - 10V / 0 - 20mA) 17: AI4 input (-10 - 10V / 0 - 20mA) 18: Output frequency (-1 times - 1 times maximum output frequency) 19: Reference frequency (-1 times - 1 times maximum output frequency)	0	1	○	
F16.22	Analogue output AO1 bias	-100.0 - 100.0%	0.0%	0.1%	○	
F16.23	Analogue output AO1 gain	0.0 - 200.0%	100.0%	0.1%	○	
F16.24	Analogue output AO2 bias	-100.0 - 100.0%	0.0%	0.1%	○	
F16.25	Analogue output AO2 gain	0.0 - 200.0%	100.0%	0.1%	○	
F16.26	DO2 maximum output pulse frequency	0.1 - 50.0kHz	10.0kHz	0.1kHz	○	
F16.27	Keypad potentiometer offset	0.0 - 200.0%	100.0%	0.1%	○	
F16.28	Keypad potentiometer gain	0.0 - 200.0%	110.0%	0.1%	○	
<b>F17: SCI Communication Parameter</b>						
F17.00	Data format	0: 1-8-2 format, no parity, RTU 1: 1-8-1 format, even parity, RTU 2: 1-8-1 format, odd parity, RTU 6: 1-8-11 format, no parity, RTU	0	1	×	
F17.01	Baud rate selection	0: 1200bps 1: 2400bps 2: 4800bps 3: 9600bps 4: 19200bps 5: 38400bps 6: 57600bps 7: 76800bps 8: 115200bps	3	1	×	
F17.02	Local address	0 - 247	2	1	×	



Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F17.03	Host PC response time	0 - 1000ms	0ms	1ms	×	
F17.04	Time threshold for detecting communication status	0.0 - 1000.0s <i>0.0: Not detect communication time out</i>	0.0s	0.1s	×	
F17.05	Detecting time at communication error	0.0 - 1000.0s <i>0.0: Not detect the communication error</i>	0.0s	0.1s	×	
F17.06	Action selection at communication time out	0: Coast to stop 1: Emergency stop 2: Decelerate to stop 3: Continue to run	3	1	×	
F17.07	Action selection at communication fault		3	1	×	
F17.08	Action selection at communication peripheral device fault		1	1	×	
F17.09	Communication write function parameter of storage EEPROM method selection	Unit: Except of F00.13, F19.03, EEPROM storage selection in communication 0: Not stored in EEPROM 1: Stored in EEPROM  Ten: For F00.13, F19.03, EEPROM storage selection in communication 0: Not stored in EEPROM 1: Stored in EEPROM	01	1	×	
<b>F18: Display Control Parameters</b>						
F18.00	Language selection	0: Chinese 1: English	0	1	○	
F18.01	Displaying contrast of the LCD keypad	1 - 10	5	1	○	
F18.02	Set the display parameter 1 during operation	0: Unused 1: Controller's rated current 3: Controller status 4: Master setting frequency source	8	1	○	
F18.03	Set the display parameter 2 during operation	5: Master setting frequency 6: Auxiliary setting frequency 7: Setting frequency	7	1	○	
F18.04	Set the display parameter 3 during operation	8: Reference frequency (after Acc. / Dec.) 9: Output frequency	9	1	○	
F18.05	Set the display parameter 4 during operation	10: Setting speed 11: Running speed 13: Output voltage 14: Output current	13	1	○	
F18.06	Set the display parameter 5 during operation	15: Torque given 16: Output torque	14	1	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F18.07	Set the display parameter 6 during operation	17: Output power 18: DC bus voltage 19: Potentiometer input voltage 20: AI1 input voltage 21: AI1 input voltage (after disposal)	18	1	○	
F18.08	Set the display parameter 1 at stop	22: AI2 input voltage 23: AI2 input voltage (after disposal) 24: AI3 input voltage 25: AI3 input voltage (after disposal)	7	1	○	
F18.09	Set the display parameter 2 at stop	26: AI4 input voltage 27: AI4 input voltage (after disposal) 28: DI6 terminal pulse input frequency	18	1	○	
F18.10	Set the display parameter 3 at stop	29: AO1 output 30: AO2 output 31: High-speed output pulse frequency	20	1	○	
F18.11	Set the display parameter 4 at stop	32: Heatsink temperature 33: Set the line speed 34: Reference line speed 37: Process PID reference 38: Process PID feedback 39: Process PID error	22	1	○	
F18.12	Set the display parameter 5 at stop	40: Process PID integral value 41: Process PID output 42: External counting value 43: Input terminal status 44: Output terminal status	43	1	○	
F18.13	Set the display parameter 6 at stop	45: MODBUS communication status 46: Actual length 47: Total length 48: Total time at power on (hour) 49: Total time at running (hour)	44	1	○	
F18.14	Frequency display gain	0.0 - 160.0	0.0	0.1	○	
F18.15	Maximum line speed	0 - 65535	1000	1	○	
F18.16	Line speed display accuracy	0: Integer 1: One decimal 2: Two decimal 3: Three decimal	0	1	○	
<b>F19: Function-boost Parameters</b>						
F19.00	Auxiliary frequency setting source selection	0: No auxiliary source 1: Digital setting 1	0	1	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		2: Digital setting 2 (the initial value is set by F19.03 and adjusted by terminals UP/DN) 3: Digital setting 3 (the initial value = 0, set by SCI direct communication) 4: AI analogue setting 5: Terminal pulse setting 6: Process PID output				
F19.01	Master / Auxiliary setting calculation	0: Master setting + auxiliary setting 1: Master setting - auxiliary setting	0	1	○	
F19.02	Analogue auxiliary setting coefficient	0.00 - 9.99	1.00	0.01	○	
F19.03	Initial value of digital auxiliary frequency	0.00 - F00.06	0.00Hz	0.01Hz	○	
F19.04	Control selection of digital auxiliary frequency	Unit: Save selection at power outage (Only when F19.00 = 1 or 2 will F19.04 be enabled) 0: Not save auxiliary frequency at power outage 1: The auxiliary frequency will be saved to F19.03 at power outage  Ten: Frequency disposal when the controller stops 0: Maintain the auxiliary frequency when the controller stops 1: The auxiliary frequency clears to zero when the controller stops	00	1	○	
F19.05	Adjustment selection of setting frequency	0: No adjustment 1: To adjust as per the max. output frequency 2: To adjust as per the current frequency	1	1	○	
F19.06	Adjustment coefficient of setting frequency	0.0 - 200.0%	100.0%	0.1%	○	
F19.07	Control selection of cooling fan	0: Auto stop mode 1: Immediate stop mode 2: The fan runs continuously when power on	0	1	○	
F19.08	Cooling fan controls delaying time	0.0 - 600.0s	30.0s	0.1s	○	
F19.09	Reserved				*	
F19.10	Zero-frequency threshold	0.00Hz - F00.06	1.00Hz	0.01Hz	○	
F19.11	Action selection at setting frequency is lower than zero-frequency threshold	0: Run according to frequency command 1: Holding stop, no output	0	1	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		2: Run according to zero-frequency threshold 3: Run according to zero-frequency				
F19.12	Trip-free selection at momentary power loss	0: This function is disabled 1: This function is enabled	0	1	×	
F19.13	Dec. time at voltage compensation	10 - 1000	500	1	○	
F19.14	Auto-Current-Limit frequency recover filtering times	0 - 9999	63	1	○	
F19.15	Reference voltage of trip-free operation at momentary power loss	400 - 720V	430V	1V	○	
F19.16	Restart after power failure	0: This function is disabled 1: This function is enabled	0	1	×	
F19.17	Delay time for restart after power failure	0.00 - 10.00s	2.00s	0.01s	○	
F19.18	Overvoltage suppression gain	0 - 1000 <i>0.000: Overvoltage stall is prohibited</i>	500	1	○	
F19.19	Stall overvoltage point	450 - 790V	740V	1V	○	
F19.20	Auto current limiting selection	0 - 1000	500	1	○	
F19.21	Auto current limiting threshold	20.0 - 200.0%	150.0%	0.1%	○	
F19.23	Enabled mode of terminal run command	0: Rise edge enabled mode 1: Level enabled mode	0	1	○	
F19.24	Action voltage of braking unit	630 - 750V	720V	1V	○	
F19.25	Flux brake enabled	0: Prohibited 1: Enable	0	1	○	
F19.26	Preset length	0 - 65535m	0m	1m	○	
F19.28	Length ratio	0.001 - 30.000	1.000	0.001	○	
F19.29	Length checking coefficient	0.001 - 1.000	1.000	0.001	○	
F19.30	Measuring shaft diameter	1.00 - 100.00cm	10.00cm	0.01cm	○	
F19.31	Number of pulses per revolution	1 - 9999	1	1	○	
F19.32	Length arrive and output function selection	0: Output level signal 1: Output 500ms pulse	0	1	○	
F19.33	Record of length disposal after length arrive	0: Auto-clear 1: No change	0	1	○	
F19.34	Record of length disposal at stop		0	1	○	
F19.35	Switching frequency from variable frequency to power frequency when up running	0.00Hz - upper limit	51.00Hz	0.01Hz	×	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
F19.36	Switch frequency from power frequency to variable frequency when down running	0.00Hz - upper limit	51.00Hz	0.01Hz	×	
F19.37	Switching angle range	0.0 - 60.0°	10.0°	0.1°	×	
F19.38	Delay time switch from variable frequency to power frequency	0 - 2000ms	20ms	1ms	×	
F19.39	Delay time switch from power frequency to variable frequency	0 - 2000ms	200ms	1ms	×	
F19.40	Effective way of switching signal between power frequency and variable frequency when the instant of power on	0: Rising edge valid 1: Electrical level valid	0	1	×	
F19.41	Enable detection of input phase dislocation	0: Enable 1: Shielded	0	1	○	
F19.42	Detection time of variable frequency contact fault	0 - 2000ms	1000ms	1ms	×	
F19.43	Detection time of power frequency contact fault	0 - 2000ms	1000ms	1ms	×	
F19.44	Short circuit detection selection	0: Disable detection 1: Enable detection	1	1	○	
<b>F20: Protection of Fault Parameters</b>						
F20.00	Overload pre-alarm detection	Unit: Overload pre-alarm detection 0: It is active all the time in running status 1: It is active only at constant speed  Ten: Action selection for overload pre-alarm 0: The controller doesn't alarm and continues operation when detecting an active overload signal 1: The controller alarms and stops operation when detecting an active overload signal  Hundred: Overload threshold selection 0: Ratio of load current to the motor's rated current (alarm: Motor overload) 1: Ratio of load current to the controller's rated current (alarm: Controller overload)	00000	1	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		Thousand: Motor type selection 0: Standard motor 1: Variable frequency  Ten thousand: Overload protection 0: Enable overload protection 1: Shield overload protection				
F20.01	Overload pre-alarm detection threshold	20.0 - 200.0%	150.0%	0.1%	○	
F20.02	Overload pre-alarm detection time	0.0 - 60.0s	5.0s	0.1s	○	
F20.03	Controller output load-loss detection	0: Disabled 1: It is detecting all the time in running process, and then continues operation after detecting (alarm) 2: It detects only at the same speed, and then continues operation after detecting (alarm) 3: It is detecting all the time in running process, and then cut off the output after detecting (fault) 4: It is detects only at the same speed, and then cut off the output after detecting (fault)	0	1	○	
F20.04	Controller output load-loss detection threshold	0 - 100%	30%	1%	○	
F20.05	Controller output load-loss detection time	0.00 - 20.00s	1.00s	0.01s	○	
F20.06	Motor overheating signal input type	0: Does not detect the motor overheating 1: Positive characteristic (PTC) 2: Negative characteristic (NTC)	0	1	○	
F20.07	Thermistor value at motor overheating	0.0 - 10.0kΩ	5.0kΩ	0.1kΩ	○	
F20.08	Input phase loss detection reference	0 - 50% 0%: The controller will not detect input phase loss fault	30%	1%	○	
F20.09	Input phase loss detection time	1.00 - 5.00s	1.00s	0.01s	○	
F20.10	Output phase loss detection reference	0 - 50% 0%: The controller will not detect output phase loss fault	20%	1%	○	
F20.11	Output phase loss detection time	0.00 - 20.00s	3.00s	0.01s	○	
F20.12	PID reference lose detected value	0 - 100%	0%	1%	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		<i>0%: Does not detect PID reference lose</i>				
F20.13	PID reference loss detection time	0.00 - 10.00s <i>0.00s: Does not detect PID reference loss</i>	0.20s	0.01s	○	
F20.14	PID feedback loss detected value	0 - 100% <i>0%: Does not detect PID feedback loss</i>	0%	1%	○	
F20.15	PID feedback loss detection time	0.00 - 10.00s <i>0.00s: Does not detect PID feedback loss</i>	0.20s	0.01s	○	
F20.16	Detection value at PID feedback out of the limit	0 - 100% <i>100%: Does not detect PID feedback out of the limit</i>	100%	1%	○	
F20.17	Detection time at PID feedback out of the limit	0.00 - 10.00s <i>0.00s: Does not detect PID feedback out of the limit</i>	0.20s	0.01s	○	
F20.18	Auto reset times	0 - 100 <i>0: No auto reset function</i>	0	1	○	
F20.19	Auto reset interval	2.0 - 20.0s/time	5.00s/time	0.01 s/time	○	
F20.20	Faulted relay action selection	Unit: In auto reset process Ten: In the undervoltage process 0: Faulted relay doesn't act 1: Faulted relay acts	00	1	○	
F20.21	Type of fifth latest (the last) fault	-Lu-: DC bus under voltage E0001: Acc. overcurrent E0002: Dec. overcurrent E0003: Costant overcurrent E0004: Acc. overvoltage E0005: Dec. overvoltage E0006: Constant overvoltage E0007: Stall overvoltage E0008: Fault of power module E0009: Heatsink overheat E0010: Fault of braking unit E0011: CPU fault E0012: Parameters auto-tuning fault E0013: Contactor is not actuated E0014: Fault of current detection circuit E0015: Fault of input phase E0016: Fault of output phase E0017: Controller overload E0018: Controller output is unloaded	0	1	*	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		E0019: Motor overload E0020: Motor overheat E0021: Access fault of control board EEPROM E0022: Access fault of keypad EEPROM (only displaying without any protection) E0023: Fault setting of parameters E0024: Fault of external equipment E0025: PID reference loss E0026: PID feedback loss E0027: PID feedback out of limiting E0028: SCI communication time-out E0029: SCI communication error E0035: Variable frequency contact abnormal E0036: Power frequency contact abnormal E0037: Input phase dislocation				
F20.22	Setting frequency at the last fault	0.00 - 400.00Hz	0.00Hz	0.01Hz	*	
F20.23	Running frequency at the last fault	0.00 - 400.00Hz	0.00Hz	0.01Hz	*	
F20.24	Bus voltage at the last fault	0 - 999V	0V	1V	*	
F20.25	Output voltage at the last fault	0 - 999V	0V	1V	*	
F20.26	Output current at the last fault	7.5kW or above: Actual value	0.0A	0.1A	*	
		5.5kW or below: Actual value	0.00A	0.01A		
F20.27	Input terminal status at the last fault	0 - 0x1FF	0	1	*	
F20.28	Output terminal status at the last fault	0 - 0x7FF	0	1	*	
F20.29	Interval of fifth latest fault	0 - 6553.5h	0.0h	0.1h	*	
F20.30	Type of fourth latest fault	0 - 99	0	1	*	
F20.31	Interval of fourth latest fault	0 - 6553.5h	0.0h	0.1h	*	
F20.32	Type of third latest fault	0 - 99	0	1	*	
F20.33	Interval of third latest fault	0 - 6553.5h	0.0h	0.1h	*	
F20.34	Type of second latest fault	0 - 99	0	1	*	
F20.35	Interval of second latest fault	0 - 6553.5h	0.0h	0.1h	*	
F20.36	Type of first latest fault	0 - 99	0	1	*	
F20.37	Interval of first latest fault	0 - 6553.5h	0.0h	0.1h	*	
<b>F21: Torque Control Parameters</b>						
F21.00	Torque command given channel selection	0: F21.01 digital set 1: Analogue set 2: Terminals pulse set	0	1	×	



Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
		3: SCI communication set				
F21.01	Torque command digital setting	-100.0 - 100.0% (F21.02)	0.0%	0.1%	○	
F21.02	Max. Torque setting	0.0 - 500.0% (F08.04)	100.0%	0.1%	×	
F21.03	Filter time of torque command	0.000 - 1.000s	0.000s	0.001s	○	
F21.04	Speed limit selection in torque control	0: Defined by F21.05, F21.06 1: Defined by F00.06 (max. output frequency) 2: Limited by analog quantity	1	1	×	
F21.05	Positive speed limit selection in torque control	0 - 100% (F00.06)	100%	1%	○	
F21.06	Reverse speed limit selection in torque control	0 - 100% (F00.06)	100%	1%	○	
F21.10	Stop mode selection of torque control	0: Dec. stop + DC braking 1: Stop torque output	0	1	×	
<b>F23: PWM Control Parameters</b>						
F23.00	Set the carrier frequency	1 - 12kHz	Depend on controller	1kHz	×	
F23.01	Carrier frequency is automatically adjusted	0: The carrier frequency is disabled automatically 1: Carrier frequency auto adjustment	0	1	×	
F23.02	PWM overshoot enable	0: Disabled 1: Enabled	1	1	×	
F23.03	PWM modulation mode	0: Two-phase modulation or three-phase modulation 1: Three-phase modulation	0	1	×	
F23.04	PWM modulation mode switching point 1	5.00Hz - F23.05 - 2.00	Depend on controller	0.01Hz	×	
F23.05	PWM modulation mode switching point 2	F23.04 + 2.00 - 50.00Hz	Depend on controller	0.01Hz	×	
<b>Group U: User Menu Mode Display Parameters</b>						
U00.00	User menu map of setting 1	00.00 - 23.05, 99.99 <i>99.99 is corresponding to no parameter mapping function</i>	00.01	0.01	○	
U00.02	User menu map of setting 2		00.06	0.01	○	
U00.04	User menu map of setting 3		00.08	0.01	○	
U00.06	User menu map of setting 4		00.13	0.01	○	
U00.08	User menu map of setting 5		00.10	0.01	○	
U00.10	User menu map of setting 6		00.11	0.01	○	
U00.12	User menu map of setting 7		02.13	0.01	○	
U00.14	User menu map of setting 8		03.01	0.01	○	
U00.16	User menu map of setting 9		03.02	0.01	○	
U00.18	User menu map of setting 10		08.00	0.01	○	
U00.20	User menu map of setting 11		08.01	0.01	○	

Ref. Code	Function	Setting Range	Default	Unit	Attribute	Setting
U00.22	User menu map of setting 12		08.02	0.01	○	
U00.24	User menu map of setting 13		08.03	0.01	○	
U00.26	User menu map of setting 14		08.04	0.01	○	
U00.28	User menu map of setting 15		99.99	0.01	○	
U00.30	User menu map of setting 16		99.99	0.01	○	
U00.01	The setting value of map 1	-	-		-	
U00.03	The setting value of map 2		-		-	
U00.05	The setting value of map 3		-		-	
U00.07	The setting value of map 4		-		-	
U00.09	The setting value of map 5		-		-	
U00.11	The setting value of map 6		-		-	
U00.13	The setting value of map 7		-		-	
U00.15	The setting value of map 8		-		-	
U00.17	The setting value of map 9		-		-	
U00.19	The setting value of map 10		-		-	
U00.21	The setting value of map 11		-		-	
U00.23	The setting value of map 12		-		-	
U00.25	The setting value of map 13		-		-	
U00.27	The setting value of map 14		-		-	
U00.29	The setting value of map 15		-		-	
U00.31	The setting value of map 16		-		-	