



MD310 Quick Start Manual

General-Purpose AC Drive

Version 0.1

Dated 14th OCT, 2013

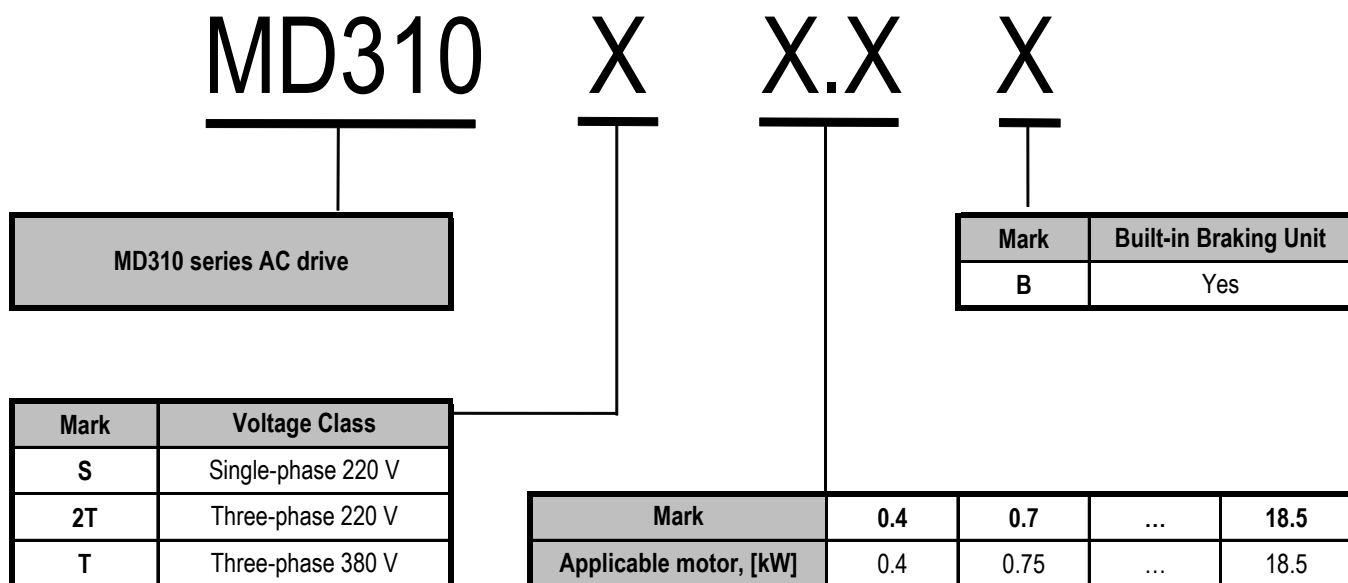


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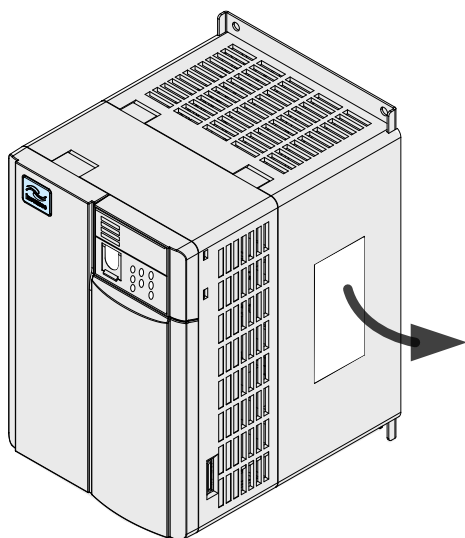
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CHAPTER 1 PRODUCT INFORMATION

1.1 Designation



1.2 Nameplate



Nameplate

AC drive model	→	MODEL: MD310T0.7B
Rated input	→	INPUT: 3~ 380-440V, 3.4A, 50Hz/60Hz
Rated output	→	OUTPUT: 3~ 0-440V, 2.1A, 0-600Hz, 0.75kW
S/N code	→	S/N: 013012024C700087
Barcode	→	
Manufacturer	→	<hr style="width: 80%; margin: 0 auto;"/> Suzhou Inovance Technology Co.,Ltd.

1.3 General Specifications

Voltage Class		Three-phase 380V										
Drive Model		MD310 T0.4B	MD310 T0.7B	MD310 T1.5B	MD310 T2.2B	MD310 T3.7B	MD310 T5.5B	MD310 T7.5B	MD310 T11B	MD310 T15B	MD310 T18.5B	
Frame Size		1		2		3		4		5		
Dimension [★]	H [mm]	128			185			234		270		
	W [mm]	108			130			140		180		
	D [mm]	148	158			164	171		175.5			
	A [mm]	96			108			122		160		
	B [mm]	118			198			248		284		
	H1 [mm]	/			209			260		298		
Mounting Hole Diameter [mm]		Ø5					Ø6					
Drive Input	Rated Input Voltage	Three-phase 380 to 440 VAC, -15% to 20% (323 to 528 VAC)										
	Rated Input Current(A)	1.9	3.4	5.0	5.8	10.5	14.6	20.5	26.0	35.0	38.5	
	Rated Input Frequency	50/60 Hz, ±5% (47.5 to 63 Hz)										
Drive Output	Applicable Motor	[kW]	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5
		[HP]	0.5	1	2	3	5	7.5	10	15	20	25
	Output Current, [A]	1.5	2.1	3.8	5.1	9.0	13.0	17.0	25.0	32.0	37	
	Power Capacity, [kVA]	1.0	1.5	3.0	4.0	5.9	8.9	11.0	17.0	21.0	24.0	
	Overload Capacity [☆]	120% for 1 hour & 150% for 60 Sec & 180% for 2 Sec										
	Max. Output Voltage	Three-phase 380 VAC (proportional to input voltage)										
	Max. Output Frequency	300 Hz for SVC control, 600Hz for V/F control										
Recommended Braking Resistor	[kW]	≥0.15	≥0.15	≥0.15	≥0.25	≥0.30	≥0.40	≥0.50	≥0.80	≥1.00	≥1.30	
	[Ω]	≥300	≥300	≥220	≥200	≥130	≥90	≥65	≥43	≥32	≥25	
Cooling Method		Air				Fan						

☆: At 6 kHz carrier frequency without derating

★: The mounting dimensions are shown below.

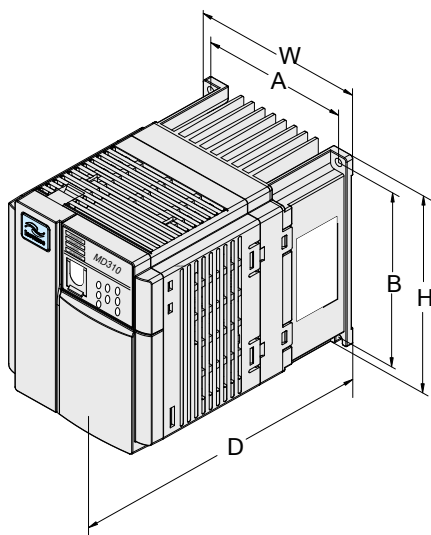


Figure 1..Model of 0.4 to 2.2 kW

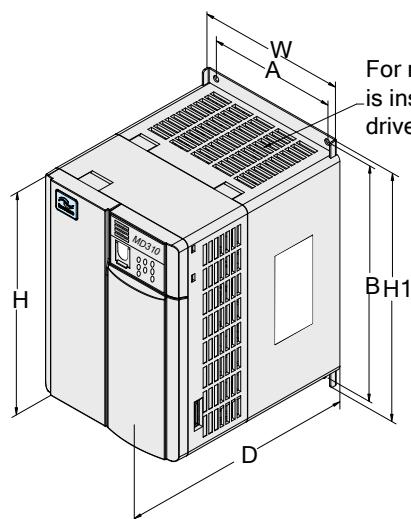
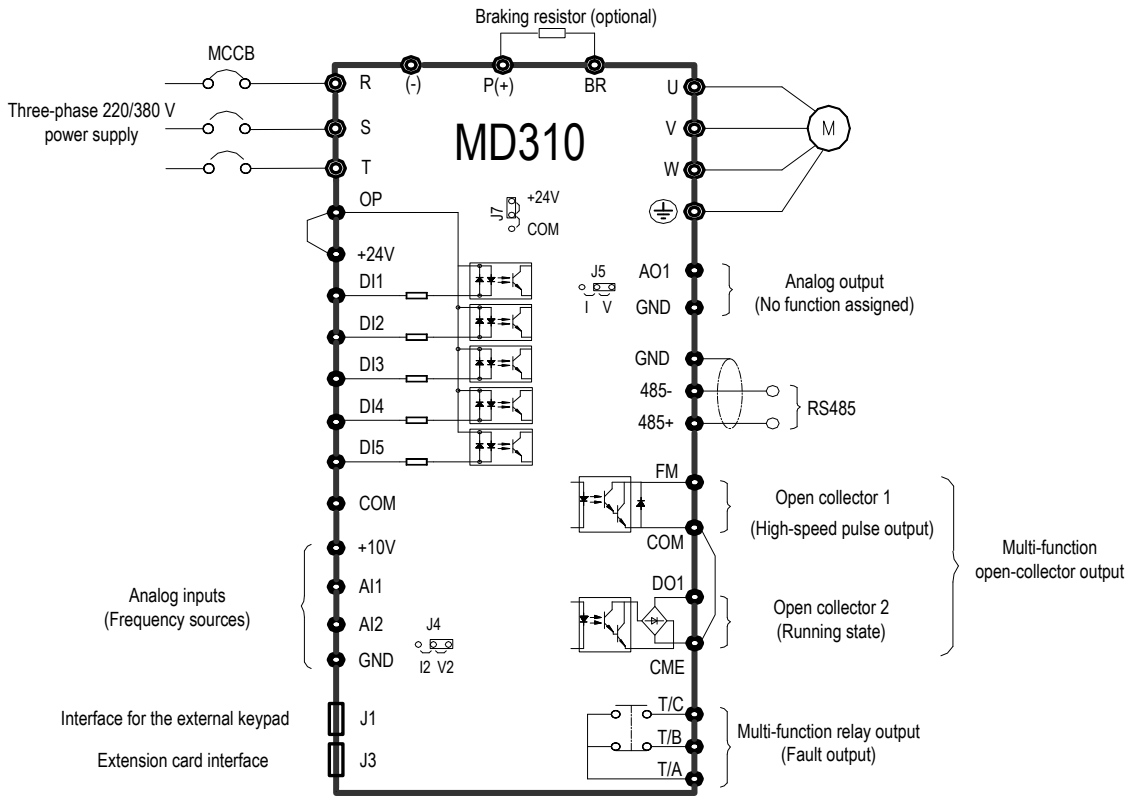


Figure 2..Model of 3.7 to 18.5 kW

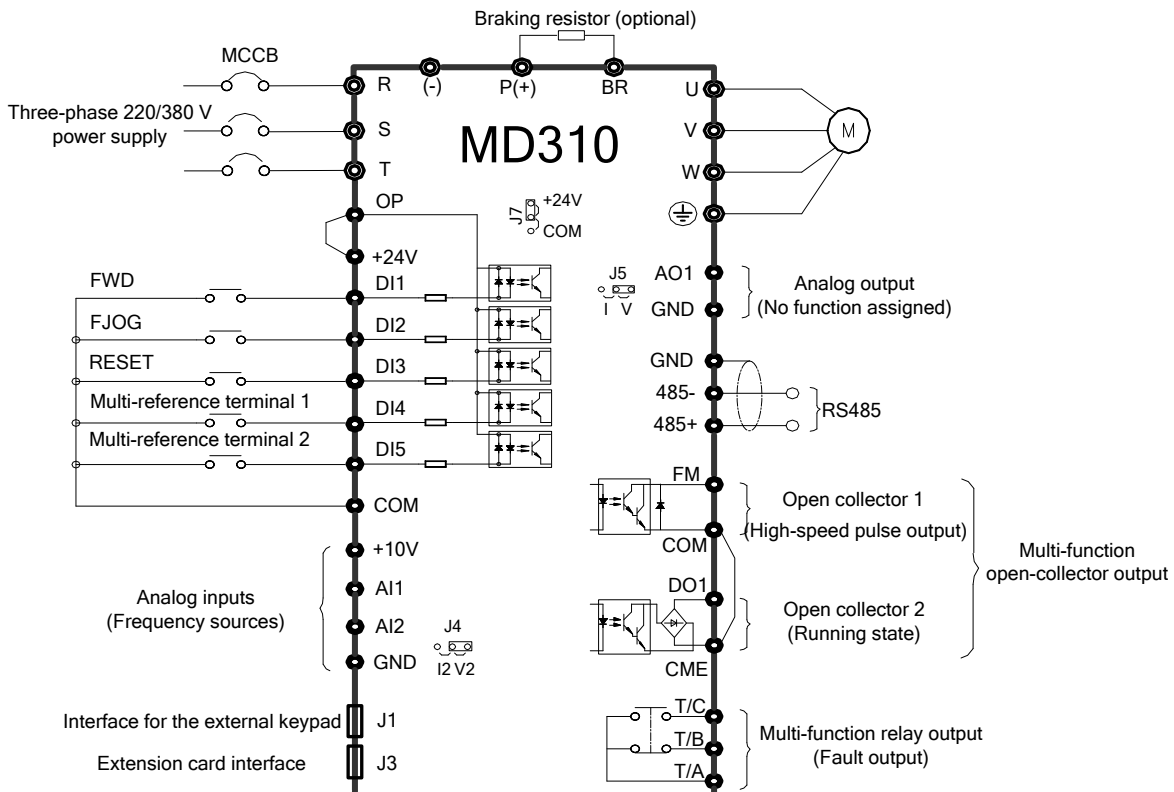
CHAPTER 2 WIRING

2.1 Typical Wiring

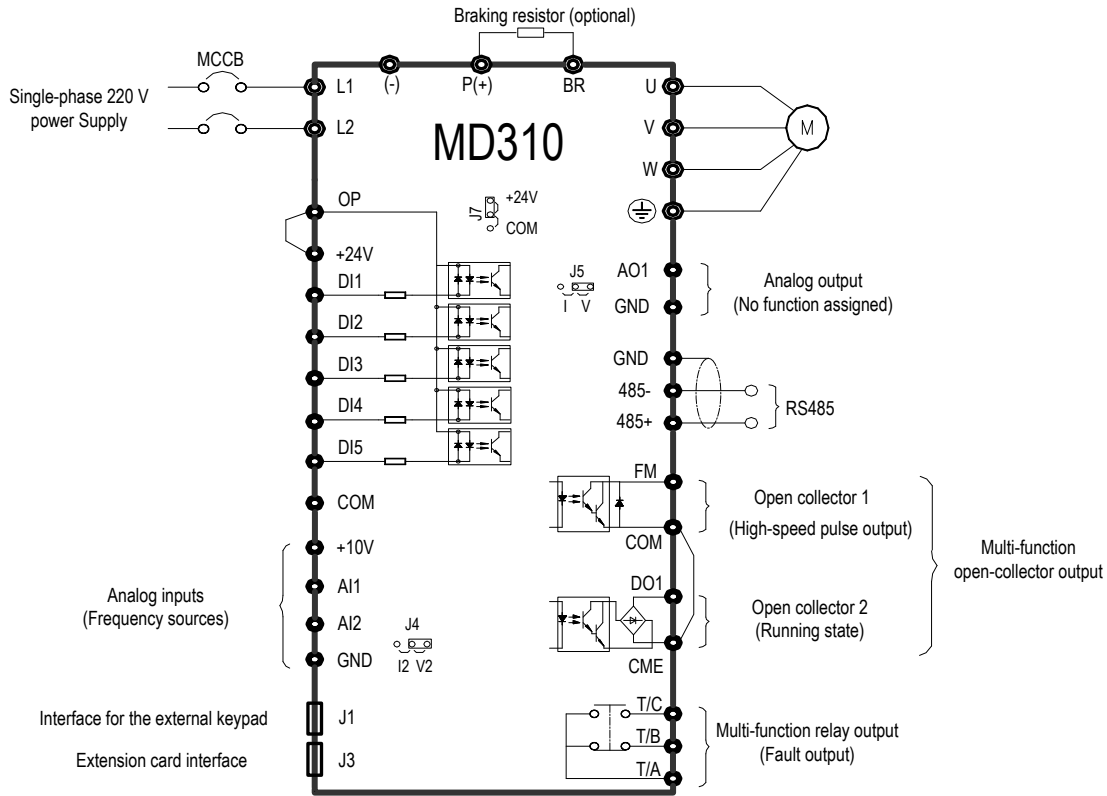
✓ Wiring Of Three-Phase 220/380 VAC (Keypad Control, F6-00 = 0)



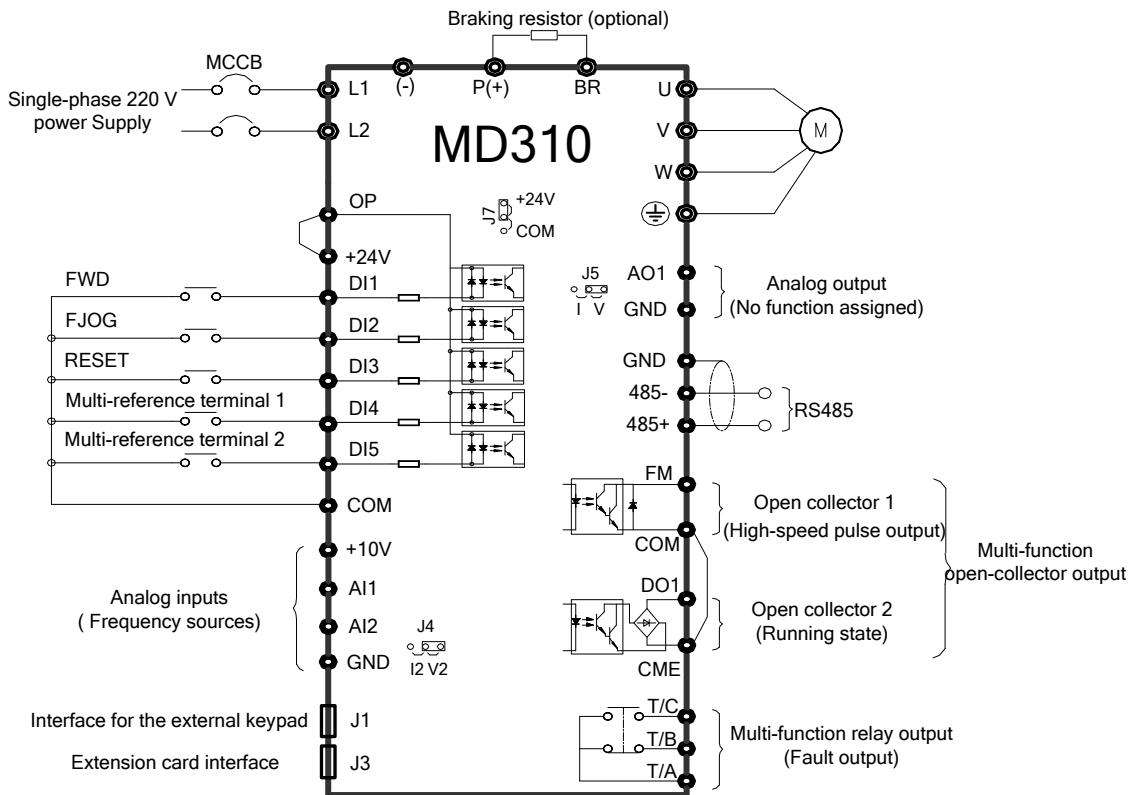
✓ Wiring Of Three-Phase 220/380 VAC (Terminal Control, F6-00 = 1)



✓ **Wiring Of Single-Phase 220 VAC (Keypad Control, F6-00 = 0)**



✓ **Wiring Of Single-Phase 220 VAC (Terminal Control, F6-00 = 1)**



2.2 Terminals

✓ Terminals Of Main Circuit

Table 2-1: Main circuit terminals of three-phase



Terminal	Terminal Name	Description
R, S, T	Three-phase power supply input terminals	Connect to the three-phase AC power supply
P(+), (-)	Positive and negative terminals of DC bus	Common DC bus input point
P(+), BR	Connecting terminals of braking resistor	Connect to a braking resistor
U, V, W	Output terminals	Connect to a three-phase motor.
	Grounding terminal	Must be grounded.

Table 2-2: Main circuit terminals of single-phase

Terminal	Terminal Name	Description
L1, L2	Single-phase power supply input terminals	Connect to the single-phase 220 VAC power supply.
P(+), (-)	Positive and negative terminals of DC bus	Common DC bus input point.
P(+), BR	Connecting terminals of braking resistor	Connect to a braking resistor.
U, V, W	Output terminals	Connect to a three-phase motor.
	Grounding terminal	Must be grounded.

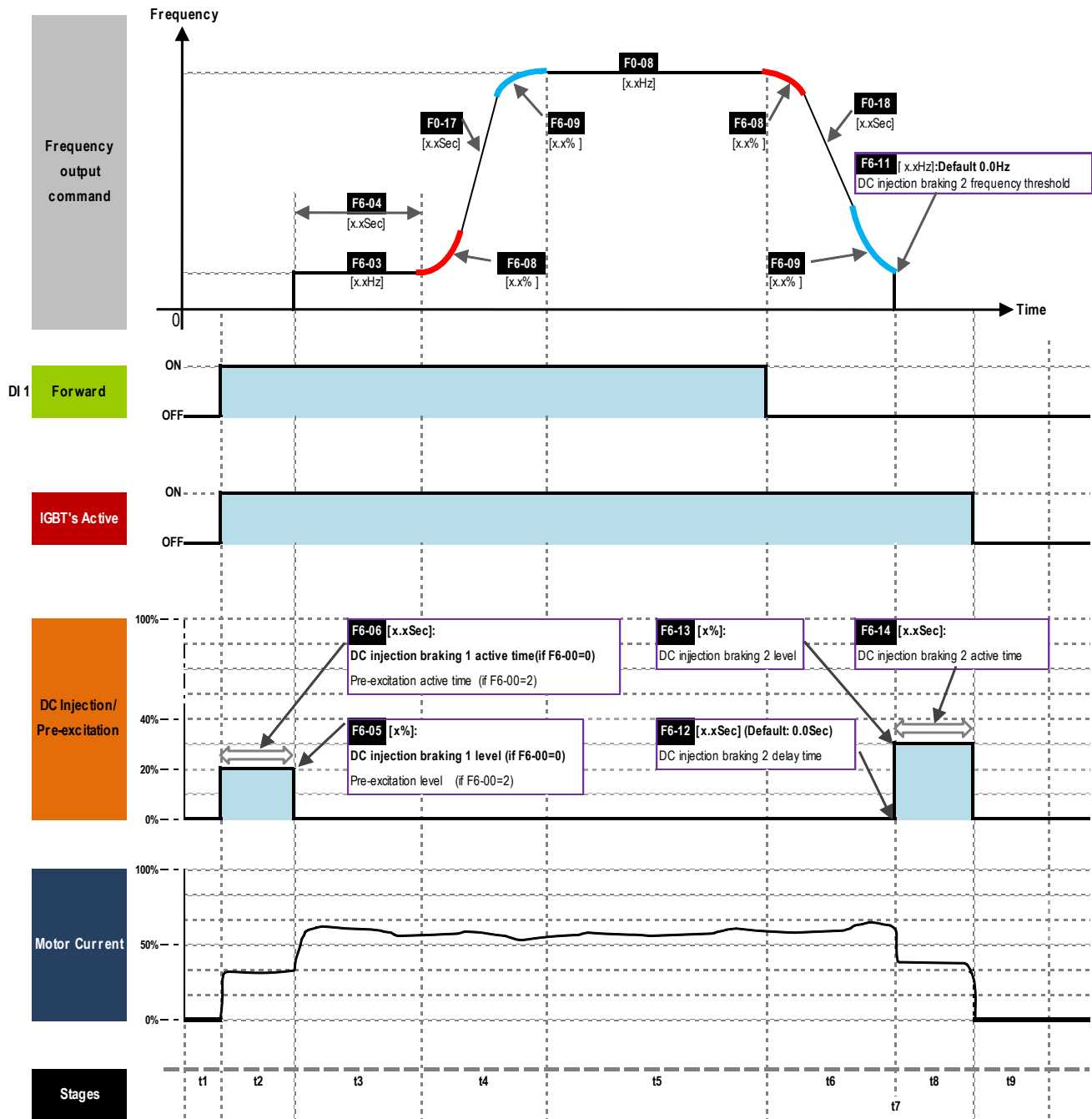
✓ Terminals Of Control Circuit

Terminal	Terminal Name	Description
+10V-GND	+10 VDC power supply	Provide +10 VDC power supply externally. Usually, it provides power supply to the external potentiometer with resistance range of 1 to 5 kΩ. Maximum output current: 10 mA
+24V-COM	+24 VDC power supply	Provide +24 VDC power supply externally. Usually, it provides power supply to DI/DO terminals and external sensors. Maximum output current: 200 mA
OP	Input terminal of external power supply	Connect to +24 VDC by default. When DI1 to DI5 need to be driven by the external signal, OP needs to be connected to the external power supply and be disconnected from +24 VDC.
AI1-GND	Analog input 1	AI1 input voltage range: 0 to 10 VDC
AI2-GND	Analog input 2	AI2 input range: 0 to 10 VDC or 4 to 20 mA Impedance: 22 kΩ
DI1-COM	Digital input 1	
DI2-COM	Digital input 2	Optical coupling isolation, compatible with dual-polarity input Impedance: 2.4 kΩ.
DI3-COM	Digital input 3	Input voltage range: 9 to 30 VDC
DI4-COM	Digital input 4	
DI5-COM	High-speed pulse input	Besides features of DI1 to DI4, it can be used for high-speed pulse input. Maximum input frequency: 20 kHz.
AO1-GND	Analog output 1	Voltage or current output, determined by jumper J5 on the control board. Output voltage range: 0 to 10 VDC. Output current range: 0 to 20 mA.
DO1-CME	Digital output 1	Multi-function open-collector output Voltage range: 0 to 24 VDC. Current range: 0 to 50 mA.
FM-COM	High-speed pulse output	Output pulse frequency range: 0 to 50 kHz. For jumper J6, CME and COM are shorted by default.
T/A-T/B	Normally closed terminal	Contact driving capacity: 250 VAC, 0.2A
T/A-T/C	Normally open terminal	30 VDC, 1 A

CHAPTER 3 EASY SETUP

3.1 Logic Of Control

✓ Complete Timing Diagram

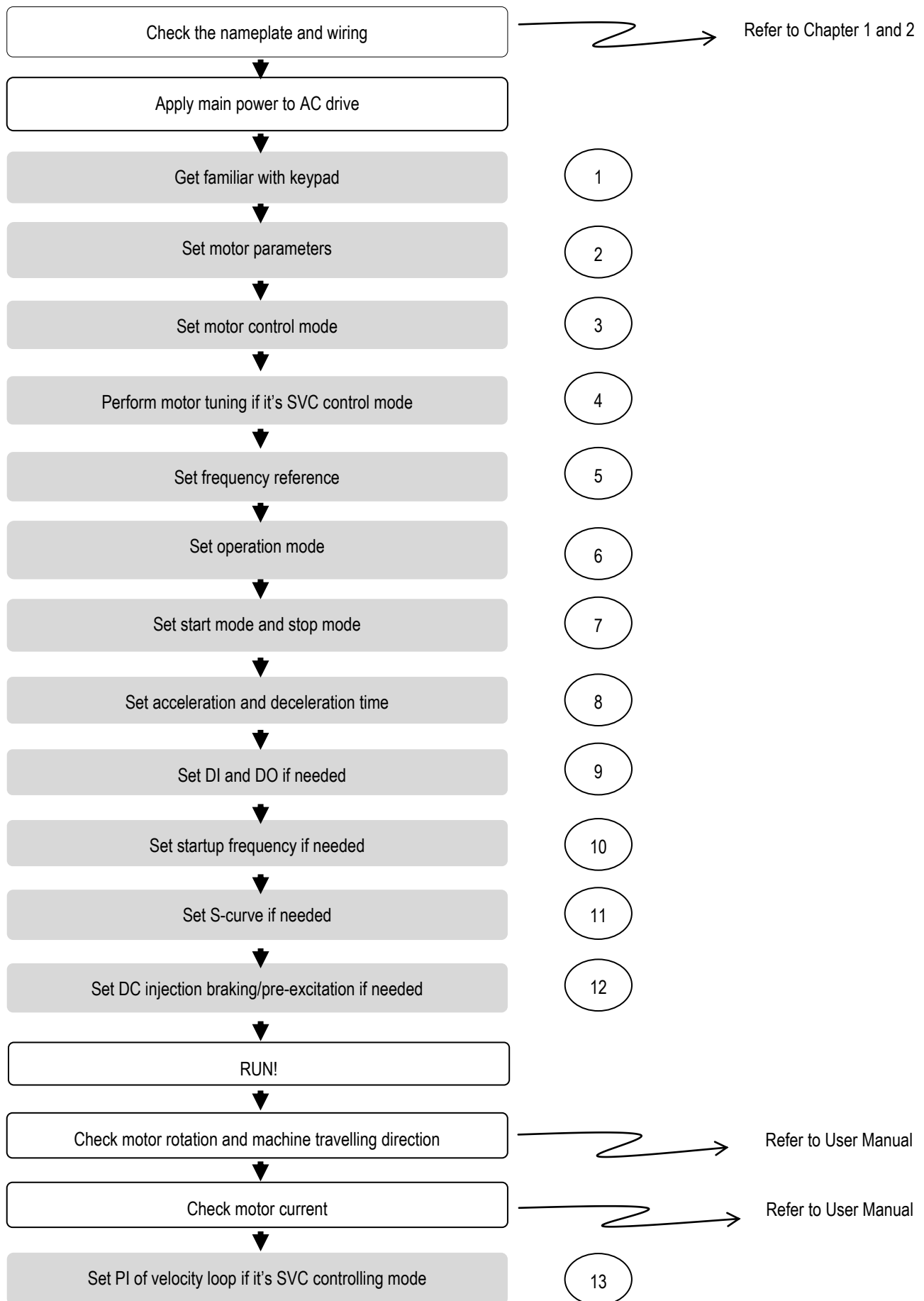


✓ Timing Diagram Description

Event	Description	Function code	Status
t1	-The AC drive waits for the RUN signal.	-----	Inhabit
t2	-The AC drive receives the Forward RUN command. -The IGBT becomes active. -DC Injection Braking 1/Pre-excitation is enabled if F6-06 > 0. (if F6-00 = 0, it is "DC Injection Braking 1"; if F6-00 = 2, it is "Pre-excitation")	----- ----- F6-05 F6-06	RUN
t3	-DC Injection Braking 1/Pre-excitation is disabled. -The startup frequency becomes active if F6-04 > 0.	----- F6-03 F6-04	RUN
t4	-The startup frequency becomes inactive. - The motor ramps up to the expected frequency. -S-curve active	----- F0-17 F6-08 F6-09	RUN
t5	-Motor runs at expected frequency.	F0-08	RUN
t6	-The Forward RUN command is cancelled. -The motor ramps down to zero frequency. -S-curve active	----- F0-18 F6-08 F6-09	RUN
t7	-The frequency output command reaches the DC Injection Braking 2 frequency threshold. -The IGBT shall become inactive if DC Injection Braking 2 delay time is not zero. -After the delay time set in F6-12, the IGBT becomes active again	F6-11 F6-12 -----	RUN (if F6-12 = 0) Inhabit (if F6-12 > 0)
t8	-DC Injection Braking 2 is enabled if F6-14 > 0	F6-13 F6-14	RUN
t9	-DC Injection Braking 2 is disabled. -The IGBT turns inactive.	----- -----	Inhabit

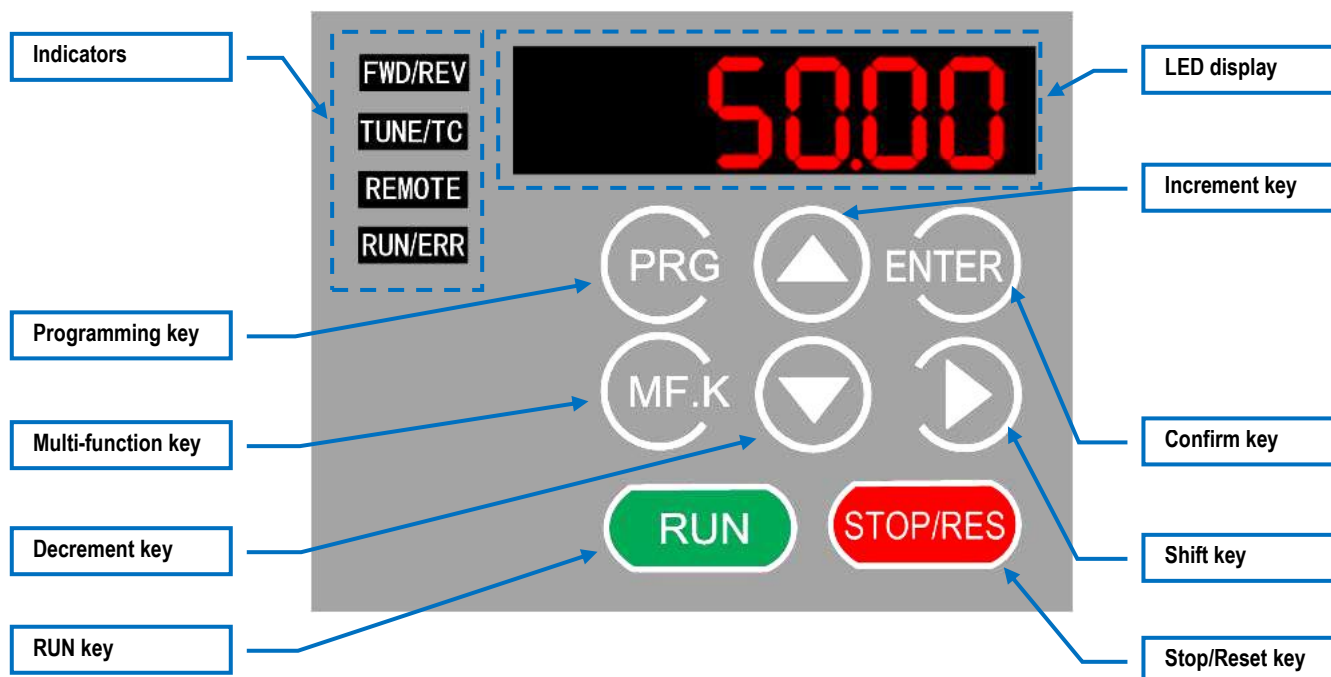
3.2 Step By Step Setup

✓ Setup Flowchart



✓ Step 1: Get Familiar With Keypad

◆ Overview



◆ Indicators

FWD/REV : It indicates forward or reverse rotation.

OFF indicates forward rotation and ON indicates reverse rotation.

TUNE/TC : ON indicates torque control mode, blinking slowly indicates auto-tuning state, blinking quickly indicates fault state.

REMOTE : It indicates whether the AC drive is operated by means of keypad, terminals or communication.

OFF indicates keypad control, ON indicates terminal control, and blinking indicates communication control.






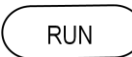


RUN/ERR : It indicates the state of the AC drive.

OFF indicates the stop state, ON (green) indicates the running state, and ON (red) indicates the faulty state.

◆ LED Display

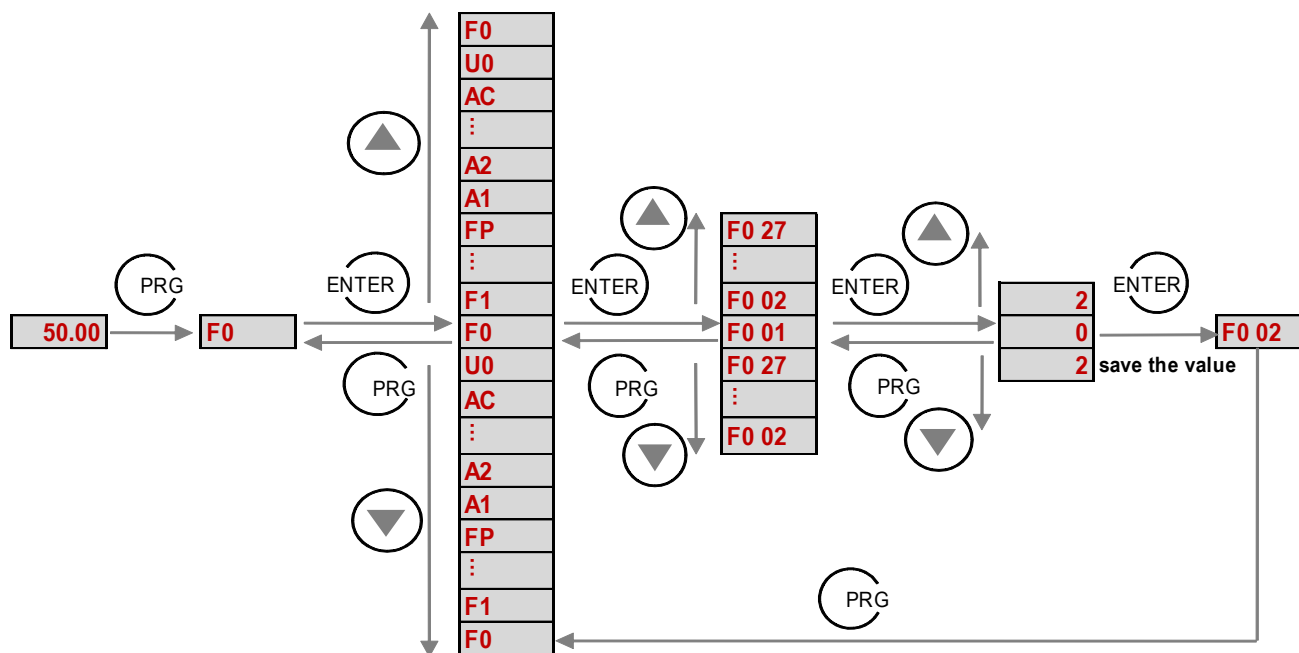
The 5-digit LED display is able to display the frequency reference, output frequency, monitoring data and fault codes.

◆ Keys On Keypad

Key	Key Name	Function
	Programming	Enter or exit Level I menu.
	Confirm	Enter the menu interfaces level by level, and confirm the parameter setting.
	Increment	Increase data or function code.
	Decrement	Decrease data or function code.
	Shift	Select the displayed parameters in turn in the stop or running state, and select the digit to be modified when modifying parameters.
	RUN	Start the AC drive in the keypad operation mode.
	Stop/Reset	Stop the AC drive when it is in the running state and perform the reset operation when it is in the faulty state. The functions of this key are restricted by F7-02 .
	Multifunction	Perform function switchover (such as quick switchover of command source or direction) according to the setting of F7-01 .

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F7-01	MF.K key function selection	0: MF.K key disabled 1: Switchover from remote control (terminal or communication) to keypad control 2: Switchover between forward rotation and reverse rotation 3: Forward jog 4: Reverse jog 5: Individualized parameter display	N.A	0	
F7-02	STOP/RESET key function	0: STOP/RESET key enabled only in keypad control 1: STOP/RESET key enabled in any operation mode	N.A	1	

◆ Keypad Operation



◆ Function Code Arrangement

Function code Group	Description	Remark
F0 to FP	Standard function code group	Compatible with MD380 series function codes
A0 to AC	Advanced function code group	AI/AO correction
U0	Running state function code group	Display of basic parameters

✓ Step 2: Set Motor Parameters

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F1-00	Motor type	0: Common asynchronous motor 1: Variable-frequency asynchronous motor	N.A	0	
F1-01	Rated motor power	0.1 to 30.0	kW	Model dependent	
F1-02	Rated motor voltage	1 to 1000	V	Model dependent	
F1-03	Rated motor current	0.01 to 655.35	A	Model dependent	
F1-04	Rated motor frequency	0.01 to maximum frequency	Hz	Model dependent	
F1-05	Rated motor rotational speed	1 to 65535	RPM	Model dependent	

✓ Step 3: Set Motor Controlling Mode

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F0-01	Motor 1 control mode	0: Sensorless vector control (SVC) 2: Voltage/Frequency control (V/F)	N.A	2	

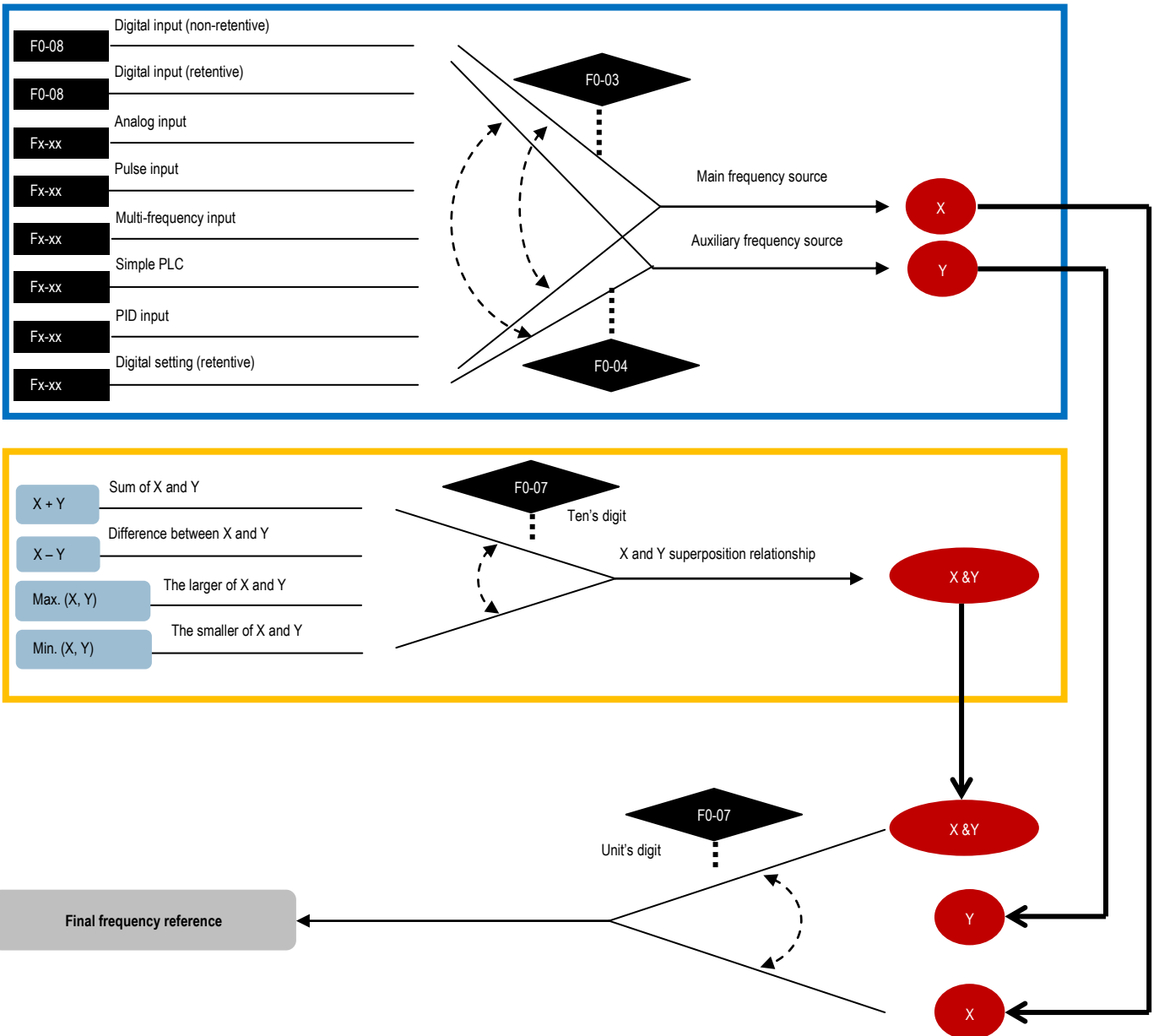
✓ Step 4: Perform Motor Tuning If It's SVC Control Mode

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F1-37	Auto-tuning selection	0: No auto-tuning 1: Static auto-tuning 2: Complete dynamic auto-tuning	N.A	0	

✓ Step 5: Set Frequency Reference

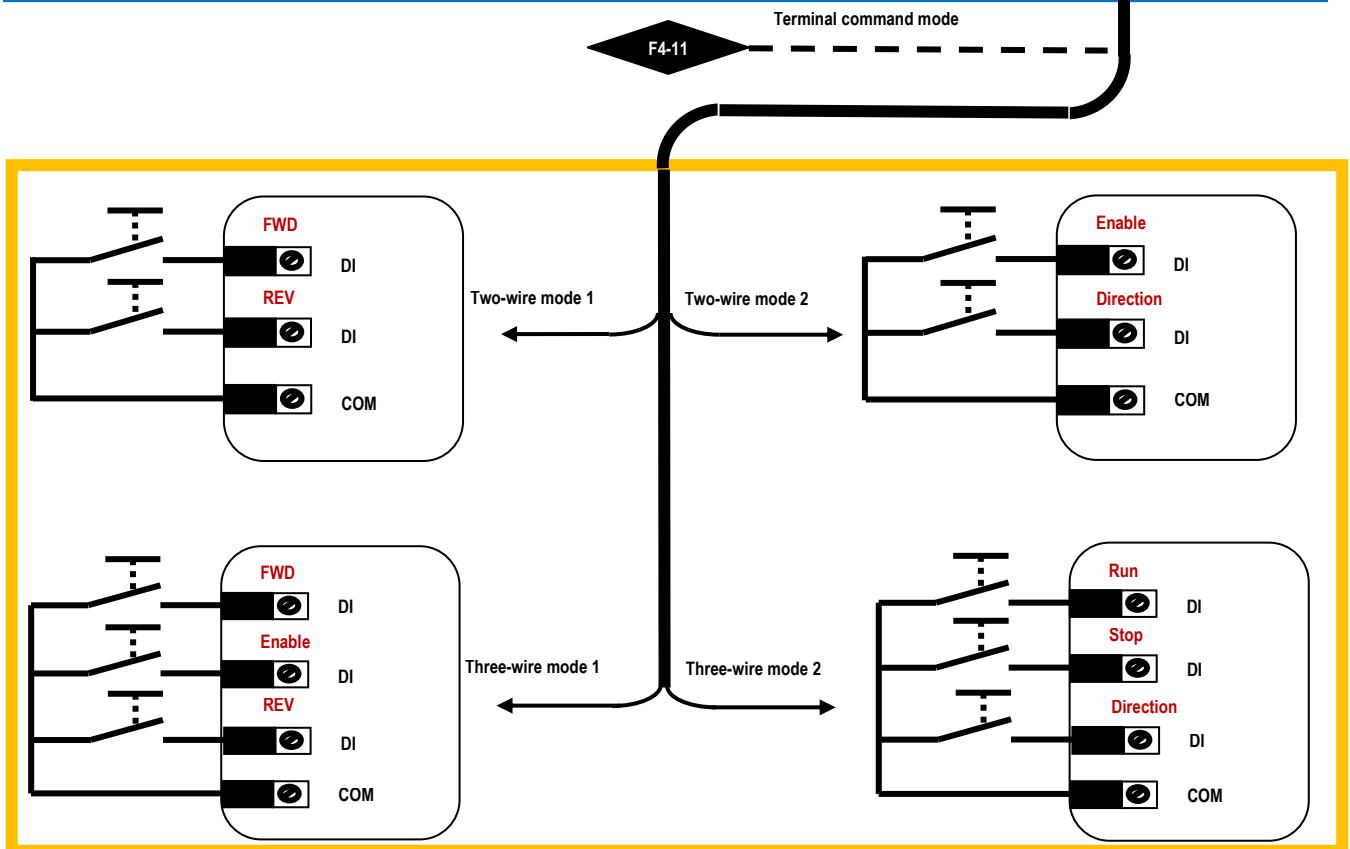
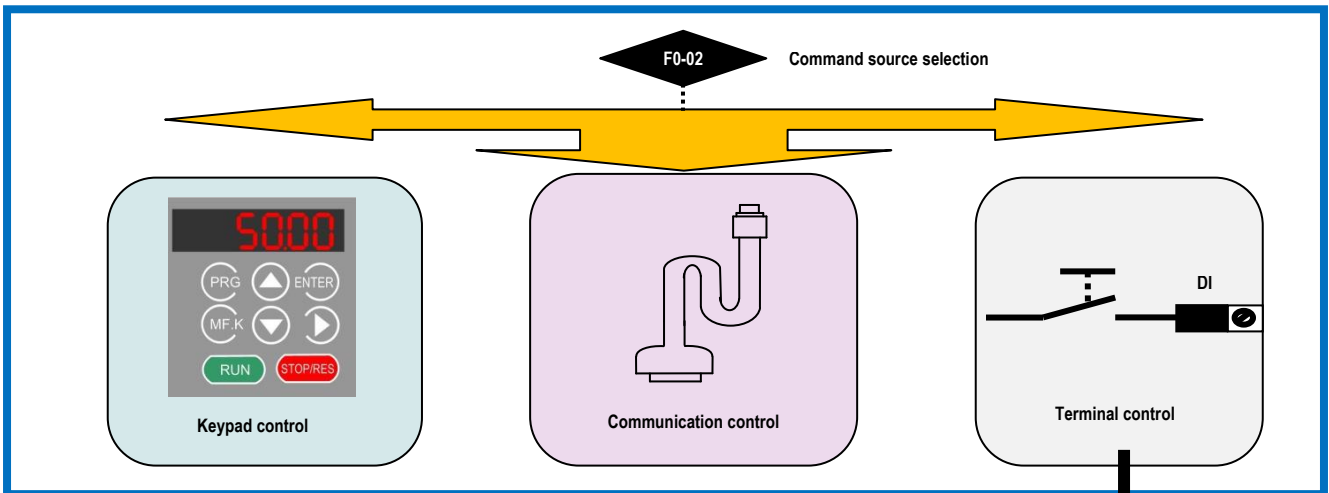
Function code	Parameter Name	Setting Range	Unit	Default	Commission
F0-03	Main frequency source X selection	0: Digital setting F0-08 (non-retentive at power failure) 1: Digital setting F0-08 (retentive at power failure) 2: AI1 3: Reserved 4: Reserved 5: Pulse setting (DI5) 6: Multi-reference 7: Simple PLC 8: PID 9: Communication setting	N.A	0	
F0-04	Auxiliary frequency source Y selection	The same as F0-03 (Main frequency source X selection)	N.A	0	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F0-07	Frequency source selection	5-digit	N.A	00	
	0: X + Y 1: X - Y 2: Max. (X, Y) 3: Min. (X, Y)				
	0: Main frequency source X 1: X and Y superposition 2: Switchover between X and Y (by DI terminal) 3: Switchover between X and "X and Y superposition"(by DI terminal) 4: Switchover between Y and "X and Y superposition"(by DI terminal)				
F0-08	Preset frequency	0.00 to maximum frequency	Hz	50.00	



✓ **Step 6: Select Operation Mode**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F0-02	Command source selection	0: Keypad control 1: Terminal control 2: Communication control	N.A	0	
F4-11	Terminal command mode	0: Two-wire mode 1 1: Two-wire mode 2 2: Three-wire mode 1 3: Three-wire mode 2	N.A	0	



✓ **Step 7: Set Start Mode And Stop Mode**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F6-00	Start mode	0: Direct start 1: Reserved 2: Pre-excited start	N.A	0	
F6-10	Stop mode	0: Decelerate to stop 1: Coast to stop	N.A	0	

✓ **Step 8: Set Acceleration And Deceleration Parameters**

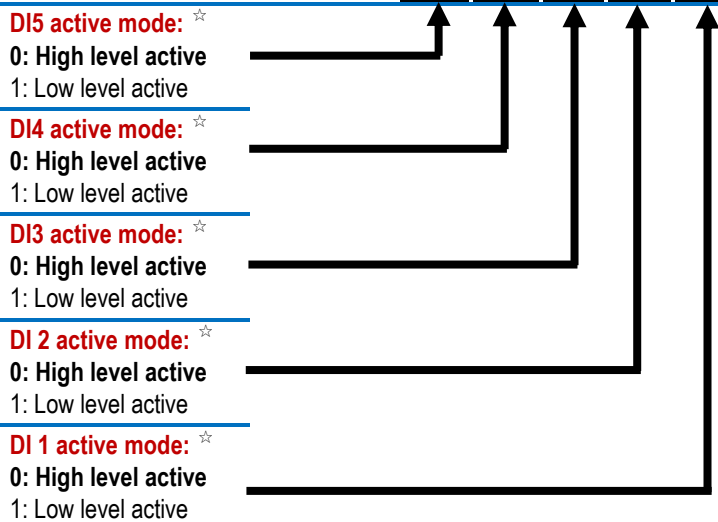
Function code	Parameter Name	Setting Range	Unit	Default	Commission
F0-17	Acceleration time 1	0.00 to 650.00 (if F0-19 = 2) 0.0 to 6500.0 (if F0-19 = 1) 0 to 65000 (if F0-19 = 0)	s	Model dependent	
F0-18	Deceleration time 1	0.00 to 650.00 (if F0-19 = 2) 0.0 to 6500.0 (if F0-19 = 1) 0 to 65000 (if F0-19 = 0)	s	Model dependent	
F0-19	Acceleration/Deceleration time unit	0: 1s 1: 0.1s 2: 0.01s	N.A	1	
F6-07	Acceleration/Deceleration mode	0: Linear mode 1: S-curve mode A 2: S-curve mode B	N.A	0	

✓ **Step 9: Set DI And DO If Needed**

◆ **DI Setting**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F4-00	DI1 function selection	0: No function 1: Forward RUN (FWD)	N.A	1 FWD	
F4-01	DI2 function selection	2: Reverse RUN (REV) 3: Three-wire control 4: Forward JOG (FJOG)	N.A	4 FJOG	
F4-02	DI3 function selection	5: Reverse JOG (RJOG) 6: Terminal UP	N.A	9 RESET	
F4-03	DI4 function selection	7: Terminal DOWN 8: Coast to stop 9: Fault reset (RESET)	N.A	12 Multi-reference terminal 1	
F4-04	DI5 function selection	10: RUN pause 11: External fault normally open (NO) input 12: Multi-reference terminal 1 13: Multi-reference terminal 2 14: Multi-reference terminal 3 15: Multi-reference terminal 4 16: Terminal 1 for acceleration/deceleration time selection 17: Terminal 2 for acceleration/deceleration time selection 18: Frequency source switchover 19: UP and DOWN setting clear (terminal, keypad) 20: Command source switchover terminal 1 21: Acceleration/Deceleration prohibited 22: PID pause 23: PLC status reset 24: Swing pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control prohibited 30: Pulse input (enabled only for DI5) 31: Reserved 32: Immediate DC injection braking 33: External fault normally closed (NC) input 34: Frequency modification forbidden 35: PID action direction reverse 36: External STOP terminal 1 37: Command source switchover terminal 2 38: PID integral pause 39: Switchover between main frequency source X and preset frequency 40: Switchover between auxiliary frequency source Y and preset frequency 41: Motor selection terminal 1 42: Motor selection terminal 2 43: PID parameter switchover 44: User-defined fault 1 45: User-defined fault 2 46: Speed control/Torque control switchover 47: Emergency stop 48: External STOP terminal 2 49: Deceleration DC injection braking 50: Clear the current running time	N.A	13 Multi-reference terminal 2	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F4-10	DI filter time	0.000 to 1.000	s	0.010	
F4-35	DI1 delay	0.0 to 3600.0	s	0.0	
F4-36	DI2 delay	0.0 to 3600.0	s	0.0	
F4-37	DI3 delay	0.0 to 3600.0	s	0.0	
F4-38	DI active mode selection 1	7-segment		00000	N.A



☆: 'High level active' means that, if a high level voltage is applied to DI terminal, the DI signal will be seen as active.
 'Low level active' means that, if a low level voltage is applied to DI terminal, the DI signal will be seen as active.

◆ DO Setting

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F5-00	FM terminal output mode	0: Pulse output (FMP) 1: Switch signal output (FMR)	N.A	0	
F5-01	FMR function (open-collector output terminal) selection	0: No output 1: AC drive running 2: Fault output (stop) 3: Frequency-level detection FDT1 output 4: Frequency reached 5: Zero-speed running (no output at stop) 6: Motor overload pre-warning 7: AC drive overload pre-warning 8: Set count value reached 9: Designated count value reached	N.A	0 No output	
F5-02	Relay function (T/A-T/B-T/C) selection	10: Length reached 11: PLC cycle completed 12: Accumulative running time reached 13: Frequency limited 14: Torque limited 15: Ready for RUN 16: Reserved 17: Frequency upper limit reached 18: Frequency lower limit reached (no output at stop)	N.A	2 Fault output	
F5-03	Extension card relay function (P/A-P/B-P/C) selection	19: Undervoltage state output 20: Communication setting 21: Reserved 22: Reserved 23: Zero-speed running 2 (having output at stop) 24: Accumulative power-on time reached 25: Frequency level detection FDT2 output 26: Frequency 1 reached	N.A	0 No output	
F5-04	DO1 function selection (open-collector output terminal)	27: Frequency 2 reached 28: Current 1 reached 29: Current 2 reached 30: Timing duration reached 31: AI1 input limit exceeded 32: Load becoming 0 33: Reverse running 34: Zero current state 35: Module temperature reached 36: Software current limit exceeded	N.A	1 AC drive running	
F5-05	Extension card DO2 function selection	37: Frequency lower limit reached (having output at stop) 38: Alarm output 39: Motor overheat warning 40: Current running time reached 41: Fault output (no output at undervoltage)	N.A	4 Frequency reached	
F5-17	FMR output delay time	0.0 to 3600.0	s	0.0	
F5-18	Relay 1 output delay time	0.0 to 3600.0	s	0.0	
F5-19	Relay 2 output delay time	0.0 to 3600.0	s	0.0	
F5-20	DO1 output delay time	0.0 to 3600.0	s	0.0	
F5-21	DO2 output delay time	0.0 to 3600.0	s	0.0	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F5-22	DO active mode selection	7-segment 0 0 0 0 0	N.A	00000	
	DO2 active mode: 0: Positive logic 1: Negative logic				
	DO1 active mode: 0: Positive logic 1: Negative logic				
	Relay 2 active mode: 0: Positive logic 1: Negative logic				
	Relay 1 active mode: 0: Positive logic 1: Negative logic				
	FMR active mode: 0: Positive logic 1: Negative logic				

☆: 'Positive logic' means that, DO output terminal is normally the default state.
'Negative logic' means the opposite situation.

✓ Step 10: Set Startup Frequency If Needed

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F6-03	Startup frequency	0.00 to 10.00	Hz	0.00	
F6-04	Startup frequency active time	0.0 to 100.0	s	0.0	

✓ Step 11: Set S-Curve If Needed

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F6-07	Acceleration/ Deceleration mode	0: Linear mode 1: S-curve mode A 2: S-curve mode B	N.A	0	1
F6-08	Time proportion of S-curve start segment	0.0 to [100.0 minus F6-09]	%	30.0	
F6-09	Time proportion of S-curve end segment	0.0 to [100.0 minus F6-08]	%	30.0	

✓ **Step 12: Set DC Injection Braking/ Pre-Excitation If Needed**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F6-00	Start mode	0: Direct start 1: Reserved 2: Pre-excited start	N.A	0	
F6-05 [☆]	DC Injection Braking 1 level	0 to 100	%	0	
F6-06 [☆]	DC Injection Braking 1 active time	0.0 to 100.0	s	0.0	
F6-11	DC Injection Braking 2 frequency threshold	0.00 to maximum frequency	Hz	0.00	
F6-12	DC Injection Braking 2 delay	0.0 to 36.0	s	0.0	
F6-13	DC Injection Braking 2 level	0 to 100%	%	0	
F6-14	DC Injection Braking 2 active time	0.0 to 36.0	s	0.0	

☆: Only when F6-00=0, the Function codes F6-05 and F6-06 are related to DC Injection Braking 1.

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F6-00	Start mode	0: Direct start 1: Reserved 2: Pre-excited start	N.A	0	2
F6-05 [☆]	Pre-excitation level	0 to 100	%	0	
F6-06 [☆]	Pre-excitation active time	0.0 to 100.0	s	0.0	

☆: Only when F6-00=2, the function codes F6-05 and F6-06 are related to pre-excitation.

✓ **Step 13: Set PI Of Velocity Loop If It's SVC Control Mode**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F2-00	Speed loop proportional gain 1	0 to 100	N.A	30	
F2-01	Speed loop integral time 1	0.01 to 10.00	s	0.50	
F2-02	Switchover frequency 1	0.00 to F2-05	Hz	5.00	
F2-03	Speed loop proportional gain 2	0 to 100	N.A	20	
F2-04	Speed loop integral time 2	0.01 to 10.00	s	1.00	

CHAPTER 4 TROUBLESHOOTING

4.1 Faults And Solutions

Display	Fault Name	Possible Causes	Solutions
Err02	Overcurrent during acceleration	<ol style="list-style-type: none"> 1. The output circuit is short circuited. 2. The acceleration time is too short. 3. Manual torque boost or V/F curve is not appropriate. 4. The power supply is too low. 5. The startup operation is performed on the rotating motor. 6. A sudden load is added during acceleration. 7. The AC drive model is of too small power class. 	<ol style="list-style-type: none"> 1: Eliminate short circuit. 2: Increase the acceleration time. 3: Adjust the manual torque boost or V/F curve. 4: Check that the power supply is normal. 5: Select rotational speed tracking restart or start the motor after it stops. 6: Remove the added load. 7: Select a drive of higher power class.
Err03	Overcurrent during deceleration	<ol style="list-style-type: none"> 1. The output circuit is short circuited. 2. The deceleration time is too short. 3. The power supply is too low. 4. A sudden load is added during deceleration. 5. The braking resistor is not installed. 	<ol style="list-style-type: none"> 1: Eliminate short circuit. 2: Increase the deceleration time. 3: Check the power supply, and ensure it is normal. 4: Remove the added load. 5: Install the braking resistor.
Err04	Overcurrent at constant speed	<ol style="list-style-type: none"> 1. The output circuit is short circuited. 2. The power supply is too low. 3. A sudden load is added during operation. 4. The AC drive model is of too small power class. 	<ol style="list-style-type: none"> 1: Eliminate short circuit. 2: Adjust power supply to normal range. 3: Remove the added load. 4: Select a drive of higher power class.
Err05	Overvoltage during acceleration	<ol style="list-style-type: none"> 1. The DC bus voltage is too high[☆]. 2. An external force drives the motor during acceleration. 3. The acceleration time is too short. 4. The braking resistor is not installed. 	<ol style="list-style-type: none"> 1: Replace with a proper braking resistor. 2: Cancel the external force or install a braking resistor. 3: Increase the acceleration time. 4: Install a braking resistor.
Err06	Overvoltage during deceleration	<ol style="list-style-type: none"> 1. The DC bus voltage is too high[☆]. 2. An external force drives the motor during deceleration. 3. The deceleration time is too short. 4. The braking resistor is not installed. 	<ol style="list-style-type: none"> 1: Replace with a proper braking resistor. 2: Cancel the external force or install braking resistor. 3: Increase the deceleration time. 4: Install the braking resistor
Err07	Overvoltage at constant speed	<ol style="list-style-type: none"> 1. The DC bus voltage is too high[☆]. 2. An external force drives the motor during deceleration. 	<ol style="list-style-type: none"> 1: Replace with a proper braking resistor. 2: Cancel the external force.

☆: Voltage thresholds

Voltage Class	DC Bus Overvoltage	DC Bus Undervoltage	Braking Unit Operation Level
Single-phase 220 V	400V	200V	381V
Three-phase 220 V	400V	200V	381V
Three-phase 380 V	810V	350V	700V

Display	Fault Name	Possible Causes	Solutions
Err08	Control power fault	The input voltage exceeds the allowed range.	Adjust the input voltage to within the allowed range.
Err09	Undervoltage	<ol style="list-style-type: none"> 1. Instantaneous power failure occurs. 2. The input voltage exceeds the allowed range 3. The DC bus voltage is too low[☆]. 4. The rectifier bridge and buffer resistor are faulty. 5. The drive board is faulty. 6. The control board is faulty. 	<ol style="list-style-type: none"> 1: Reset the fault. 2: Adjust the input voltage to within the allowed range. 3 to 6: Seek for maintenance.
Err10	Drive overload	<ol style="list-style-type: none"> 1. The load is too heavy or the rotor is locked. 2. The drive is of too small power class. 	<ol style="list-style-type: none"> 1: Reduce the load, or check the motor, or check the machine whether it is locking the rotor. 2: Select a drive of higher power class.
Err11	Motor overload	<ol style="list-style-type: none"> 1. F9-01 is too small. 2. The load is too heavy or the rotor is locked. 3. The drive is of too small power class. 	<ol style="list-style-type: none"> 1: Set F9-01 correctly. 2: Reduce the load, or check the motor, or check the machine whether it is locking the rotor. 3: Select a drive of larger power class.
Err12	Power input phase loss	<ol style="list-style-type: none"> 1. The three-phase power supply is abnormal. 2. The drive board is faulty. 3. The lightning protection board is faulty. 4. The control board is faulty. 	<ol style="list-style-type: none"> 1: Check the power supply. 2 to 4: Seek for maintenance.
Err13	Power output phase loss	<ol style="list-style-type: none"> 1. The cable between drive and motor is faulty. 2. The drive's three-phase output is unbalanced when the motor is running. 3. The drive board is faulty 4. The IGBT is faulty. 	<ol style="list-style-type: none"> 1: Check the cable. 2: Check the motor windings. 3 to 4: Seek for maintenance.
Err14	IGBT overheat	<ol style="list-style-type: none"> 1. The ambient temperature is too high. 2. The air filter is blocked. 3. The cooling fan is damaged. 4. The thermal sensor of IGBT is damaged. 5. The IGBT is damaged. 	<ol style="list-style-type: none"> 1: Reduce the ambient temperature. 2: Clean the air filter. 3 to 5: Seek for maintenance.
Err15	External equipment fault	<ol style="list-style-type: none"> 1. External fault signal is input via DI. 2. External fault signal is input via VDI. 	Reset the fault.
Err16	Communication fault	<ol style="list-style-type: none"> 1. The host computer is abnormal. 2. The communication cable is faulty. 3. The extension card type set in F0-28 is incorrect. 4. The communication parameters in group FD are set improperly. 	<ol style="list-style-type: none"> 1: Check cabling of the host computer. 2: Check the communication cabling. 3: Set F0-28 correctly. 3: Set the communication parameters properly.
Err18	Current detection fault	The drive board is faulty.	Replace the drive board.
Err19	Motor tuning fault	<ol style="list-style-type: none"> 1. Motor parameters are wrong. 2. Motor tuning overtime. 	<ol style="list-style-type: none"> 1. Check motor parameters F1-00 to F1-05. 2. Check the wiring between drive and motor.
Err21	EEPROM read-write fault	The EEPROM chip is damaged.	Replace the main control board.
Err23	Short circuit to ground	The motor is short-circuited to ground.	Replace the cables or motor.
Err26	Accumulative running time reached	The accumulative running time reaches the setting of F8-17.	Clear the record by performing parameter initialization (set FP-01 to 2).
Err27	User-defined fault 1	<ol style="list-style-type: none"> 1. The user-defined fault 1 signal is input via DI. 2. User-defined fault 1 signal is input via VDI. 	Reset the fault.

Display	Fault Name	Possible Causes	Solutions
Err28	User-defined fault 2	<ol style="list-style-type: none"> 1. The user-defined fault 2 signal is input via DI 2. The user-defined fault 2 signal is input via VDI. 	Reset the fault.
Err29	Accumulative power-on time reached	The accumulative power-on time reaches the setting of F8-16.	Clear the record by performing parameter initialization (set FP-01 to 2).
Err30	Off load fault	Offload when it's running.	Check the connection between motor and load.
Err31	PID feedback lost during running	The PID feedback is lower than FA-26.	Check the PID feedback signal or set FA-26 to a proper value.
Err40	Quick current limit	<ol style="list-style-type: none"> 1. The load is too heavy or the rotor is locked. 2. The drive is of too small power class. 	<ol style="list-style-type: none"> 1: Reduce the load, or check the motor, or check the machine whether it is locking the rotor. 2: Select a drive of higher power class.
Err41	Motor switchover fault during running	The current motor is switched over via a terminal during running of the AC drive.	Switch over the motor only after the AC drive stops.

4.2 Common Symptoms And Diagnostics

Fault Name	Possible Causes	Solutions
There is no display at power-on.	<ol style="list-style-type: none"> 1. There is no power supply or the power supply is too low. 2. The switching power supply on the drive board is faulty. 3. The rectifier bridge is damaged. 4. The buffer resistor of the drive is damaged. 5. The control board or the keypad is faulty. 6. The cable between the control board and the drive board or keypad breaks. 	<ol style="list-style-type: none"> 1: Check the power supply. 2 to 5: Seek for maintenance. 6: Re-connect the 4-core and 28-core flat cables, or seek for maintenance.
"HC" is displayed at power-on.	<ol style="list-style-type: none"> 1. The cable between the drive board and the control board is in poor contact. 2. The control board is damaged. 3. The motor winding or the motor cable is short-circuited to the ground. 4. The power supply is too low. 	<ol style="list-style-type: none"> 1: Re-connect the 4-core and 28-core flat cables, or seek for maintenance. 2: Seek for maintenance. 3: Check the motor or replace it, and check the motor cable. 4. Check the power supply according to chapter 1.3.
The display is normal upon power-on, but "HC" is displayed after after startup and the motor stops immediately.	<ol style="list-style-type: none"> 1. The cooling fan is damaged or the rotor is locked. 2. A certain terminal is short-circuited. 	<ol style="list-style-type: none"> 1: Replace cooling fan, or check the machine whether it is locking the rotor. 2: Eliminate short circuit.
Err14 is reported frequently.	<ol style="list-style-type: none"> 1. The carrier frequency is set too high. 2. The cooling fan is damaged, or the air filter is blocked. 3. Components (thermal coupler or others) inside the drive are damaged. 	<ol style="list-style-type: none"> 1: Reduce F0-15. 2: Replace the fan and clean the air filter. 3: Seek for maintenance.
The motor does not rotate after the AC drive outputs a non-zero reference.	<ol style="list-style-type: none"> 1. The motor or motor cable is damaged. 2. The motor parameters are set improperly. 3. The cable between the drive board and the control board is in poor contact. 4. The drive board is faulty. 5. The rotor is locked. 	<ol style="list-style-type: none"> 1: Check the motor, or check the cable between the drive and the motor. 2: Check and re-set motor parameters. 3: Re-connect the 4-core and 28-core flat cables, or seek for maintenance. 4: Seek for maintenance. 5: Check the machine whether it is locking the rotor.
The DI terminals are disabled.	<ol style="list-style-type: none"> 1. The DI parameters are set incorrectly. 2. The input signal is incorrect. 3. The wire jumper between OP and +24V is in poor contact. 4. The control board is faulty. 	<ol style="list-style-type: none"> 1: Check and reset DI parameters in group F4. 2: Check the input signals, or check the input cable. 3: Check the jumper between OP and +24 V. 4: Seek for maintenance.
The drive reports overcurrent and overvoltage frequently.	<ol style="list-style-type: none"> 1. The motor parameters are set improperly. 2. The acceleration/deceleration time is too small. 3. The load fluctuates. 	<ol style="list-style-type: none"> 1: Reset motor parameters. 2: Set proper acceleration/deceleration time. 3: Check the machine, or seek for maintenance.

CHAPTER 5 FUNCTION CODE TABLE

5.1 General Function Codes

✓ Group F0: Standard

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F0-01	Motor 1 control mode	0: Sensorless vector control (SVC) 2: Voltage/Frequency control (V/F)	N.A	2	
F0-02	Command source selection	0 to 2	N.A	0	
F0-03	Main frequency source X selection	0 to 9	N.A	0	
F0-04	Auxiliary frequency source Y selection	The same as F0-03 (Main frequency source X selection)	N.A	0	
F0-05	Range of auxiliary frequency Y for X and Y operation	0: Relative to maximum frequency 1: Relative to main frequency X	N.A	0	
F0-06	Range of auxiliary frequency Y for X and Y operation	0 to 150	%	100	
F0-07	Frequency source selection	00 to 34	N.A	00	
F0-08	Preset frequency	0.00 to maximum frequency (F0-10)	N.A	50.00	
F0-09	Rotation direction	0: Same direction 1: Reverse direction	N.A	0	
F0-10	Maximum frequency	50.00 to 600.00	Hz	50.00	
F0-11	Source of frequency upper limit	0 to 5	N.A	0	
F0-12	Frequency upper limit	Frequency lower limit (F0-14) to maximum frequency (F0-10)	Hz	50.00	
F0-13	Frequency upper limit offset	0.00 to maximum frequency (F0-10)	Hz	0.00	
F0-14	Frequency lower limit	0.00 to frequency upper limit (F0-12)	Hz	0.00	
F0-15	Carrier frequency	0.5 to 16.0	kHz	Model dependent	
F0-16	Carrier frequency adjustment with temperature	0: No 1: Yes	N.A	1	
F0-17	Acceleration time 1	0.00 to 650.00 (if F0-19=2) 0.0 to 6500.0 (if F0-19=1) 0 to 65000 (if F0-19=0)	s	Model dependent	
F0-18	Deceleration time 1	0.00 to 650.00 (if F0-19=2) 0.0 to 6500.0 (if F0-19=1) 0 to 65000 (if F0-19=0)	s	Model dependent	
F0-19	Acceleration/Deceleration time unit	0: 1 1: 0.1 2: 0.01	s	1	
F0-21	Frequency offset of auxiliary frequency source for X and Y operation	0.00 to maximum frequency (F0-10)	Hz	0.00	
F0-22	Frequency reference resolution	1: 0.1 2: 0.01	Hz	2	
F0-23	Retentive of digital setting frequency upon power failure	0: Not retentive 1: Retentive	N.A	2	
F0-25	Acceleration/Deceleration time base frequency	0: Maximum frequency (F0-10) 1: Frequency reference 2: 100	N.A	0	
F0-26	Base frequency for UP/DOWN modification during running	0: Running frequency 1: Frequency reference	N.A	0	
F0-27	Binding command source to frequency source	0000 to 9999	N.A	0000	

✓ Group F1: Motor 1 Parameters

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F1-00	Motor type	0: Common asynchronous motor 1: Variable frequency asynchronous motor	N.A	0	
F1-01	Rated motor power	0.1 to 7.5	kW	Model dependent	
F1-02	Rated motor voltage	1 to 1000	V	Model dependent	
F1-03	Rated motor current	0.01 to 655.35	A	Model dependent	
F1-04	Rated motor frequency	0.01 to max frequency	Hz	Model dependent	
F1-05	Rated motor rotational speed	1 to 65535	RPM	Model dependent	
F1-06	Stator resistance (asynchronous motor)	0.001 to 65.535	Ω	Model dependent	
F1-07	Rotor resistance	0.001 to 65.535	Ω	Model dependent	
F1-08	Leakage inductive reactance	0.01 to 655.35	mH	Model dependent	
F1-09	Mutual inductive reactance	0.1 to 6553.5	mH	Model dependent	
F1-10	No-load current (asynchronous motor)	0.01 to F1-03	A	Model dependent	
F1-37	Auto-tuning selection	0: No auto-tuning 1: Static auto-tuning 2: Complete dynamic auto-tuning	N.A	0	

✓ Group F2: Vector Control

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F2-00	Speed loop proportional gain 1	0 to 100	Hz	30	
F2-01	Speed loop integral time 1	0.01 to 10.00	s	0.50	
F2-02	Switchover frequency 1	0.00 to F2-05	Hz	5.00	
F2-03	Speed loop proportional gain 2	0 to 100	Hz	20	
F2-04	Speed loop integral time 2	0.01 to 10.00s	s	1.00	
F2-06	Vector control slip gain	50 to 200	%	100	
F2-07	Time constant of speed loop filter	0.000 to 0.100	s	0.000	
F2-08	Vector control over-excitation gain	0 to 200	N.A	64	
F2-09	Torque upper limit source in speed control mode	0 to 7	N.A	0	
F2-10	Digital setting of torque upper limit in speed control mode	0.0 to 200.0	%	150.0	
F2-13	Excitation adjustment proportional gain	0 to 20000	N.A	2000	
F2-14	Excitation adjustment integral gain	0 to 20000	N.A	1300	
F2-15	Torque adjustment proportional gain	0 to 20000	N.A	2000	
F2-16	Torque adjustment integral gain	0 to 20000	N.A	1300	

✓ **Group F3: V/F Control**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F3-00	V/F curve setting	0 to 9	N.A	0	
F3-01	Torque boost	0.0 to 30.0	%	Model dependent	
F3-02	Cut-off frequency of torque boost	0.00 to maximum output frequency	Hz	50.00	
F3-03	Multi-point V/F frequency 1 (F1)	0.00 to F3-05	Hz	0.00	
F3-04	Multi-point V/F voltage 1 (V1)	0.0 to 100.0	%	0.0	
F3-05	Multi-point V/F frequency 2 (F2)	F3-03 to F3-07	Hz	0.00	
F3-06	Multi-point V/F voltage 2 (V2)	0.0 to 100.0	%	0.0	
F3-07	Multi-point V/F frequency 3 (F3)	F3-05 to rated motor frequency (F1-04)	Hz	0.00	
F3-08	Multi-point V/F voltage 3 (V3)	0.0 to 100.0	%	0.0	
F3-09	V/F slip compensation gain	0 to 200.0	%	0.0	
F3-10	V/F over-excitation gain	0 to 200	%	64	
F3-11	V/F oscillation suppression gain	0 to 100	%	Model dependent	
F3-13	Voltage source for V/F separation	0 to 8	N.A	0	
F3-14	Voltage digital setting for V/F separation	0 to rated motor voltage	V	0	
F3-15	Voltage rise time of V/F separation	0.0 to 1000.0	s	0.0	

✓ Group F4: Input Terminals

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F4-00	DI1 function selection	0 to 59	N.A	1	
F4-01	DI2 function selection	0 to 59	N.A	4	
F4-02	DI3 function selection	0 to 59	N.A	9	
F4-03	DI4 function selection	0 to 59	N.A	12	
F4-04	DI5 function selection	0 to 59	N.A	13	
F4-05	DI6 function selection	0 to 59	N.A	0	
F4-06	DI7 function selection	0 to 59	N.A	0	
F4-07	DI8 function selection	0 to 59	N.A	0	
F4-08	DI9 function selection	0 to 59	N.A	0	
F4-09	DI10 function selection	0 to 59	N.A	0	
F4-10	DI filter time	0.000 to 1.000	s	0.010	
F4-11	Terminal wiring mode selection	0: Two-wire mode 1 1: Two-wire mode 2 2: Three-wire mode 1 3: Three-wire mode 2	N.A	0	
F4-12	Terminal UP/DOWN rate	0.01 to 65.535	Hz/s	1.00	
F4-13	AI curve 1 minimum input	0.00 to F4-15	V	0.00	
F4-14	Corresponding setting of AI curve1 minimum input	-100.0 to 100.0	%	0.0	
F4-15	AI curve 1 maximum input	F4-13 to 10.00	V	10.00	
F4-16	Corresponding setting of AI curve1 maximum input	-100.0 to 100.0	%	100.0	
F4-17	AI1 filter time	0.00 to 10.00	s	0.10	
F4-18	AI curve 2 minimum input	0.00 to F4-20	V	0.00	
F4-19	Corresponding setting of AI curve2 minimum input	-100.0 to 100.0	%	0.0	
F4-20	AI curve 2 maximum input	F4-18 to 10.00	V	10.00	
F4-21	Corresponding setting of AI curve2 maximum input	-100.0 to 100.0	%	100.0	
F4-22	AI2 filter time	0.00 to 10.00	s	0.10	
F4-23	AI curve 3 minimum input	0.00 to F4-25	V	0.00	
F4-24	Corresponding setting of AI curve3 minimum input	-100.0 to 100.0	%	0.0	
F4-25	AI curve 3 maximum input	F4-23 to 10.00	V	10.00	
F4-26	Corresponding setting of AI curve3 maximum input	-100.0 to 100.0	%	100.0	
F4-27	AI3 filter time	0.00 to 10.00	s	0.10	
F4-28	Pulse minimum input	0.00 to F4-30	kHz	0.00	
F4-29	Corresponding setting of pulse minimum input	-100.0 to 100.0	%	0.0	
F4-30	Pulse maximum input	F4-28 to 50.00	kHz	50.00	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F4-31	Corresponding setting of pulse maximum input	-100.0 to 100.0	%	100.0	
F4-32	Pulse filter time	0.00 to 10.00	s	0.10	
F4-33	AI curve selection	111 to 555	N.A	321	
F4-34	Setting for AI less than minimum input	000 to 111	N.A	000	
F4-35	DI1 delay time	0.0 to 3600.0	s	0.0	
F4-36	DI2 delay time	0.0 to 3600.0	s	0.0	
F4-37	DI3 delay time	0.0 to 3600.0	s	0.0	
F4-38	DI active mode selection 1	00000 to 11111	N.A	00000	
F4-39	DI active mode selection 2	00000 to 11111	N.A	00000	

✓ Group F5: Output Terminals

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F5-00	FM terminal output mode	0 to 1	N.A	0	
F5-01	FMR function (open-collector output terminal) selection	0 to 41	N.A	0	
F5-02	Relay function (T/A-T/B-T/C) selection	0 to 41	N.A	2	
F5-03	Extension card relay function (P/A-P/B-P/C) selection	0 to 41	N.A	0	
F5-04	DO1 function selection (open-collector output terminal)	0 to 41	N.A	1	
F5-05	Extension card DO2 function selection	0 to 41	N.A	4	
F5-06	FMP function selection	0	N.A	0	
F5-07	AO1 function selection	0 to 16	N.A	0	
F5-08	AO2 function selection	1	N.A	1	
F5-09	Maximum FMP output frequency	0.01 to 50.00	kHz	50.00	
F5-10	AO1 offset coefficient	-100.0 to 100.0	%	0.0	
F5-11	AO1 gain	-10.00 to 10.00	N.A	1.00	
F5-12	AO2 zero offset coefficient	-100.0 to +100.0	%	0.00	
F5-13	AO2 gain	-10.00 to +10.00	N.A	1.00	
F5-17	FMR output delay time	0.0 to 3600.0	s	0.0	
F5-18	Relay 1 output delay time	0.0 to 3600.0	s	0.0	
F5-19	Relay 2 output delay time	0.0 to 3600.0	s	0.0	
F5-20	DO1 output delay time	0.0 to 3600.0	s	0.0	
F5-21	DO2 output delay time	0.0 to 3600.0	s	0.0	
F5-22	DO active mode selection	00000 to 11111	N.A	00000	

✓ Group F6: Start/Stop Control

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F6-00	Start mode	0: Direct start 2: Pre-excited start (asynchronous motor)	N.A	0	
F6-03	Startup frequency	0.00 to 10.00	Hz	0.00	
F6-04	Startup frequency active time	0.0 to 100.0	s	0.0	
F6-05	DC injection braking 1 level/ Pre-excitation level	0 to 100	%	0	
F6-06	DC Injection Braking 1 active time/ Pre-excitation active time	0.0 to 100.0	s	0.0	
F6-07	Acceleration/ Deceleration mode	0: Linear mode 1: S-curve mode A 2: S-curve mode B	N.A	0	
F6-08	Time proportion of S-curve starting segment	0.0 to (100.0 minus F6-09)	%	30.0	
F6-09	Time proportion of S-curve ending segment	0.0 to (100.0 minus F6-08)	%	30.0	
F6-10	Stop mode	0: Decelerate to stop 1: Coast to stop	N.A	0	
F6-11	DC Injection Braking 2 frequency threshold	0.00 to maximum frequency	Hz	0.00	
F6-12	DC Injection Braking 2 delay time	0.0 to 36.0	s	0.0	
F6-13	DC Injection Braking 2 level	0 to 100	%	0	
F6-14	DC Injection Braking 2 active time	0.0 to 36.0	s	0.0	
F6-15	Brake use ratio	0 to 100	%	100	

✓ Group F7: Keypad Control And LED Display

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F7-01	MF.K Key function selection	0 to 5	N.A	0	
F7-02	STOP/RESET key function	0 to 1	N.A	1	
F7-03	LED display running parameters 1	0000 to FFFF	N.A	1F	
F7-04	LED display running parameters 2	0000 to FFFF	N.A	0	
F7-05	LED display stop parameters	0000 to FFFF	N.A	33	
F7-06	Load speed display coefficient	0.0001 to 6.5000	N.A	1.0000	
F7-09	Accumulative running time	0 to 65535	h	-	
F7-10	Product number	-	-	-	
F7-11	Software version	-	-	-	
F7-12	Number of decimal places for load speed display	0: 0 decimal place 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	N.A	1	
F7-13	Accumulative power-on time	0 to 65535	h	-	
F7-14	Accumulative power consumption	0 to 65535	kWh	-	

✓ Group F8: Auxiliary Functions

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F8-00	JOG running frequency	0.00 to maximum frequency	Hz	2.00	
F8-01	JOG acceleration time	0.0 to 6500.0	s	20.0	
F8-02	JOG deceleration time	0.0 to 6500.0	s	20.0	
F8-03	Acceleration time 2	0.0 to 6500.0	s	Model dependent	
F8-04	Deceleration time 2	0.0 to 6500.0	s	Model dependent	
F8-05	Acceleration time 3	0.0 to 6500.0	s	Model dependent	
F8-06	Deceleration time 3	0.0 to 6500.0	s	Model dependent	
F8-07	Acceleration time 4	0.0 to 500.0	s	Model dependent	
F8-08	Deceleration time 4	0.0 to 6500.0	s	Model dependent	
F8-09	Jump frequency 1	0.00 to maximum frequency	Hz	0.00	
F8-10	Jump frequency 2	0.00 to maximum frequency	Hz	0.00	
F8-11	Frequency jump amplitude	0.00 to maximum frequency	Hz	0.00	
F8-12	Forward/Reverse rotation dead-zone time	0.0 to 3000.0	s	0.0	
F8-13	Reverse control	0: Enabled 1: Disabled	N.A	0	
F8-14	Running mode when frequency reference lower than frequency lower limit	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	N.A	0	
F8-15	Droop control	0.00 to 10.00	Hz	0.00	
F8-16	Accumulative power-on time threshold	0 to 65000	h	0	
F8-17	Accumulative running time threshold	0 to 65000	h	0	
F8-18	Startup protection	0: No 1: Yes	N.A	0	
F8-19	Frequency detection value (FDT1)	0.00 to maximum frequency	Hz	50.00	
F8-20	Frequency detection hysteresis (FDT1hysteresis)	0.0 to 100.0 (FDT1 level)	%	5.0	
F8-21	Detection range of frequency reached	0.00 to 100 (maximum frequency)	%	0.0	
F8-22	Jump frequency during acceleration/deceleration	0: Disabled 1: Enabled	N.A	0	
F8-25	Frequency switchover point between acceleration time 1 and acceleration time 2	0.00 to maximum frequency	Hz	0.00	
F8-26	Frequency switchover point between deceleration time 1 and deceleration time 2	0.00 to maximum frequency	Hz	0.00	
F8-27	Terminal JOG priority	0: Disabled 1: Enabled	N.A	0	
F8-28	Frequency detection value (FDT2)	0.00 to maximum frequency	N.A	50.00	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F8-29	Frequency detection hysteresis (FDT2 hysteresis)	0.0 to 100.0 (FDT2 level)	%	5.0	
F8-30	Any frequency reaching detection value 1	0.00 to maximum frequency	Hz	50.00	
F8-31	Any frequency reaching detection amplitude 1	0.0 to 100.0 (maximum frequency)	%	0.0	
F8-32	Any frequency reaching detection value 2	0.00 to maximum frequency	Hz	50.00	
F8-33	Any frequency reaching detection amplitude 2	0.0 to 100.0 (maximum frequency)	%	0.0	
F8-34	Zero current detection level	0.0 to 300.0 (rated motor current as 100%)	%	5.0	
F8-35	Zero current detection delay	0.01 to 600.00	s	0.10	
F8-36	Output overcurrent threshold	0.0 (no detection) 0.1 to 300.0 (rated motor current)	%	200.0	
F8-37	Output overcurrent detection delay time	0.00 to 600.00	s	0.00	
F8-38	Any current reaching 1	0.0 to 300.0 (rated motor current)	%	100.0	
F8-39	Any current reaching 1 amplitude	0.0 to 300.0 (rated motor current)	%	0.0	
F8-40	Any current reaching 2	0.0 to 300.0 (rated motor current)	%	100.0	
F8-41	Any current reaching 2 amplitude	0.0 to 300.0 (rated motor current)	%	0.0	
F8-42	Timing function	0: Disabled 1: Enabled	N.A	0	
F8-43	Timing duration source	0 to 3	N.A	0	
F8-44	Timing duration	0.0 to 6500.0	min	0.0	
F8-45	AI1 input voltage lower limit	-11.00 to F8-46	V	3.10	
F8-46	AI1 input voltage upper limit	F8-45 to 11.00	V	6.80	
F8-47	Module temperature threshold	0 to 100	°C	75	
F8-48	Cooling fan control	0: Fan working during running 1: Fan working continuously	N.A	0	
F8-49	Wakeup frequency	Dormant frequency (F8-51) to maximum frequency (F0-10)	Hz	0.00	
F8-50	Wakeup delay time	0.0 to 6500.0	s	0.0	
F8-51	Dormant frequency	0.00 to wakeup frequency (F8-49)	Hz	0.00	
F8-52	Dormant delay time	0.0 to 6500.0	s	0.0	
F8-53	Current running time reached	0.0 to 6500.0	min	0.0	

✓ Group F9: Fault And Protection

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F9-00	Motor overload protection selection	0: Disabled 1: Enabled	N.A	1	
F9-01	Motor overload protection gain	0.20 to 10.00	N.A	1.00	
F9-02	Motor overload warning coefficient	50 to 100	%	80	
F9-03	Overvoltage stall gain	0 to 100	N.A	0	
F9-04	Overvoltage stall protective voltage	120 to 150	%	130	
F9-05	Overcurrent stall gain	0 to 100	N.A	20	
F9-06	Overcurrent stall protective current	100 to 200	%	150	
F9-07	Short-circuit to ground upon power-on	0: Disabled 1: Enabled	N.A	1	
F9-09	Fault auto reset times	0 to 20	N.A	0	
F9-10	DO action during fault auto reset	0: Not act 1: Act	N.A	0	
F9-11	Time interval of fault auto reset	0.1 to 100.0	s	1.0	
F9-12	Input phase loss protection selection	0: Disabled 1: Enabled	N.A	0	
F9-13	Output phase loss protection selection	0: Disabled 1: Enabled	N.A	1	
F9-14	1st fault type	0 to 51	N.A	-	
F9-15	2nd fault type	0 to 51	N.A	-	
F9-16	3rd (latest) fault type	0 to 51	N.A	-	
F9-17	Frequency upon 3rd fault	-	-	-	
F9-18	Current upon 3rd fault	-	-	-	
F9-19	Bus voltage upon 3rd fault	-	-	-	
F9-20	DI status upon 3rd fault	-	-	-	
F9-21	Output terminal status upon 3rd fault	-	-	-	
F9-22	AC drive status upon 3rd fault	-	-	-	
F9-23	Power-on time upon 3rd fault	-	-	-	
F9-24	Running time upon 3rd fault	-	-	-	
F9-27	Frequency upon 2nd fault	-	-	-	
F9-28	Current upon 2nd fault	-	-	-	
F9-29	Bus voltage upon 2nd fault	-	-	-	
F9-30	DI status upon 2nd fault	-	-	-	
F9-31	Output terminal status upon 2nd fault	-	-	-	
F9-32	Frequency upon 2nd fault	-	-	-	
F9-33	Current upon 2nd fault	-	-	-	
F9-34	Bus voltage upon 2nd fault	-	-	-	
F9-37	DI status upon 1st fault	-	-	-	
F9-38	Output terminal status upon 1st fault	-	-	-	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
F9-39	Frequency upon 1st fault	-	-	-	
F9-40	Current upon 1st fault	-	-	-	
F9-41	Bus voltage upon 3rd fault	-	-	-	
F9-42	DI status upon 1st fault	-	-	-	
F9-43	Output terminal status upon 1st fault	-	-	-	
F9-44	Frequency upon 1st fault	-	-	-	
F9-47	Fault protection action selection 1	00000 to 22222	N.A	0000	
F9-48	Fault protection action selection 2	00000 to 11111	N.A	0000	
F9-49	Fault protection action selection 3	00000 to 22222	N.A	0000	
F9-54	Frequency selection for continuing to run upon fault	0 to 4	N.A	0	
F9-55	Backup frequency upon abnormality	0.0 to 100.0 (maximum frequency)	Hz	100.0	
F9-59	Action selection at instantaneous power failure	0: Invalid 1: Decelerate 2: Decelerate to stop	N.A	0	
F9-60	Action pause judging voltage at instantaneous power failure	80.0 to 100.0	%	90.0	
F9-61	Voltage rally judging time at instantaneous power failure	0.00 to 100.00	s	0.50	
F9-62	Action judging voltage at instantaneous power failure	60.0 to 100.0 (standard bus voltage)	%	80.0	
F9-63	Protection upon load becoming 0	0: Disabled 1: Enabled	N.A	0	

✓ **Group FA: Process Control And PID Function**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
FA-00	PID setting source	0 to 6	N.A	0	
FA-01	PID digital setting	0.0 to 100.0	%	50.0	
FA-02	PID feedback source	0 to 8	N.A	0	
FA-03	PID action direction	0: Forward action 1: Reverse action	N.A	0	
FA-04	PID setting feedback range	0 to 65535	N.A	1000	
FA-05	Proportional gain Kp1	0.0 to 100.0	N.A	20.0	
FA-06	Integral time Ti1	0.01 to 10.00	s	2.00	
FA-07	Differential time Td1	0.00 to 10.000	s	0.000	
FA-08	Cut-off frequency of PID reverse rotation	0.00 to maximum frequency	Hz	2.00	
FA-09	PID deviation limit	0.0 to 100.0	%	0.0	
FA-10	PID differential limit	0.00 to 100.00	%	0.10	
FA-11	PID setting change time	0.00 to 650.00	s	0.00	
FA-12	PID feedback filter time	0.00 to 60.00	s	0.00	
FA-13	PID output filter time	0.00 to 60.00	s	0.00	
FA-14	Reserved	-	-	-	
FA-15	Proportional gain Kp2	0.0 to 100.0	N.A	20.0	
FA-16	Integral time Ti2	0.01 to 10.00	s	2.00	
FA-17	Differential time Td2	0.000 to 10.000	s	0.000	
FA-18	PID parameter switchover condition	0 to 2	N.A	0	
FA-19	PID parameter switchover deviation 1	0.0 to FA-20	%	20.0	
FA-20	PID parameter switchover deviation 2	FA-19 to 100.0	%	80.0	
FA-21	PID initial value	0.0 to 100.0	%	0.0	
FA-22	PID initial value holding time	0.00 to 650.00	s	0.00	
FA-23	Maximum deviation between two PID outputs in forward direction	0.00 to 100.00	%	1.00	
FA-24	Maximum deviation between two PID outputs in reverse direction	0.00 to 100.00	%	1.00	
FA-25	PID integral property	00 to 11	N.A	00	
FA-26	Detection value of PID feedback loss	0.0: Not judging feedback loss 0.1 to 100.0	%	0.0	
FA-27	Detection time of PID feedback loss	0.0 to 20.0	s	0.0	
FA-28	PID operation at stop	0: No PID operation at stop 1: PID operation at stop	N.A	0	

✓ **Group FB: Swing Frequency, Fixed Length And Count**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
FB-00	Swing frequency setting mode	0: Relative to the central frequency 1: Relative to the maximum frequency	N.A	0	
FB-01	Swing frequency amplitude	0.0 to 100.0	%	0.0	
FB-02	Jump frequency amplitude	0.0 to 50.0	%	0.0	
FB-03	Swing frequency cycle	0.0 to 3000.0	s	10.0	
FB-04	Triangular wave rising time coefficient	0.0 to 100.0	%	50.0	
FB-05	Set length	0 to 65535	m	1000	
FB-06	Actual length	0 to 65535	m	0	
FB-07	Number of pulses per meter	0.1 to 6553.5	N.A	100.0	
FB-08	Set count value	1 to 65535	N.A	1000	
FB-09	Designated count value	1 to 65535	N.A	1000	

✓ **Group FC: Multi-Reference And Simple PLC Function**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
FC-00	Reference 0	-100.0 to 100.0	%	0.0	
FC-01	Reference 1	-100.0 to 100.0	%	0.0	
FC-02	Reference 2	-100.0 to 100.0	%	0.0	
FC-03	Reference 3	-100.0 to 100.0	%	0.0	
FC-04	Reference 4	-100.0 to 100.0	%	0.0	
FC-05	Reference 5	-100.0 to 100.0	%	0.0	
FC-06	Reference 6	-100.0 to 100.0	%	0.0	
FC-07	Reference 7	-100.0 to 100.0	%	0.0	
FC-08	Reference 8	-100.0 to 100.0	%	0.0	
FC-09	Reference 9	-100.0 to 100.0	%	0.0	
FC-10	Reference 10	-100.0 to 100.0	%	0.0	
FC-11	Reference 11	-100.0 to 100.0	%	0.0	
FC-12	Reference 12	-100.0 to 100.0	%	0.0	
FC-13	Reference 13	-100.0 to 100.0	%	0.0	
FC-14	Reference 14	-100.0 to 100.0	%	0.0	
FC-15	Reference 15	-100.0 to 100.0	%	0.0	
FC-16	Simple PLC running mode	0 to 2	N.A	0	
FC-17	Simple PLC retentive selection	00 to 11	N.A	00	
FC-18	Running time of simple PLC reference 0	0.0 to 6553.5	s or h	0.0	
FC-19	Acceleration/deceleration time of simple PLC reference 0	0 to 3	N.A	0	
FC-20	Running time of simple PLC reference 1	0.0 to 6553.5	s or h	0.0	
FC-21	Acceleration/deceleration time of simple PLC reference 1	0 to 3	N.A	0	
FC-22	Running time of simple PLC reference 2	0.0 to 6553.5	s or h	0.0	
FC-23	Acceleration/deceleration time of simple PLC reference 2	0 to 3	N.A	0	
FC-24	Running time of simple PLC reference 3	0.0 to 6553.5	s or h	0.0	
FC-25	Acceleration/deceleration time of simple PLC reference 3	0 to 3	N.A	0	
FC-26	Running time of simple PLC reference 4	0.0 to 6553.5	s or h	0.0	
FC-27	Acceleration/deceleration time of simple PLC reference 4	0 to 3	N.A	0	
FC-28	Running time of simple PLC reference 5	0.0 to 6553.5	s or h	0.0	
FC-29	Acceleration/deceleration time of simple PLC reference 5	0 to 3	N.A	0	
FC-30	Running time of simple PLC reference 6	0.0 to 6553.5	s or h	0.0	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
FC-31	Acceleration/deceleration time of simple PLC reference 6	0 to 3	N.A	0	
FC-32	Running time of simple PLC reference 7	0.0 to 6553.5	s or h	0.0	
FC-33	Acceleration/deceleration time of simple PLC reference 7	0 to 3	N.A	0	
FC-34	Running time of simple PLC reference 8	0.0 to 6553.5	s or h	0.0	
FC-35	Acceleration/deceleration time of simple PLC reference 8	0 to 3	N.A	0	
FC-36	Running time of simple PLC reference 9	0.0 to 6553.5	s or h	0.0	
FC-37	Acceleration/deceleration time of simple PLC reference 9	0 to 3	N.A	0	
FC-38	Running time of simple PLC reference 10	0.0 to 6553.5	s or h	0.0	
FC-39	Acceleration/deceleration time of simple PLC reference 10	0 to 3	N.A	0	
FC-40	Running time of simple PLC reference 11	0.0 to 6553.5	s or h	0.0	
FC-41	Acceleration/deceleration time of simple PLC reference 11	0 to 3	N.A	0	
FC-42	Running time of simple PLC reference 12	0.0 to 6553.5	s or h	0.0	
FC-43	Acceleration/deceleration time of simple PLC reference 12	0 to 3	N.A	0	
FC-44	Running time of simple PLC reference 13	0.0 to 6553.5	s or h	0.0	
FC-45	Acceleration/deceleration time of simple PLC reference 13	0 to 3	N.A	0	
FC-46	Running time of simple PLC reference 14	0.0 to 6553.5	s or h	0.0	
FC-47	Acceleration/deceleration time of simple PLC reference 14	0 to 3	N.A	0	
FC-48	Running time of simple PLC reference 15	0.0 to 6553.5	s or h	0.0	
FC-49	Acceleration/deceleration time of simple PLC reference 15	0 to 3	N.A	0	
FC-50	Time unit of simple PLC running	0: s (second); 1: h (hour)	N.A	0	
FC-51	Reference 0 source	0 to 6	N.A	0	

✓ **Group FD: Communication**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
FD-00	Baud rate	0000 to 9999	N.A	6005	
FD-01	Data format	0 to 3	N.A	0	
FD-02	Local address	0: Broadcast address; 1 to 247	N.A	1	
FD-03	Response delay	0 to 20	ms	2	
FD-04	Communication timeout	0.0 (invalid); 0.1 to 60.0	s	0.0	
FD-05	Modbus protocol selection	00 to 11	N.A	00	
FD-06	Current unit in communication	0: 0.01 1: 0.1	A	0	

✓ **Group FE: User-Defined Function Code**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
FE-00	User-defined function code 0	F0-00 to FP-xx, A1-00 to Ax-xx, U0-xx to U0-xx	-	F0-00	
FE-01	User-defined function code 1		-	F0-02	
FE-02	User-defined function code 2		-	F0-03	
FE-03	User-defined function code 3		-	F0-07	
FE-04	User-defined function code 4		-	F0-08	
FE-05	User-defined function code 5		-	F0-17	
FE-06	User-defined function code 6		-	F0-18	
FE-07	User-defined function code 7		-	F3-00	
FE-08	User-defined function code 8		-	F3-01	
FE-09	User-defined function code 9		-	F4-00	
FE-10	User-defined function code 10		-	F4-01	
FE-11	User-defined function code 11		-	F4-02	
FE-12	User-defined function code 12		-	F5-04	
FE-13	User-defined function code 13		-	F5-07	
FE-14	User-defined function code 14		-	F6-00	
FE-15	User-defined function code 15		-	F6-10	
FE-16	User-defined function code 16		-	F0-00	
FE-17	User-defined function code 17		-	F0-00	
FE-18	User-defined function code 18		-	F0-00	
FE-19	User-defined function code 19		-	F0-00	
FE-20	User-defined function code 20		-	F0-00	
FE-21	User-defined function code 21		-	F0-00	
FE-22	User-defined function code 22		-	F0-00	
FE-23	User-defined function code 23		-	F0-00	
FE-24	User-defined function code 24			F0-00	
FE-25	User-defined function code 25		-	F0-00	
FE-26	User-defined function code 26		-	F0-00	
FE-27	User-defined function code 27		-	F0-00	
FE-28	User-defined function code 28		-	F0-00	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
FE-29	User-defined function code 29		-	F0-00	

✓ **Group FP: Function Code Management**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
FP-00	User password	0 to 65535	N.A	0	
FP-01	Restore default settings	0: No operation 01: Restore factory settings except motor parameters 02: Clear records 04: Restore user backup parameters 501: Back up current user parameters	N.A	0	
FP-02	AC drive parameter display property	00 to 11	N.A	11	
FP-03	Individualized parameter display property	00 to 11	N.A	00	
FP-04	Parameter modification property	0: Modifiable 1: Not modifiable	N.A	0	

✓ **Group A0: Torque Control**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
A0-00	Speed/Torque control selection	0: Speed control 1: Torque control	N.A	0	
A0-01	Torque setting source in torque control	0 to 7	N.A	0	
A0-03	Torque digital setting in torque control	-200.0 to 200.0	%	150.0	
A0-05	Forward maximum frequency in torque control	0.00 to maximum frequency (F0-10)	Hz	50.00	
A0-06	Reverse maximum frequency in torque control	0.00 to maximum frequency (F0-10)	Hz	50.00	
A0-07	Acceleration time in torque control	0.00 to 650.00	s	0.00	
A0-08	Deceleration time in torque control	0.00 to 650.00	s	0.00	

✓ **Group A1: Virtual DI/DO**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
A1-00	VDI1 function selection	0 to 59	N.A	0	
A1-01	VDI2 function selection	0 to 59	N.A	0	
A1-02	VDI3 function selection	0 to 59	N.A	0	
A1-03	VDI4 function selection	0 to 59	N.A	0	
A1-04	VDI5 function selection	0 to 59	N.A	0	
A1-05	VDI state setting mode	00000 to 11111	N.A	00000	
A1-06	VDI state selection	00000 to 11111	N.A	00000	
A1-07	Function selection for AI1 used as DI	0 to 59	N.A	0	
A1-08	Function selection for AI2 used as DI	0 to 59	N.A	0	
A1-09	Function selection for AI3 used as DI	0 to 59	N.A	0	
A1-10	State selection for AI used as DI	000 to 111	N.A	000	
A1-11	VDO1 function selection	0 to 41	N.A	0	
A1-12	VDO2 function selection	0 to 41	N.A	0	
A1-13	VDO3 function selection	0 to 41.	N.A	0	
A1-14	VDO4 function selection	0 to 41	N.A	0	
A1-15	VDO5 function selection	0 to 41	N.A	0	
A1-16	VDO1 output delay	0.0 to 3600.0	s	0.0	
A1-17	VDO2 output delay	0.0 to 3600.0	s	0.0	
A1-18	VDO3 output delay	0.0 to 3600.0	s	0.0	
A1-19	VDO4 output delay	0.0 to 3600.0	s	0.0	
A1-20	VDO5 output delay	0.0 to 3600.0	s	0.0	
A1-21	VDO state selection	00000 to 11111	N.A	00000	

✓ Group A2: Motor 2 Parameters

Function code	Parameter Name	Setting Range	Unit	Default	Commission
A2-00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor	N.A	0	
A2-01	Rated motor power	0.1 to 30.0	kW	Model dependent	
A2-02	Rated motor voltage	1 to 1000	V	Model dependent	
A2-03	Rated motor current	0.01 to 655.35	A	Model dependent	
A2-04	Rated motor frequency	0.01 to maximum frequency	Hz	Model dependent	
A2-05	Rated motor rotational speed	1 to 65535	RPM	Model dependent	
A2-06	Stator resistance	0.001 to 65.535	Ω	Model dependent	
A2-07	Rotor resistance	0.001 to 65.535	Ω	Model dependent	
A2-08	Leakage inductive reactance	0.01 to 655.35	mH	Model dependent	
A2-09	Mutual inductive reactance	0.1 to 6553.5	mH	Model dependent	
A2-10	No-load current	0.01 to A2-03	A	Model dependent	
A2-37	Auto-tuning selection	0: No auto-tuning 1: Static auto-tuning 2: Complete auto-tuning	N.A	0	
A2-38	Speed loop proportional gain 1	0 to 100	N.A	30	
A2-39	Speed loop integral time 1	0.01 to 10.00	s	0.50	
A2-40	Switchover frequency 1	0.00 to A2-43	Hz	5.00	
A2-41	Speed loop proportional gain 2	0 to 100	N.A	15	
A2-42	Speed loop integral time 2	0.01 to 10.00	s	1.00	
A2-43	Switchover frequency 2	A2-40 to maximum output frequency	Hz	10.00	
A2-44	Vector control slip gain	50 to 200	%	100	
A2-45	Time constant of speed loop filter	0.000 to 0.100	s	0.000	
A2-46	Vector control over-excitation gain	0 to 200	N.A	64	
A2-47	Torque upper limit source in speed control mode	0 to 7	N.A	0	
A2-48	Digital setting of torque upper limit in speed control mode	0.0 to 200.0	%	150.0	
A2-51	Excitation adjustment proportional gain	0 to 20000	N.A	2000	
A2-52	Excitation adjustment integral gain	0 to 20000	N.A	1300	
A2-53	Torque adjustment proportional gain	0 to 20000	N.A	2000	
A2-54	Torque adjustment integral gain	0 to 20000	N.A	1300	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
A2-61	Motor 2 control mode	0: Sensorless vector control (SVC) 2: Voltage/Frequency (V/F) control	N.A	0	
A2-62	Motor 2 acceleration/deceleration time	0: Same as motor 1 1: Acceleration/Deceleration time 1 2: Acceleration/Deceleration time 2 3: Acceleration/Deceleration time 3 4: Acceleration/Deceleration time 4	N.A	0	
A2-63	Motor 2 torque boost	0.0: Fixed torque boost, 0.1 to 30	%	Model dependent	
A2-65	Motor 2 oscillation suppression gain	0 to 100	N.A	Model dependent	

✓ Group A3: Motor 3 Parameters

Function code	Parameter Name	Setting Range	Unit	Default	Commission
A3- 00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor	N.A	0	
A3- 01	Rated motor power	0.1 to 30.0	kW	Model dependent	
A3- 02	Rated motor voltage	1 to 1000	V	Model dependent	
A3- 03	Rated motor current	0.01 to 655.35	A	Model dependent	
A3- 04	Rated motor frequency	0.01 to maximum frequency	Hz	Model dependent	
A3- 05	Rated motor rotational speed	1 to 65535	RPM	Model dependent	
A3- 06	Stator resistance	0.001 to 65.535	Ω	Model dependent	
A3- 07	Rotor resistance	0.001 to 65.535	Ω	Model dependent	
A3- 08	Leakage inductive reactance	0.01 to 655.35	mH	Model dependent	
A3- 09	Mutual inductive reactance	0.1 to 6553.5	mH	Model dependent	
A3- 10	No-load current	0.01 to A3- 03	A	Model dependent	
A3- 37	Auto-tuning selection	0: No auto-tuning 1: Static auto-tuning 2: Complete auto-tuning	N.A	0	
A3- 38	Speed loop proportional gain 1	0 to 100	N.A	30	
A3- 39	Speed loop integral time 1	0.01 to 10.00	s	0.50	
A3- 40	Switchover frequency 1	0.00 to A3- 43	Hz	5.00	
A3- 41	Speed loop proportional gain 2	0 to 100	N.A	15	
A3- 42	Speed loop integral time 2	0.01 to 10.00	s	1.00	
A3- 43	Switchover frequency 2	A3- 40 to maximum output frequency	Hz	10.00	
A3- 44	Vector control slip gain	50 to 200	%	100	
A3- 45	Time constant of speed loop filter	0.000 to 0.100	s	0.000	
A3- 46	Vector control over-excitation gain	0 to 200	N.A	64	
A3- 47	Torque upper limit source in speed control mode	0 to 7	N.A	0	
A3- 48	Digital setting of torque upper limit in speed control mode	0.0 to 200.0	%	150.0	
A3- 51	Excitation adjustment proportional gain	0 to 20000	N.A	2000	
A3- 52	Excitation adjustment integral gain	0 to 20000	N.A	1300	
A3- 53	Torque adjustment proportional gain	0 to 20000	N.A	2000	
A3- 54	Torque adjustment integral gain	0 to 20000	N.A	1300	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
A3- 61	Motor 2 control mode	0: Sensorless vector control (SVC) 2: Voltage/Frequency (V/F) control	N.A	0	
A3- 62	Motor 2 acceleration/deceleration time	0: Same as motor 1 1: Acceleration/Deceleration time 1 2: Acceleration/Deceleration time 2 3: Acceleration/Deceleration time 3 4: Acceleration/Deceleration time 4	N.A	0	
A3- 63	Motor 2 torque boost	0.0: Fixed torque boost, 0.1 to 30	%	Model dependent	
A3- 65	Motor 2 oscillation suppression gain	0 to 100	N.A	Model dependent	

✓ Group A4: Motor 4 Parameters

Function code	Parameter Name	Setting Range	Unit	Default	Commission
A4- 00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor	N.A	0	
A4- 01	Rated motor power	0.1 to 30.0	kW	Model dependent	
A4- 02	Rated motor voltage	1 to 1000	V	Model dependent	
A4- 03	Rated motor current	0.01 to 655.35	A	Model dependent	
A4- 04	Rated motor frequency	0.01 to maximum frequency	Hz	Model dependent	
A4- 05	Rated motor rotational speed	1 to 65535	RPM	Model dependent	
A4- 06	Stator resistance	0.001 to 65.535	Ω	Model dependent	
A4- 07	Rotor resistance	0.001 to 65.535	Ω	Model dependent	
A4- 08	Leakage inductive reactance	0.01 to 655.35	mH	Model dependent	
A4- 09	Mutual inductive reactance	0.1 to 6553.5	mH	Model dependent	
A4- 10	No-load current	0.01 to A4- 03	A	Model dependent	
A4- 37	Auto-tuning selection	0: No auto-tuning 1: Static auto-tuning 2: Complete auto-tuning	N.A	0	
A4- 38	Speed loop proportional gain 1	0 to 100	N.A	30	
A4- 39	Speed loop integral time 1	0.01 to 10.00	s	0.50	
A4- 40	Switchover frequency 1	0.00 to A4- 43	Hz	5.00	
A4- 41	Speed loop proportional gain 2	0 to 100	N.A	15	
A4- 42	Speed loop integral time 2	0.01 to 10.00	s	1.00	
A4- 43	Switchover frequency 2	A4- 40 to maximum output frequency	Hz	10.00	
A4- 44	Vector control slip gain	50 to 200	%	100	
A4- 45	Time constant of speed loop filter	0.000 to 0.100	s	0.000	
A4- 46	Vector control over-excitation gain	0 to 200	N.A	64	
A4- 47	Torque upper limit source in speed control mode	0 to 7	N.A	0	
A4- 48	Digital setting of torque upper limit in speed control mode	0.0 to 200.0	%	150.0	
A4- 51	Excitation adjustment proportional gain	0 to 20000	N.A	2000	
A4- 52	Excitation adjustment integral gain	0 to 20000	N.A	1300	
A4- 53	Torque adjustment proportional gain	0 to 20000	N.A	2000	
A4- 54	Torque adjustment integral gain	0 to 20000	N.A	1300	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
A4- 61	Motor 2 control mode	0: Sensorless vector control (SVC) 2: Voltage/Frequency (V/F) control	N.A	0	
A4- 62	Motor 2 acceleration/deceleration time	0: Same as motor 1 1: Acceleration/Deceleration time 1 2: Acceleration/Deceleration time 2 3: Acceleration/Deceleration time 3 4: Acceleration/Deceleration time 4	N.A	0	
A4- 63	Motor 2 torque boost	0.0: Fixed torque boost, 0.1 to 30	%	Model dependent	
A4- 65	Motor 2 oscillation suppression gain	0 to 100	N.A	Model dependent	

✓ **Group A5: Control Optimization**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
A5-00	DPWM switchover frequency upper limit	0.00 to 15.00	Hz	12.00	
A5-01	PWM modulation mode	0: Asynchronous modulation 1: Synchronous modulation	N.A	0	
A5-02	Dead zone compensation mode selection	0: No compensation 1: Compensation	N.A	1	
A5-03	Random PWM depth	0 to 10	N.A	0	
A5-04	Rapid current limit	0: Disabled 1: Enabled	N.A	1	
A5-06	Undervoltage threshold	60.0 to 140.0	%	100.0	
A5-07	Reserved	-	-	-	
A5-08	Dead-zone time adjustment	100 to 200	%	150	
A5-09	Narrow pulse control	0: Disabled 1: Enabled	N.A	0	

✓ **Group A6: AI Curve Setting**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
A6-00	AI curve 4 minimum input	-10.00 to A6-02	V	0.00	
A6-01	Corresponding setting of AI curve 4 minimum input	-100.0 to 100.0	%	0.0	
A6-02	AI curve 4 inflexion 1 input	A6-00 to A6-04	V	3.00	
A6-03	Corresponding setting of AI curve 4 inflexion 1 input	-100.0 to 100.0	%	30.0	
A6-04	AI curve 4 inflexion 1 input	A6-02 to A6-06	V	6.00	
A6-05	Corresponding setting of AI curve 4 inflexion 1 input	-100.0 to 100.0	%	60.0	
A6-06	AI curve 4 maximum input	A6-06 to 10.00	V	10.00	
A6-07	Corresponding setting of AI curve 4 maximum input	-100.0 to 100.0	%	100.0	
A6-08	AI curve 5 minimum input	-10.00 to A6-10	V	0.00	
A6-09	Corresponding setting of AI curve 5 minimum input	-100.0 to 100.0	%	0.0	
A6-10	AI curve 5 inflexion 1 input	A6-08 to A6-12	V	3.00	
A6-11	Corresponding setting of AI curve 5 inflexion 1 input	-100.0 to 100.0	%	30.0	
A6-12	AI curve 5 inflexion 1 input	A6-10 to A6-14	V	6.00	
A6-13	Corresponding setting of AI curve 5 inflexion 1 input	-100.0 to 100.0	%	60.0	
A6-14	AI curve 5 maximum input	A6-14 to 10.00	V	10.00	
A6-15	Corresponding setting of AI curve 5 maximum input	-100.0 to 100.0	%	100.0	
A6-24	Jump point of AI1 input corresponding setting	-100.0 to 100.0	%	0.0	
A6-25	Jump amplitude of AI1 input corresponding setting	0.0 to 100.0	%	0.5	
A6-26	Jump point of AI2 input corresponding setting	-100.0 to +100.0	%	0.0	
A6-27	Jump amplitude of AI2 input corresponding setting	0.0 to 100.0	%	0.5	
A6-28	Jump point of AI3 input corresponding setting	-100.0 to +100.0	%	0.0	
A6-29	Jump amplitude of AI3 input corresponding setting	0.0 to 100.0	%	0.5	

✓ **Group AC: AI/AO Correction**

Function code	Parameter Name	Setting Range	Unit	Default	Commission
AC-00	AI1 measured voltage 1	0.500 to 4.000	V	Factory corrected	
AC-01	AI1 displayed voltage 1	0.500 to 4.000	V	Factory corrected	
AC-02	AI1 measured voltage 2	6.000 to 9.999	V	Factory corrected	
AC-03	AI1 displayed voltage 2	6.000 to 9.999	V	Factory corrected	
AC-04	AI2 measured voltage 1	0.500 to 4.000	V	Factory-corrected	
AC-05	AI2 displayed voltage 1	0.500 to 4.000	V	Factory-corrected	
AC-06	AI2 measured voltage 2	6.000 to 9.999	V	Factory-corrected	
AC-07	AI2 displayed voltage 2	6.000 to 9.999	V	Factory-corrected	
AC-08	AI3 measured voltage 1	-9.999 to 10.000	V	Factory-corrected	
AC-09	AI3 displayed voltage 1	-9.999 to 10.000	V	Factory-corrected	
AC-10	AI3 measured voltage 2	-9.999 to 10.000	V	Factory-corrected	
AC-11	AI3 displayed voltage 2	-9.999 to 10.000	V	Factory-corrected	
AC-12	AO1 target voltage 1	0.500 to 4.000	V	Factory corrected	
AC-13	AO1 measured voltage 1	0.500 to 4.000	V	Factory corrected	
AC-14	AO1 target voltage 2	6.000 to 9.999	V	Factory corrected	
AC-15	AO1 measured voltage 2	6.000 to 9.999	V	Factory corrected	
AC-16	AO2 target voltage 1	0.500 to 4.000	V	Factory corrected	
AC-17	AO2 measured voltage 1	0.500 to 4.000	V	Factory corrected	
AC-18	AO2 target voltage 2	6.000 to 9.999	V	Factory corrected	
AC-19	AO2 measured voltage 2	6.000 to 9.999	V	Factory corrected	

5.2 Monitoring Function Codes

✓ Group U0: Monitoring

Function code	Parameter Name	Setting Range	Unit	Default	Commission
U0-00	Running frequency	-	Hz	-	
U0-01	Reference frequency	-	Hz	-	
U0-02	Bus voltage	-	V	-	
U0-03	Output voltage	-	V	-	
U0-04	Output current	-	A	-	
U0-05	Output power	-	kW	-	
U0-06	Output torque	-	%	-	
U0-07	DI state	-	N.A	-	
U0-08	DO state	-	N.A	-	
U0-09	AI1 voltage	-	V	-	
U0-10	AI2 voltage	-	V	-	
U0-11	AI3 voltage	-	V	-	
U0-12	Count value	-	N.A	-	
U0-13	Length value	-	N.A	-	
U0-14	Load speed	-	N.A	-	
U0-15	PID setting	-	N.A	-	
U0-16	PID feedback	-	N.A	-	
U0-17	PLC stage	-	N.A	-	
U0-18	Input pulse frequency	-	kHz	-	
U0-19	Feedback speed	-	Hz	-	
U0-20	Remaining running time	-	Min	-	
U0-21	AI1 voltage before correction	-	V	-	
U0-22	AI2 voltage before correction	-	V	-	
U0-23	AI3 voltage before correction	-	V	-	
U0-24	Linear speed	-	m/Min	-	
U0-25	Accumulative power-on time	-	Min	-	
U0-26	Accumulative running time	-	Min	-	
U0-27	Pulse input frequency	-	Hz	-	
U0-28	Communication setting value	-	%	-	
U0-29	Reserved	-	-	-	
U0-30	Main frequency X	-	Hz	-	
U0-31	Auxiliary frequency Y	-	Hz	-	
U0-32	Viewing any register address value	-	N.A	-	

Function code	Parameter Name	Setting Range	Unit	Default	Commission
U0-34	Motor temperature	-	°C	-	
U0-35	Target torque	-	%	-	
U0-37	Power factor angle	-	°	-	
U0-41	DI state visual display	-	N.A	-	
U0-42	DO state visual display	-	N.A	-	
U0-43	DI function state visual display 1	-	N.A	-	
U0-44	DI function state visual display 2	-	N.A	-	
U0-59	Current frequency reference	-	%	-	
U0-60	Current running frequency	-	%	-	
U0-61	AC drive state	-	N.A	-	