



Manual

GA20 Series AC Drive

NISTRO

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1 General

1.1 Safety Precautions

Please read this manual thoroughly before using the product to grasp its functions, operation, and maintenance. Take note of the safety precautions in the manual to ensure proper and safe use.

Signs and Meanings

The following signs are used in this manual to highlight the key safety points. Failure to observe these points may result in damages to this product and the associated system, or even personal injuries.

 DANGER	DANGER: Incorrect operation may result in death or major safety incidents.
 CAUTION	CAUTION: Incorrect operation may result in minor injuries.

Operator

This product must be installed, operated and maintained by trained professionals. "Trained professionals" means that the personnel working on this product must be trained with specialized skills and knowledge about installation, wiring, operation and maintenance of the equipment, so they can respond correctly to various emergencies that may arise during use.

Safety Guide

The safety rules and warning signs presented for safety are taken to prevent personal injuries and damages to the products and the associated systems. Please read this manual carefully before use and strictly follow the safety guidelines and warning signs in this manual.

- Correct transportation, storage, installation, as well as careful operation and maintenance, for the safe operation of the AC drive is essential. During transportation and storage, it is crucial to protect the AC drive from shocks and vibrations. Additionally, it should be stored in a dry environment free of corrosive gases and conductive dust below 60°C.
- This product is equipped with hazardous voltage to control potentially dangerous motion mechanisms. Failure to observe the regulations or this manual may lead to damages to the products and associated systems, or even personal injuries and death.
- Do not perform wiring work while the power is on, as there is a risk of death by electric shock. Before performing wiring, inspection, maintenance, etc., disconnect the power supply to all associated equipment and make sure that the DC voltage in the main circuit has dropped to a safe level for 15 minutes.
- The power cable, motor cable, and control cable must all be tightly connected, and the grounding terminal must be grounded with a grounding resistance of lower than 10Ω.
- The static electricity of human body may cause significant harm to internal sensitive devices. So it is crucial for professionals to adhere to the measures and methods outlined in the Electrostatic Discharge Prevention (ESD) guidelines before commencing work on the AC drives.
- Due to the pulse waveform output voltage of the AC drive, it is essential to remove the installed

power factor improvement capacitors, lightning protection varistors or other devices on the output side of the AC drive, or move the devices to the input side.

- Do not add switching devices such as circuit breakers and contactors to the output side of the AC drive. (If it is necessary to connect switching devices to the output side, please ensure that the output current of the AC drive is zero when the switch is on or off.)
- Failure of the control device could lead to production halt and significant accidents. Therefore, please apply the necessary external protection measures or backup devices.
- This product is intended for the manufacturer's specified purposes. Unauthorized applications in such as emergency, rescue, marine, medical, aviation, or facility-related settings are seriously prohibited.
- Maintenance of this product can only be carried out by our company or by professionals authorized and licensed by our company. Unauthorized modification or use of accessories not approved by our company may result in product failure. Any defective devices during maintenance must be replaced timely.

1.2 Pre-use

Please check the outer packaging for any damage upon receiving the ordered products. And then check the product inside for any damage, scratches, or dirt. (Please note that damage during transportation is not covered by the Three Guarantees warranty policy.) If the product is damaged during shipping, please contact us or the shipping company immediately. If everything is fine, please double-check that the model number of the received drive is the same as the order sheet.

Power Output Current(A) Input Voltage (V)		
	220	380
0.4	2.5	-
0.75	4	3
1.5	7	4
2.2	10	5
4.0	-	9.5
5.5	-	13
7.5	-	17
11.0	-	25
15.0	-	32
18.5	-	38
22.0	-	45

1.3 Technical Specifications

Item		Specification
Power Input	Voltage and frequency	S2: single phase, 200V~240V, 50Hz/60Hz T2: Three phase, 200V~240V, 50Hz/60Hz T3: Three phase, 380V~480V, 50Hz/60Hz
	Allowable fluctuation	T/S2: -10%~10%; T3: -15%~10%; voltage imbalance rate: <3%; frequency: $\pm 5\%$
	Switching surge current	<Rated current
Output	Voltage	Output under rated conditions: Three phase, 0V ~ input voltage, tolerance<5%
	Frequency range	0Hz~ 600Hz
	Frequency accuracy	$\pm 0.5\%$ of the max. frequency
	Overload capacity	T3: 150% of rated current for 90s, 180% of rated current for 10s, and 200% of rated current for 3s T/S2: 150% of rated current for 24s; and 180% of rated current for 3s
Main Control Performance	Motor control	V/F SVC Note: Some models do not support SVC. Please consult the manufacturer for details.
	Modulation	PWM
	Carrier frequency	T/S2: 1kHz~8kHz T3: 1kHz~16kHz (Consider derating for non-default carrier frequency.)
	Speed control range	SVC: Rated load 1:100;
	Speed stabilizing accuracy	SVC: $\leq 2\%$ rated synchronous speed
	Starting torque	SVC: 150% of rated torque at 0.5Hz
	Torque response	SVC: <20ms;

	Frequency accuracy	Digit setting: max. frequency $\times \pm 0.01\%$; analog setting: max. frequency $\times \pm 0.2\%$
	Frequency resolution	Digit setting: 0.01Hz; analog setting: Max. frequency $\times 0.05\%$
Basic Function	Torque control	Torque calculation and speed limit in torque mode
	DC brake	Starting frequency: 0.00Hz~50.00Hz; braking time: 0.0s~60.0s; braking current: 0.0%~150.0% of rated current
	Torque boost	Auto torque boost: 0.0% ~ 100.0%; manual torque boost: 0.0% ~ 30.0%.
	V/F curve	4 patterns: Linear torque characteristic curve, self-defined V/F curve, torque drop characteristic curve (1.1~1.9 power), and square V/F curve
	ACC/DEC curve	2 patterns: Linear and S-curve acceleration/deceleration 4 sets of ACC and DEC times, up to 65,000s.
	Rated output voltage	With the power voltage compensation function, it can be set within 50%~100% with the rated voltage of the motor as 100% (the output cannot exceed the input voltage)
	Auto voltage regulation	The output voltage can be automatically kept constant during the grid voltage fluctuation
	Auto ECO mode	The output voltage is automatically optimized according to the load under V/F control mode to save energy.
	Auto current limit	Auto current limit works during operation to prevent frequent tripping due to over-current fault.
	Instantaneous power-down mode	Uninterrupted operation is realized through bus voltage control in case of instantaneous power down
	Standard function	PID control, fly track and restart after power down, jump frequency, upper/lower frequency limit control, programmed operation, multi-frequency, RS485 communication, AO, frequency pulse output, parameter access level, common parameter, monitoring parameter comparator output, counting and timing, and wobble frequency
	Frequency source	Switchable via keypad, keypad potentiometer, voltage/current terminal AI, communication and multi-source terminals, and main and auxiliary combined sources
	Feedback input source	Set via keypad potentiometer, voltage/current terminal AI, communication, and PUL terminal

	Command source	Set via operation panel, external terminals and communication	
	Input command signal	Start, stop, forward and reverse, jog, multi-frequency, free stop, reset, acceleration/deceleration time, frequency source, and external fault alarms.	
	Output signal	1-channel relay output, 1-channel open collector output, and 1-channel AO can be set as 0V~10V, 0mA~20mA or 4mA~20mA	
Protection		Over-voltage, under-voltage, current limit, over-current, overload, over-heat, data protection, overspeed, and I/O phase loss	
Keypad Display	LED display	Built-in keypad: single line 5-digit display	To monitor the status of 1 AC drive
		External keypad: Single/dual line 5-digit display	Dual-line to monitor the status of 2 AC drives
	Parameter copy	Upload/download function code information of the drive for fast parameter copying (external keypad only)	
	Status monitoring	All parameters of the monitoring parameter group include output frequency, frequency target, output current, input voltage, output voltage, motor speed, PID feedback, PID target, module temperature, torque target, output torque, etc.	
	Error alarm	Overvoltage, under-voltage, overcurrent, short-circuit, phase loss, overload, overheat, current limit, data protection damaged, operating conditions of current faults, historical faults	
Ambient Condition	Installation	<1000 meters, derate 1% for every 100 meters rise when above 1000m. No condensation, icing, rain, snow, hail, etc., solar radiation <700W/m ² , air pressure 70kPa~106kPa	
	Temperature, humidity	-10°C~+50°C, derate above 40°C, 50°C max. (no-load) 5%RH~95%RH (non-condensing)	
	Vibration	5.9m/s ² (0.6G) at 9Hz~200Hz	
	Storage temperature	-30°C~+60°C	
	Installation method	Wall-mounting	

	IP	IP20
	Pollution degree	Degree 2
	Cooling method	Forced air-cooling
CE standard	Overvoltage category (OVC)	III
	Electric system	TN
	Protection category	I
	Standard	EN61800-5-1

Note: Three-phase/single-phase 220V 50/60Hz power input method:

GA20-T/S2 series drive is designed for single-phase 220VAC voltage input; it is compatible with three-phase 220VAC input, but this may cause R, S, T three-phase current imbalance in the power grid.

2 Installation and Wiring

Please refer to this chapter for the installation and wiring of the AC drive for long-life and stable performance.

Installation direction and space

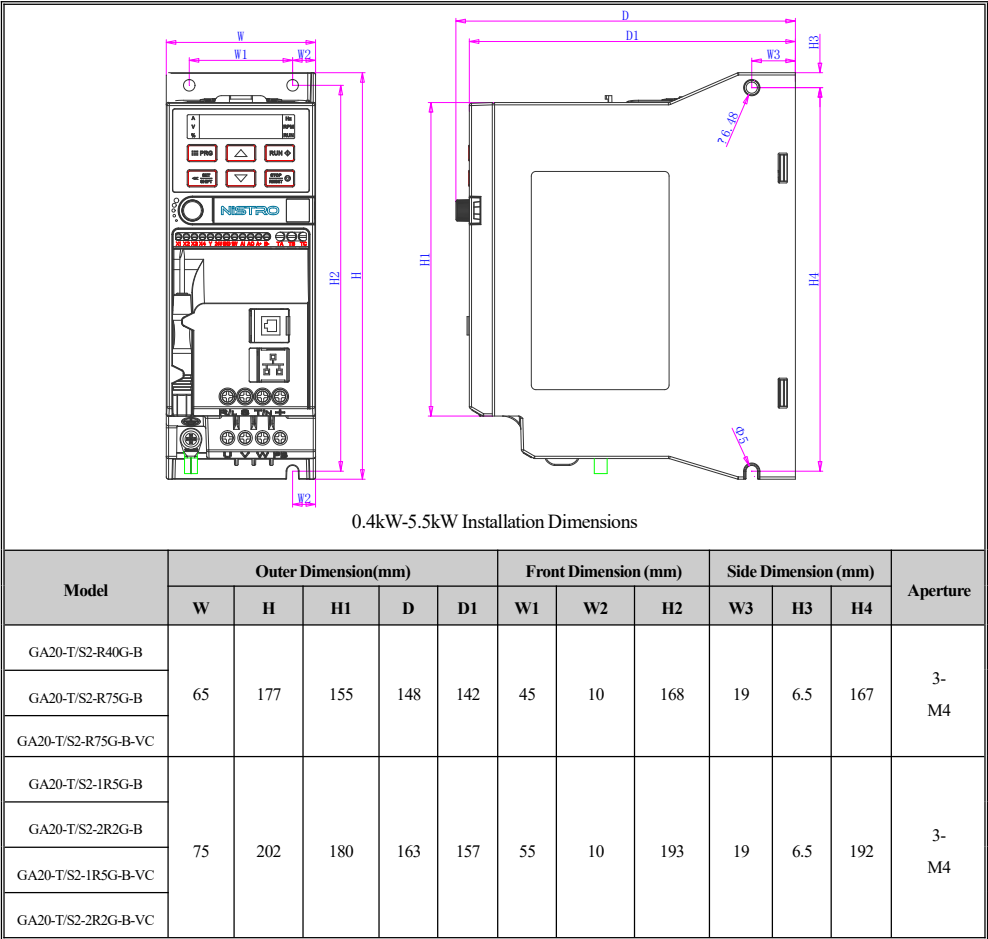
● Direction

Be sure to install the AC drive vertically to ensure the cooling effect.

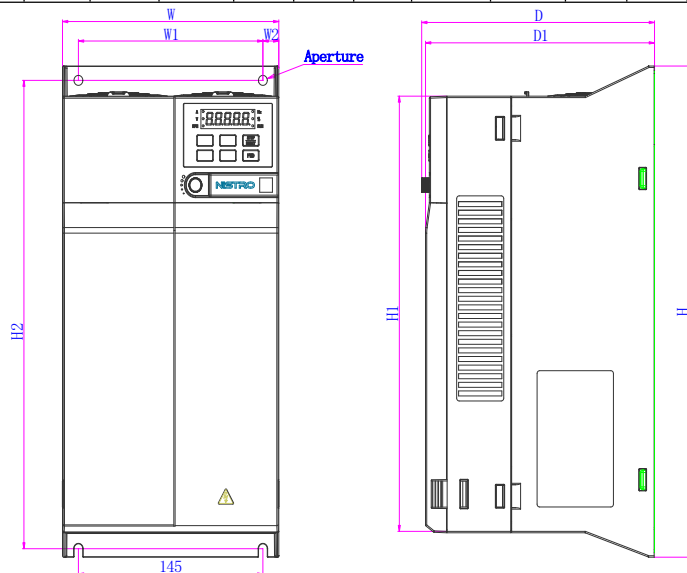
● Space

To ensure the ventilation space and wiring space required for cooling, please install the AC drive with its back closely attached to the wall to make the cooling air around the cooling fan flow smoothly.

External dimensions of drive and keypad



GA20-T3-R75G-B	65	177	155	148	142	45	10	168	19	6.5	167	3-M4
GA20-T3-1R5G-B												
GA20-T3-2R2G-B												
GA20-T3-004G-B	75	202	180	163	157	55	10	193	19	6.5	192	3-M4
GA20-T3-5R5G-B												



7.5kW-22kW Installation Dimension

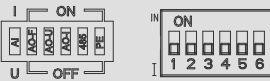
Model	Outer Dimension(mm)					Front Dimension (mm)			Side Dimension (mm)			Aperture
	W	H	H1	D	D1	W1	W2	H2	W3	H3	H4	
GA20-T3-7R5G-B	130	320	286	161	158	105	12.5	302	-	-	-	M5
GA20-T3-011G-B												
GA20-T3-015G-B	170	342.5	303.5	183	180	145	12.5	326.5	-	-	-	M6
GA20-T3-018G-B												
GA20-T3-022G-B												

Switch function diagram and description

0.4kW~ 5.5kW DIP Switch Description

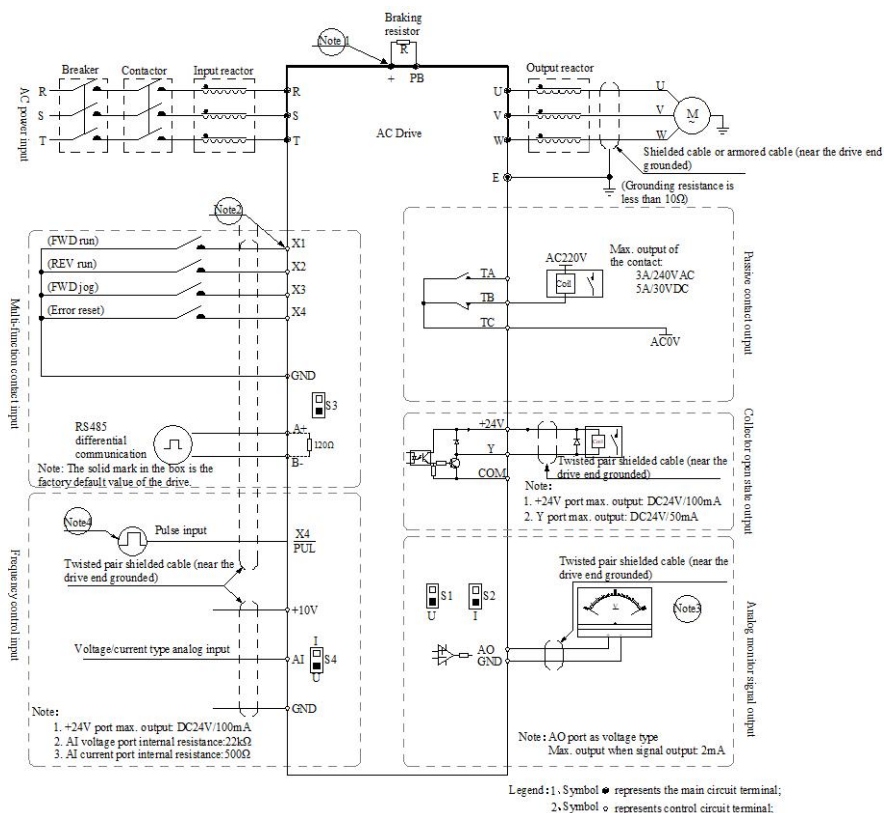
	Pin	Position	Function
	S1	ON	Enable AO 0V~10V
		OFF	Disable AO voltage
	S2	ON	Enable AO 0mA~20mA or 4mA~20mA
		OFF	Disable AO current
	S3	ON	RS48 connects to 120Ω termination resistor.
		OFF	RS48 disconnects to 120Ω termination resistor.
	S4	ON	AI 0mA~20mA
		OFF	AI 0V~10V

7.5kW~ 22kW DIP Switch Description

	Pin	Position	Function
	S1	ON	AI 0mA~20mA
		OFF	AI 0V~10V
	S2	ON	Enable AO 0.0kHz~100.0kHz
		OFF	Disable AO frequency
	S3	ON	Enable AO 0V~10V
		OFF	Disable AO voltage
	S4	ON	Enable AO 0mA~20mA or 4mA~20mA
		OFF	Disable AO current
	S5	ON	RS48 connects to 120Ω termination resistor.
		OFF	RS48 disconnects to 120Ω termination resistor.
	S6	ON	Control board grounded
		OFF	Control board not grounded

Standard wiring

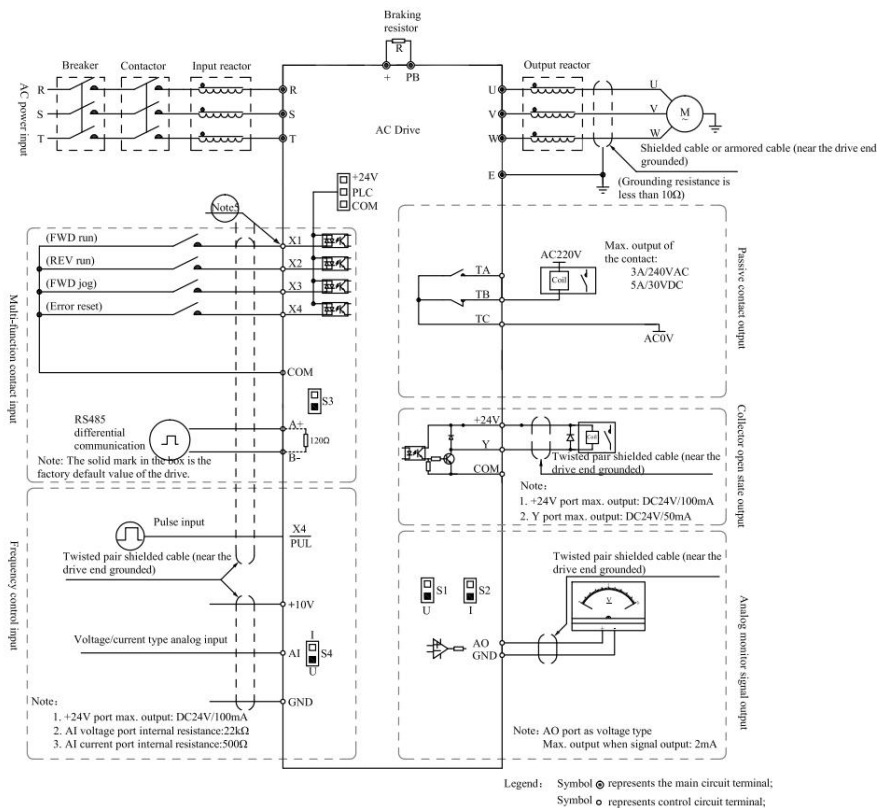
0.4kW~5.5kW



Note:

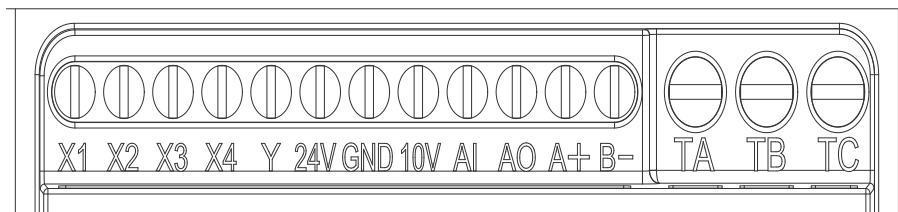
1. Select the appropriate braking resistor according to the site conditions and *Braking Resistor Specification Parameters*.
2. Multi-function input terminal (X1~X4/PUL) can take the NPN transistor signal as input. For input with PNP transistor signals, the GA20-P model can be selected as an option.
3. Analog monitoring output is dedicated for ammeter, voltmeter and other indication meters, and cannot be used for feedback control or other operations.
4. Please refer to the detailed description for the specific wiring as there are various pulse types in actual use.
5. The COM and GND terminals are combined into a single GND terminal for external use.

7.5kW~22.0kW

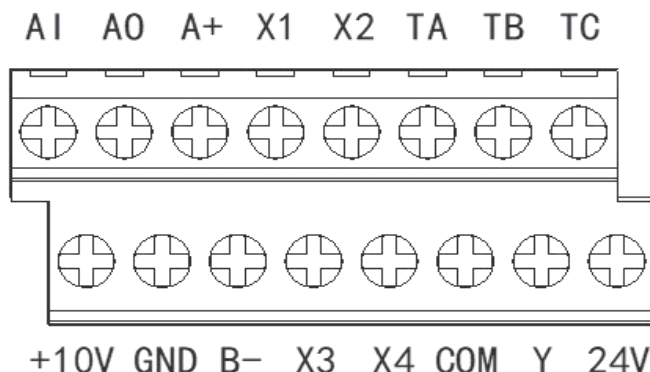
**Note:**

1. Select the appropriate braking resistor according to the site conditions and *Braking Resistor Specification Parameters*.
2. Multi-function input terminal (X1~X4/PUL) can take the NPN or PNP transistor signal as input.
3. Analog monitoring output is dedicated for ammeter, voltmeter and other indication meters, and cannot be used for feedback control or other operations.
4. Please refer to the detailed description for the specific wiring as there are various pulse types in actual use.

● Control loop output capability



Arrangement of 0.4kW- 5.5kW Control Circuit Terminals

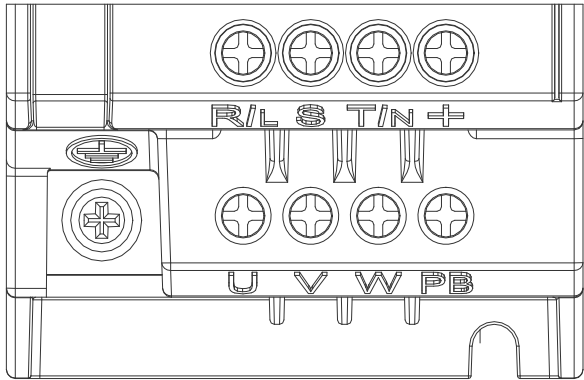


Arrangement of 7.5kW- 22kW Control Circuit Terminals

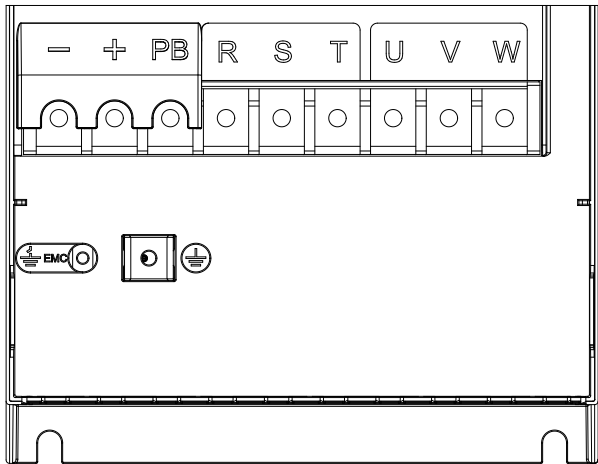
Type	Mark	Name	Description
Power	+10V-GND	External +10V power supply	Provide +10V power supply, with maximum output current of 50mA; generally used as the power supply for external potentiometer with the resistance range of 1k Ω - 5k Ω
	+24V-GND +24V-COM	External +24V power supply	Provide +24 V power supply, generally used as the power supply for DI and DO terminals and external sensors 0.4kW~ 5.5kW, forming a circuit with GND 7.5kW~ 22kW, forming a circuit with COM Max. output current: 100mA
AI	AI-GND	Voltage/Current AI	1. Input current range: DC 0V~10V/0mA~20mA 2. Voltage impedance: 22k Ω 3. Current impedance: 500 Ω
	X1-GND	Multi-function terminal input 1	0.75kW to 5.5kW: Supports only unipolar input 7.5kW to 22kW: Supports bipolar switching input 1. Input impedance: 6.3k Ω 2. Voltage range at high-level: 10V ~ 30V 3. Voltage range at low-level: 0V ~ 5V

DI	X2-GND	Multi-function terminal input 2	0.75kW to 5.5kW: Supports only unipolar input 7.5kW to 22kW: Supports bipolar switching input 1. Input impedance: 6.3k Ω 2. Voltage range at high-level: 10V ~ 30V 3. Voltage range at low-level: 0V ~ 5V Except for the features of X1 ~ X3, X4 can be used for PUL input 1) 0.75kW ~ 5.5kW supports pulse input up to 100kHz. 2) 7.5kW ~ 22kW supports pulse input up to 10kHz.
	X3-GND	Multi-function terminal input 3	
	X4-GND	Multi-function terminal input 4	
	X4/PUL-GND	Multi-function terminal input 4/PUL input	
	AO-GND	Analog monitoring output	1. Voltage range: DC 0V ~ 10V 2. Current range: DC 0mA ~ 20mA Note: Max. output of 2mA for voltage signals
AO	Y-GND	Digital Output	Open collector output, action object can be set in the software 1. Voltage range: DC 0V ~ 30V 2. Max. load current: DC 50mA
RO	TA-TC	Normally open	Passive contact output, action object can be set in the software Contact drive capacity: 240VAC, 3A 30VDC, 5A
	TB-TC	Normally closed	
COM Terminal	A+	Communication terminal A+	RS485 communication port RS485 communication is connected to the 120 Ω terminal resistance by toggling DIP switch to S3
	B-	Communication terminal B-	

● Arrangement and definition of main circuit terminals



Arrangement and Definition of 0.4kW- 5.5kW Main Circuit Terminals



Arrangement and Definition of 7.5kW~ 22kW Main Circuit Terminals

Mark	Name	Description
(+)	DC power terminal (7.5kW-22kW only)	DC power output (-) for negative DC bus (+) for positive DC bus
(-)		

+	Brake resistor terminal	For connecting to the external braking resistors to realize quick stop
PB		
R/L	Drive input terminal	For connecting to AC supply
S		
T/N		
U	Drive output terminal	For connecting to the motor
V		
W		
	Ground	Ground terminal, with the grounding resistance < 10Ω

● Recommended brake resistor

The braking resistor resistance and resistor power described in the following table are verified under the common inertia load and intermittent braking mode. If it needs to be used in the occasion with large inertia and frequent braking for a long time, please adjust the braking resistor resistance and resistor power appropriately according to the specifications of the selected drive and the rated parameters of the braking unit. If there is any doubt, please consult the Technical Service Department of our company.

Three Phase 380V			
Motor Power	Resistance (kW)	Resistor Power (kW)	Braking Torque (%)
0.75	1000	0.15	100
1.5	500	0.3	100
2.2	300	0.45	100
4.0	200	0.8	100
5.5	150	1.1	100
7.5	100	1.5	100
11	50	1.2	100
15	40	1.5	100
18.5	35	2.0	100
22	32	2.5	100
Three/Single Phase 220V			
Motor Power	Resistance (kW)	Resistor Power (kW)	Braking Torque (%)
0.4	400	0.09	100
0.75	200	0.12	100
1.5	100	0.3	100
2.2	75	0.3	100

3 Keypad Layout and Operation Instructions

• Keypad



• Key functions

Mark	Name	Description
	Menu	Enter the function menu interface when standby or running; press the key to exit the modification when in the parameter modification status; long press the key (1s) when in standby or running to enter the status monitoring interface directly.
	Set/ Shift	Press the key to enter the parameter modification status when the menu interface is in operation; press the key again to confirm the modified value after the modification is completed; long press the key in the parameter interface (1s) to shift the parameter; long press the key, then it will shift cyclically, and every bit blink three times before shifting to the next bit.
	Up/Down	Select the parameter in the menu interface; modify the parameter value in the parameter modification status; modify the frequency target and PID target in the standby or operation monitoring status (when the frequency target and PID target are set by keypad, check [F11.04]).
	RUN	When run/stop is controlled by the keypad, press the key to turn the drive forward. The status indicator light is always on when running in forward direction, and flashes when running in reverse direction.
	Stop/ Reset	When the command source is set to keypad, press the key to stop the drive; expand its effective range through the parameter [F11.03]; press the key to reset the drive when in error status. (It will not be reset when the error is not eliminated).

● Indicator meanings

Name		Status	Description
Unit Indicator	Hz	Flash/On	Frequency unit
	A	On	Current unit
	V	On	Voltage unit
	RPM	On	Speed unit
	%	Flash/On	Percentage unit
Status Indicator	RUN	On	Drive in FWD Operation
	RUN	Flash	Drive in REV Operation
	RUN	Off	Drive in stop

4 Function Table

This chapter only provides a brief list of functions. Please refer to the GA20 Technical Manual or consult our company for detailed information.

4.1 Safety Precautions

Danger
Please pay attention to all information in this book regarding safety.
Please note that failure to observe the warnings may result in death or serious injuries. OUR COMPANY will not be held liable for injuries and equipment damage caused by your company or your customers' failure to comply with the contents of this manual.

4.2 Reading Method

◆ Marks and terms of control modes

Mark	Content	Mark	Content
V/F	Parameters valid in V/F control mode	RUN	Parameters that can be modified during operation
SVC	Parameters valid in SVC	STOP	Parameters that cannot be modified during operation
-	-	READ	Parameters can only be read, not modified

4.3 Function Group

Caution
Set RS485 or external keypad via [F11.30], this parameter is not restored with [F00.03]. It is strongly recommended that users disconnect the hardware of the other source once it is chosen.

Types of parameters for this product

Parameter	Name	Parameter	Name
F00.0x	Environment Settings	F07.0x	Start Control
F00.1x	Common Parameters	F07.1x	Stop Control
F01.0x	Basic Commands	F07.2x	DC Brake and Fly Track
F01.1x	Frequency Commands	F07.3x	Jogging
F01.2x-F01.3x	ACC/DEC Time	F07.4x	Hold and Jump Frequency during Start/Stop
F01.4x	PWM Control	F08.0x	Counting and Timing
F02.0x	Basic Parameters and Auto-tuning	F08.1x	Reserved
F02.1x	AM Advanced Parameters	F08.2x	Reserved

F02.2x	PM Advanced Parameters	F08.3x	Wobble-frequency Control
F02.3x-F02.4x	Reserved	F10.0x	Current Protection
F02.5x	Motor Application	F10.1x	Voltage Protection
F03.0x	ASR	F10.2x	Auxiliary Protection
F03.1x	ACR and Torque Limit	F10.3x	Load Protection
F03.2x	Torque Optimization Control	F10.4x	Stall Protection
F03.3x	Flux Optimization	F10.5x	Error Reset and Motor Overload
F03.4x-F03.5x	Torque Control	F11.0x	Keys
F04.0x	V/F Control	F11.1x	Cyclic Monitoring of Status Interface
F04.1x	Customized V/F Curve	F11.2x	Monitoring Parameter Display
F04.2x	Reserved	F11.3x	Special Keypad Functions
F04.3x	V/F ECO Mode	F12.0x	Modbus Slave Parameters
F05.0x	DI Terminal	F12.1x	Modbus Master Parameters
F05.1x	X1-X4 Detection Delay	F13.00-F13.06	PID Target and Feedback
F05.2x	DI Terminal Mode	F13.07-F13.24	PID Target
F05.3x	PUL Terminal	F13.25-F13.28	PID Feedback Disconnection
F05.4x	AI Parameters	F13.29-F13.33	PID Sleep
F05.5x	AI Linear Parameters	F14.00-F14.14	Multi-frequency Control
F05.6x	AI Curve 1	F14.15	PLC Mode
F05.7x	AI Curve 2	F14.16-F14.30	PLC Runtime
F05.8x	AI as DI Terminal	F14.31-F14.45	PLC Direction and ACC/DEC Time
F06.0x	AO	F15.0x	Reserved
F06.1x	Reserved	C00.xx	Basic Monitoring
F06.2x-F06.3x	DO and RO	C01.xx	Error Monitoring
F06.4x	Frequency Detection	C02.xx	App Monitoring
F06.5x	Comparator Monitoring	C03.xx	Maintenance and Tension Monitoring
F06.6x-F06.7x	Virtual I/O Terminals	-	-

4.4 F00: Environmental Settings

F00.0x: Environment Settings

Code (Address)	Name	Content	Default (Range)	Property
F00.00 (0x0000)	Parameter Access Level	V/F SVC Set the parameter access level according to access restriction. 0: Standard parameters (Fxx.yyy, Cxx.yyy) 1: Common parameters (F00.00, Pxx.yyy) 2: Monitoring parameters (F00.00, Cxx.yyy) 3: Modified parameters (F00.00, Hxx.yy)	0 (0~3)	RUN
F00.03 (0x0003)	Initializati on	V/F SVC Set the initialization mode for the drive. 0: Invalid 11: Set parameters according to actual needs (motor parameters excl.) 22: All parameters initialized 33: Clear error records	0 (0~33)	STOP
F00.04 (0x0004)	Keypad Parameter Copy	V/F SVC 0: Invalid 11: Upload parameters to keypad 22: Download parameters to the drive Note: Built-in keypad do not support parameter copy.	0 (0~30)	STOP
F00.05 (0x0005)	Reserved	Reserved	Reserved	Reserved
F00.06 (0x0006)	Reserved	Reserved	Reserved	Reserved
F00.07 (0x0007)	Free Parameter 1	V/F SVC Used as the machine code or application mode code when multiple drives are used.	0 (0~65535)	RUN

F00.08 (0x0008)	Free Parameter 2	V/F SVC Used as the machine code or application mode code when multiple drives are used.	0 (0~65535)	RUN
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F00.10~F00.39: Common Parameters

Code (Address)	Name	Content	Default (Range)	Property
F00.1~ F00.39 (0x0010~ 0x0027)	Common Parameter Address	V/F SVC Ones-and tens-bit: Set 00~99 to yy in Fxx.yy Hundreds- and thousands-bit: Set 00~31 to xx in Fxx.yy	Common default parameters (0000~2999)	RUN

4.5 F01: Basic Settings**F01.0x: Basic Commands**

Code (Address)	Name	Content	Default (Range)	Property
F01.00 (0x0100)	Motor 1 Control Mode	V/F SVC Set the motor control mode. 0: AM- V/F: V/F control 1: AM-SVC, open loop vector control, current closed loop control PM: 10: PM-V/F: V/F control 11: PM-SVC, open loop vector control, current closed loop control Note: T/S2 models without the suffix -VC only support AM-V/F control. T/S2 models with the suffix -VC support both AM-SVC and PM control.	0 (0~11)	STOP
F01.01 (0x0101)	Command Source	V/F SVC Select the method to send run/stop commands and the direction of operation to the drive. 0: Keypad (external keypad first) 1: Terminals 2: RS485 communication 3: Reserved	0 (0~3)	RUN

F01.02 (0x0102)	Frequency Source A	V/F SVC Set frequency giving source. 0: Keypad 1: Potentiometer 2: AI terminal 3: Reserved 4: Reserved	5: PUL terminal 6: RS485 7: UP/DW terminal 8: PID control 9: PLC 10: Reserved 11: Multi-frequency	0 (0~11)	RUN
F01.03 (0x0103)	Frequency Source A Gain	V/F SVC Set the gain of frequency source A.		100.0% (0.0%~ 500.0%)	STOP
F01.04 (0x0104)	Frequency Source B	V/F SVC Set frequency source. The same as [F01.02]		0 (0~11)	RUN
F01.05 (0x0105)	Frequency Source B Gain	V/F SVC Set the gain of frequency source B.		100.0% (0.0%~ 500.0%)	STOP
F01.06 (0x0106)	Frequency Source B Reference	V/F SVC Set the reference for frequency source B. 0: Max. output frequency 1: Frequency of source A		0 (0~1)	RUN
F01.07 (0x0107)	Frequency Source Combination	V/F SVC Set the combination method of source A and source B of the drive. 0: Source A 1: Source B 2: A + B 3: A - B 4: Max. (A or B) 5: Min. (A or B)		0 (0~5)	RUN

F01.08 (0x0108)	Frequency /Command Source Binding	V/F SVC Used to bond each command source to frequency sources. Ones-bit: Via keypad Tens-bit: Via terminal Hundreds-bit: Via communication Thousands-bit: Reserved 0: Invalid 1: Keypad 2: Potentiometer	3: AI terminal 4: Reserved 5: Reserved 6: PUL terminal 7: Communication 8: UP/DW terminal 9: PID A: PLC B: Reserved C: Multi-frequency D: Reserved	0x0000 (0x0000~ 0xDDDD)	RUN
F01.09 (0x0109)	Keypad Set Frequency	V/F SVC Set and modify the frequency via keypad.		50.00Hz (0.00Hz~ Upper limit frequency)	RUN

F01.1x: Frequency Commands

Code (Address)	Name	Content		Default (Range)	Property
F01.10 (0x010A)	Max. Frequency	V/F SVC Set the maximum frequency for the drive.		50.00Hz (Upper limit frequency ~ 600.00Hz)	STOP
F01.11 (0x010B)	Upper Limit Frequency Source	V/F SVC Select the upper limit frequency source. 0: Keypad 1: Potentiometer 2: AI terminal	3: Reserved 4: Reserved 5: PUL terminal 6: RS485 7: Reserved	0 (0~7)	RUN
F01.12 (0x010C)	Keypad Set UL Frequency	V/F SVC The upper limit frequency source when F01.11 is set to 0.		0.00Hz (Lower limit frequency~ Max. frequency)	RUN

F01.13 (0x010D)	Lower Limit Frequency	V/F SVC Set the lower limit to the given frequency.	0.00Hz (0.00Hz~Upper limit frequency)	RUN
F01.14 (0x010E)	Frequency Command Resolution	V/F SVC Set the frequency command resolution 0: 0.01Hz 1: 0.1Hz 2: 0.1rpm 3: 1rpm 4: 10rpm	0 (0~4)	STOP

F01.2x~F01.3x: ACC/DEC Time

Code (Address)	Name	Content	Default (Range)	Property
F01.20 (0x0114)	Reference Frequency	V/F SVC Set the reference frequency to calculate the acceleration and deceleration time. 0: Max. frequency 1: 50Hz 2: Set frequency	0 (0~2)	STOP
F01.21 (0x0115)	ACC Time Range	V/F SVC Set the acceleration time range. 0: 1s 1: 0.1s	2 (0~2)	STOP
F01.22 (0x0116)	ACC Time 1	V/F SVC Set the time required to accelerate the output frequency from 0.00 Hz to the reference frequency. 1s~65000s (F01.21=0) 0.1s~6500.0s (F01.21=1) 0.01s~650.00s (F01.21=2)	Up to model (0.01s~ 650.00s)	RUN
F01.23 (0x0117)	DEC Time 1	V/F SVC Set the time required to decelerate the output frequency from the reference frequency to 0.00Hz.	Up to model (0.01s~ 650.00s)	RUN
F01.24 (0x0118)	ACC Time 2	V/F SVC Set the time required to accelerate the output frequency from 0.00 Hz to the reference frequency.	Up to model (0.01s~ 650.00s)	RUN

F01.25 (0x0119)	DEC Time 2	V/F SVC Set the time required to decelerate the output frequency from the reference frequency to 0.00Hz.	Up to model (0.01s~ 650.00s)	RUN
F01.26 (0x011A)	ACC Time 3	V/F SVC Set the time required to accelerate the output frequency from 0.00 Hz to the reference frequency.	Up to model (0.01s~ 650.00s)	RUN
F01.27 (0x011B)	DEC Time 3	V/F SVC Set the time required to decelerate the output frequency from the reference frequency to 0.00Hz.	Up to model (0.01s~ 650.00s)	RUN
F01.28 (0x011C)	ACC Time 4	V/F SVC Set the time required to accelerate the output frequency from 0.00 Hz to the reference frequency.	Up to model (0.01s~ 650.00s)	RUN
F01.29 (0x011D)	DEC Time 4	V/F SVC Set the time required to decelerate the output frequency from the reference frequency to 0.00Hz.	Up to model (0.01s~ 650.00s)	RUN
F01.30 (0x011E)	S-Curve ACC/DEC	V/F SVC Set S-curve acceleration /deceleration. 0: OFF 1: ON 2: Smoother S-curve	1 (0~2)	STOP
F01.31 (0x011F)	ACC S-Curve Start Time	V/F SVC Set the start time of s-curve acceleration.	0.20s (0.00s~ 10.00s)	STOP
F01.32 (0x0120)	ACC S-Curve End Time	V/F SVC Set the end time of s-curve acceleration.	0.20s (0.00s~ 10.00s)	STOP
F01.33 (0x0121)	DEC S-Curve Start Time	V/F SVC Set the start time of s-curve deceleration.	0.20s (0.00s~ 10.00s)	STOP
F01.34 (0x0122)	DEC S-Curve End Time	V/F SVC Set the end time of s-curve deceleration.	0.20s (0.00s~ 10.00s)	STOP

F01.35 (0x0123)	ACC Time 1/2 Shift Frequency	V/F SVC Set the shift frequency between acceleration time 1 and 2.	0.00Hz (0.00Hz~ Max. frequency)	RUN
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F01.4x: PWM Control

Code (Address)	Name	Content		Default (Range)	Property
F01.40 (0x0128)	Carrier Frequency	V/F SVC Set the switching frequency of the drive's IGBT module.		Up to model (1.0kHz~ 16.0kHz)	RUN
F01.41 (0x0129)	PWM Mode	V/F SVC Ones-bit: Carrier-temperature correlation 0: Irrelevant 1: Relevant Tens-bit: Carrier-output frequency correlation 0: Irrelevant 1: Relevant	Hundreds-bit: Random PWM enable 0: Invalid 1: Valid in V/F control mode 2: Valid in vector control mode Thousands-bit: PWM modulation mode 0: Only three-phase modulation 1: Automatic shift of two-phase/three-phase modulation	1111 (0000~1211)	RUN
F01.43 (0x012B)	Deadband Compensation Gain	V/F SVC Set the deadband compensation gain.		306 (0~512)	RUN
F01.46 (0x012E)	Random PWM Depth	V/F SVC The higher the set point, the greater the carrier fluctuation when random PWM is enabled.		0 (0~20)	RUN

4.6 F02: Motor 1 Parameters**F02.0x: Basic Parameters and Auto-tuning**

Code (Address)	Name	Content	Default (Range)	Property
F02.00 (0x0200)	Type	V/F SVC Set the motor type: 0: Asynchronous motor (AM) 1: Permanent magnet synchronous motor (PM)	0 (0~1)	READ
F02.01 (0x0201)	Pole No.	V/F SVC Set the motor pole number.	4 (2~98)	STOP
F02.02 (0x0202)	Rated Power	V/F SVC Set the rated power of the motor.	Up to model (0.1kW~ 1000.0kW)	STOP
F02.03 (0x0203)	Rated Frequency	V/F SVC Set the rated frequency of the motor.	Up to model (0.01Hz~ Max. frequency)	STOP
F02.04 (0x0204)	Rated Speed	V/F SVC Set the rated speed of the motor.	Up to model (0rpm~ 65000rpm)	STOP
F02.05 (0x0205)	Rated Voltage	V/F SVC Set the rated voltage of the motor.	Up to model (0V~2000V)	STOP
F02.06 (0x0206)	Rated Current	V/F SVC Set the rated current of the motor.	Up to model (0.1A~ 3000.0A)	STOP
F02.07 (0x0207)	Auto-tuning	V/F SVC After the parameter auto-tuning is finished, [F02.07] will be set to "0" automatically. 0: OFF 1: Dynamic auto-tuning 2: Static auto-tuning	0 (0~3)	STOP

Note: When F02.00 [Motor Type] is a synchronous motor, F02.04 [Motor Rated Speed] is calculated from F02.01 [Motor Poles] and F02.03 [Motor Rated Frequency], please set the corresponding parameters correctly. The calculation formula is: $F02.04[\text{Motor Rated Speed}] = 60 * F02.03[\text{Motor Rated Frequency}] / (F02.01[\text{Motor Pole}] / 2)$

F02.1x: AM Advanced Parameters

Code (Address)	Name	Content	Default (Range)	Property
F02.10 (0x020A)	No-Load Current	V/F SVC Set the no-load current for asynchronous motors.	Up to model (0.1A~ 3000.0A)	STOP
F02.11 (0x020B)	Stator Resistance	V/F SVC Set the stator resistance for asynchronous motors.	Up to model (0.01mΩ~ 60000.00 mΩ)	STOP
F02.12 (0x020C)	Rotor Resistance	V/F SVC Set the rotor resistance for asynchronous motors.	Up to model (0.01mΩ~ 60000.00 mΩ)	STOP
F02.13 (0x020D)	Stator Leakage Inductance	V/F SVC Set the stator leakage inductance for asynchronous motors.	Up to model (0.01mH~655 35.00mH)	STOP
F02.14 (0x020E)	Stator Inductance	V/F SVC Set the stator inductance for asynchronous motors.	Up to model (0.01mH~ 65535.00 mH)	STOP
F02.15 (0x020F)	Per-unit Stator Resistance	V/F SVC Set the per-unit stator resistance for asynchronous motors.	Up to model (0.01%~ 50.00%)	READ
F02.16 (0x0210)	Per-unit Rotor Resistance	V/F SVC Set the per-unit rotor resistance for asynchronous motors.	Up to model (0.01%~ 50.00%)	READ
F02.17 (0x0211)	Per-unit Stator Leakage Inductance	V/F SVC Set the per-unit stator leakage inductance for asynchronous motors.	Up to model (0.01%~ 50.00%)	READ
F02.18 (0x0212)	Per-unit Stator Inductance	V/F SVC Set the per-unit stator inductance for asynchronous motors.	Up to model (0.1%~ 999.0%)	READ
F02.19 (0x0213)	F02.11~F0 2.14 Decimal Point	V/F SVC Set the decimal point of the four parameters from F02.11 to F02.14.	0x0000 (0x0000~ 0x2222)	STOP

F02.2x: PM Advanced Parameters

Code (Address)	Name	Content	Default (Range)	Propert
F02.20 (0x0214)	Stator Resistance	V/F SVC Set the stator resistance for permanent magnet synchronous motors.	Up to model (0.01 mΩ ~60000.00 mΩ)	STOP
F02.21 (0x0215)	D-axis Inductance	V/F SVC Set the D-axis inductance for permanent magnet synchronous motors.	Up to model (0.001 mH ~6553.500 mH)	STOP
F02.22 (0x0216)	Q-axis Inductance	V/F SVC Set the Q-axis inductance for permanent magnet synchronous motors.	Up to model (0.001 mH ~6553.500 mH)	STOP
F02.23 (0x0217)	Back Emf	V/F SVC Set the back emf for permanent magnet synchronous motors. Only dynamic auto-tuning is recognized.	Up to model (0V~ 1500V)	STOP
F02.24 (0x0218)	Encoder Angle	V/F SVC Set the encoder installation angle for permanent magnet synchronous motors.	Up to model (0.0°~360.0°)	RUN
F02.25 (0x0219)	Per-unit Stator Resistance	V/F SVC Set the per-unit stator resistance for permanent magnet synchronous motors.	Up to model (Monitored values)	READ
F02.26 (0x021A)	Per-unit D-Axis Inductance	V/F SVC Set the per-unit value of D-axis inductance for permanent magnet synchronous motors.	Up to model (Monitored values)	READ
F02.27 (0x021B)	Per-unit Q-Axis Inductance	V/F SVC Set the per-unit value of Q-axis inductance for permanent magnet synchronous motors.	Up to model (Monitored values)	READ

F02.28 (0x021C)	Pulse Width Coefficient	V/F SVC Set the pulse width coefficient for permanent magnet synchronous motors.	Up to model (00.00~ 99.99)	STOP
F02.29 (0x021D)	F02.20~F02.22 Decimal Point	V/F SVC Set the decimal point of the three parameters from F02.20 to F02.22.	0x0000 (0x0000~ 0x2222)	READ

F02.3x~F02.4x: Reserved**F02.5x~F02.6x: Motor Application**

Code (Address)	Name	Content	Default (Range)	Property
F02.50 (0x0232)	Stator Resistance Auto-tuning	V/F SVC 0: Invalid 1: Tuning only without updating > 1: Tuning and updating	0 (0~3)	STOP
F02.51 (0x0233)	Stator Resistance Tuning Coefficient 1	V/F SVC Set the stator resistance tuning coefficient 1.	0 (0~1000)	RUN
F02.52 (0x0234)	Stator Resistance Tuning Coefficient 2	V/F SVC Set the stator resistance tuning coefficient 2.	0.00% (-20.00%~ 20.00%)	RUN
F02.53 (0x0235)	Stator Resistance Tuning Coefficient 3	V/F SVC Set the stator resistance tuning coefficient 3.	0 (0~65535)	RUN
F02.60 (0x023C)	PM Pole Position Search	V/F SVC Ones-bit: Reserved Tens-bit: FVC 0: OFF 1: ON 2: ON during the first power-up Hundreds-bit: V/F 0: OFF 1: ON 2: ON during the first power-up	0010 (0000~3223)	STOP

F02.61 (0x023D)	Pole Position Search Current	V/F SVC Set the value of pole search current.	0.0% (0.0%~ 6553.5%)	STOP
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4.7 F03: Vector Control

F03.0x: ASR (Automatic Speed Regulator)

Code (Address)	Name	Content	Default (Range)	Property
F03.00 (0x0300)	Rigidity Level	SVC Set the rigidity level. The higher the level, the better the rigidity.	32 (1~128)	RUN
F03.01 (0x0301)	Rigidity Mode	SVC Set the ASR rigidity mode.	0x0000 (0x0000~ 0x1111)	RUN
F03.02 (0x0302)	Proportional Gain 1	SVC Set the ASR proportional gain 1.	10.00 (0.01~ 100.00)	RUN
F03.03 (0x0303)	Integral Time 1	SVC Set the ASR integral time 1.	0.100s (0.000s~ 6.000s)	RUN
F03.04 (0x0304)	Filter Time 1	SVC Set the ASR filter time 1.	0.0ms (0.0ms~ 100.0ms)	RUN
F03.05 (0x0305)	Shift Frequency 1	SVC Set the ASR shift frequency 1	0.00Hz (0.00Hz~ Max. frequency)	RUN
F03.06 (0x0306)	Proportional Gain 2	SVC Set the ASR proportional gain 2.	10.00 (0.01~ 100.00)	RUN
F03.07 (0x0307)	Integral Time 2	SVC Set the ASR integral time 2.	0.100s (0.000s~ 6.000s)	RUN
F03.08 (0x0308)	Filter Time 2	SVC Set the ASR filter time 2.	0.0ms (0.0ms~ 100.0ms)	RUN
F03.09 (0x0309)	Shift Frequency 2	SVC Set the ASR shift frequency 2.	0.00Hz (0.00Hz~ Max. frequency)	RUN

F03.1x: ACR (Automatic Current Regulator) and Torque Limit

Code (Address)	Name	Content	Default (Range)	Property
F03.10 (0x030A)	D-axis Proportional Gain	SVC Set the D-axis proportional gain for the current loop.	1.000 (0.001~ 4.000)	RUN
F03.11 (0x030B)	D-axis Integral Gain	SVC Set the D-axis integral gain for the current loop.	1.000 (0.001~ 4.000)	RUN
F03.12 (0x030C)	Q-axis Proportional Gain	SVC Set the Q-axis proportional gain for the current loop.	1.000 (0.001~ 4.000)	RUN
F03.13 (0x030D)	Q-axis Integral Gain	SVC Set the Q-axis integral gain for the current loop.	1.000 (0.001~ 4.000)	RUN
F03.15 (0x030F)	Motoring Torque Limit	SVC Set the torque limit during normal motor driving.	250.0% (0.0%~ 400.0%)	RUN
F03.16 (0x0310)	Generating Torque Limit	SVC Set the torque limit in power generation mode.	250.0% (0.0%~ 400.0%)	RUN
F03.17 (0x0311)	Regenerative Torque Limit	SVC Set regenerative torque limit at low speed.	0.0% (0.0%~ 400.0%)	RUN
F03.18 (0x0312)	Regenerative Torque Limit Frequency	SVC Set the frequency range limited by torque when at low speed.	6.00Hz (0.00Hz~ 30.00Hz)	RUN
F03.19 (0x0313)	Torque Limit	SVC Ones-bit: Torque limit source during motoring 0: Keypad 1: Potentiometer 2: AI terminal 3: Reserved 4: Reserved 5: PUL terminal 6: RS485 communication	0x0000 (0x0000~ 0x0177)	RUN

		(0x3014) 7: Reserved Tens-bit: Torque limit source during generating 0: Keypad 1: Potentiometer 2: AI terminal 3: Reserved 4: Reserved 5: PUL terminal 6: RS485 communication (0x3014) 7: Reserved Hundreds-bit: C00.06 displays 0: The torque limit during motoring 1: The torque limit during generating Thousands-bit: Reserved		
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F03.2x: Torque Optimization

Code (Address)	Name	Content	Default (Range)	Property
F03.20 (0x0314)	PM LF Drag Current	SVC When the SVC mode of the PM is on, the larger the drag current, the larger the torque output.	20.0% (0.0%~50.0%)	RUN
F03.21 (0x0315)	PM HF Drag Current	SVC When the SVC mode of the PM is on, the larger the drag current, the larger the torque output.	10.0% (0.0%~50.0%)	RUN
F03.22 (0x0316)	PM Drag Frequency	SVC The set value 100.0% corresponds to F01.10 [Max. Frequency].	10.0% (0.0%~100.0%)	RUN
F03.23 (0x0317)	AM Slip Compensation	SVC Set the AM slip compensation.	100.0% (0.0%~250.0%)	RUN

F03.24 (0x0318)	Initial Starting Torque	SVC Set the initial starting torque.	0.0% (0.0%~ 250.0%)	RUN
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F03.3x: Flux Optimization

Code (Address)	Name	Content	Default (Range)	Property
F03.30 (0x031E)	Field-weakening Feed-forward Coefficient	SVC Set the feedforward coefficient under field weakening control.	10.0% (0.0%~ 500.0%)	RUN
F03.31 (0x031F)	Field-weakening Gain	SVC Set the control gain under field weakening control.	10.0% (0.0%~ 500.0%)	RUN
F03.32 (0x0320)	Field-weakening Current Limit	SVC Set the current limit under field weakening control.	60.0% (0.0%~ 250.0%)	RUN
F03.33 (0x0321)	Field-weakening Voltage Coefficient	SVC Set the voltage coefficient under field weakening control.	97.0% (0.0%~ 120.0%)	RUN
F03.34 (0x0322)	Output Power Limit	SVC Set the output power limit.	250.0% (0.0%~ 400.0%)	RUN
F03.35 (0x0323)	Excitation Gain	SVC Set the excitation gain.	100.0% (0.0%~ 500.0%)	RUN
F03.36 (0x0324)	Excitation Range	SVC Set the excitation range.	100.0% (0.0%~ 250.0%)	RUN
F03.37 (0x0325)	ECO Mode	SVC 0: OFF 1: ON	0 (0~1)	RUN
F03.38 (0x0326)	Min. ECO Excitation	SVC Set the lower limit of eco excitation.	50.0% (0.0%~ 80.0%)	RUN
F03.39 (0x0327)	ECO Filter Time	SVC Set the filter time of eco running.	0.010s (0.000s~ 6.000s)	RUN

F03.4x~F03.5x: Torque Control

Code (Address)	Name	Content		Default (Range)	Property
F03.40 (0x0328)	Torque Mode	SVC 0: Torque limit under speed control 1: Speed limit under torque control		0 (0~1)	RUN
F03.41 (0x0329)	Torque Command	SVC Ones-bit: Source A: 0: Keypad 1: Integrated keypad&potentiometer 2: AI terminal 3: Reserved 4: Reserved 5: PUL terminal 6: RS485 7: Reserved 8: Reserved 9: Tension calculation	Tens-bit: Source B: The same as source A Hundreds-bit: combination method 0: Source A 1: Source B 2: A + B 3: A - B 4: Min. (A, B) 5: Max. (A,	0000 (0000~ 0599)	RUN
F03.42 (0x032A)	Keypad Set Torque	SVC Set the torque via keypad.		0.0% (0.0%~ 100.0%)	RUN
F03.43 (0x032B)	Torque Input Lower Limit	SVC Set the torque input lower limit.		0.00% (0.00%~ 100.00%)	RUN
F03.44 (0x032C)	Lower Limit Percentage	SVC Set the torque input lower limit percentage.		0.00% (-250.00%~300. 00%)	RUN
F03.45 (0x032D)	Torque Input Upper Limit	SVC Set the torque input upper limit.		100.00% (0.00%~ 100.00%)	RUN

F03.46 (0x032E)	Upper Limit Percentage	SVC Set the torque input upper limit percentage.	100.00% (-250.00%~300.00%)	RUN
F03.47 (0x032F)	Torque Filter Time	SVC Set the frequency range limited by torque when at low speed.	0.100s (0.000s~6.000s)	RUN
F03.52 (0x0334)	Torque Command Upper Limit	SVC Set the upper limit for torque command.	150.0% (0.0%~300.0%)	RUN
F03.53 (0x0335)	Torque Command Lower Limit	SVC Set the lower limit for torque command	0.0% (0.0%~300.0%)	RUN
F03.54 (0x0336)	FWD Speed Limit	SVC 0: F03.56; 1: Integrated keypad& potentiometer×F03.56 2: AI× F03.56 3: Reserved 4: Reserved 5: PUL× F03.56 6: RS485 × F03.56 7: Reserved 8: Reserved	0 (0~8)	RUN
F03.55 (0x0337)	REV Speed Limit	SVC 0: F03.57 1: Integrated keypad& potentiometer×F03.57 2: AI× F03.57 3: Reserved 4: Reserved 5: PUL× F03.57 6: RS485 × F03.57 7: Reserved 8: Reserved	0 (0~8)	RUN

F03.56 (0x0338)	Max. FWD Speed	SVC Set the max. forward speed limit in torque control.	100.0% (0.0%~ 100.0%)	RUN
F03.57 (0x0339)	Max. REV Speed	SVC Set the max. reverse speed limit in torque control.	100.0% (0.0%~ 100.0%)	RUN
F03.58 (0x033A)	Torque Gain Shift Frequency	SVC Set the torque gain shift frequency.	1.00Hz (0.00Hz~ 50.00Hz)	RUN
F03.59 (0x033B)	Torque Gain	SVC Set the torque gain.	100.0% (0.0%~ 500.0%)	RUN

4.8 F04: V/F Control

F04.0x: V/F Control

Code (Address)	Name	Content	Default (Range)	Property
F04.00 (0x0400)	V/F Curve	V/F Select the type of V/F curve according to different load characteristics. 0: Linear V/F curve 1~9: 1.1-1.9 power V/F curves respectively 10: Square V/F curve 11: Custom V/F curve	0 (0~11)	STOP
F04.01 (0x0401)	Torque Boost	V/F 0.0%: Automatic torque boost 0.1%~30.0%: Manual torque	Up to model (0.0%~ 30.0%)	RUN
F04.02 (0x0402)	Torque Boost OFF Frequency	V/F Set the range of the torque boost. The torque boost will be cut off when the output frequency exceeds this value.	100.0% (0.0%~ 100.0%)	RUN
F04.03 (0x0403)	Slip Compensation Gain	V/F Set the slip compensation gain.	0.0% (0.0%~ 200.0%)	RUN

F04.04 (0x0404)	Slip Compensation Range	V/F Set the slip compensation range.	100.0% (0.0%~ 300.0%)	RUN
F04.05 (0x0405)	Slip Compensation Filter Time	V/F Enter the parameters on the motor's nameplate correctly to implement parameter tuning for best effect.	0.200s (0.000s~ 6.000s)	RUN
F04.06 (0x0406)	Anti-oscillation Gain	V/F Adjust this value to suppress low-frequency resonance, but it should not be too large or it will cause instability.	100.0% (0.0%~ 900.0%)	RUN
F04.07 (0x0407)	Anti-oscillation Filter Time	V/F Set the anti-oscillation filter time.	1.0s (0.0s~ 100.0s)	RUN
F04.08 (0x0408)	Output Voltage Percentage	V/F Set the output voltage percentage.	100.0% (25.0%~ 120.0%)	STOP

F04.1x: Customized V/F Curve

Code (Address)	Name	Content	Default (Range)	Property
F04.10 (0x040A)	V1 (User-defined Voltage)	V/F Set the V1 (user-defined voltage).	3.0% (0.0%~ 100.0%)	STOP
F04.11 (0x040B)	F1 (User-defined Frequency)	V/F Set the F1 (user-defined frequency).	1.00Hz (0.00Hz~ Max. frequency)	STOP
F04.12 (0x040C)	V2 (User-defined Voltage)	V/F Set the V2 (user-defined voltage).	28.0% (0.0%~ 100.0%)	STOP
F04.13 (0x040D)	F2 (User-defined Frequency)	V/F Set the F2 (user-defined frequency).	10.00Hz (0.00Hz~ Max. frequency)	STOP
F04.14 (0x040E)	V3 (User-defined Voltage)	V/F Set the V3 (user-defined voltage).	55.0% (0.0%~ 100.0%)	STOP

F04.15 (0x040F)	F3 (User-defined Frequency)	V/F Set the F3 (user-defined frequency).	25.00Hz (0.00Hz~ Max. frequency)	STOP
F04.16 (0x0410)	V4 (User-defined Voltage)	V/F Set the V4 (user-defined voltage).	78.0% (0.0%~ 100.0%)	STOP
F04.17 (0x0411)	F4 (User-defined Frequency)	V/F Set the F4 (user-defined frequency).	37.50Hz (0.00Hz~ Max. frequency)	STOP
F04.18 (0x0412)	V5 (User-defined Voltage).	V/F Set the V5 (user-defined voltage).	100.0% (0.0%~ 100.0%)	STOP
F04.19 (0x0413)	F5 (User-defined Frequency)	V/F Set the F5 (user-defined voltage).	50.00Hz (0.00Hz~ Max. frequency)	STOP

F04.2x: Reserved**F04.3x: V/F ECO Mode**

Code (Address)	Name	Content	Default (Range)	Property
F04.30 (0x041E)	V/F ECO Mode	V/F 0: OFF 1: ON	0 (0~1)	STOP
F04.31 (0x041F)	Min. Frequency	V/F Set the lower frequency limit of the ECO mode.	15.0Hz (0.0Hz~ 50.0Hz)	STOP
F04.32 (0x0420)	Min. Voltage	V/F Set the lower voltage limit of the ECO mode.	50.0% (20.0%~ 100.0%)	STOP
F04.33 (0x0421)	Voltage Decrease Rate	V/F Set the voltage decrease rate in the ECO mode.	0.010V/ms (0.010V/ms~ 0.200V/ms)	RUN
F04.34 (0x0422)	Voltage Increase Rate	V/F Set the voltage increase rate in the ECO mode.	0.200V/ms (0.010V/ms~ 0.200V/ms)	RUN

4.9 F05: Input Terminal

F05.0x: DI Terminal

Code (Address)	Name	Content	Default (Range)	Property
F05.00 (0x0500)	X1 Function	V/F SVC See the functions of terminal X.	1 (0~95)	STOP
F05.01 (0x0501)	X2 Function	V/F SVC See the functions of terminal X.	2 (0~95)	STOP
F05.02 (0x0502)	X3 Function	V/F SVC See the functions of terminal X.	4 (0~95)	STOP
F05.03 (0x0503)	X4 Function	V/F SVC See the functions of terminal X.	8 (0~95)	STOP

F05.1x: X1~X4 Detection Delay

Code (Address)	Name	Content	Default (Range)	Property
F05.10 (0x050A)	X1 ON Delay	V/F SVC Delay time for terminal X1 from OFF to ON.	0.010s (0.000s~ 6.000s)	RUN
F05.11 (0x050B)	X1 OFF Delay	V/F SVC Delay time for terminal X1 from ON to OFF.	0.010s (0.000s~ 6.000s)	RUN
F05.12 (0x050C)	X2 ON Delay	V/F SVC Delay time for terminal X2 from OFF to ON.	0.010s (0.000s~ 6.000s)	RUN
F05.13 (0x050D)	X2 OFF Delay	V/F SVC Delay time for terminal X2 from ON to OFF.	0.010s (0.000s~ 6.000s)	RUN
F05.14 (0x050E)	X3 ON Delay	V/F SVC Delay time for terminal X3 from OFF to ON.	0.010s (0.000s~ 6.000s)	RUN
F05.15 (0x050F)	X3 OFF Delay	V/F SVC Delay time for terminal X3 from ON to OFF.	0.010s (0.000s~ 6.000s)	RUN
F05.16 (0x0510)	X4 ON Delay	V/F SVC Delay time for terminal X4 from OFF to ON.	0.330s (0.000s~ 6.000s)	RUN

F05.17 (0x0511)	X4 OFF Delay	V/F SVC Delay time for terminal X4 from ON to OFF.	0.330s (0.000s~ 6.000s)	RUN
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F05.2x: DI Terminal Mode

Code (Address)	Name	Content	Default (Range)	Property
F05.20 (0x0514)	Terminal Control Mode	V/F SVC 0: Two-wire 1 1: Two-wire 2 2: Three-wire 1 3: Three-wire 2	0 (0~3)	STOP
F05.22 (0x0516)	X1~X4 Terminal Characterist ics	V/F SVC 0: ON when closed 1: ON when open Ones-bit: X1 Tens-bit: X2 Hundreds- bit: X3 Thousands- bit: X4	0000 (0000~ 1111)	RUN
F05.25 (0x0519)	Terminal UP/DW	V/F SVC 0: Power-down save ON 1: Power-down save OFF 2: Modifiable during operation, cleared after shutdown	0 (0~2)	STOP
F05.26 (0x051A)	Terminal UP/DW Frequency ACC/DEC Rate	V/F SVC Set the frequency ACC/DEC rate on the UP/DW terminal.	0.50Hz/s (0.01Hz/s~5 0.00 Hz/s)	RUN
F05.27 (0x051B)	Emergency Stop DEC. Time	V/F SVC Set the deceleration time once emergency stop command is given via the terminals.	1.00s (0.01s~ 650.00s)	RUN

F05.3x: PUL Terminal

Code (Address)	Name	Content	Default (Range)	Property
F05.31 (0x051F)	Min. Frequency	V/F SVC Set the min. frequency that can be accepted by the PUL terminal. If the frequency given is below this value, drive will still process by this setting.	0.00kHz (0.00kHz~ 500.00kHz)	RUN
F05.32 (0x0520)	Min. Frequency Percentage	V/F SVC Set the percentage of the min. input frequency of the PUL terminal.	0.00% (0.00%~ 100.00%)	RUN
F05.33 (0x0521)	Max. Frequency	V/F SVC Set the max. frequency that can be accepted by the PUL terminal. If the frequency given is above this value, drive will still process by this setting.	50.00kHz (0.00kHz~ 500.00kHz)	RUN
F05.34 (0x0522)	Max. Frequency Percentage	V/F SVC Set the percentage of the max. input frequency of the PUL terminal.	100.00% (0.00%~ 100.00%)	RUN
F05.35 (0x0523)	Filter Time	V/F SVC Set the size of the filter applied to the pulse signal to remove interference to the PUL terminal.	0.100s (0.000s~ 9.000s)	RUN
F05.36 (0x0524)	PUL OFF Frequency	V/F SVC Frequencies below this parameter are no longer recognized by the drive and are processed as 0Hz.	0.010kHz (0.000kHz~ 1.000kHz)	RUN

F05.4x: AI Parameters

Code (Address)	Name	Content	Default (Range)	Property
F05.40 (0x0528)	Signal Type Selection	V/F SVC 0: DIP switch 1: Reserved	0 (0~1)	RUN
F05.41 (0x0529)	Signal Type	V/F SVC 0: Voltage 0V~10V 1: Current 0mA~20mA	0 (0~1)	RUN

F05.43 (0x052B)	Curve	V/F SVC 0: Straight line (default) 1: Curve 1 2: Curve 2	Ones-bit: AI Tens-bit: Reserved Hundreds-bit: Reserved Thousands-bit: Reserved	0000 (0000~ 2222)	RUN
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F05.5x: AI Linear Parameters

Code (Address)	Name	Content	Default (Range)	Property
F05.50 (0x0532)	Lower Limit	V/F SVC Define the lower limit of the signal received by the terminal. If the voltage given is below this value, drive will still process by this setting.	0.0% (0.0%~ 100.0%)	RUN
F05.51 (0x0533)	Lower Limit Percentage	V/F SVC Set the percentage of the set value.	0.00% (-100.00%~ 100.00%)	RUN
F05.52 (0x0534)	Upper Limit	V/F SVC Define the upper limit of the signal received by the terminal. If the voltage given is above this value, drive will still process by this setting.	100.0% (0.0%~ 100.0%)	RUN
F05.53 (0x0535)	Upper Limit Percentage	V/F SVC Set the percentage of the set value.	100.00% (0.00%~ 100.00%)	RUN
F05.54 (0x0536)	Filter Time	V/F SVC Define the size of the filter applied to the analog signal to remove interference to the AI terminal.	0.100s (0.000s~ 6.000s)	RUN

F05.6x: AI Curve 1

Code (Address)	Name	Content	Default (Range)	Property
F05.60 (0x053C)	Lower Limit	V/F SVC Set the lower limit for curve 1.	0.0% (0.0%~ 100.0%)	RUN
F05.61 (0x053D)	Lower Limit Percentage	V/F SVC Set the percentage of the set value.	0.00% (-100.00%~ 100.00%)	RUN

F05.62 (0x053E)	Inflection Point 1 Input Voltage	V/F SVC Set the inflection point 1 input voltage for curve 1.	30.0% (0.0%~ 100.0%)	RUN
F05.63 (0x053F)	Inflection Point 1 Percentage	V/F SVC Set the percentage of the set value.	30.00% (-100.00%~ 100.00%)	RUN
F05.64 (0x0540)	Inflection Point 2 Input Voltage	V/F SVC Set the inflection point 2 input voltage for curve 1.	60.0% (0.0%~ 100.0%)	RUN
F05.65 (0x0541)	Inflection Point 2 Percentage	V/F SVC Set the percentage of the set value.	60.00% (-100.00%~ 100.00%)	RUN
F05.66 (0x0542)	Upper Limit	V/F SVC Set the upper limit for curve 1.	100.0% (0.0%~ 100.0%)	RUN
F05.67 (0x0543)	Upper Limit Percentage	V/F SVC Set the percentage of the set value.	100.00% (-100.00%~ 100.00%)	RUN

F05.7x: AI Curve 2

Code (Address)	Name	Content	Default (Range)	Property
F05.70 (0x0546)	Lower Limit	V/F SVC Set the lower limit for curve 2.	0.0% (0.0%~ 100.0%)	RUN
F05.71 (0x0547)	Lower Limit Percentage	V/F SVC Set the percentage of the set value.	0.00% (-100.00%~ 100.00%)	RUN
F05.72 (0x0548)	Inflection Point 1 Input Voltage	V/F SVC Set the inflection point 1 input voltage for curve 2.	30.0% (0.0%~ 100.0%)	RUN
F05.73 (0x0549)	Inflection Point 1 Percentage	V/F SVC Set the percentage of the set value.	30.00% (-100.00%~ 100.00%)	RUN
F05.74 (0x054A)	Inflection Point 2 Input Voltage	V/F SVC Set the inflection point 2 input voltage for curve 2.	60.0% (0.0%~ 100.0%)	RUN
F05.75 (0x054B)	Inflection Point 2 Percentage	V/F SVC Set the percentage of the set value.	60.00% (-100.00%~ 100.00%)	RUN
F05.76 (0x054C)	Upper Limit	V/F SVC Set the upper limit for curve 2.	100.0% (0.0%~ 100.0%)	RUN

F05.77 (0x054D)	Upper Limit Percentage	V/F SVC Set the percentage of the set value.	100.00% (-100.00%~ 100.00%)	RUN
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F05.8x: AI as DI Terminal

Code (Address)	Name	Content		Default (Range)	Property
F05.80 (0x0550)	AI as DI Terminal	V/F SVC 0: ON at low level 1: OFF at high level Ones-bit: AI	Tens-bit: Reserved Hundreds-bit: Reserved Thousands-bit: Reserved	0000 (0000~ 1111)	RUN
F05.81 (0x0551)	AI Function (as Terminal X)	V/F SVC See Terminal X Function.		0 (0~95)	RUN
F05.82 (0x0552)	High Level	V/F SVC Any value beyond this setting is considered as high level.		70.00% (0.00%~ 100.00%)	RUN
F05.83 (0x0553)	Low Level	V/F SVC Any value below this setting is considered as low level.		30.00% (0.00%~ 100.00%)	RUN

4.10 F06: Output Terminal**F06.0x: AO (Analog Output)**

Code (Address)	Name	Content		Default (Range)	Property
F06.00 (0x0600)	Mode	V/F SVC 0: 0V~10V 1: 4.00mA~ 20.00mA	2: 0.00mA~ 20.00mA 3: FM high-speed pulse Note: PUL output is supported for 7.5kW to 22kW.	0 (0~3)	RUN

F06.01 (0x0601)	Content	V/F SVC 0: Target frequency 1: Output frequency 2: Output current 3: Input voltage 4: Output voltage 5: Mechanical speed 6: Target torque 7: Output torque 8: PID target	10: Output power 11: Bus voltage 12: AI value 13: Reserved 14: Reserved 15: PUL input 16: Module temperature 1 17: Module temperature 2 18: RS485 19: Virtual terminal vY1	0 (0~19)	RUN
F06.02 (0x0602)	Gain	V/F SVC Set the gain value of the analog output.		100.0% (0.0%~300.0%)	RUN
F06.003 (0x0603)	Bias	V/F SVC Set the bias of the analog output. Used to adjust the zero point of the terminal output.		0.0% (-10.0%~10.0%)	RUN
F06.04 (0x0604)	Filter Time	V/F SVC Define the size of the filter applied to the analog signal to remove interference to the AO terminal.		0.010s (0.000s~6.000s)	RUN
F06.05 (0x0605)	AO as FM Lower Limit	V/F SVC Set AO as the lower limit of the FM frequency.		0.20kHz (0.00kHz~100.00 kHz)	RUN
F06.06 (0x0606)	AO as FM Upper Limit	V/F SVC Set AO as the upper limit of the FM frequency.		50.00kHz (0.00kHz~100.00 kHz)	RUN

F06.1x: Reserved**F06.2x~F06.2x: DO and RO**

Code (Address)	Name	Content		Default (Range)	Property
F06.20 (0x0614)	Output Terminal Polarity	V/F SVC 0: Positive 1: Negative Ones-bit: Terminal Y	Tens-bit: RO terminal 1 Hundreds-bit: Reserved Thousands-bit: Reserved	0000 (0000~ 1111)	RUN
F06.21 (0x0615)	Output Terminal Y	V/F SVC See Terminal Y Function.		1 (0~63)	RUN
F06.22 (0x0616)	RO 1 (TA-TB-TC)	V/F SVC See Terminal Y Function.		4 (0~63)	RUN
F06.25 (0x0619)	Y ON Delay	V/F SVC Set the delay time when Y is turned on.		0.010s (0.000s~ 60.000s)	RUN
F06.26 (0x061A)	Relay 1 ON Delay	V/F SVC Set the delay time when Relay 1 is turned on.		0.010s (0.000s~ 60.000s)	RUN
F06.29 (0x061D)	Y OFF Delay	V/F SVC Set the delay time when Y is turned off.		0.010s (0.000s~ 60.000s)	RUN
F06.30 (0x061E)	Relay 1 OFF Delay	V/F SVC Set the delay time when Relay 1 is turned off.		0.010s (0.000s~ 60.000s)	RUN

F06.4x: Frequency Detection

Code (Address)	Name	Content	Default (Range)	Property
F06.40 (0x0628)	Frequency Level 1	V/F SVC Set the frequency detection level 1.	2.00Hz (0.00Hz~ Max. frequency)	RUN
F06.41 (0x0629)	Frequency Range 1	V/F SVC Set the frequency detection range 1.	1.00Hz (0.00Hz~ Max.)	RUN

F06.42 (0x062A)	Frequency Level 2	V/F SVC Set the frequency detection level 2.	2.00Hz (0.00Hz~ Max. frequency)	RUN
F06.43 (0x062B)	Frequency Range 2	V/F SVC Set the frequency detection range 2.	1.00Hz (0.00Hz~ Max. frequency)	RUN
F06.44 (0x062C)	Frequency Arrival Range	V/F SVC Set the detection range of the target frequency.	2.00Hz (0.00Hz~ Max. frequency)	RUN

F06.5x: Comparator Monitoring

Code (Address)	Name	Content	Default (Range)	Property
F06.50 (0x0632)	CP 1 Item	V/F SVC Ones- and tens-bit: Set 00~63 to yyy in monitor parameter Cxx.yy Hundreds- and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy	0001 (0000~ 0763)	RUN
F06.51 (0x0633)	CP 1 Upper Limit	V/F SVC Set the comparator 1 upper limit.	(up to F06.50)	RUN
F06.52 (0x0634)	CP 1 Lower Limit	V/F SVC Set the comparator 1 lower limit.	(up to F06.50)	RUN
F06.53 (0x0635)	CP 1 Bias	V/F SVC Set the comparator 1 bias.	(up to F06.50)	RUN
F06.54 (0x0636)	CP 1 Mode	V/F SVC 0: Continue operation (DO terminal only) 1: Report alarm and free stop 2: Report warning and continue operation 3: Force stop	0 (0~3)	RUN
F06.55 (0x0637)	CP 2 Item	V/F SVC Ones- and tens-bit: Set 00~63 to yyy in monitor parameter Cxx.yy Hundreds- and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy	0002 (0000~ 0763)	RUN

F06.56 (0x0638)	CP 2 Upper Limit	V/F SVC Set the comparator 2 upper limit.	(up to F06.55)	RUN
F06.57 (0x0639)	CP 2 Lower Limit	V/F SVC Set the comparator 2 lower limit.	(up to F06.55)	RUN
F06.58 (0x063A)	CP 2 Bias	V/F SVC Set the comparator 2 bias.	(up to F06.55)	RUN
F06.59 (0x063B)	CP 2 Mode	V/F SVC 0: Continue operation (DO terminal only) 1: Report alarm and free stop 2: Report warning and continue operation 3: Force stop	0 (0~3)	RUN

F06.6x~ F06.7x: Virtual I/O Terminal

Code (Address)	Name	Content		Default (Range)	Property
F06.60 (0x063C) ~ F06.63 (0x063F)	vX1~ vX4 Terminal Function	V/F SVC See the functions of terminal X.		0 (0~95)	STOP
F06.64 (0x0640)	vX Status Source	V/F SVC 0: Internal connection with vYn terminal 1: Physical connection with Xn terminal 2: Function code	Ones-bit: vX1 Tens-bit: vX2 Hundreds-bit: vX3 Thousands-bit: vX4	0000 (0000~ 2222)	RUN
F06.65 (0x0641)	vX Status from Funcode	V/F SVC 0: OFF 1: ON Ones-bit: vX1	Tens-bit: vX2 Hundreds-bit: vX3 Thousands-bit: vX4	0000 (0000~ 111)	RUN
F06.66 (0x0642) ~ F06.69 (0x0645) F06.69 (0x0645)	vY1~vY4 Function	V/F SVC See Terminal Y Function.		0 (0~63)	RUN

F06.70 (0x0646) ~ F06.73 (0x0649)	vY1~vY4 ON Delay	V/F SVC Set delay time from OFF to ON of vY1~vY4.	0.010s (0.000s~ 60.000s)	RUN
F06.74 (0x064A) ~ F06.77 (0x064D)	vY1~vY4 OFF Delay	V/F SVC Set delay time from ON to OFF of vY1~vY4.	0.010s (0.000s~ 60.000s)	RUN

4.11 F07: Operation Control

F07.0x: Start Control

Code (Address)	Name	Content	Default (Range)	Property
F07.00 (0x0700)	Start Mode	V/F SVC 0: Start at starting frequency 1: Start from DC braking and then at starting frequency 2: Start from fly track and direction identification Note: T/S2 models do not support the fly track.	0 (0~2)	STOP
F07.01 (0x0701)	Excitation Start Time	V/F SVC Only asynchronous motors in SVC supports pre-excitation. Note: T/S2 models do not support this parameter.	0.00s (0.00s~ 60.00s)	STOP
F07.02 (0x0702)	Start Frequency	V/F SVC Stay in standby status instead of starting when the given frequency is lower than this value.	0.50Hz (0.00Hz~Up per limit frequency from keypad)	STOP

F07.03 (0x0703)	Terminal Protection	V/F SVC 0: OFF 1: ON Ones-bit: ON when terminals under abnormal exit Tens-bit: ON when jogging terminals under abnormal exit Hundreds-bit: ON when command source switched to terminals Thousands-bit: Reserved Note: The terminal protection is enabled by default when the free stop, emergency stop or forced stop command are valid.		0111 (0000~1111)	STOP
F07.05 (0x0705)	Operation Direction	V/F SVC Ones-bit: Operation Direction 0: Keep direction 1: Reverse direction Tens-bit: Operation direction disable 0: FWD and REV commands are both allowed	1: Only FWD command allowed 2: Only REV command allowed Hundreds-bit: Frequency-based direction control 0: ON 1: OFF Thousands-bit: Reserved	0000 (0000~1121)	STOP
Note: This value will not be reset during initialization; and the ones-bit value will not be changed after parameter download.					
F07.06 (0x0706)	Power-OFF Restart	V/F SVC 0: Invalid 1: Start from fly track 2: Start as startup mode setting		0 (0~2)	STOP
F07.07 (0x0707)	Power-OFF Restart Waiting Time	V/F SVC Set the waiting time for restart after power failure.		0.50s (0.00s~60.00s)	STOP

F07.1x: Stop Control

Code (Address)	Name	Content	Default (Range)	Property
F07.10 (0x070A)	Stop Mode	V/F SVC 0: Deceleration stop 1: Free stop	0 (0~1)	RUN
F07.11 (0x070B)	Stop Frequency	V/F SVC In deceleration stop mode, the drive will stop if the output frequency is lower than this value.	0.50Hz (0.00Hz~ Upper limit frequency)	RUN
F07.12 (0x070C)	Restart Min Time	V/F SVC Set waiting time to restart after operation pause.	0.000s (0.000s~ 60.000s)	STOP
F07.15 (0x070F)	Under-Low er Limit Frequency Mode	V/F SVC 0: Run at frequency command 1: Free stop and pause 2: Run at lower limit frequency 3: Run at zero speed	2 (0~3)	RUN
F07.16 (0x0710)	Zero Frequency Torque	V/F SVC Set the torque current during zero-frequency operation, 100.0% of the rated drive current.	60.0% (0.0%~ 150.0%)	RUN
F07.17 (0x0711)	Zero Frequency Torque Time	V/F SVC Set the holding time for zero frequency operation.	0.0s (0.0s~ 6000.0s)	RUN
F07.18 (0x0712)	FED/REV Deadband Time	V/F SVC Set zero frequency holding time during FWD/REV switching.	0.0s (0.0s~ 120.0s)	STOP

F07.2x: DC Brake and Fly Track

Code (Address)	Name	Content	Default (Range)	Property
F07.20 (0x0714)	Start DC Brake Current	V/F SVC 100.0% of the rated motor current, the upper limit of the braking current is the rated current of the drive.	60.0% (0.0%~ 150.0%)	STOP

F07.21 (0x0715)	Start DC Brake Hold Time	V/F SVC Set DC braking time before startup.	0.0s (0.0s~ 60.0s)	STOP
F07.22 (0x0716)	Stop DC Brake Frequency	V/F SVC Set the DC braking start frequency.	1.00Hz (0.00Hz~ 50.00Hz)	STOP
F07.23 (0x0717)	DC Brake Current	V/F SVC The reference is the rated current of the motor, and it's limited by the rated drive current.	60.0% (0.0%~ 150.0%)	STOP
F07.24 (0x0718)	Stop DC Brake Hold Time	V/F SVC Set the DC braking time during stop.	0.0s (0.0s~ 60.0s)	STOP
F07.25 (0x0719)	Fly Track	V/F SVC Ones-bit: Search mode 0: Search from max. frequency 1: Search from stop frequency Tens-bit: Reverse search 0: OFF 1: ON Hundreds-bit: Search source 0: Software 1: Hardware Thousands-bit: Reserved	0000 (0000~ 1111)	STOP
F07.26 (0x071A)	Fly Track Time	V/F SVC Set the fly track time.	0.50s (0.00s~ 60.00s)	STOP
F07.27 (0x071B)	Fly Track Delay	V/F SVC Set the fly track stop delay.	1.00s (0.00s~ 60.00s)	STOP
F07.28 (0x071C)	Fly Track Current	V/F SVC Set the fly track current.	120.0% (0.0%~ 400.0%)	STOP

F07.3x: Jogging

Code (Address)	Name	Content	Default (Range)	Property
F07.30 (0x071E)	Jog Frequency	V/F SVC Set the jogging frequency.	5.00Hz (0.00Hz~ Max.	RUN

			frequency)	
F07.31 (0x071F)	Jog ACC Time	V/F SVC Set the jogging acceleration time.	10.00s (0.00s~ 650.00s)	RUN
F07.32 (0x0720)	Jog DEC Time	V/F SVC Set the jogging deceleration time.	10.00s (0.00s~ 650.00s)	RUN
F07.33 (0x0721)	S-curve Jog	V/F SVC 0: OFF 1: ON	1 (0~1)	RUN
F07.34 (0x0722)	Jog Stop Mode	V/F SVC 0: Same as the mode in F07.10 1: Deceleration stop only	0 (0~1)	RUN

F07.4x: Hold and Jump Frequency during Start/Stop

Code (Address)	Name	Content	Default (Range)	Property
F07.40 (0x0728)	Start Hold Frequency	V/F SVC It is higher than the starting frequency and lower than the upper limit frequency set from the keypad.	0.50Hz (0.00Hz~Up per limit frequency from keypad)	STOP
F07.41 (0x0729)	Start Hold Frequency Time	V/F SVC The set value should be greater than the starting frequency, and if it is lower, start at starting frequency.	0.00s (0.00s~ 60.00s)	STOP
F07.42 (0x072A)	Stop Hold Frequency	V/F SVC Set the stop hold frequency.	0.50Hz (0.00Hz~Up per limit frequency from keypad)	STOP
F07.43 (0x072B)	Stop Hold Frequency Time	V/F SVC Invalid during terminal DC braking and jogging. When the stop DC braking is active, it is invalid when the stop hold frequency is lower than the stop DC braking frequency. When inactive, it is invalid when the stop hold frequency is lower than the stop DC braking frequency.	0.00s (0.00s~ 60.00s)	STOP

F07.44 (0x072C)	Jump Frequency 1	V/F SVC Set the jump frequency 1.	0.00Hz (0.00Hz~ Max. frequency)	RUN
F07.45 (0x072D)	Jump Frequency Range	V/F SVC Set the range of jump frequency.	0.00Hz (0.00Hz~ Max. frequency)	RUN
F07.46 (0x072E)	Jump Frequency 2	V/F SVC Set the jump frequency 2.	0.00Hz (0.00Hz~ Max. frequency)	RUN
F07.47 (0x072F)	Jump Frequency Range	V/F SVC Set the range of jump frequency.	0.00Hz (0.00Hz~ Max. frequency)	RUN

4.12 F08: Auxiliary Control

F08.0x: Counting and Timing

Code (Address)	Name	Content		Default (Range)	Property
F08.00 (0x0800)	Counter Source	V/F SVC 0: Common X terminal	1: PUL terminal 2: Reserved	0 (0~2)	RUN
F08.01 (0x0801)	Counter Division	V/F SVC Set the counting division for input.		0 (0~6000)	RUN
F08.02 (0x0802)	Max. Counting	V/F SVC Set the max. value for the counting circuit.		1000 (0~65000)	RUN
F08.03 (0x0803)	Counter Target	V/F SVC Set the target value for the counting circuit.		500 (0~65000)	RUN
F08.05 (0x0805)	Length	V/F SVC Increase the length to output, while reset when one terminal length is reached.		1000m (0m~ 65535m)	STOP
F08.06 (0x0806)	Actual Length	V/F SVC No power-down storage.		0m (0m~ 65535m)	STOP

F08.07 (0x0807)	Timer Unit	V/F SVC 0: Second (s)	1: Minute (min) 2: Hour (h)	0 (0~2)	STOP
F08.08 (0x0808)	Timer Target	V/F SVC Set the target value for timing.		0 (0~65000)	STOP

F08.1x~F08.2x: Reserved**F08.3x: Wobble-frequency Control**

Code (Address)	Name	Content		Default (Range)	Property
F08.30 (0x081E)	Wobble-fre quency Control	V/F SVC 0: OFF 1: ON		0 (0~1)	STOP
F08.31 (0x081F)	Mode	V/F SVC Ones-bit: Start method 0: Auto 1: Manual via terminal Tens-bit: Wobble frequency range 0: Center frequency-based	1: Max. frequency-based Hundreds-bit: Preset frequency 0: Disabled 1: Enabled Thousands-bit: Reserved	0000 (0000~ 0111)	STOP
F08.32 (0x0820)	Preset Frequency	V/F SVC Set the preset wobble frequency.		0.00Hz (0.00Hz~ Max. frequency)	STOP
F08.33 (0x0821)	Preset Time	V/F SVC Set the preset wobble frequency waiting time.		0.0s (0.0s~ 3600.0s)	STOP
F08.34 (0x0822)	Range	V/F SVC Set the wobble frequency range value.		10.0% (0.0%~ 50.0%)	STOP
F08.35 (0x0823)	Jump Range	V/F SVC Set the wobble frequency jump range.		10.0% (0.0%~ 50.0%)	STOP
F08.36 (0x0824)	ACC Time	V/F SVC Set the ACC time for wobble-frequency control.		5.00s (0.00s~ 650.00s)	STOP

F08.37 (0x0825)	DEC Time	V/F SVC Set the DEC time for wobble-frequency control.	5.00s (0.00s~ 650.00s)	STOP
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4.13 F09: Auxiliary Control 2

F09.0x: Maintenance

Code (Address)	Name	Content	Default (Range)	Property
F09.02 (0x0902)	Maintenance Warning	V/F SVC Ones-bit: Cooling fan 0: OFF 1: ON Tens-bit: Main relay 0: OFF 1: ON Hundreds-bit: Reserved Thousands-bit: Reserved	0x0000 (0x0000~ 0x1111)	RUN
F09.03 (0x0903)	Fan Maintenance	V/F SVC Set it to 0 when replacing with a new fan, in hour.	0 (0~ 65535)	STOP
F09.04 (0x0904)	Main Relay Maintenance	V/F SVC Set it to 0.0% when replacing the main relay	0.0% (0.0%~ 150.0%)	STOP

4.14 F10: Protection Parameters

F10.0x: Current Protection

Code (Address)	Name	Content	Default (Range)	Property
F10.00 (0x0A00)	Anti-OC Function	V/F SVC Set the auto limit below the set overcurrent suppression point to prevent faults triggered by excessive current. 0: Suppression ON 1: Suppression ON during acceleration and deceleration and OFF during constant speed	0 (0~1)	RUN
F10.01 (0x0A01)	Anti-OC Current	V/F SVC Set load current limit level, 100% of the motor rated current.	160.0% (0.0%~ 300.0%)	RUN

F10.02 (0x0A02)	Anti-OC Gain	V/F SVC Set the response effect of overcurrent suppression.	100.0% (0.0%~ 500.0%)	RUN
F10.03 (0x0A03)	Current Protection 1	V/F SVC Set current-related protection on/off. Ones-bit: CBC 0: OFF 1: ON Tens-bit: Anti-interference for OC protection 0: Normal 1: L1 interference suppression 2: L2 interference suppression Hundreds-bit: Anti-interference for SC protection 0: Normal 1: L1 interference suppression 2: L2 interference suppression Thousands-bit: SC/OC/OU fault reset delay 0: OFF; 1: ON	0001 (0000~ F221)	STOP
F10.04 (0x0A04)	Current Protection 2	V/F SVC Ones-bit: Three-phase current sum protection 0: OFF 1: ON Tens-bit: Three-phase current imbalance detection, report E. oLF4. 0: OFF 1: ON	0001 (0000~ 0011)	STOP
F10.05 (0x0A05)	Current Imbalance Threshold	V/F SVC Compare the ratio of the largest to the smallest phase of the three-phase current with the set value here to see if it is current imbalance.	160% (0%~ 500%)	STOP
F10.06 (0x0A06)	Current Imbalance Time	V/F SVC Increase this parameter under high current fluctuation.	2.0 (0.0~60.0)	STOP

F10.1x: Voltage Protection

Code (Address)	Name	Content	Default (Range)	Property
F10.11 (0x0A0B)	Anti-OU Busbar Proection	V/F SVC If the bus voltage is higher than the anti-OU point, acceleration and deceleration will be slowed down or canceled to prevent overvoltage faults. Ones-bit: Anti-OU 0: OFF 1: ON Tens-bit: Over-excitation 0: OFF 1: ON during deceleration	0011 (0000~0021)	STOP
F10.12 (0x0A0C)	Anti-OU Busbar Point	V/F SVC Set the bus voltage value to trigger the anti-OU function. Note: T3 overvoltage point: 820V (750V~840V) S2 overvoltage point: 400V (360V~410V)	T3: 750V S2: 370V (T3: 650V~800V S2: 340V~380V) Simultaneously limited by overvoltage points.	STOP
F10.13 (0x0A0D)	Anti-OU Busbar Gain	V/F SVC Set the response effect of anti-OU function.	100.0% (0.0%~500.0%)	RUN
F10.14 (0x0A0E)	Dynamic Brake	V/F SVC Set the dynamic brake on or off. 0: OFF 1: ON, with anti-OU function off 2: ON, with anti-OU function on	2 (0~2)	RUN
F10.15 (0x0A0F)	Dynamic Brake Voltage	V/F SVC Set the dynamic brake voltage to start when the bus voltage is higher than this value. Note: T3 overvoltage point: 820V (750V~840V) S2 overvoltage point: 400V (360V~410V)	T3: 740V S2: 360V (T3: 650V~800V S2: 350V~390V) Simultaneously limited by overvoltage points.	RUN

F10.16 (0x0A10)	Anti-LU Function	V/F SVC Auto adjust the operation frequency when the bus voltage is lower than the anti-LU point to prevent undervoltage fault 0: OFF 1: ON	0 (0~1)	STOP
F10.17 (0x0A11)	Anti-LU Voltage	V/F SVC Set bus voltage value to trigger the anti-LU function. Note: T3 overvoltage point: 820V (750V~840V) S2 overvoltage point: 400V (360V~410V)	T3: 430V S2: 240V (T3: 350V~450V S2: 180V~260V) Simultaneously limited by overvoltage points.	STOP
F10.18 (0x0A12)	Anti-LU Gain	V/F SVC Set the response effect of anti-LU function.	100.0% (0.0%~ 500.0%)	RUN
F10.19 (0x0A13)	LU Protection Voltage	V/F SVC Set the lower limit voltage of the busbar voltage allowed, report undervoltage fault when below this value. Note: T3 overvoltage point: 820V (750V~840V) S2 overvoltage point: 400V (360V~410V)	T3: 320V S2: 190V (T3: 300V~400V S2: 160V~240V) Simultaneously limited by overvoltage points.	STOP

F10.2x: Auxiliary Protection

Code (Address)	Name	Content	Default (Range)	Property
F10.20 (0x0A14)	I/O Phase Loss Protection	V/F SVC Set the I/O phase loss protection function on or off. Ones-bit: Output phase loss protection. 0: OFF 1: ON Tens-bit: Input phase loss protection 0: OFF 1: ON, report A.iLF when input phase loss is detected, continue operation 2: ON, report E.iLF when input phase loss is detected, free stop Hundreds-bit: Reserved Thousands-bit: Reserved	0021 (0000~ 1121)	STOP
F10.21 (0x0A15)	Input Phase Loss Threshold	V/F SVC Set the voltage detection percentage for the input phase loss detection, 100% of the rated bus voltage.	10.0% (0.0%~ 30.0%)	STOP
F10.22 (0x0A16)	Short Ground Protection	V/F SVC Set the drive output and cooling fan to ground short circuit protection on/off. Ones-bit: Output to ground short circuit protection 0: OFF 1: ON Tens-bit: Fan to ground short circuit protection 0: OFF 1: ON Hundreds-bit: Reserved Thousands-bit: Reserved	11 (00~12)	STOP

F10.23 (0x0A17)	Fan ON/OFF	Set the drive cooling fan operation mode. 0: Fan runs after the drive is powered up; 1: Fan runs according to temperature, and runs with the drive; 2: Fan runs for the set time of F10.24 and then stops. It relates to temperature.	1 (0~2)	RUN
F10.24 (0x0A18)	Fan Delay	V/F SVC Set the time from running command releasing to cooling fan stopping.	30.00s (0.00s~ 600.00s)	STOP
F10.25 (0x0A19)	Drive OH Alarm Level 1	V/F SVC Set the value for overheating, report an alarm when it is above this value.	80.0°C (0.0°C~100.0°C)	RUN

F10.3x: Load Protection

Code (Address)	Name	Content	Default (Range)	Property
F10.32 (0x0A20)	Load Alarm Mode	V/F SVC Set the drive load detection mode and the warning mode at this time. Ones-bit: Load alarm 1 function 0: OFF 1: Detect overload 2: Detect overload only at constant speed 3: Detect underload 4: Detect underload only at constant speed Tens-bit: Load alarm 1 mode 0: Continue the operation, report A. LD1 1: Free stop, report E. Ld1 Hundreds-bit: Load alarm 2 function 0: OFF 1: Detect overload 2: Detect overload only at constant speed	0000 (0000~ 1414)	STOP

		3: Detect underload 4: Detect underload only at constant speed Thousands-bit: Load alarm 2 function 0: continue the operation, report A. LD2 1: Free stop, report E. LD2		
F10.33 (0x0A21)	Load Alarm Level 1	V/F SVC Set the load alarm value 1 for detection. For V/F control, it is 100% of the rated motor current; For vector control, it is 100% of the motor rated output torque.	130.0% (0.0%~ 200.0%)	STOP
F10.34 (0x0A22)	Load Alarm Time 1	V/F SVC Set the detection duration of load alarm 1. If the load is higher than the load alarm threshold for the set time here, report load alarm 1.	5.0s (0.0s~ 60.0s)	STOP
F10.35 (0x0A23)	Load Alarm Level 2	V/F SVC Set the load alarm value 2 for detection. For V/F control, it is 100% of the rated motor current; For vector control, it is 100% of the motor rated output torque.	30.0% (0.0%~ 200.0%)	STOP
F10.36 (0x0A24)	Load Alarm Time 2	V/F SVC Set the detection duration of load alarm 2. If the load is higher than the load alarm threshold for the set time here, report load alarm 2.	5.0s (0.0s~ 60.0s)	STOP

F10.4x: Stall Protection

Code (Address)	Name	Content	Default (Range)	Property
F10.40 (0x0A28)	Excessive Speed Deviation Protection	SVC Set the detection mode and alarm mode of excessive deviation between the motor's given speed and the feedback speed. Ones-bit: Detection function 0: OFF 1: Detect only at constant speed 2: ON Tens-bit: Alarm mode 0: Free stop and report error 1: Report alarm and continue operation	00 (00~12)	STOP
F10.41 (0x0A29)	Excessive Speed Deviation Threshold	V/F SVC Set the detection value for excessive speed deviation, 100% of F01.10 [Max. Frequency].	10.0% (0.0%~ 60.0%)	STOP
F10.42 (0x0A2A)	Excessive Speed Deviation Time	V/F SVC Set the duration for detecting excessive speed deviation. If the deviation between the given speed and the feedback speed is greater than F10.41 and continues for this time, an excessive speed deviation warning is reported.	2.0s (0.0s~ 60.0s)	STOP
F10.43 (0x0A2B)	Overspeed Protection	V/F SVC Set the detection mode and alarm mode. Ones-bit: Detection function 0: OFF 1: Detect only at constant speed 2: ON Tens-bit: Alarm mode 0: Free stop and report error 1: Report alarm and continue operation	02 (00~12)	STOP
F10.44 (0x0A2C)	Overspeed Threshold	V/F SVC Set the value of the overspeed detection, 100% of F01.10 [Max. Frequency].	110.0% (0.0%~ 150.0%)	STOP

F10.45 (0x0A2D)	Overspeed Time	V/F SVC Set the duration of overspeed detection. If the feedback speed is higher than F10.44 and lasts for the set time here, report warning.	0.100s (0.000s~ 2.000s)	STOP
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F10.5x: Error Reset and Motor Overload

Code (Address)	Name	Content	Default (Range)	Property
F10.50 (0x0A32)	Auto Reset No.	V/F SVC Set the number of times allowed to perform error auto reset. Note: 0 indicates that the auto reset function is disabled; otherwise, it is enabled.	0 (0~10)	STOP
F10.51 (0x0A33)	Auto Reset Interval	V/F SVC Set the waiting time after an error occurs until reset.	1.0s (0.0s~ 100.0s)	STOP
F10.52 (0x0A34)	Performed Auto Reset	V/F SVC Indicate the times of already performed auto error reset, read-only.	0	STOP
F10.55 (0x0A37)	Motor Type	V/F SVC 0: Common motor 1: Variable frequency motor (50Hz) 2: Variable frequency motor (60Hz) 3: Motor without cooling fan	0 (0~3)	RUN
F10.56 (0x0A38)	Insulation Class	V/F SVC 0: Class A; 1: Class E 2: Class B; 3: Class F 4: Class H; 5: Special class S	3 (0~5)	STOP
F10.57 (0x0A39)	Work Mode	V/F SVC 0-1: S1 pattern (continuous operation) 2: S2 pattern 3-9: S3-S9	0 (0~9)	STOP
F10.58 (0x0A3A)	OL Threshold	V/F SVC Set the motor overload threshold. Record the overload quantity when actual current is greater than the value here.	105.0% (0.0%~ 130.0%)	STOP

F10.59 (0x0A3B)	Motor OL Coefficient	V/F SVC Motor overload current=actual current * motor overload coefficient.	100.0% (0.0%~ 250.0%)	STOP
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4.15 F11: Keypad Parameters

F11.0x: Keys

Code (Address)	Name	Content	Default (Range)	Property
F11.00 (0x0B00)	Key Lock	V/F SVC 0: OFF 1: Lock parameter modified via keypad 2: Lock functional parameters and non-Start/Stop key 3: Lock all the functional parameters and keys	0 (0~3)	RUN
F11.01 (0x0B01)	Key Lock Password	V/F SVC Use with key lock; please remember the password after setting, otherwise it will not be operated if locked.	0 (0~65535)	RUN
F11.02 (0x0B02)	Multi-func tion Key Action	V/F SVC 0: Invalid 1: REV 2: FWD jogging 3: REV jogging 4: Command source from keypad to terminal 5: Command source from keypad to communication 6: Command source from terminal to communication 7: Command source to keypad, terminal, and communication circularly	0 (0~7)	STOP

F11.03 (0x0B03)	STOP Key	V/F SVC 0: Non-keypad control mode invalid 1: Stop by stop mode setting for non-keypad control mode 2: Stop as free stop for non-keypad control mode	0 (0~2)	STOP
F11.04 (0x0B04)	UP/DW (Knob) Key Action	V/F SVC Ones-bit: UP/DW modification function 0: Invalid 1: Modify F01.09 given via keypad 2: Modify F13.01 given via keypad and PID 3: Modify Funcode via keypad UP/DW key Tens-bit: Power-down save 0: OFF 1: ON Hundreds-bit: Action limit 0: Adjustable during operation and shutdown 1: Adjustable during operation only, keep during shutdown 2: Adjustable during operation, clear during shutdown Thousands-bit: Reserved	0011 (0000~0213)	STOP
F11.05 (0x0B05)	UP/DW Key for Modification	V/F SVC Ones- and tens-bit: Set 00~99 to yy in function parameter Fxx.yy Hundreds- and thousands-bit: Set 00~15 to xx in function parameter Fxx.yy	0109 (0000~2999)	RUN

F11.06 (0x0B06)	Command Key	V/F SVC Ones-bits: Internal/external command keys (RUN, STOP and RESET). 0: External first, when external is valid, internal is invalid. 1: Internal first, when internal is valid, external is invalid. 2: When both internal and external are valid, STOP/RESET command first; when both forward and reverse are valid, the command is invalid. Tens-bit: Reserved Hundreds-bit: Reserved	0000 (0000~2122)	STOP
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F11.1x: Cyclic Monitoring of Status Interface

Code (Address)	Name	Content	Default (Range)	Property
F11.10 (0x0B0A)	L/R Shift Key	V/F SVC Ones-bit: Left shift key to adjust the first row of monitoring 0: OFF 1: ON Tens-bit: Right shift key to adjust the second row of monitoring 0: OFF 1: ON	0011 (0000~0011)	STOP
F11.11 (0x0B0B)	1st Row Parameter 1 for Cyclic Display	V/F SVC Ones- and tens-bit: Set 00~63 to yyy in monitor parameter Cxx.yy Hundreds- and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy	0000 (0000~0763)	RUN
F11.12 (0x0B0C)	1st Row Parameter 2 for Cyclic Display	V/F SVC Ones- and tens-bit: Set 00~63 to yyy in monitor parameter Cxx.yy Hundreds- and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy	0001 (0000~0763)	RUN

F11.13 (0x0B0D)	1st Row Parameter 3 for Cyclic Display	V/F SVC Ones- and tens-bit: Set 00~63 to yyy in monitor parameter Cxx.yy Hundreds- and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy	0002 (0000~ 0763)	RUN
F11.14 (0x0B0E)	1st Row Parameter 4 for Cyclic Display	V/F SVC Ones- and tens-bit: Set 00~63 to yyy in monitor parameter Cxx.yy Hundreds- and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy	0011 (0000~ 0763)	RUN
F11.15 (0x0B0F)	2nd Row Parameter 1 for Cyclic Display	V/F SVC Ones- and tens-bit: Set 00~63 to yyy in monitor parameter Cxx.yy Hundreds- and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy	0002 (0000~ 0763)	RUN
F11.16 (0x0B10)	2nd Row Parameter 2 for Cyclic Display	V/F SVC Ones- and tens-bit: Set 00~63 to yyy in monitor parameter Cxx.yy Hundreds- and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy	0004 (0000~ 0763)	RUN
F11.17 (0x0B11)	2nd Row Parameter 3 for Cyclic Display	V/F SVC Ones- and tens-bit: Set 00~63 to yyy in monitor parameter Cxx.yy Hundreds- and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy	0010 (0000~ 0763)	RUN
F11.18 (0x0B12)	2nd Row Parameter 4 for Cyclic Display	V/F SVC Ones- and tens-bit: Set 00~63 to yyy in monitor parameter Cxx.yy Hundreds- and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy	0012 (0000~ 0763)	RUN

F11.2x: Monitoring Parameter Display

Code (Address)	Name	Content	Default (Range)	Property
F11.20 (0x0B14)	Keypad Display Item	V/F SVC Ones-bit: Output frequency display 0: Target frequency 1: Operation frequency >=2: Operation frequency. The larger the value, the deeper the filter. Tens-bit: Reserved 0: Invalid 1: Active power with stator resistance losses removed Hundreds-bit: Power display 0: In percentage (%) 1: In kilowatt (kW) Thousands-bit: Reserved	0x0002 (0x0000~ 0x111F)	RUN
F11.21 (0x0B15)	Speed Display Coefficient	V/F SVC Set the monitoring speed parameter to display in scale factor.	100.0% (0.0%~ 500.0%)	RUN
F11.22 (0x0B16)	Power Display Coefficient	V/F SVC Set the monitoring power parameter to display in scale factor.	100.0% (0.0%~ 500.0%)	RUN
F11.23 (0x0B17)	Parameter Group	V/F SVC Ones-bit: Reserved 0: OFF 1: ON Tens-bit: C05 0: Auto switching with control modes 1: V/F mode related parameters 2: V/C mode related parameters Hundreds-bit: C00.40~C00.63 0: OFF 1: ON Thousands-bit: Reserved	0x0000 (0x0000~0 xFFFF)	RUN

F11.24 (0x0B18)	Filter Display	V/F SVC Ones-bit: ON 0~F: The larger the value, the deeper the filtering	0x0002 (0x0000~0x000F)	RUN
F11.25 (0x0B19)	Motor Auto-tuning Display	V/F SVC 0: ON 1: OFF Note: T/S2 models do not support this parameter.	0 (0~1)	RUN
F11.27 (0x0B1B)	Error Display	Ones-bit: Display the error during error reset 0: OFF 1: ON	0x0001 (0x0000~0x0001)	RUN

F11.3x: Special Keypad Functions

Code (Address)	Name	Content	Default (Range)	Property
F11.30 (0x0B1E)	GA20 Serial Port Function	V/F SVC 0: RS485 communication 1: External keypad RS485 bus and external keypad are mutually exclusive. RS485 bus (master/slave) is not available when external keypad is selected to be valid and connected.	0 (0~1)	STOP
F11.31 (0x0B1F)	Potentiometer Voltage Lower Limit	V/F SVC To define the lower limit value of the voltage given by the keypad potentiometer, any value smaller is treated as such.	0.50V (0.00V~3.00V)	RUN
F11.32 (0x0B20)	Potentiometer Voltage Lower Limit Percentage	V/F SVC Set keypad potentiometer lower voltage limit percentage	0.00% (0.00%~100.00%)	RUN
F11.33 (0x0B21)	Potentiometer Upper Voltage Limit	V/F SVC To define the upper limit value of the voltage given by the keypad potentiometer, any value larger is treated as such.	2.80V (0.00V~3.00V)	RUN
F11.34 (0x0B22)	Potentiometer Upper Voltage Limit Percentage	V/F SVC Set the keypad potentiometer upper voltage limit percentage	100.0% (0.0%~100.0%)	RUN

F11.35 (0x0B23)	Keypad Potentiometer	V/F SVC Set the keypad potentiometer source. 0: Built-in potentiometer 1: Potentiometer of the external keypad	0 (0~1)	STOP
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4.16 F12: Communication Parameters

F12.0x: Modbus Slave Parameters

Code (Address)	Name	Content		Default (Range)	Property
F12.00 (0x0C00)	Master/Slave	V/F SVC 0: Slave 1: Master		0 (0~1)	STOP
F12.01 (0x0C01)	Modbus Address	V/F SVC Set Modbus slave communication address.		1 (1~247)	STOP
F12.02 (0x0C02)	Baud Rate	V/F SVC 0: 1200 bps 1: 2400 bps 2: 4800 bps	3: 9600 bps 4: 19200 bps 5: 38400 bps 6: 57600 bps	3 (0~6)	STOP
F12.03 (0x0C03)	Modbus Data Format	V/F SVC 0: (N, 8, 1) no parity Data bit: 8 Stop bit: 1 1: (E, 8, 1) even parity Data bit: 8 Stop bit: 1 2: (N, 8, 1) odd parity Data bit: 8 Stop bit: 1	3: (N, 8, 2) no parity Data bit: 8 Stop bit: 2 4: (E, 8, 2) even parity Data bit: 8 Stop bit: 2 5: (O, 8, 2) odd parity Data bit: 8 Stop bit: 2	0 (0~5)	STOP
F12.04 (0x0C04)	Modbus Response Mode	V/F SVC 0: ON to white operation 1: OFF to write operation		0 (0~1)	RUN
F12.05 (0x0C05)	Modbus Response Delay	V/F SVC Set the interval between the completion of receiving data and replying to the master with answer data.		0ms (0ms~ 5000ms)	RUN

F12.06 (0x0C06)	Modbus Failure Timeout	V/F SVC The time between two communications to determine a communication	1.0s (0.1s~ 100.0s)	RUN
F12.07 (0x0C07)	Communi- cation Disconnec- tion	V/F SVC 0: Overtime detection OFF 1: Report error and free stop 2: Report warning and continue operation	0 (0~3)	RUN
F12.08 (0x0C08)	Frequency Bias (0x3000)	V/F SVC Set the bias value for the communication giving frequency (100.00 corresponds to 100.00Hz).	0.00 (-100.00~ 100.00)	RUN
F12.09 (0x0C09)	Frequency Gain (0x3000)	V/F SVC Set the gain for the communication giving frequency. Given frequency = Actual communication giving value x Gain + Bias	100.0% (0.0%~ 500.0%)	RUN

F12.1x: Modbus Master Parameters

Code (Address)	Name	Content		Default (Range)	Property
F12.10 (0x0C0A)	Master Text	V/F SVC Ones, tens, hundreds, and thousands-bit all can be set with: 0: None 1: Master command 2: Target frequency 3: Output frequency 4: Upper limit frequency 5: Given torque	6: Output torque 7: Reserved 8: Reserved 9: PID target 10: PID feedback 11: Reserved 12: Active current component	0x0031 (0x0000~ xCCCC)	RUN
F12.11 (0x0C0B)	User-Defi- ned Frequency Address	V/F SVC Set this parameter to a non-zero value to replace the communication giving frequency address 0x3000 or 0x2000.		0x0000 (0x0000~ 0xFFFF)	RUN

F12.12 (0x0C0C)	User-Defined Command Address	V/F SVC Set this parameter to a non-zero value to replace the communication giving frequency address 0x3001 or 0x2001.	0x0000 (0x0000~ 0xFFFF)	RUN
F12.13 (0x0C0D)	FWD Command Value	V/F SVC Set this parameter to replace the communication command setting data 0001H: forward operation.	0x0001 (0x0000~ 0xFFFF)	RUN
F12.14 (0x0C0E)	REV Command Value	V/F SVC Set this parameter to replace the communication command setting data 0002H: reverse operation.	0x0002 (0x0000~ 0xFFFF)	RUN
F12.15 (0x0C0F)	Stop Command Value	V/F SVC Set this parameter to replace the communication command setting data 00025H: deceleration stop.	0x0005 (0x0000~ 0xFFFF)	RUN
F12.16 (0x0C10)	Reset Command Value	V/F SVC Set this parameter to replace the communication command setting data 0007H: error reset.	0x0007 (0x0000~ 0xFFFF)	RUN
F12.19 (0x0C13)	Master Command	V/F SVC Set the master command. 0: Send running command 1: Send running status	0 (0~1)	RUN

4.17 F13: PID Control

F13.00~F13.06: PID Target and Feedback

Code (Address)	Name	Content		Default (Range)	Property
F13.00 (0x0D00)	PID Controller Source	V/F SVC 0: Keypad 1: Keypad potentiometer 2: Analog current/voltage AI 3: Reserved	4: Reserved 5: PUL terminal 6: RS485 7: Reserved 8: Terminals 9: Communication- giving active current	0 (0~9)	RUN
F13.01 (0x0D01)	Keypad Set PID Target /Feedback	V/F SVC This parameter is valid when F13.00 or F13.03 is set to [0: Keypad].		50.0% (0.0%~ 100.0%)	RUN
F13.02 (0x0D02)	PID Target Change Time	V/F SVC Set the time required when PID target increase from 0.0% to 100.0%.		1.00s (0.00s~ 60.00s)	RUN
F13.03 (0x0D03)	PID Feedback Source	V/F SVC 0: Keypad 1: Keypad potentiometer 2: Analog current/voltage AI 3: Reserved 4: Reserved	5: PUL terminal 6: RS485 7: Reserved 8: Terminals 9: Local active current	2 (0~9)	RUN
F13.04 (0x0D04)	Feedback Filter Time	V/F SVC The longer the filter time, the greater the anti-interference effect, but the response becomes slower.		0.010s (0.000s~ 6.000s)	RUN
F13.05 (0x0D05)	Feedback Gain	V/F SVC Set for linear proportional regulation of the feedback input signal.		1.00 (0.00~ 10.00)	RUN

F13.06 (0x0D06)	Feedback Range	V/F SVC The PID feedback signal range is dimensionless units which are used to	100.0 (0.0~ 100.0)	RUN
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F13.07~F13.24: PID Target

Code (Address)	Name	Content	Default (Range)	Property
F13.07 (0x0D07)	PID Control Property	V/F SVC Ones-bit: Feedback property 0: Positive 1: Negative Tens-bit: Reserved Hundreds-bit: Reserved Thousands-bit: Differential regulation 0: Differential for deviation 1: Differential for feedback	0100 (0000~ 1111)	RUN
F13.08 (0x0D08)	PID Preset	V/F SVC When PID operation is initiated, output as the pre-settings.	100.0% (0.0%~ 100.0%)	RUN
F13.09 (0x0D09)	PID Preset Time	V/F SVC Set the time for the PID preset output, and performs as the normal PID target after it is finished.	0.0s (0.0s~ 6500.0s)	RUN
F13.10 (0x0D0A)	PID Deviation Limit	V/F SVC Set the maximum deviation of PID feedback from PID target.	0.0% (0.0%~ 100.0%)	RUN
F13.11 (0x0D0B)	Proportional Gain P1	V/F SVC Set the proportional gain of PID parameter group 1.	0.100 (0.000~ 4.000)	RUN
F13.12 (0x0D0C)	Integral Time I1	V/F SVC Set the integral time of PID parameter group 1.	1.0s (0.0s~ 600.0s)	RUN
F13.13 (0x0D0D)	Differential Time D1	V/F SVC Set the differential time of PID parameter group 1.	0.000s (0.000s~ 6.000s)	RUN
F13.14 (0x0D0E)	Proportional Gain P2	V/F SVC Set the proportional gain of PID parameter group 2.	0.100 (0.000~ 4.000)	RUN

F13.15 (0x0D0F)	Integral Time I2	V/F SVC Set the integral time of PID parameter group 2.	1.0s (0.0s~ 600.0s)	RUN
F13.16 (0x0D10)	Differential Time D2	V/F SVC Set the differential time of PID parameter group 2.	0.000s (0.000s~ 6.000s)	RUN
F13.17 (0x0D11)	PID Shift Condition	V/F SVC 0: OFF 1: ON via DI terminal 2: ON according to deviation	0 (0~2)	RUN
F13.18 (0x0D12)	Shift Deviation Low	V/F SVC Gain 1 parameter is used when the PID deviation is lower than this value.	20.0% (0.0%~ 100.0%)	RUN
F13.19 (0x0D13)	Shift Deviation High	V/F SVC Gain 2 parameter is used when the PID deviation is greater than this value.	80.0% (0.0%~ 100.0%)	RUN
F13.21 (0x0D15)	Differentiati on Range	V/F SVC This parameter is used to set the range of the PID differential output.	5.0% (0.0%~ 100.0%)	RUN
F13.22 (0x0D16)	Max. PID Output	V/F SVC Set the PID output upper limit.	100.0% (0.0%~ 100.0%)	RUN
F13.23 (0x0D17)	Min. PID Output	V/F SVC Set the PID output lower limit.	0.0% (-100.0%~ F13.22)	RUN
F13.24 (0x0D18)	PID Filter Time	V/F SVC Set the PID output filter time.	0.000s (0.000s~ 6.000s)	RUN

F13.25~F13.28: PID Feedback Disconnection

Code (Address)	Name	Content	Default (Range)	Property
F13.25 (0x0D19)	Feedback Disconnection Mode	V/F SVC 0: Continue PID operation without reporting error 1: Stop and report error 2: Continue PID operation, and report alarm 3: Run at current frequency, and report alarm	0 (0~3)	STOP

F13.26 (0x0D1A)	Feedback Break Time	V/F SVC Set the PID feedback disconnection detection duration.	1.0s (0.0s~ 120.0s)	RUN
F13.27 (0x0D1B)	Feedback Break Upper Limit	V/F SVC If the feedback signal exceeds this value and continues for F13.26, the sensor is considered disconnected.	100.0% (0.0%~ 100.0%)	RUN
F13.28 (0x0D1C)	Feedback Break Lower Limit	V/F SVC If the feedback signal is lower than this value and continues for F13.26, the sensor is considered disconnected.	0.0% (0.0%~ 100.0%)	RUN

F13.29~F13.33: PID Sleep

Code (Address)	Name	Content	Default (Range)	Property
F13.29 (0x0D1D)	Sleep	V/F SVC 0: OFF 1: ON	0 (0~1)	RUN
F13.30 (0x0D1E)	Sleep Frequency	V/F SVC When the sleep function is valid, the PID output frequency is lower than [F13.30] and continues for F13.31 [Sleep Delay], then sleep function	10.00Hz (0.00Hz~ Max. frequency)	RUN
F13.31 (0x0D1F)	Sleep Delay	V/F SVC Set the sleep delay time.	60.0s (0.0s~ 3600.0s)	RUN
F13.32 (0x0D20)	Wakeup Deviation	V/F SVC When PID feedback is smaller/greater than (positive characteristic/negative characteristic) PID target minus/plus	5.0% (0.0%~ 50.0%)	RUN
F13.33 (0x0D21)	Wakeup Delay	(positive characteristic/negative characteristic) F13.32 [Wakeup Deviation] and continues for F13.33 [Wakeup Delay], the drive exits from sleep status and start the normal operation.	1.0s (0.0s~ 60.0s)	RUN

4.18 F14: Simulation PLC for Multi-frequency Control

F14.00~F14.14: Multi-frequency Control

Code (Address)	Name	Content	Default (Range)	Property
F14.00 (0x0E00) ~ F14.14 (0x0E0E)	Multi-frequency 1~15	V/F SVC [F01.02] Frequency giving source 9: given by program control (PLC), frequency and running direction of the drive are controlled by built-in PLC, and up to 15-seg frequency can be controlled; the running mode is shown in the [F14.15] setting. If the running time of a segment is set to "0", the segment is skipped when the program is executed. [F01.02] Frequency giving source 11: The setting frequency is selected by "Multi-frequency terminal," the running direction and acceleration/deceleration time are set by [F14.31~F14.45]. If all the multi-frequency terminals are invalid, the multi-frequency setting is set to zero. For the "Multi-frequency terminal" setting, see parameters [F5.00 to F5.03]. The default values are set as shown below: F14.00 Multi-frequency 1= 10.00Hz F14.08 Multi-frequency 9= 10.00Hz F14.01 Multi-frequency 2= 20.00Hz F14.09 Multi-frequency 10= 20.00Hz F14.02 Multi-frequency 3= 30.00Hz F14.10 Multi-frequency 11= 30.00Hz F14.03 Multi-frequency 4= 40.00Hz F14.11 Multi-frequency 12= 40.00Hz F14.04 Multi-frequency 5= 50.00Hz F14.12 Multi-frequency 13= 50.00Hz F14.05 Multi-frequency 6= 40.00Hz F14.13 Multi-frequency 14= 40.00Hz F14.06 Multi-frequency 7= 30.00Hz F14.14 Multi-frequency 15= 30.00Hz PLC Multi-frequency 8= 20.00Hz	See the left side (0.00Hz~ Max. frequency)	RUN

F14.15: PLC Mode

Code (Address)	Name	Content		Default (Range)	Property
F14.15 (0x0E0F)	PLC Operation Mode	V/F SVC Ones-bit: Cycle mode 0: Stop after single cycle 1: Cycle continuously 2: Hold to final value after single cycle Tens-bit: Timing unit 0: Second (s) 1: Minute (m) 2: Hour (h)	Hundreds-bit: Power-down save 0: OFF 1: ON Thousands-bit: Start mode 0: Restart from the first stage 1: Restart from the stage upon stop last time 2: Continue operation for the remaining of the stop stage	0000 (0000~ 2122)	RUN

F14.16~F14.30: PLC Runtime

Code (Address)	Name	Content		Default (Range)	Property
F14.16 (0x0E10) ~ F14.30 (0x0E1E)	Multi-freque ncy 1~15 Runtime	V/F SVC Set the 1~15 segments runtime		10.0 (s/m/h) (0.0 (s/m/h)~ 6500.0 (s/m/h))	RUN

F14.31~F14.45: PLC Direction and ACC/DEC Time

Code (Address)	Name	Content	Default (Range)	Property
F14.31 (0x0E1F) ~ F14.45 (0x0E2D)	Multi-frequency 1~15 Direction and ACC/DEC Time	V/F SVC Ones-bit: Direction of the current stage (compared with operation command) 0: Same 1: Opposite Tens-bit: ACC/DEC time of the current stage 0: ACC/DEC time 1 2: ACC/DEC time 3 1: ACC/DEC time 2 3: ACC/DEC time 4 Hundreds-bit: Reserved Thousands-bit: Reserved	0000 (0000~ 0031)	RUN

4.19 F15: Reserved**4.20 F25: AI and AO Correction**

This group of funcodes and descriptions are described in detail in the corresponding technical manuals.

4.21 C0x: Monitoring Parameters**C00: Basic Monitoring**

Code (Address)	Name	Code (Address)	Name	Code (Address)	Name
C00.00 (0x2100)	Given Frequency	C00.14 (0x210E)	Input Terminal X Status	C00.28 (0x211C)	Software Version
C00.01 (0x2101)	Output Frequency	C00.15 (0x210F)	Output Terminal Y Status	C00.29 (0x211D)	Reserved
C00.02 (0x2102)	Output Current	C00.16 (0x2110)	AI Value	C00.30 (0x211E)	Timer Record
C00.03 (0x2103)	Input Voltage	C00.17 (0x2111)	Reserved	C00.31 (0x211F)	PID Output

C00.04 (0x2104)	Output Voltage	C00.18 (0x2112)	Keypad Potentiometer Input	C00.32 (0x2120)	AC Drive Software Sub-version
C00.05 (0x2105)	Mechanical Speed	C00.19 (0x2113)	PUL Input	C00.33 (0x2121)	Reserved
C00.06 (0x2106)	Given Torque	C00.20 (0x2114)	AO Value	C00.34 (0x2122)	Reserved
C00.07 (0x2107)	Output Torque	C00.21 (0x2115)	Reserved	C00.35 (0x2123)	Reserved
C00.08 (0x2108)	PID Target	C00.22 (0x2116)	Counter Record	C00.36 (0x2124)	Error Code
C00.09 (0x2109)	PID Feedback	C00.23 (0x2117)	Current Power-ON	C00.37 (0x2125)	Total Power Consumption (Low)
C00.10 (0x210A)	Output Power	C00.24 (0x2118)	Total Runtime	C00.38 (0x2126)	Total Power Consumption (High)
C00.11 (0x210B)	Bus Voltage	C00.25 (0x2119)	AC Drive Power	C00.39 (0x2127)	Power Factor Angle
C00.12 (0x210C)	Module Temperature ₁	C00.26 (0x211A)	AC Drive Rated Voltage	-	-
C00.13 (0x210D)	Module Temperature ₂	C00.27 (0x211B)	AC Drive Rated Current	-	-

C01: Error Monitoring

Code (Address)	Name	Code (Address)	Name	Code (Address)	Name
C01.00 (0x2200)	Error Type	C01.08 (0x2208)	Error X Terminal Status	C01.16 (0x2210)	Previous 1 Error Module Temp.
C01.01 (0x2201)	Errcode Info	C01.09 (0x2209)	Error Y Terminal Record	C01.17 (0x2211)	Previous 1 Error Drive Status

C01.02 (0x2202)	Error Output Frequency	C01.10 (0x220A)	Previous 1 Error Type	C01.18 (0x2212)	Previous 1 Error X Terminal Status
C01.03 (0x2203)	Error Output Voltage	C01.11 (0x220B)	Previous 1 Errcode Info	C01.19 (0x2213)	Previous 1 Error Y Terminal Status
C01.04 (0x2204)	Error Output Current	C01.12 (0x220C)	Previous 1 Error Output Frequency	C01.20 (0x2214)	Previous 2 Error Type
C01.05 (0x2205)	Error Bus Voltage	C01.13 (0x220D)	Previous 1 Error Output Voltage	C01.21 (0x2215)	Previous 2 Errcode Info
C01.06 (0x2206)	Error Module Temp.	C01.14 (0x220E)	Previous 1 Error Output Current	C01.22 (0x2216)	Previous 3 Error Type
C01.07 (0x2207)	Error Drive Status	C01.15 (0x220F)	Previous 1 Error Bus Voltage	C01.23 (0x2217)	Previous 3 Errcode Info

Note: Error drive status bit meaning:

Ones-bit: Operation direction 0: Forward; 1: Reverse

Tens-bit: Operation status 0: Stop; 1: Steady speed

2: ACC; 3: DEC

Hundreds-bit: OV/OC 0: Normal 1: OV

2: OC 3: OV/OC

Thousands-bit: Reserved

C02: App Monitoring

Code (Address)	Name	Code (Address)	Name
C02.00(0x2300)	PID Target	C02.13 (0x230D) ~ C02.14 (0x230E)	Reserved
C02.01(0x2301)	PID Feedback	C02.15(0x230F)	Drive Overload Timing Factor
C02.02(0x2302)	PID Output	C02.16(0x2310)	Motor Overload Timing Factor
C02.03(0x2303)	PID Control Status	C02.17 (0x2311) ~ C02.18(0x2312)	Reserved
C02.05(0x2305)	PLC Operation Stage	C02.19(0x2313)	CBC Count

C02.06(0x2306)	PLC Stage Frequency	C02.20 (0x2314) ~ C02.31(0x231F)	Reserved
C02.07(0x2307)	PLC Stage Runtime	C02.32 (0x2320) ~ C02.47(0x232F)	Power-down Save Parameter 1~16
C02.08(0x2308)	FWD/REV Command	C02.48 (0x2330) ~ C02.49(0x2331)	Reserved
C02.09(0x2309)	Jogging Command	C02.50 (0x2332) ~ C02.59(0x233B)	Cache Register 0~9
C02.10(0x230A)	Voltage/Current before AI Correction	C02.60 (0x233C) ~ C02.61(0x233D)	Reserved
C02.11(0x230B)	Reserved	C02.62(0x233E)	External Keypad Version
C02.12(0x230C)	Voltage/Current before AO Correction	-	-

C03: Maintenance and Tension Monitoring

Code (Address)	Name	Code (Address)	Name
C03.00(0x2400)	Current Runtime	C03.23(0x2417)	Reserved
C03.01(0x2401)	Total Runtime (hour)	C03.24(0x2418)	Reserved
C03.02(0x2402)	Total Power-ON (hour)	C03.25(0x2419)	Reserved
C03.03(0x2403)	Total Power-ON (min)	C03.26(0x241A)	Reserved
C03.04(0x2404)	Fan Runtime	C03.27(0x241B)	Reserved
C03.05(0x2405)	Fan Maintenance	C03.28(0x241C)	Reserved
C03.06(0x2406)	Reserved	C03.29(0x241D)	Reserved
C03.07(0x2407)	Main Relay Maintenance	C03.30(0x241E)	Reserved
C03.08 (0x2408)~ C03.19(0x2413)	Reserved	C03.31 (0x241F)~ C03.39(0x2427)	Reserved
C03.20(0x2414)	Reserved	C03.50(0x2432)	Machine Code 1
C03.21(0x2415)	Reserved	C03.51(0x2433)	Machine Code 2
C03.22(0x2416)	Reserved	C03.52(0x2434)	Machine Code 3

4.22 Terminal I/O Function

X	Description	X	Description	X	Description
0	None;	24	PID Target Switching 1	48	Command Source to Keypad
1	FWD	25	PID Target Switching 2	49	Command Source to Terminal
2	REV	26	PID Target Switching 3	50	Command Source to Communication
3	Three-wire Operation Control	27	PID Feedback Switching 1	51	Reserved
4	FWD Jog	28	PID Feedback Switching	52	Operation Disable
5	REV Jog	29	PID Feedback Switching	53	FWD Operation
6	Free Stop	30	Program (PLC) Pause	54	REV Operation
7	E-stop	31	Program (PLC) Restart	55	Reserved
8	Error Reset	32	ACC/DEC Time Terminal 1	56	Reserved
9	External Error Input	33	ACC/DEC Time Terminal 2	57	Reserved
10	Frequency Increase (UP)	34	ACC/DEC Pause	58	Reserved
11	Frequency Decrease (DW)	35	Wobble Frequency Trigger	59	Reserved
12	Frequency Reset (UP/DW Reset)	36	Wobble Frequency Pause	60	Speed/Torque Control Switching
13	Source A to Source B	37	Wobble Frequency Reset	62	Torque Frequency Limit by Jog Frequency
14	Combined Frequency Source to Source A	38	Keypad & Display Check	63~87	Reserved
15	Combined Frequency Source to Source B	39	X4 Frequency Measurement	88	Reserved

16	Multi-frequency Terminal 1	40	Timer Trigger Terminal	89	Reserved
17	Multi-frequency Terminal 2	41	Timer Reset Terminal	90	Reserved
18	Multi-frequency Terminal 3	42	Counter Signal Input Terminal	91	Reserved
19	Multi-frequency Terminal 4	43	Counter Reset Terminal	92	Reserved
20	PID Control Cancel	44	DC Brake Command	93	Reserved
21	PID Control Pause	45	Excitation Command Terminal	94	Reserved
22	PID Property Switching	46	Reserved	95	Reserved
23	PID Parameter Switching	47	Reserved	—	—
Y	Description	Y	Description	Y	Description
0	No Output	13	Upper Limit Frequency Arrival	26	Emergency Stopping
1	Drive in Operation	14	Lower Limit Frequency Arrival	27	Overload Warning 1
2	Drive in REV Operation	15	Program Cycle Completion	28	Underload Warning 2
3	Drive in FWD Operation	16	Program Stage Completion	29	Drive in Warning
4	Error Trip Alarm 1 (report during auto reset)	17	PID Feedback above Upper Limit	30	Address: 0x3018 Control Output
5	Error Trip Alarm 2 (no report during auto reset)	18	PID Feedback below Lower Limit	31	Drive Overheat
6	External Error Stop	19	PID Feedback Sensor Break	32	Reserved

7	Drive Low Voltage	20	Reserved	33~36	Reserved
8	Drive Ready	21	Timer Target Arrival	37	Comparator 1 Detection
9	Output Frequency Detection 1 (FDT1)	22	Counter Maximum Arrival	38	Comparator 2 Detection
10	Output Frequency Detection 2 (FDT2)	23	Counter Target Arrival	39~63	Reserved
11	Given Frequency Arrival	24	Dynamic Braking	-	-
12	Zero-frequency Operating Now	25	Reserved	-	-

4.23 Errcode List

Note: The numbers in brackets in the code column are error codes and warning codes. (DEC. indicates decimal).

Display (DEC.)	Name	Error Type	Display (DEC.)	Name	Error Type
E.SC1 (1)	System failure during acceleration	Error	E.Ld2 (80)	Load protection 2	Error
E.SC2 (2)	System failure during deceleration	Error	E.CPu (81)	CPU timeout	Error
E.SC3 (3)	System failure during constant speed	Error	Reserved (82- 84)	Reserved	Error
E.SC4 (4)	System failure during stop	Error	E.LoC (85)	Locked chip	Error
E.oC1 (5)	Overcurrent during acceleration	Error	E.EEP (86)	Parameter save error	Error
E.oC2 (6)	Overcurrent during deceleration	Error	Reserved (87- 96)	Reserved	Error
E.oC3 (7)	Overcurrent during constant speed	Error	E.CP1 (97)	Monitor comparator 1 error	Error

E.oC4 (8)	GA20 software overcurrent	Error	E.CP2 (98)	Monitor comparator 2 error	Error
E.ou1 (9)	Overvoltage during acceleration	Error	E.dAT (99)	Parameter error	Error
E.ou2 (10)	Overvoltage during deceleration	Error	Reserved (100~109)	Reserved	Error
E.ou3 (11)	Overvoltage during constant speed	Error	E.FA1 (110)	Reserved for expansion 1	Error
Reserved (12)	Reserved	Error	E.FA2 (111)	Reserved for expansion 2	Error
E.Lu (13)	Low-voltage during operation	Error	E.FA3 (112)	Reserved for expansion 3	Error
E.oL1 (14)	Motor overload	Error	E.FA4 (113)	Reserved for expansion 4	Error
E.oL2 (15)	Drive overload 1	Error	E.FA5 (114)	Reserved for expansion 5	Error
E.oL3 (16)	Drive overload 2	Error	E.FA6 (115)	Reserved for expansion 6	Error
E.oL4 (17)	Drive overload 3	Error	E.FA7 (116)	Reserved for expansion 7	Error
E.iLF (18)	Input phase loss	Error	E.FA8 (117)	Reserved for expansion 8	Error
E.oLF (19)	Three-phase output phase loss	Error	E.FrA (118)	Material fracture	Error
E.oLF1 (20)	U phase loss	Error	Alarm		
E.oLF2 (21)	V phase loss	Error	A.Lu1 (128)	Low-voltage during stop	Alarm
E.oLF3 (22)	W phase loss	Error	A.ou (129)	Over-voltage during stop	Alarm
Reserved (23- 29)	Reserved	Error	A.iLF (130)	Input phase loss	Alarm
E.oH1 (30)	Rectifier module overheat	Error	A.Pid (131)	PID feedback disconnection	Alarm

E.oH2 (31)	IGBT module overheat	Error	A.EEP (132)	Parameter save alarm	Alarm
Reserved (32)	Reserved	Error	A.dEF (133)	Excessive speed deviation	Alarm
E.EF (33)	External error	Error	A.SPd (134)	Overspeed	Alarm
E.CE (34)	Modbus communication error	Error	A.GPS1 (135)	GPS lockout	Alarm
E.HAL1 (35)	Large U-phase zero drift	Error	A.GPS2 (136)	GPS disconnection	Alarm
E.HAL2 (36)	Large V-phase zero drift	Error	A.CE (137)	Modbus communication disconnection	Alarm
E.HAL (37)	Non-0 current sum of three phases	Error	A.Ld1 (138)	Load protection 1	Alarm
E.HAL3 (38)	Large W-phase zero drift	Error	A.Ld2 (139)	Load protection 2	Alarm
Reserved (39)	Reserved	Error	Reserved (140)	Reserved	Alarm
E.SGxx (40)	Short circuit to ground	Error	A.oH1 (141)	Module overheat	Alarm
E.FSG (41)	Fan short circuit	Error	Reserved (142)	Reserved	Alarm
E.Pid (42)	PID feedback disconnection	Error	A.run1 (143)	Alarm 1 during operation	Alarm
E.CoP (43)	Parameter copy error	Error	A.PA2 (144)	External keypad disconnection	Alarm
E.PG(44)	Wrong PG setting	Error	A.CoP (145)	Parameter copy alarm	Alarm
Reserved (45- 49)	Reserved	Error	A.CP1 (146)	Monitor comparator 1 alarm	Alarm
E.bru (50)	Braking unit error	Error	A.CP2 (147)	Monitor comparator 2 alarm	Alarm
Reserved (51)	Reserved	Error	A.run2 (148)	Alarm 2 during operation	Alarm
E.TExx (52)	Auto-tuning error	Error	A.run3 (149)	Alarm 3 during operation	Alarm
Reserved (53~70)	Reserved	Error	A.FA1 (150)	Reserved for expansion 1	Alarm
E.iAE1 (71)	Motor angle tuning error 1	Error	A.FA2 (151)	Reserved for expansion 2	Alarm
E.iAE2 (72)	Motor angle tuning error 2	Error	A.FA3 (152)	Reserved for expansion 3	Alarm

E.iAE3 (73)	Motor angle tuning error 3	Error	A.FA4 (153)	Reserved for expansion 4	Alarm
E.PST1 (74)	PM step loss 1	Error	A.FA5 (154)	Reserved for expansion 5	Alarm
E.PST2 (75)	PM step loss 2	Error	A.FA6 (155)	Reserved for expansion 6	Alarm
E.PST3 (76)	PM step loss 3	Error	A.FrA (157)	Material fracture	Alarm
E.dEF (77)	Excessive speed deviation	Error	A.161 (161)	Fan span	Alarm
E.SPd (78)	Overspeed	Error	A.163 (163)	Main relay span	Alarm
E.Ld1 (79)	Load protection 1	Error	-	-	-

5 Regular Inspection and Maintenance

5.1 Inspection

The drives consist of semiconductor devices, passive electronic devices, and motion devices, all of which have a service life, and even under normal operating conditions, some of the devices may change in property or fail if their service life is exceeded. To prevent malfunction, preventive inspections and maintenance such as daily inspections, periodic inspections, and device replacement must be performed. It is recommended that inspections be performed every 3 to 4 months after the machine is installed.

Daily inspection: To avoid damage to the drive and shortening of its service life, check the following items on a daily basis.

Item	Content	Solutions
Power Supply	Check that the supply voltage meets the requirements and that there is no phase loss in the supply.	Solve the problem in accordance with the requirements of the nameplate.
Surroundings	Check whether the installation environment meets the requirements.	Confirm the source and solve it properly.
Cooling system	Check whether there is abnormal heating and discoloration of the drive and motor, and check the working condition of the fan.	Confirm whether there is overload, whether the heat sink is dirty and the fan is blocked, and tighten the screws
Motor	Check whether the motor has abnormal vibration or sound.	Tighten mechanical and electrical connections and lubricate mechanical parts.
Load	Check whether the output current of the drive is higher than the rated value of the motor and it runs for a certain period of time.	Confirm that overload has not occurred and that the drive model is correct.

- Periodic inspection: In general, it is appropriate to conduct periodic inspections every 3 to 4 months, however, please determine the actual inspection period for each machine based on its usage and working environment.

Item	Content	Solutions
Overall	Insulation resistance check; environment check.	Tighten parts and replace defective ones; Clean and improve the operating environment.
Electrical connection	● The wires and connections are free of discoloration, broken insulation, cracks and signs of deterioration; ● Connection terminals are not worn, damaged, or loose; ● Grounding check.	● Replace damaged wires; ● Tighten loose terminals and replace damaged ones; ● Measure the grounding resistance and tighten the corresponding grounding terminals.
Mechanical connection	● Check for abnormal vibrations and noises, and for loose fixing.	● Tighten and lubricate parts, and replace defective ones.
Semiconductor devices	● Check for dirt and dust; ● Check for visible changes in appearance.	● Clean the operating environment; ● Replace the damaged parts;
Electrolytic capacitor	● Check for fluid leakage, discoloration, cracks, and exposed, expanded, ruptured, or leaked valves.	● Replace the damaged parts;

Peripherals protection	● Appearance and insulation inspection of peripheral equipment.	● Clean the environment and replace damaged parts.
Printed circuit board	● Check for odor, discoloration, and severe rust, and whether connectors are correct and reliable.	● Fasten connectors; ● Clean the printed circuit board; ● Replace the damaged printed circuit board.
Cooling system	● Check the cooling fan for damage and blockage; ● Check for dirt and dust on the heatsinks; ● Check that the air inlet and exhaust ports are not clogged or contaminated with foreign matter.	● Clean the operating environment; ● Replace the damaged parts;
Keypad	● Check the keypad for damage and blockage;	● Replace the damaged parts;
Motor	● Check whether the motor has abnormal vibration or sound.	● Tighten mechanical and electrical connections and lubricate mechanical parts.



Do not carry out work with the power supply on, as there is a risk of electric shock and death. Before performing operation, disconnect the power supply and make sure that the DC voltage in the main circuit has dropped to a safe level for 15 minutes.

5.2 Maintenance

All equipment and components have a service life, proper maintenance can prolong the life, but it does not fix the damage of the equipment and devices, please replace the devices according to the requirements.

Name	Life	Name	Life	Name	Life
Fan	2~3 years	Electrolytic capacitor	4~5 years	Printed circuit board	8~10 years

Replacement of other devices requires maintenance techniques and product knowledge, and replacement must be strictly tested before it is put into use, so we do not recommend users to replace other internal devices. If replacement is indeed necessary, please contact the agent from whom you purchased the product or our Sales Department.

5.3 Product Warranty

1. If the product malfunctions during the warranty period, please see the warranty terms in the warranty card for coverage.

2. Primary troubleshooting will be carried out by your company, but the service can be provided by our company or its service network for a fee at your request. If the cause of malfunction is found to be on our company, the service will be free of charge according to mutual negotiation.

3. Liability exemption: The inconvenience caused to your company or your customers due to the failure of our company products and the damage caused to the non-our company products, regardless of whether they are within the warranty period, should not be attributable to our company.

Appendix I: Modbus Communication Protocol

● Communication frame structure

The communication data format is as follows:

Composition of bytes: Start bit, 8 data bits, parity bit and stop bit.

Start bit	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8	Parity bit	Stop bit
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The information of a frame must be transmitted in one continuous data stream, and if it is longer than 1.5 bytes of interval before the end of transmission of the entire frame, the receiving device will clear this incomplete information and incorrectly assume that the subsequent byte is the address field of the next new frame. Similarly, if the start of a new frame is shorter than 3.5 bytes interval from the previous frame, the receiving device will consider it to be the sequent part of the previous frame. The final CRC parity will be incorrect due to the misalignment of the frame, resulting in a communication error.

● Communication control parameter group address description

Function	Address	Description			R/W Property
Communication giving frequency	0X3000 or 0x2000	0~50000 corresponds to 0.00Hz~500.00Hz			W/R
Communication command	0X3000 or 0x2001	0000H: None 0001H: FWD 0002H: REV 0003H: FWD jogging 0004H: REV jogging	0005H: DEC stop 0006H: Free stop 0007H: Error reset 0008H: Operation off 0009H: Operation on		W/R
Drive status	0x3002 or 0x2002	Bit0	0: Stop	1: Operating	R
		Bit1	0: Non-accelerating;	1: Accelerating	
		Bit2	0: Non-decelerating;	1: Decelerating	
		Bit3	0: Forward;	1: Reverse	
		Bit4	0: No error;	1: Drive error	
		Bit5	0: GPRS unlocked;	1: GPRS locked	
		Bit6	0: No warning;	1: Drive in warning	
		Bit7	0: Operation not allowed	1: Operation allowed	

Drive error code	0X3000 or 0x2003	Current error code (see error code list)		R
Communication giving upper limit frequency	0X3004 or 0x2004	0~32000 corresponds to 0.00Hz~320.00Hz		W/R
Communication set torque	0X3000 or 0x2005	0~1000 corresponds to 0.0%~100.0%		W/R
FWD upper frequency limit in torque mode	0x3006 or 0x2006	0~1000 corresponds to 0.0%~100.0%		W/R
REV upper frequency limit in torque mode	0x3007 or 0x2007	0~1000 corresponds to 0.0%~100.0%		W/R
Communication giving PID target	0x3008 or 0x2008	0~1000 corresponds to 0.0%~100.0%		W/R
Communication giving PID feedback	0x3009 or 0x2009	0~1000 corresponds to 0.0%~100.0%		W/R
Error/Alarm code reading	0x3010 or 0x2010	0~63 are error codes 64~ are alarm codes		R
Output terminal status	0x3018 or 0x2018	Drive output terminals externally occupied, BIT0-Y	BIT1--TA1-TB1-TC1 BIT2-TA2-TB2-TC2	W
AO	0x3019 or 0x2019	0~10000 corresponds to output 0V~10V, 0mA~20mA		W

Note: Other function code addresses are listed in the "Communication Address" column of the function code list.

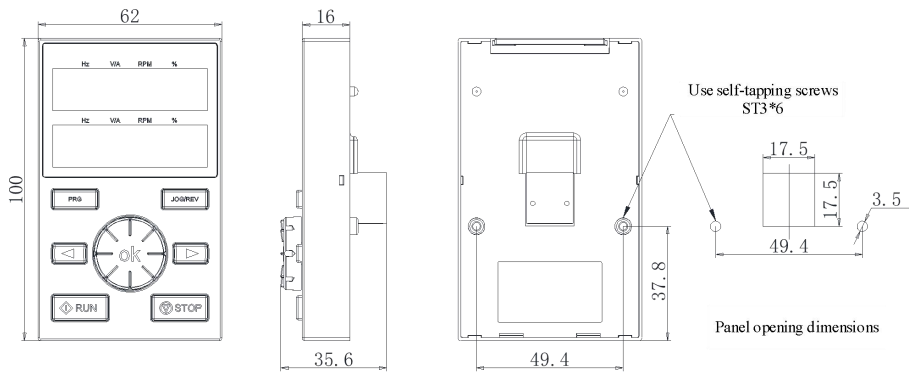
- When write command (06H) is used to write the F00~F15 parameters, if the highest bit of the address field of function code parameter is 0, it will be written into the RAM of drive only, and will not be stored during power down; if the high half byte of the address field of function code parameter is 1, it will be written into EEPROM, that is to say, it will be stored during power down. Like F00: 0x00XX (write into RAM), 0x10XX (store in EEPROM).
- When write command (06H) is used to write the F16~F29 parameters, if the highest bit of the address field of function code parameter is 5, it will be written into the RAM of drive only, and will not be stored during power down; if the high half byte of the address field of function code parameter is D, it will be written into EEPROM, that is to say, it will be stored during power down. Like F16: 0x50XX (write into RAM), 0xD0XX (store in EEPROM); F17: 0x51XX (write into RAM), 0xD1XX (store in EEPROM).
- Meaning of error codes of the abnormal response messages from slave

Error Code	Description	Error Code	Description	Error Code	Description
1	Command code error	3	CRC parity error	4	Illegal address
5	Illegal data	6	Parameters not for modification during operation	8	Drive busy (saving to EEPROM)
9	Parameter over range	10	Reserved parameters not for modification	11	Error in reading parameter bytes

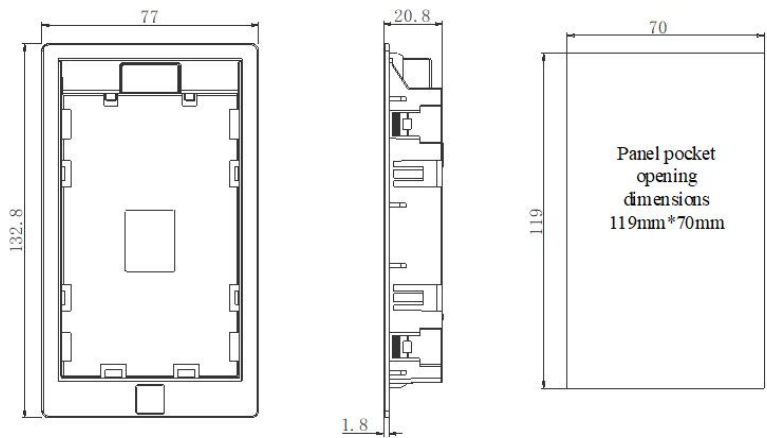
Appendix II: External Keypad Dimensions and Models

- External dual-row keypad and opening dimensions

Model: KBD310-25 (Note: LCD and LED keypad external dimensions and opening dimensions are fully compatible (unit in the drawing: mm)).



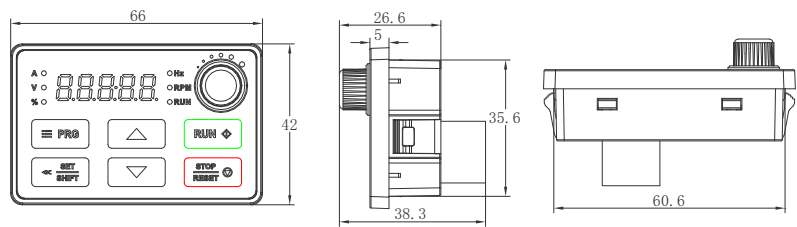
GA20 External Dual-row Keypad Dimensions



GA20 External Dual-row Keypad Pocket and Opening Dimensions

- External single-row keypad and opening dimensions

Model: KBD20-15 (Note: mounting plate opening dimensions: 61mmx36mm. (unit in drawing: mm))



Version Change Log

Date	Version	Content
2025.10	V1.0	First version issued

NiSTRO