VEICHI

Manual

AC01 Series Network AC Drive

Catalog

Chapter 1 General

1.1 Safety Precautions

Please fully understand the safety precautions described in this manual before using to ensure safety of both persons and products.

Warning signs and their meanings

The following marks are used in this manual to indicate that this part is of great safety importance. Failure to follow these precautions may result in personal injury, damage or even death to the product and associated systems.

⚠	**DANGER:** Death or major safety accidents may occur due to wrong operations.
⚠	**Caution**: Minor injuries may occur due to wrong operations.

Operating qualification

This product must be operated by trained professionals. In addition, operators must go through professional skills training, familiar with the installation, wiring, operation and maintenance of the equipment, and correctly respond to various emergency situations in use.
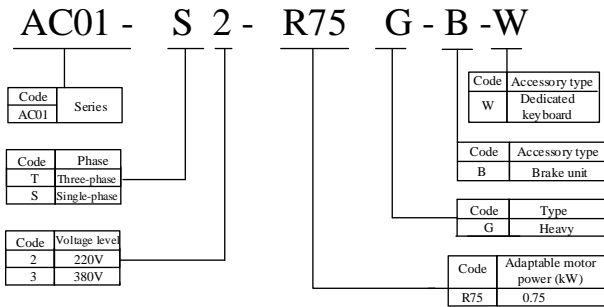
Safety rules

Safety rules are put forward for your safety and are measures taken to prevent injury to operators and damage to the product and associated systems; Read this manual carefully before use and strictly follow the safety rules and warning signs in this manual.

● Correct transportation, storage, installation, as well as careful operation and maintenance, is very important for the safe operation of the AC drive. During transportation and storage, the drive must be protected from shock and shake. It must also be stored in places which are dry and free from non-corrosive gas, non-conductive dust and where ambient temperature is lower than 60°C.

● This product has dangerous voltage, and it is controlled by a potentially dangerous movement mechanism. Any operations against the regulations or the requirements of this manual may lead to personal injury or damage of the product and related system.

● Do not wire when power is on otherwise there is a risk of death by electric shock; When connecting cables, checking, or maintaining cables, power off all related devices and ensure that the DC voltage of the main loop is reduced to a safe level. Wait five minutes before performing related operations.

● Power cables, motor cables and control cables must be connected tight and all of the ground terminals must be grounded, and the grounding resistance is less than 10Ω.

● The static electricity of human body will seriously damage the internal sensitive devices. Before performing related operations, please follow the instructions specified in ESD prevention measures (ESD), otherwise the AC drive may be damaged.

● Drive output voltage is a kind of pulse waveform, if the output side is equipped with capacitors or lightning protection varistor devices to improve the power factor, be sure to remove or refit the input side of it.

● Switch devices such as circuit breakers and contactors shall not be added on the output side of the drive (if the switch device must be connected on the output side, the drive output current must be zero when the switch is operated in the control).

● No matter where the fault occurs in the control equipment, it may cause production suspension and major accidents. Therefore, take necessary external protection measures or backup devices.

● Please use this product only for the purposes prescribed by the manufacturer, usage for special occasions of emergency and rescue like marine, medical, aviation and nuclear facilities without permission are seriously forbidden.

● Maintenance of this product can only carry out by VEICHI or professionals who have been licensed by VEICHI, unauthorized modification or use of accessories without VEICHI's authorization may lead to product failure. Any defective components must be replaced in time for product maintenance.

1.2 Before use

Upon receipt of your ordered products, please check whether the outer package is damaged, open the outer package after confirming that it is intact, and confirm whether the AC drive is damaged, scratched or contaminated (Damage caused during transportation does not fall within the scope of VEICHI's "three guarantees"). If you receive a product with transportation damage, please contact the company or transportation company immediately. After confirming that the received product is intact, please confirm again whether you received what you have ordered.

AC01 - S 2 - R75 G - B -W

Code	Series
AC01	

Code	Phase
T	Three-phase
S	Single-phase

Code	Voltage level
2	220V
3	380V

Code	Accessory type
W	Dedicated keyboard

Code	Accessory type
B	Brake unit

Code	Type
G	Heavy

Code	Adaptable motor power (kW)
R75	0.75

Voltage	220V	380V
Power(kW)	Rated output current(A)	
0.4	3.0	-
0.75	4.0	2.5
1.5	7.0	3.7
2.2	10.0	5.0
4	16.0	10.0
5.5	-	13.0
7.5	-	17.0

1.3 Technical Specifications

Item		Specification
Power input	Voltage & Frequency	S2: Single-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: ±5%; distortion rate conforming to IEC61800-2
	Inrush current	Lower than rated current
Output	Output voltage	Rated output: three-phase, 0V~input voltage, error lower than 5%
	Output frequency	0Hz~600Hz
	Output frequency accuracy	±0.5% of the maximum frequency value
	Overload capacity	T3 model: 150% of rated current for 89 s, 180% of rated current for 10 seconds, 200% rated current for 3 s S2 model: 150% of rated current for 24 seconds, 180% of rated current for 3.4 seconds
Primary control performance	Motor control mode	No PG V/F control, SFC
	Modulation mode	Optimized space vector PWM modulation
	Motor type	Three-phase asynchronous motor & permanent magnet synchronous motor supported
	Carrier frequency	2.0kHz~12.0kHz
	Speed control range	SVC, rated load 1: 100;
	Steady-state speed accuracy	SVC: ≤2% of rated synchronous speed;
	Starting torque	SVC: 150% of rated torque at 0.5Hz;
	Torque ripple	SVC: ≤0.1% of rated torque
	Torque response	SVC: < 20ms;
	Frequency accuracy	Digital setting: Maximum frequency ×±0.01%; Simulation setting: Maximum frequency ×±0.2%
	Frequency resolution	Digital setting: 0.01Hz; Simulation setting: Maximum frequency ×0.05%
Product basic function	Torque control	Torque setting calculation, torque mode speed limit
	DC braking capability	Starting frequency: 0.00Hz~50.00Hz; Braking time: 0.0s~60.0s; Braking current: 0.0%~150.0% of
	Torque boost	Automatic torque increased by 0.0%~100.0%; Manual torque increased by 0.0%~30.0%
	V/F curve	Four methods: Linear torque characteristic curve, self-setting V/F curve, reduced torque characteristic curve (power 1.1~2.0), square V/F curve
	Acceleration & Deceleration curves	Two methods: Linear acceleration and deceleration, S-curve acceleration and deceleration Four settings of acceleration and deceleration time, time unit 0.01s, 65000s max.
	Rated output voltage	Power supply voltage compensation enables setting within the range of 50%~100% (the output cannot exceed the input voltage) when rated motor voltage is 100%.
	Automatic voltage regulation	The output voltage can be kept constant automatically during grid voltage fluctuation.
	Automatic energy-saving	The V/F control mode automatically optimizes the output voltage according to the load to realize energy saving.
	Automatic current limiting	Automatic current limit during operation to prevent frequent overcurrent failure trip
	Instantaneous power failure treatment	Uninterrupted running during instantaneous power failure through the bus voltage control
	Standard functions	PID control, speed tracking and power-off restart, jump frequency, frequency upper and minimum control, program operation, multi-speed, RS485 communication port, analog output, parameter access level setting, common parameter setting, monitoring parameter comparator output, counting and timing,
	Frequency setting channel	Analog voltage/current terminals AS (VS), communication and multi-channel terminals setting, combination of primary and secondary channels, and external panel settings can be switched in various

	Command channel	Communication with the upper computer. Terminal setting via the X terminal The number entering via the external panel
	Input command signal	Start, stop, positive and negative rotation, point, multi-speed, free stop, reset, acceleration and deceleration time selection, frequency and channel setting and external fault alarm
	External output signal	1-way relay output, 1-way collector open output
Protections		Overvoltage, undervoltage, current limiting, overcurrent, overload, electronic thermal relay, overheat, overvoltage stall, data protection, rapid protection, input and output phase loss protection
Panel display	Parameter copy	Function code information of the drive can be uploaded and downloaded to realize fast parameter replication (only external panel)
	Condition monitoring	1. External panel input all parameters of monitoring parameter group including output frequency, given frequency, output current, input voltage, output voltage, motor speed, PID feedback, PID setting, module temperature, given torque and output torque. 2. The relevant status of the drive can be indicated through the three LED lights on the product. POWER indicates the power and it's red when power is normal. RUN indicates running status and it's green when running is normal. FAULT indicates warning or fault and it's red when something is abnormal.
	Fault warning	Overvoltage, undervoltage, overcurrent, short circuit, phase loss, overload, overheating, overvoltage stall, current limiting, data protection, current fault conditions and historical faults
Environment	Installation site	If the altitude is lower than 1000 meters, derate 1% for each elevation of 100 meters; No condensation, icing, rain, snow, hail, etc., solar radiation lower than 700W/m2, air pressure between 70kPa~106kPa
	Temperature & Humidity	-20°C~+50°C, derate 5% for each increase of 1°C when it's above 40 °C, 50°C max. (no-load running) ≤95%RH (20°C; relative humidity change rate shall not exceed 5% per hour, and no condensation)
	Vibration	5.9m/s²(0.6G) when during 9Hz~200Hz
	Storage temperature	-30°C~+60°C
	Installation method	wall-mounted
	Protection level	IP20
	Pollution level	Level 2
	Cooling method	Natural cooling for models with V1 cases Forced air cooling for models with V2 and V3 cases

Chapter 2 Installation and Wiring

Please use the product in strict accordance with the requirements of the environment, wiring, and ventilation described in this chapter.

in order to ensure safety of the users and best performance of the AC drive.

- Installation direction

    Be sure to mount the drive vertically for heat dissipation.

- Installation space

    Please install the back of the drive close to the wall to ensure the ventilation space and wiring space required for heat dissipation of the drive, so

that the cooling air around the heat sink can flow smoothly for heat dissipation.

- **Dimensions of the drive and panel**
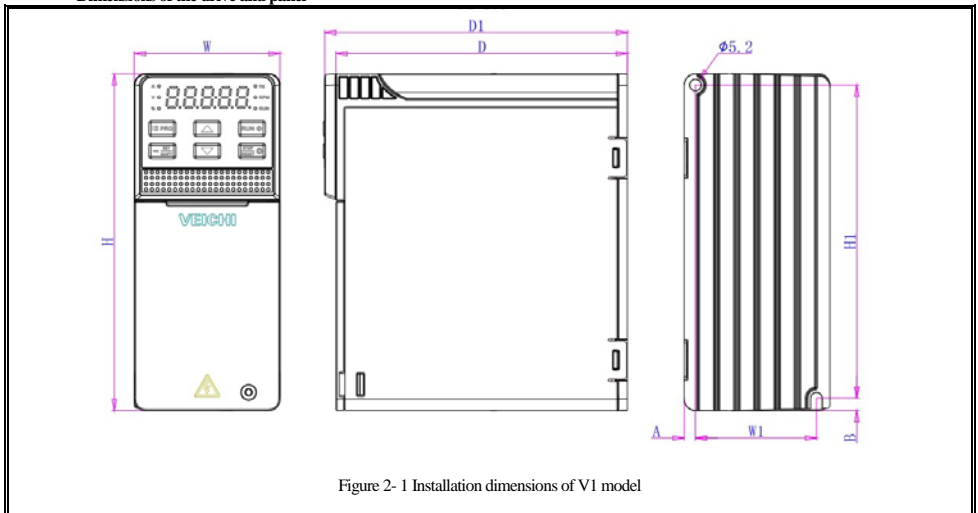
Figure 2- 1 Installation dimensions of V1 model

Model	Boundary dimension (mm)				Mounting dimension (mm)				Aperture (mm)
	W	H	D	D1	A	B	W1	H1	
AC01-S2-R40G-B	65	150	130	–	5	5.5	54	139.5	Φ5.2
AC01-S2-R75G-B									
AC01-T3-R75G-B									
AC01-T3-1R5G-B									
AC01-T3-R75G-B-W									
AC01-S2-R40G-B-W				135					
AC01-S2-R75G-B-W									
AC01-T3-1R5G-B-W									
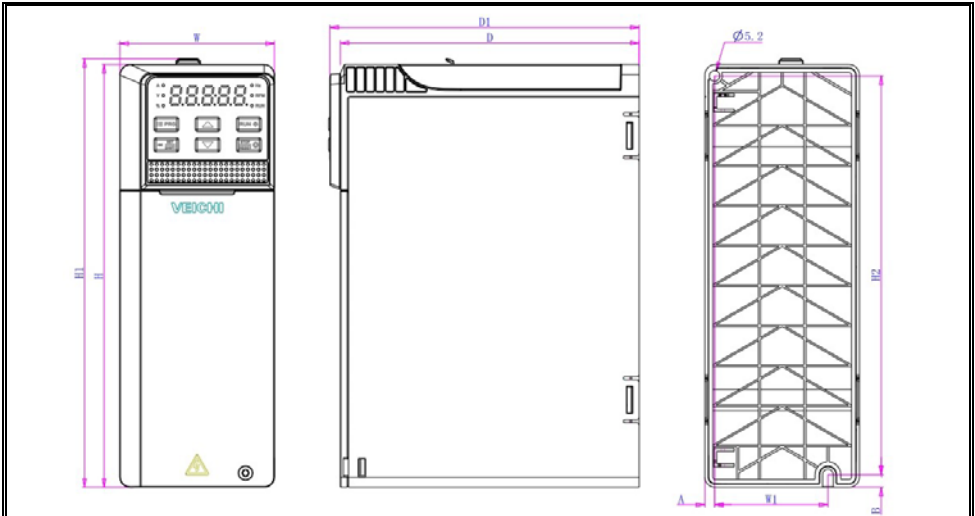
Figure 2- 2 Installation dimensions of V2, V3 model

Model	Boundary dimension (mm)				Mounting dimension (mm)				Aperture (mm)
	W	H	D	D1	A	W1	H1	H2	
AC01-S2-1R5G-B	75	205	145	-	4.7	55	207.9	193.25	Φ5.2
AC01-S2-2R2G-B									
AC01-T3-2R2G-B									
AC01-T3-004G-B									
AC01-S2-1R5G-B-W				150					
AC01-S2-2R2G-B-W									
AC01-T3-2R2G-B-W									
AC01-T3-004G-B-W									
AC01-S2-004G-B	100	230	165	-	6.0	82	232.9	218	Φ6.2
AC01-T3-5R5G-B									
AC01-T3-7R5G-B									

Note:

    1. AC01-W is standard with KBD01-15 dedicated panel before delivery, and boundary dimensions D includes that panel.

- **Standard wiring diagram**
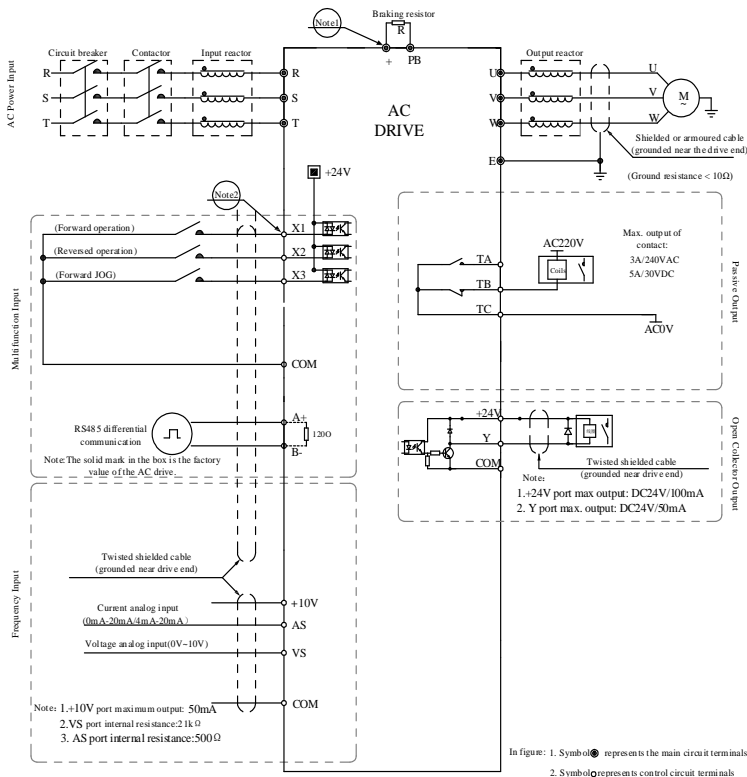
Figure 2- 2 Standard wiring diagram

Note:

1. Select the appropriate brake resistance according to the field conditions and *Brake Resistance Specifications*;

2. Multifunctional input terminals (X1~X3) can be used as input for NPN transistor signals;

3. Multi-function input terminals (X1 to X3) are PNP products, please confirm before procurement.

4. The digital and analog grounding terminals are combined into the COM terminal in the control circuit;

- **Auxiliary terminals and output capacity**

Table 2- 1 Auxiliary terminals and output capacity

Terminal	Function	Maximum output
+10V	A loop formed with a 10V auxiliary analog power output and COM	50mA
+24V	A loop formed with a 24V auxiliary digital power output and COM	100mA
COM	Digital and analog power supply	-
X1 、X2、X3	Digital input terminal	NPN
Y	Collector open output & programmable action object.	DC24V/50mA

TA/TB/TC	TA TC: Normally on; TB TC: Normally off Passive contact output & programmable action object.	3A/240VAC 5A/30VDC
AS	Current analog input	0-20mA/ 4-20mA
VS	Voltage analog input	0-10V
A+ B-	RS485 communication terminal	-

- **Main loop terminal**

Table 2- 2 Main loop terminal

Symbol	Designation	Function
R/L	Main loop input terminal	T3: Three-phase power input R phase S2: Single-phase power input L line
S		T3: Three-phase power input S phase S2: Reserved
T/N		T3: Three-phase power input T phase S2: Single-phase power input N wire
U	Main loop output terminal	U-phase output
V		V-phase output
W		W-phase output
+	DC bus power terminal +	Used on external brake resistance to realize quick stop
PB	Brake resistance terminal	
⏚	Ground terminal	Used to ground the drive

- **RJ45 interface pin definition**
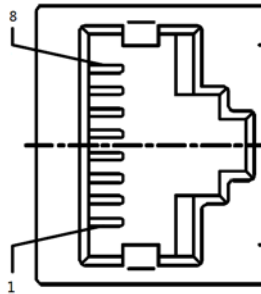
Figure 2- 4 RJ45 interface

It's the top view above and the specific network interpretations are as follows:

Table 2-3 Network interpretations

Pin label	Pin definition	Description
7	B-	RS485 communication B-, shared with terminal B-
8	A+	RS485 communication A+, shared with terminal A+

- **Recommended brake resistance specifications**

The braking resistance and resistance power in the following table are verified by ordinary inertia load and intermittent braking mode. If it

needs to be used in the occasion of large inertia and frequent braking for a long time, please adjust the braking resistance and resistance power

appropriately according to the specifications of the selected model and the rated parameters of the braking unit. If you have any questions, please consult the service hotline of technical service department of Suzhou VEICHI Electric Technology Co., LTD.

Table 2-4 Recommended brake resistance specifications

Three-phase 380V					
Model	**Motor power (kW)**	**Brake unit**	**Recommended resistance (on 100% braking torque and 10% braking rate)**		**Minimum resistance(Ω)**
			Resistor model	**Resistor qty.**	
AC01-T3-R75G-B	0.75kW	Built-in, standard	1000 Ω 150W	1	80Ω
AC01-T3-1R5G-B	1.5kW	Built-in, standard	500 Ω 300W	1	80Ω
AC01-T3-2R2G-B	2.2kW	Built-in, standard	300 Ω 450W	1	80Ω
AC01-T3-004G-B	4.0kW	Built-in, standard	200 Ω 800W	1	80Ω
AC01-T3-5R5G-B	5.5kW	Built-in, standard	150 Ω 1.1kW	1	50Ω
AC01-T3-7R5G-B	7.5kW	Built-in, standard	100 Ω 1.5kW	1	50Ω
Single-phase 220V					
Model	**Motor power (kW)**	**Brake unit**	**Recommended resistance (on 100% braking torque and 10% braking rate)**		**Minimum resistance(Ω)**
			Resistor model	**Resistor qty.**	
AC01-S2-R40G-B	0.4kW	Built-in, standard	400Ω 80W	1	100Ω
AC01-S2-R75G-B	0.75kW	Built-in, standard	200Ω 150W	1	100Ω
AC01-S2-1R5G-B	1.5kW	Built-in, standard	100Ω 300W	1	30Ω
AC01-S2-2R2G-B	2.2kW	Built-in, standard	75Ω 450W	1	30Ω
AC01-S2-004G-B	4kW	Built-in, standard	40Ω 800W	1	20Ω

Chapter 3 Indicators, Panel and Operation Instructions

● **Indicators**
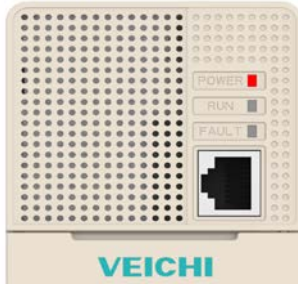
Figure 3- 1 AC01 series main interface

States of AC01 series can be told via the three indicating lights on its interface:

Table 3-1 Indicators

Symbol	Indicator	Status	Description
POWER	RED	ON	Power on, and ready for operation
		OFF	Abnormal power supply
RUN	GREEN	ON	Operation in FWD
		Flash (500ms on and then 500ms off, and cycle starts again)	Operation in REV
		OFF	Drive is not running
FAULT	RED	ON	Faults of main codes 1~11 occur
		Flash (100ms on and then 100ms off, and cycle starts again)	Faults of main codes 12~117 occur
		Flash slowly (100ms on and then 100ms off +100ms on and then 1700ms off, and cycle starts again)	Warning
		OFF	Fault-free

Note: Please refer to "4.23 Fault Code Table" for fault/warning main codes 1~163.

Note: Confirm the status of the drive by the external panel instead of checking the three indicator lights on the interface of the drive.

● **Panel layout**

Note: The current version of AC01 series products does not have its own panel, and KBD300-25 or KBD10-15 panel can be extended via RJ45 network port.

Figure 3- 2 KBD300-25 dual-line panel and KBD single-line panel

● **External panel functions**

Table 3-2 External panel meanings

Symbol	Dual-line display panel	Functions
A	Unit indicator	Hz: Frequency; A: Current; V: Voltage; V/A: Voltage or current; RPM: Speed; %: Percentage.
B	Status indicator	ON: Forward running; flash: Reverse running; OFF: Shutdown.
C	Menu PRG	Enter the menu interface when standby or running. Press the key to exit the modification after parameters are modified and long press the key for 1 second to directly enter the status interface.
F	Run ◇ RUN	When run/stop is controlled by the panel, press the key to make the motor rotate forward. The status indicator is on for forward rotating and flashing for reverse rotating.
	Stop/Reset ⊘ STOP	When the command is given via panel, press the key to stop the drive. F11.03[panel stop key setting] can be used to define whether other command channels are valid or not; Press the key to reset faults.
G	ok	Digital potentiometer: Press the up key to increase the operating value for clockwise rotation and press down key to reduce the operating value for counterclockwise rotation.
		Confirm key: Press this key to confirm after modifying the value
	Shift right ◄ ►	Move left or right
H	Multifunction key JOG/REV	Select the function of the key via F11.02[multi-function key selection via panel]

● **Dedicated panel**

Dedicated panel KBD01-15(Front/Side View)

Note:

1. Functions of this panel is the same as the external one.

2.This is connected to the RJ45 port on the AC01 by cables directly.

● **Meaning of external panel indicators**

Table 3-3 Meaning of external panel indicators

Designation		Status	Meaning
External panel unit indicator	Hz	Flash/ON	Frequency unit
	A	ON	Current unit
	V	ON	Voltage unit
	RPM	ON	Speed unit
	%	Flash/ON	Percent unit

● **Basic parameter group setting**

Take F0.122 [acceleration time] setting as an example to illustrate the basic operations of the external LED panel.
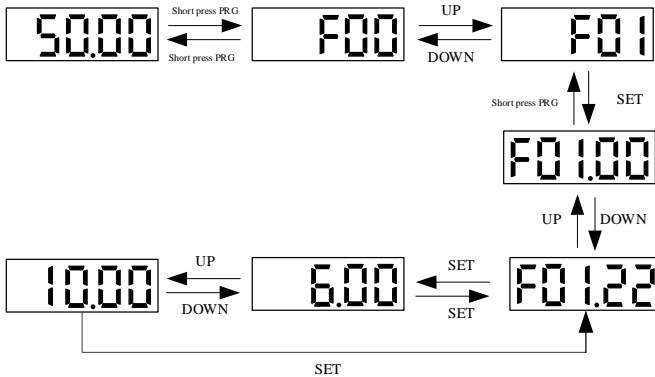
Figure 3- 3 Setting steps

Note: The panel shift key on the external panel can be used to quickly select the tens, hundreds and thousands of parameter values.

● **Operation monitoring status checking**
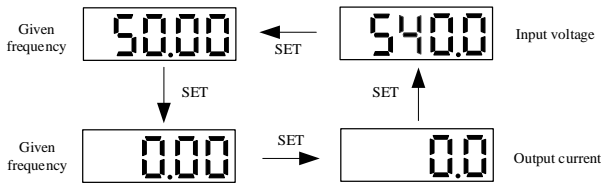
Figure 3- 4 Checking steps

Note: When using the external panel, use the left shift key to cycle switch the first row of monitoring parameters, and use the right shift key to cycle switch the second row of monitoring parameters.

● **Monitoring parameters checking**

Take C02.05[PLC operation phase] parameter checking as an example to explain the basic operation of the external LED panel.
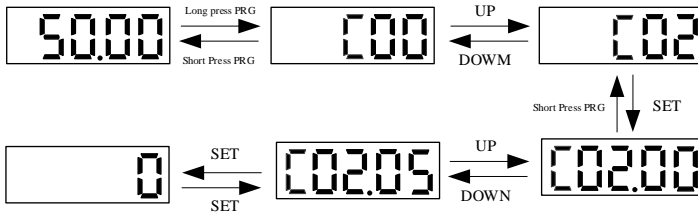
Figure 3- 5 Checking steps

Notes:

● The external panel connected to the RJ45 network port of AC01 product is wired with A+/ B- terminal block to realize 485 communication, the two functions cannot be applied at the same time, please choose one.

● No need to adjust F11.30. Connect the external panel during power off and AC01 will identify it automatically and 485 communication will be invalid. If there is no external panel connected during power off, AC01 will keep RS485 communication valid.

● Communication parameters can be saved after regulation.

● Dedicated panel KBD01-15 can be used together with RS485 on A+ and B- of the terminal block.

Chapter 4 Function List

This section only provides a brief list of functions. For details please refer to the technical manual of AC01 series products or consult relevant staff of VEICHI.

4.1 Safety Precautions

Danger
Note all the information about safety in this book.

Please **Note** that failure to follow these warnings may result in serious injury or even death. We shall not be liable for any personal injury or equipment damage resulting from failure to comply with this manual by users.

4.2 Reading Method of the Parameter List

◆ **Icons and terms under control mode**

Mark	Meaning	Mark	Meaning
V/F	Valid parameters in V/F control mode	**RUN**	Changeable parameters during running
SVC	Valid parameters in open-loop vector control mode	**STOP**	Unchangeable parameters during running
-	-	**READ**	Read-only parameters, unchangeable

4.3 Function Group

Note
Either RS485 or external panel is valid, they are not available at the same time.

◆ **Drive Parameters**

Parameter	Designation	Parameter	Designation
F00.0x	Environment Settings	F07.0x	Start Mode
F00.1x	Common Parameters	F07.1x	Stop Mode
F01.0x	Basic Commands	F07.2x	DC Braking & Speed Tracking
F01.1x	Frequency Commands	F07.3x	Jogging
F01.2x-F01.3x	Acceleration /Deceleration Time	F07.4x	Start/Stop Frequency Keeping& Frequency Jump
F01.4x	PWM Control	F08.0x	Counting and Timing
F02.0x	Motor Basic Parameters & Auto-tuning	F08.1x	Reserved
F02.1x	AM Advanced Parameters	F08.2x	Reserved
F02.2x	PM Advanced Parameters	F08.3x	Swing Frequency
F02.3x-F02.4x	Reserved	F10.0x	Current Protection
F02.5x	Motor Application Parameters	F10.1x	Voltage Protection
F03.0x	ASR (Speed Loop)	F10.2x	Auxiliary Protection
F03.1x	ACR (Current Loop) and Torque Limit	F10.3x	Load Protection
F03.2x	Torque Optimization	F10.4x	Stall Protection
F03.3x	Magnetic Flow Optimization	F10.5x	Fault Recovery & Motor Overload Protection
F03.4x-F03.5x	Torque Control	F11.0x	Panel Operation
F04.0x	V/F Control	F11.1x	Cyclic State Monitoring
F04.1x	User-Defined V/F Curve	F11.2x	Monitoring Parameters
F04.2x	Reserved	F11.3x	Special Panel Functions
F04.3x	V/F ECO Mode	F12.0x	Modbus Slave Parameters
F05.0x	Digital Input Terminal	F12.1x	Modbus Master Parameters
F05.1x	X1-X3 Detection Delay	F13.00-F13.06	PID Setting and Feedback
F05.2x	DI Terminal Operation Mode	F13.07-F13.24	PID Regulation

F05.3x	Reserved	F13.25-F13.28	PID Disconnection Feedback
F05.4x	Analog Input Type	F13.29-F13.33	Sleep Mode
F05.5x	Linear Analog Input	F14.00-F14.14	Multi-segment Speed Frequency
F05.6x	Analog Curve 1	F14.15	PLC Operation Mode
F05.7x	Analog Curve 2	F14.16-F14.30	PLC Operation Time
F05.8x	AS/VS as Digital Input Terminal	F14.31-F14.45	PLC Direction and Acceleration/Deceleration Time
F06.0x	Reserved	F16 group	Reserved
F06.1x	Reserved	C00.xx	Basic Monitoring
F06.2x-F06.3x	Digital/Relay Output	C01.xx	Fault Monitoring
F06.4x	Frequency Detection	C02.xx	Application Monitoring
F06.5x	Monitoring Comparator Output	C03.xx	Reserved
F06.6x-F06.7x	Virtual I/O Terminals	-	-

4.4 F00: Environmental Applications

F00.0x: Environment Setting

Code /Address	Designation	Content	Default (range)	Property
F00.00 (0x0000)	Parameter Access Level	V/F SVC Set the parameter access level according to parameter access limits. 0: Standard parameters (Fxx.yy, Cxx.yy) 1: Common parameters (F00.00, Pxx.yy) 2: Monitoring parameters (F00.00, Cxx.yy) 3: Changed parameters (F00.00, Hxx.yy)	0 (0~3)	RUN
F00.03 (0x0003)	Initialization	V/F SVC Set the initialization mode. 0: No initialization 11: Choose the set value according to purposes (excluding motor parameters) 22: All parameters initialized 33: Clear the failure records	0 (0~33)	STOP
F00.04 (0x0004)	Keyboard Parameters Copy	V/F SVC 0: No function 11: Upload parameters to keyboard 22: Download parameters to the drive	0 (0~30)	STOP
F00.07 (0x0007)	Free Parameter 1	V/F SVC Set the it as the machine number, or mode number for purposes when using multiple machines.	0 (0~65535)	RUN
F00.08 (0x0008)	Free Parameter 2	V/F SVC Set the it as the machine number, or mode number for purposes when using multiple machines.	0 (0~65535)	RUN

F00.10~F00.39: Common Parameters

Code /Address	Designation	Content	Default (range)	Property
F00.1~ F00.39 (0x000A~0 x0027)	Common Parameter Address	V/F SVC LED ones & tens-place: Set the "yy" between 00~99 to the parameter code Fxx.yy. Hundreds & thousands-place: Set the "xx" between 00~31 to the parameter code Fxx.yy.	Up to F00.01 (0000~2999)	RUN

4.5 F01: Basic Setting

F01.0x: Basic Setting

Code /Address	Designation	Content		Default (range)	Property
F01.00 (0x0100)	Motor 1 Control Mode	V/F SVC Set the control method of the motor. Asynchronous motor control mode (AM): 0: AM-V/F: V/F control mode 1: AM-SVC: Open loop vector control, closed loop current control Permanent magnet synchronous motor control mode (PM): 10: PM-V/F: V/F control 11: PM-SVC: Open loop vector control, current closed loop control		0 (0~11)	STOP
F01.01 (0x0101)	Command Source	V/F SVC Set the source for the drive to receive command of operation, stop and direction. 0: Via "Keyboard control (external keyboard priority)." 1: Via terminal; 2: Via RS485 communication; 3: Reserved		1 (0~3)	RUN
F01.02 (0x0102)	Frequency Source A	V/F SVC Set the frequency source for the drive. 0: Keyboard numerical frequency setting 1: Keyboard analog potentiometer setting 2: Current analog input AS setting 3: Voltage analog input VS setting 4: Reserved 5: Reserved;	6: Via RS485 communication; 7: Via UP/DW terminal; 8: Via PID; 9: Via PLC; 10: Reserved; 11: Via multi-segment speed	2 (0~11)	RUN
F01.03 (0x0103)	Frequency Source A Gain	V/F SVC Set the gain of the frequency source A.		100.0 (0.0 %~500.0%)	STOP
F01.04 (0x0104)	Frequency Source B	V/F SVC Set the source of frequency for the drive, the same as [F01.02].		0 (0~11)	RUN
F01.05 (0x0105)	Frequency Source B Gain	V/F SVC Set the gain of the frequency source B.		100.0 (0.0 %~500.0%)	STOP
F01.06 (0x0106)	Source B Reference	V/F SVC Set the reference frequency source for source B. 0: Maximum output frequency 1: Source A		0 (0~1)	RUN
F01.07 (0x0107)	Frequency Source	V/F SVC Set the combination method of frequency source A and B for the drive. 0: Source A 1: Source B 2: Source A + source B 3: Source A- source B 4: Max (A, B) 5: Min (A, B)		0 (0~5)	RUN

Code /Address	Designation	Content		Default (range)	Property
F01.08 (0x0108)	Binding Frequency Source to Command Source	V/F SVC When this parameter is valid, it is used to bind the frequency sources to command sources. LED "0": Bind to panel commands LED "00": Bind to terminal commands LED "000": Bind to communication commands LED "0000": Reserved 0: None; 1: Panel giving frequency; 2: Panel potentiometer giving frequency;	3: AS giving frequency; 4: VS giving frequency; 5: Reserved; 6: Reserved; 7: RS485 giving frequency; 8: UP/DW terminal giving frequency; 9: PID giving frequency ; A: PLC giving frequency; B: Reserved; C: Multi-segment speed giving frequency; D: Reserved	0x0000 (0x0000~0xDDDD)	RUN
F01.09 (0x0109)	Panel Giving Frequency	V/F SVC Set the and modify the frequency set via the panel.		50.00Hz (0.00Hz~ Upper limit)	RUN

F01.1x: Frequency Commands

Code /Address	Designation	Content		Default (range)	Property
F01.10 (0x010A)	Maximum Frequency	V/F SVC Set the maximum frequency for the drive.		50.00Hz (Upper limit~600.00Hz)	STOP
F01.11 (0x010B)	Upper Limit Frequency Source	V/F SVC Select the source of upper limit frequency for the drive 0: Via keyboard ; 1: Via Keyboard potentiometer; 2: Via current analog AS;	3: Via voltage analog VS; 4: Reserved; 5: Reserved; 6: Via RS485 communication; 7: Reserved	0 (0~7)	RUN
F01.12 (0x010C)	Panel Giving Upper Limit Frequency	V/F SVC Set the upper limit frequency value when F01.11 is set 0		0.00Hz (Lower ~Upper limit)	RUN
F01.13 (0x010D)	Lower Limit Frequency	V/F SVC Set the lower limit value of frequency.		0.00Hz (0.00Hz~Upper limit)	RUN
F01.14 (0x010E)	Frequency Command Resolution	V/F SVC Set the resolution of the frequency command. 0: 0.01 Hz; 1: 0. 1Hz; 2: 0.1 rpm; 3: 1 rpm; 4: 10 rpm		0 (0~4)	STOP

F01.2x~F01.3x: Acceleration/Deceleration Time

Code /Address	Designation	Content	Default (range)	Property
F01.20 (0x0114)	Acceleration & Deceleration Time Reference	V/F SVC Set the reference frequency to calculate acceleration and deceleration time 0: Maximum frequency; 1: Fixed frequency of 50Hz; 2: Set the frequency	0 (0~2)	STOP
F01.21 (0x0115)	Acceleration Time Unit	V/F SVC Set the unit of the acceleration time. 0: 1s; 1: 0.1s; 2: 0.00s	2 (0~2)	STOP
F01.22 (0x0116)	Acceleration Time 1	V/F SVC Set the time required to accelerate the output frequency from 0.00Hz 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)	Deceleration Time 1	V/F SVC Set the time required for the output frequency to decelerate from reference frequency to 0.00Hz.	Up to model (0.01s~650.00s)	RUN
F01.24 (0x0118)	Acceleration Time 2	V/F SVC Set the time required to accelerate the output frequency from 0.00Hz to the reference frequency.	Up to model (0.01s~650.00s)	RUN
F01.25 (0x0119)	Deceleration Time 2	V/F SVC Set the time required for the output frequency to decelerate from reference frequency to 0.00Hz	Up to model (0.01s~650.00s)	RUN
F01.26 (0x011A)	Acceleration Time 3	V/F SVC Set the time required to accelerate the output frequency from 0.00Hz to the reference frequency	Up to model (0.01s~650.00s)	RUN
F01.27 (0x011B)	Deceleration Time 3	V/F SVC Set the time required for the output frequency to decelerate from reference frequency to 0.00Hz	Up to model (0.01s~650.00s)	RUN
F01.28 (0x011C)	Acceleration Time 4	V/F SVC Set the time required to accelerate the output frequency from 0.00Hz to the reference frequency	Up to model (0.01s~650.00s)	RUN
F01.29 (0x011D)	Deceleration Time 4	V/F SVC Set the time required for the output frequency to decelerate from reference frequency to 0.00Hz	Up to model (0.01s~650.00s)	RUN
F01.30 (0x011E)	S-Curve Acceleration & Deceleration Selection	V/F SVC Set the whether the S-curve acceleration & deceleration selection is valid 0: Invalid; 1: Valid; 2: Smoother S-curve	1 (0~2)	STOP
F01.31 (0x011F)	S-Curve Acceleration Start Time	V/F SVC Set the start time of acceleration for S-curve.	0.20s (0.00s~10.00s)	STOP
F01.32 (0x0120)	S-Curve Acceleration End Time	V/F SVC Set the end time of acceleration for S-curve.	0.20s (0.00s~10.00s)	STOP
F01.33 (0x0121)	S-Curve Deceleration Start Time	V/F SVC Set the start time of deceleration for S-curve.	0.20s (0.00s~10.00s)	STOP
F01.34 (0x0122)	S-Curve Deceleration End Time	V/F SVC Set the end time of deceleration for S-curve.	0.20s (0.00s~10.00s)	STOP
F01.35 (0x0123)	Switch Frequency between Acceleration Time 1 & 2	V/F SVC Set the frequency switch between acceleration time 1 & 2.	0.00Hz (0.00Hz~ Upper limit)	RUN

F01.4x: PWM Control

Code /Address	Designation	Content		Default(range)	Property
F01.40 (0x0128)	Carrier Frequency	V/F SVC Set the carrier frequency.		Up to model (2.0kHz~12.0kHz)	RUN
F01.41 (0x0129)	PWM Control Mode	V/F SVC LED "0": Relationship between carrier and temperature 0: Irrelevant 1: Relevant LED "00": Relationship between carrier and output frequency 0: Irrelevant 1: Relevant	LED "000": Random PWM enable 0: Forbidden 1: Valid under V/F mode 2: Valid under vector mode LED "0000": PWM modulation mode 0: Three-phase only 1: Automatic switching between two-phase &three-phase	1111 (0000~1211)	RUN
F01.43 (0x012B)	Deadband Compensated Gain	V/F SVC Compensated gain of dead zone		306 (0~512)	RUN
F01.45 (0x012D)	Bootstrapping Time	V/F SVC Set the bootstrapping time.		50 (0ms～60000ms)	STOP
F01.46 (0x012E)	PWM Random Depth	V/F SVC When the PWM random depth is effective, the larger it is set, the larger the carrier fluctuation will be.		0 (0~20)	RUN

4.6 F02: Parameter of Motor 1

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

Code /Address	Designation	Content	Default (range)	Property
F02.00 (0x0200)	Motor Type	V/F SVC Set the type of motor. 0: Asynchronous motor (AM) 1: Permanent magnet synchronous motor control mode (PM)	0 (0~1)	READ
F02.01 (0x0201)	Pole Number	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 motor.	Up to model (0.1kW~22.0kW)	STOP
F02.03 (0x0203)	Rated Frequency	V/F SVC Set the rated frequency of motor.	Up to model (0.01 Hz~ Max frequency)	STOP
F02.04 (0x0204)	Rated Speed	V/F SVC Set the rated speed of motor.	Up to model (0rpm~65000rpm)	STOP
F02.05 (0x0205)	Rated Voltage	V/F SVC Set the rated voltage of motor.	Up to model (0V~2000V)	STOP
F02.06 (0x0206)	Rated Current	V/F SVC Set the rated current of motor.	Up to model (0.1A~3000.0A)	STOP

Code /Address	Designation	Content	Default (range)	Property
F02.07 (0x0207)	Auto-Tuning	V/F SVC [F02.07] will automatically be set to "0" after the parameter auto-tuning is finished. 1: Rotary self-learning 2: Static self-learning 3: Stator resistance self-learning	0 (0~3)	STOP

Note: When F02.00[Motor Type] is a synchronous motor, F2.04[Rated Speed] is calculated from F2.01[Pole Number] and F2.03[Rated Frequency], please set the corresponding parameters correctly. The calculation formula is: F2.04[Rated Speed] = 60* F2.03[Rated Frequency]/(F2.01[Pole Number]/2)

F02.1x: AM Advanced parameters

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

F02.2x: PM Advanced Parameters

Code /Address	Designation	Content	Default (range)	Property
F02.20 (0x0214)	Stator Resistance	V/F SVC Set the stator resistance of synchronous motor.	Up to model (0.01mΩ~60000.00mΩ)	STOP
F02.21 (0x0215)	D-Axis Inductance	V/F SVC Set the d-axis inductance of synchronous motor.	Up to model (0.001mH~6553.500mH)	STOP
F02.22 (0x0216)	Q-Axis Inductance	V/F SVC Set the q-axis inductance of synchronous motor.	Up to model (0.001mH~6553.500mH)	STOP

Code /Address	Designation	Content	Default (range)	Property
F02.23 (0x0217)	Counter Electromotive Force	V/F SVC Set the counter electromotive force of synchronous motor. Only recognized during dynamic auto-tuning.	Up to model (0V~500V)	STOP
F02.24 (0x0218)	Encoder Mounting Angle	V/F SVC Set the encoder mounting angle of synchronous motor.	Up to model (0.0°~360.0°)	RUN
F02.25 (0x0219)	Per-Unit Stator Resistance	V/F SVC Set the stator resistance per-unit value of synchronous motor.	Up to model (monitored value)	READ
F02.26 (0x021A)	Per-Unit D-Axis Inductance	V/F SVC Set the d-axis inductance per-unit value of synchronous motor.	Up to model (monitored value)	READ
F02.27 (0x021B)	Per-Unit Q-Axis Inductance	V/F SVC Set the q-axis inductance per-unit value of synchronous motor.	Up to model (monitored value)	READ
F02.28 (0x021C)	Pulse Width Coefficient	V/F SVC Set the pulse width coefficient of synchronous motor.	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. This parameter is read-only.	0x0000 (0x0000~0x2222)	READ

F02.3x~F02.4x: Reserved

F02.5x~F02.6x: Motor Application Parameters

Code /Address	Designation	Content	Default (range)	Property
F02.50 (0x0232)	Stator Resistor Auto-tuning	V/F SVC 0: Invalid; 1: Start without update; > 1: Start and update;	0 (0~3)	STOP
F02.51 (0x0233)	Stator Resistance Auto-tuning Factor 1	V/F SVC Set the stator resistance auto-tuning factor 1.	0 (0~1000)	RUN
F02.52 (0x0234)	Stator Resistance Auto-tuning Factor 2	V/F SVC Set the stator resistance auto-tuning factor 2.	0 (-20.00%~20.00%)	RUN
F02.53 (0x0235)	Stator Resistance Auto-tuning Factor 3	V/F SVC Set the stator resistance auto-tuning factor 3.	0 (0~65535)	RUN
F02.60 (0x023C)	PM Magnetic Pole Search	V/F SVC LED "0": Reserved LED "00": Open loop vector 0: OFF; 1: ON; 2: ON but only the first power-on operation; LED "000": V/F 0: OFF; 1: ON; 2: ON, but only the first power-on operation	0010 (0000~3223)	STOP
F02.61 (0x023D)	Magnetic Pole Search Current	V/F SVC Set the current value of magnetic pole search.	0.0% (0.0%~6553.5%)	STOP

4.7 F03: Vector Control

F03.0x: ASR (Speed Loop)

Code /Address	Designation	Content	Default (range)	Property
F03.00 (0x0300)	Stiffness Level	SVC Set the speed stiffness level. The higher the level, the better the speed stiffness.	32 (1~128)	RUN
F03.01 (0x0301)	Stiffness Mode	SVC Set the ASR speed stiffness mode.	0x0000 (0x0000~0x1111)	RUN
F03.02 (0x0302)	Proportional Gain 1	SVC Set the ASR (speed loop) proportional gain 1.	10.00 (0.01~100.00)	RUN
F03.03 (0x0303)	Integral Time1	SVC Set the ASR (speed loop) integral time1.	0.100s (0.000 s~6.000 s)	RUN
F03.04 (0x0304)	Filter Time 1	SVC Set the ASR (speed loop) filter time 1.	0.0ms (0.0ms~100.0ms)	RUN
F03.05 (0x0305)	Switching Frequency 1	SVC Set the ASR (speed loop) switching frequency 1.	0.00Hz (0.00Hz~ Max frequency)	RUN
F03.06 (0x0306)	Proportional Gain 2	SVC Set the ASR (speed loop) proportional gain 2.	10.00 (0.01~100.00)	RUN
F03.07 (0x0307)	Integral Time 2	SVC Set the ASR (speed loop) integral time 2.	0.100s (0.000s~6.000s)	RUN
F03.08 (0x0308)	Filter Time 2	SVC Set the ASR (speed loop) filter time 2.	0.0ms (0.0ms~100.0ms)	RUN
F03.09 (0x0309)	Switching Frequency 2	SVC Set the ASR (speed loop) switching frequency 2.	0.00Hz (0.00Hz~ Max frequency)	RUN

F03.1x: ACR(Current Loop) & Torque Limit

Code /Address	Designation	Content	Default (range)	Property
F03.10 (0x030A)	D-Axis Proportional Gain	SVC Set the d-axis proportional gain of current loop.	1.000 (0.001~4.000)	RUN
F03.11 (0x030B)	D-Axis Integral Gain	SVC Set the d-axis integral gain of current loop.	1.000 (0.001~4.000)	RUN
F03.12 (0x030C)	Q-Axis Proportional Gain	SVC Set the q-axis proportional gain of current loop.	1.000 (0.001~4.000)	RUN
F03.13 (0x030D)	Q-Axis Integral Gain	SVC Set the q-axis integral gain of current loop.	1.000 (0.001~4.000)	RUN
F03.15 (0x030F)	Torque Limit of Motoring	SVC Set the torque limit of motoring.	250.0% (0.0%~400.0%)	RUN
F03.16 (0x0310)	Torque Limit of Generating	SVC Set the torque limit of power generation.	250.0% (0.0%~400.0%)	RUN
F03.17 (0x0311)	Regenerative Torque Limit at Low Speed	SVC Set the regenerative torque limit at low speed.	0.0% (0.0%~400.0%)	RUN
F03.18 (0x0312)	LS Frequency under Torque Control	SVC Set the frequency range limited by torque at low speed.	6.00Hz (0.00Hz~30.00Hz)	RUN
F03.19 (0x0313)	Torque Limit	SVC LED "0": Torque limit source under motoring 0: Via keyboard ; 1: Via keyboard potentiometer; 2: Via AS; 3: Via VS;	0x0000 (0x0000~0x0177)	RUN

		4: Reserved; 5: Reserved; 6: Via RS485 communication (0x3014) 7: Reserved; LED "00": Torque limit source under power generation 0: Via panel; 1: Via keyboard potentiometer; 2: Via AS; 3: Via VS; 4: Reserved; 5: Reserved; 6: Via RS485 communication(0x3014); 7: Reserved; LED "000"0: C00.06 displays torque limit of motoring 1: C00.06 displays torque limit of power generation LED "0000": Reserved		

F03.2x: Torque Optimization

Code /Address	Designation	Content	Default (range)	Property
F03.20 (0x0314)	PM LF Injection Current	SVC When the open-loop control of PM motor is valid, and the greater injection current, the greater the torque output.	20.0% (0.0%~50.0%)	RUN
F03.21 (0x0315)	PM HF Injection Current	SVC When the open-loop control of PM motor is valid, and the greater injection current, the greater the torque output.	10.0% (0.0%~50.0%)	RUN
F03.22 (0x0316)	PM Injection Current Frequency	SVC 100.0% of F01.10[Max. Frequency].	10.0% (0.0%~100.0%)	RUN
F03.23 (0x0317)	Vector Slip Compensation	SVC Set the slip compensation of asynchronous motor under vector control.	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

F03.3x: Magnetic Flow Optimization

Code /Address	Designation	Content	Default (range)	Property
F03.30 (0x031E)	Feed forward Coefficient of Weak Magnetism	SVC Set the feed forward coefficient of weak magnetism.	10.0% (0.0%~500.0%)	RUN
F03.31 (0x031F)	Magnetic Weakening Control Gain	SVC Set the magnetic weakening control gain.	10.0% (0.0%~500.0%)	RUN
F03.32 (0x0320)	Upper Limit Magnetic Weakening Current	SVC Set the upper limit magnetic weakening current.	60.0% (0.0%~250.0%)	RUN
F03.33 (0x0321)	Magnetic Weakening Voltage Coefficient	SVC Set the magnetic weakening voltage coefficient	90.0% (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)	Over-Excitation Braking Gain	SVC Set the over-excitation braking gain.	100.0% (0.0%~500.0%)	RUN
F03.36 (0x0324)	Over-Excitation Braking Range	SVC Set the over-excitation brake range.	100.0% (0.0%~250.0%)	RUN

Code /Address	Designation	Content		Default (range)	Property
F03.37 (0x0325)	ECO Mode	SVC 0: OFF; 1: ON		0 (0~1)	RUN
F03.38 (0x0326)	Lower Limit Excitation of ECO Mode	SVC Set the lower limit excitation of energy-saving operation.		50.0% (0.0%~80.0%)	RUN
F03.39 (0x0327)	Filter Coefficient of ECO Mode	SVC Set the filter coefficient of energy-saving operation.		0.010s (0.000s~6.000s)	RUN

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

Code /Address	Designation	Content		Default (range)	Property
F03.40 (0x0328)	Torque Control	SVC 0: Speed control mode to limit torque 1: Torque control mode to limit speed		0 (0~1)	RUN
F03.41 (0x0329)	Torque Command Source	SVC LED "0" Source A: 0: Via keyboard ; 1: Via keyboard potentiometer (external single-line keypad for option); 2: Via AS; 3: Via VS; 4: Reserved; 5: Reserved; 6: Via RS485 communication; 7: Reserved; 8: Reserved; 9: Reserved;	LED "00": Source B: the same with source A LED "000": Combinations: 0: Source A 1: Source B 2: A+B 3: A-B 4: MIN (A, B) 5: MAX (A, B)	0000 (0000~0599)	RUN
F03.42 (0x032A)	Torque keyboard numerical setting	SVC Set the torque via the keyboard.		0.0% (0.0%~100.0%)	RUN
F03.43 (0x032B)	Lower Limit Torque	SVC Set the lower limit value of torque input.		0.00% (0.00%~100.00%)	RUN
F03.44 (0x032C)	Lower Limit Torque Percentage	SVC Set the corresponding lower limit percentage value.		0.00% (-250.00%~300.00%)	RUN
F03.45 (0x032D)	Upper Limit Torque	SVC Set the upper limit value of torque input.		100.00% (0.00%~100.00%)	RUN
F03.46 (0x032E)	Upper Limit Torque Percentage	SVC Set the corresponding upper limit percentage value.		100.00% (-250.00%~300.00%)	RUN
F03.47 (0x032F)	Torque Filter Time	SVC Set the filter time of torque.		0.100s (0.000s~6.000s)	RUN
F03.52 (0x0334)	Torque Output Upper Limit	SVC Set the upper limit of output torque under torque control.		150.0% (0.0%~300.0%)	RUN
F03.53 (0x0335)	Torque Output Lower Limit	SVC Set the lower limit of output torque under torque control.		0.0% (0.0%~300.0%)	RUN
F03.54 (0x0336)	Torque Controlled FWD Speed Limit	SVC 0: Set the via code F03.56; 1: Value from external keypad potentiometer×F03.56; 2: AS×F03.56; 3: VS×F03.56; 4: Reserved; 5: Reserved; 6: Value from RS485 communication port×F03.56; 7: Reserved; 8: Reserved;		0 (0~8)	RUN

Code /Address	Designation	Content	Default (range)	Property
F03.55 (0x0337)	Torque Controlled REV Speed Limit	SVC 0: Set the via code F03.57; 1: Value from external keypad potentiometer×F03.57; 2: AS×F03.57; 3: VS×F03.57; 4: Reserved; 5: Reserved; 6: Value from RS485 communication port×F03.57; 7: Reserved; 8: Reserved;	0 (0~8)	RUN
F03.56 (0x0338)	Torque Controlled Max. FWD Speed	SVC Set the maximum forward speed under torque control.	100.0% (0.0%~100.0%)	RUN
F03.57 (0x0339)	Torque Controlled Max. REV Speed	SVC Set the maximum reverse speed under torque control.	100.0% (0.0%~100.0%)	RUN
F03.58 (0x033A)	Torque Gain Switching Frequency	SVC Set the switching frequency for the torque gain.	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	Designation	Content	Default (range)	Property
F04.00 (0x0400)	Linear V/F Curve	V/F Select the type of V/F curve to meet the requirements of different load characteristics. 0: Straight V/F curve; 1-9: V/F curves to the powers of 1.1 to 1.9; 10: V/F curve squared; 11: Self-defined 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 boost	Up to model (0.0%~30.0%)	RUN
F04.02 (0x0402)	Torque Boost Cut-off Frequency	V/F Set the effective range of the torque boost so when the output frequency exceeds this value, the torque boost will be cut off.	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 Limit	V/F Set the slip compensation limit	100.0% (0.0%~300.0%)	RUN
F04.05 (0x0405)	Slip Compensation Filter Time	V/F The slip compensation function requires correct input of parameters on the motor nameplate to start parameter auto-tuning and then deliver the best performance.	0.200s (0.000s~6.000s)	RUN
F04.06 (0x0406)	Oscillation Suppression Gain	V/F By adjusting this value, the low frequency resonance can be suppressed, but if it's too large, additional stability problems will further occur.	100.0% (0.0%~900.0%)	RUN
F04.07 (0x0407)	Oscillation Suppression Filter Time	V/F Set the oscillation suppression 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: User-defined V/F Curve

Code /Address	Designation	Content	Default (range)	Property
F04.10 (0x040A)	Voltage V1	V/F Set the value of self-defined voltage V1.	3.0% (0.0%~100.0%)	STOP
F04.11 (0x040B)	Frequency F1	V/F Set the value of self-defined frequency F1.	1.00Hz (0.00Hz~ Max. frequency)	STOP
F04.12 (0x040C)	Voltage V2	V/F Set the value of self-defined voltage V2.	28.0% (0.0%~100.0%)	STOP
F04.13 (0x040D)	Frequency F2	V/F Set the value of self-defined frequency F2.	10.00Hz (0.00Hz~ Max. frequency)	STOP
F04.14 (0x040E)	Voltage V3	V/F Set the value of self-defined voltage V3.	55.0% (0.0%~100.0%)	STOP
F04.15 (0x040F)	Frequency F3	V/F Set the value of self-defined frequency F3.	25.00Hz (0.00Hz~ Max. frequency)	STOP
F04.16 (0x0410)	Voltage V4	V/F Set the value of self-defined voltage V4.	78.0% (0.0%~100.0%)	STOP
F04.17 (0x0411)	Frequency F4	V/F Set the value of self-defined frequency F4.	37.50Hz (0.00Hz~ Max. frequency)	STOP
F04.18 (0x0412)	Voltage V5	V/F Set the value of self-defined voltage V5.	100.0% (0.0%~100.0%)	STOP
F04.19 (0x0413)	Frequency F5	V/F Set the value of self-defined frequency F5.	50.00Hz (0.00Hz~ Max. frequency)	STOP

F04.2x: Reserved

F04.3x: V/F ECO Mode

Code /Address	Designation	Content	Default (range)	Property
F04.30 (0x041E)	Automatic ECO Control	V/F 0: OFF 1: ON	0 (0~1)	STOP
F04.31 (0x041F)	Lower Limit Frequency	V/F Set the lower frequency limit for energy saving.	15.0Hz (0.0Hz~50.0Hz)	STOP
F04.32 (0x0420)	Lower Limit Voltage	V/F Set the lower voltage limit for energy saving.	50.0% (20.0%~100.0%)	STOP
F04.33 (0x0421)	Voltage Regulation Rate	V/F Set the voltage regulation rate for energy saving.	0.010V/ms (0.000V/ms~0.200V/ms)	RUN
F04.34 (0x0422)	Voltage Recovery Rate	V/F Set the voltage recovery rate for energy saving.	0.200V/ms (0.000V/ms~2.000V/ms)	RUN

4.9 F05: Input Terminal

F05.0x: DI Terminal

Code /Address	Designation	Content	Default (range)	Property
F05.00 (0x0500)	X1 Function	V/F SVC See the functions of terminal X for details	1 (0~95)	STOP

Code /Address	Designation	Content	Default (range)	Property
F05.01 (0x0501)	X2 Function	V/F SVC See the functions of terminal X for details	2 (0~95)	STOP
F05.02 (0x0502)	X3 Function	V/F SVC See the functions of terminal X for details	4 (0~95)	STOP

F05.1x: X1~X3 Detection Delay

Code /Address	Designation	Content	Default (range)	Property
F05.10 (0x050A)	X1 ON Detection Delay	V/F SVC Set the delay time of terminal X1 from the invalid state to the valid state.	0.010s (0.000s~6.000s)	RUN
F05.11 (0x050B)	X1 OFF Detection Delay	V/F SVC Set the delay time of terminal X1 from the valid state to the invalid state.	0.010s (0.000s~6.000s)	RUN
F05.12 (0x050C)	X2 ON Detection Delay	V/F SVC Set the delay time of terminal X2 from the invalid state to the valid state.	0.010s (0.000s~6.000s)	RUN
F05.13 (0x050D)	X2 OFF Detection Delay	V/F SVC Set the delay time of terminal X2 from the valid state to the invalid state.	0.010s (0.000s~6.000s)	RUN
F05.14 (0x050E)	X3 ON Detection Delay	V/F SVC Set the delay time of terminal X3 from the invalid state to the valid state.	0.010s (0.000s~6.000s)	RUN
F05.15 (0x050F)	X3 OFF Detection Delay	V/F SVC Set the delay time of terminal X3 from the valid state to the invalid state.	0.010s (0.000s~6.000s)	RUN

F05.2x: DI Terminal Operation Mode

Code /Address	Designation	Content	Default (range)	Property
F05.20 (0x0514)	Terminal Control Mode	V/F SVC 0: Two-wire system 1; 1: Two-wire system 2; 2: Three-wire system 1; 3: Three-wire system 2	0 (0~3)	STOP
F05.22 (0x0516)	X1~X3 Terminal Characteristic	V/F SVC 0: Valid when closed 1: Valid when open LED "0": X1 terminal LED "00": X2 terminal LED "000": X3 terminal LED "0000": Reserved	0000 (0000~1111)	RUN
F05.25 (0x0519)	UP/DW Frequency Mode	V/F SVC 0: Save the frequency during power cut; 1: Don't save the frequency during power cut; 2: Adjustable in operation and clear all at stop	0 (0~2)	STOP
F05.26 (0x051A)	UP/DW Controlled Frequency Regulation Rate	V/F SVC Set the increase & decrease rate of frequency under UP/DW terminal control.	0.50Hz/s (0.01Hz/s~50.00Hz/s)	RUN
F05.27 (0x051B)	Terminal Controlled Emergency Stop Deceleration Time	V/F SVC Set the emergency stop deceleration time when controlled by the terminal.	1.00s (0.01s~650.00s)	RUN

F05.3x: Reserved

F05.4x: Analog Input Type

Code /Address	Designation	Content		Default (range)	Property
F05.43 (0x052B)	AI Curve	V/F SVC 0: Straight line (default) 1: Curve 1 2: Curve 2	LED "0": AS LED "00": VS LED "000": Reserved LED "0000": Reserved	0000 (0000~2222)	RUN

F05.5x: Liner Analog Input

Code /Address	Designation	Content	Default (range)	Property
F05.50 (0x0532)	AS Lower Limit	V/F SVC Define the signal received by the AS terminal, and the voltage signal below this value is processed as the lower limit.	0.0% (0.0%~100.0%)	RUN
F05.51 (0x0533)	AS Lower Limit Percentage	V/F SVC Set the percentage for the set AS lower limit value.	0.00% (-100.00%~100.00%)	RUN
F05.52 (0x0534)	AS Upper Limit	V/F SVC Define the signal received by the AS terminal, and the voltage signal above this value is processed as the upper limit.	100.0% (0.0%~100.0%)	RUN
F05.53 (0x0535)	AS Upper Limit Percentage	V/F SVC Set the percentage for the set AS upper limit value.	100.00% (0.00%~100.00%)	RUN
F05.54 (0x0536)	AS Filter Time	V/F SVC Define the size of the AS circuit analog signal filtering to eliminate interference signals.	0.100s (0.000s~6.000s)	RUN
F05.55 (0x0537)	VS Lower limit	V/F SVC Define the signal received by the VS terminal, and the voltage signal below this value is processed as the lower limit.	0.0% (0.0%~100.0%)	RUN
F05.56 (0x0538)	VS Lower Limit Percentage	V/F SVC Set the percentage for the set VS lower limit value.	0.00% (-100.00%~100.00%)	RUN
F05.57 (0x0539)	VS Upper Limit	V/F SVC Define the signal received by the VS terminal, and the voltage signal above this value is processed as the upper limit.	100.0% (0.0%~100.0%)	RUN
F05.58 (0x053A)	VS Upper Limit Percentage	V/F SVC Set the percentage for the set AS upper limit value.	100.00% (0.00%~100.00%)	RUN
F05.59 (0x053B)	VS Filter Time	V/F SVC Define the size of the VS circuit analog signal filtering to eliminate interference signals.	0.100s (0.000s~6.000s)	RUN

F05.6x: Analog Curve 1

Code /Address	Designation	Content	Default (range)	Property
F05.60 (0x053C)	Lower Limit	V/F SVC Set the lower limit value for curve 1.	0.0% (0.0%~100.0%)	RUN
F05.61 (0x053D)	Lower Limit Percentage	V/F SVC Set the percentage of lower limit value for curve 1.	0.00% (-100.00%~100.00%)	RUN
F05.62 (0x053E)	Inflection Point 1	V/F SVC Set the input voltage on inflection point 1 of curve-1.	30.0% (0.0%~100.0%)	RUN
F05.63 (0x053F)	Inflection Point 1 Percentage	V/F SVC Set the percentage of input voltage on inflection point 1 of curve 1.	30.00% (-100.00%~100.00%)	RUN
F05.64 (0x0540)	Inflection Point 2	V/F SVC Set the input voltage on inflection point 2 of curve 1.	60.0% (0.0%~100.0%)	RUN

Code /Address	Designation	Content	Default (range)	Property
F05.65 (0x0541)	Inflection Point 2 Percentage	V/F SVC Set the percentage of input voltage on inflection point 2 of curve 1.	60.00% (-100.00%~100.00%)	RUN
F05.66 (0x0542)	Upper Limit	V/F SVC Set the upper value for curve 1.	100.0% (0.0%~100.0%)	RUN
F05.67 (0x0543)	Upper Limit Percentage	V/F SVC Set the percentage of upper limit value for curve 1.	100.00% (-100.00%~100.00%)	RUN

F05.7x: Analog Curve 2

Code /Address	Designation	Content	Default (range)	Property
F05.70 (0x0546)	Lower Limit	V/F SVC Set the lower limit value for curve 2.	0.0% (0.0%~100.0%)	RUN
F05.71 (0x0547)	Lower Limit Percentage	V/F SVC Set the percentage of lower limit value for curve 2.	0.00% (-100.00%~100.00%)	RUN
F05.72 (0x0548)	Inflection Point 1	V/F SVC Set the input voltage on inflection point 1 of curve 2.	30.0% (0.0%~100.0%)	RUN
F05.73 (0x0549)	Inflection Point 1 Percentage	V/F SVC Set the percentage of input voltage on inflection point 1 of curve 2.	30.00% (-100.00%~100.00%)	RUN
F05.74 (0x054A)	Inflection Point 2	V/F SVC Set the input voltage on inflection point 2 of curve 2.	60.0% (0.0%~100.0%)	RUN
F05.75 (0x054B)	Inflection Point 2 Percentage	V/F SVC Set the percentage of input voltage on inflection point 2 of curve 2.	60.00% (-100.00%~100.00%)	RUN
F05.76 (0x054C)	Upper Limit	V/F SVC Set the upper value for curve 2.	100.0% (0.0%~100.0%)	RUN
F05.77 (0x054D)	Upper Limit Percentage	V/F SVC Set the percentage of upper limit value for curve 2.	100.00% (-100.00%~100.00%)	RUN

F05.8x: AS/VS as Digital Input Terminal

Code /Address	Designation	Content		Default (range)	Property
F05.80 (0x0550)	Characteristic	V/F SVC 0: Valid at low level 1: Valid at high level LED "0": AS	LED "00": VS LED "000": Reserved LED "0000": Reserved	0000 (0000~1111)	RUN
F05.81 (0x0551)	AS as Digital input	V/F SVC See X terminal functions for details.		0 (0~95)	RUN
F05.82 (0x0552)	AS High Level	V/F SVC It's high level when AS setting is greater than this value.		70.00% (0.00%~100.00%)	RUN
F05.83 (0x0553)	AS Low Level	V/F SVC It's low level when AS input setting is smaller than this value.		30.00% (0.00%~100.00%)	RUN
F05.84 (0x0554)	VS as Digital input	V/F SVC See X terminal functions for details.		0 (0~95)	RUN
F05.85 (0x0555)	VS High Level	V/F SVC It's high level when VS setting is greater than this value.		70.00% (0.00%~100.00%)	RUN
F05.86 (0x0556)	VS Low Level	V/F SVC It's low level when VS input setting is smaller than this value.		30.00% (0.00%~100.00%)	RUN

4.10 F06: Output Terminal

F06.0x: Reserved

F06.1x: Reserved

F06.2x~F06.3x: Digital/Relay Output

Code /Address	Designation	Content		Default (range)	Property
F06.20 (0x0614)	Polarity	V/F SVC 0: Positive 1: Negative LED "0": Y terminal	LED "00": Relay output terminal LED "000": Reserved LED "0000": Reserved	0000 (0000~1111)	RUN
F06.21 (0x0615)	Terminal Y Function	V/F SVC See Y terminal functions for details.		1 (0~63)	RUN
F06.22 (0x0616)	Relay Function	V/F SVC See Y terminal functions for details.		4 (0~63)	RUN
F06.25 (0x0619)	Y ON Delay	V/F SVC Set the delay time when Y terminal starts output.		0.010s (0.000s~60.000s)	RUN
F06.26 (0x061A)	Relay ON Delay	V/F SVC Set the delay time when relay starts output.		0.010s (0.000s~60.000s)	RUN
F06.29 (0x061D)	Y OFF Delay	V/F SVC Set the delay time when Y terminal stops output.		0.010s (0.000s~60.000s)	RUN
F06.30 (0x061E)	Relay OFF Delay	V/F SVC Set the delay time when relay stops output.		0.010s (0.000s~60.000s)	RUN

F06.4x: Frequency Detection

Code /Address	Designation	Content	Default (range)	Property
F06.40 (0x0628)	Frequency Detection 1	V/F SVC Set the frequency detection value 1.	2.00Hz (0.00Hz~Max. frequency)	RUN
F06.41 (0x0629)	Frequency Detection Range 1	V/F SVC Set the frequency detection range 1.	1.00Hz (0.00Hz~ Max. frequency)	RUN
F06.42 (0x062A)	Frequency Detection 2	V/F SVC Set the frequency detection value 2.	2.00Hz (0.00Hz~ Max. frequency)	RUN
F06.43 (0x062B)	Frequency Detection Range 2	V/F SVC Set the frequency detection range 2.	1.00Hz (0.00Hz~ Max. frequency)	RUN
F06.44 (0x062C)	Given Frequency Arrival Range	V/F SVC Set the detection range to tell if the set frequency is reached.	2.00Hz (0.00Hz~ Max. frequency)	RUN

F06.5x: Monitoring Comparator Output

Code /Address	Designation	Content	Default (range)	Property
F06.50 (0x0632)	Comparator 1 Monitoring Selection	V/F SVC LED "0"-& LED "00": Set the "yy" between 00~63 to monitoring parameter "Cxx.yy"; LED "000"-&LED "0000": Set the "xx" between 00~07 to monitoring parameter "Cxx.yy";	0001 (0000~0763)	RUN
F06.51 (0x0633)	Upper Limit of Comparator 1	V/F SVC Set the upper limit value of comparator 1.	(Up to F06.50)	RUN
F06.52 (0x0634)	Lower Limit of Comparator 1	V/F SVC Set the lower limit value of comparator 1.	(Up to F06.50)	RUN
F06.53 (0x0635)	Comparator 1 Bias	V/F SVC Set the comparator 1 bias.	(Up to F06.50)	RUN
F06.54 (0x0636)	Comparator 1 Mode	V/F SVC 0: Keep operation(DO terminal only) 1: Report warning and stop freely 2: Report warning and keep operation 3: Forced stop	0 (0~3)	RUN
F06.55 (0x0637)	Comparator 2 Monitoring Selection	V/F SVC LED "0"-& LED "00": Set the "yy" between 00~63 to monitoring parameter "Cxx.yy"; LED "000"-&LED "0000": Set the "xx" between 00~07 to monitoring parameter "Cxx.yy";	0002 (0000~0763)	RUN
F06.56 (0x0638)	Upper Limit of Comparator 2	V/F SVC Set the upper limit value of comparator 2.	(up to F06.55)	RUN
F06.57 (0x0639)	Lower Limit of Comparator 2	V/F SVC Set the lower limit value of comparator 2.	(up to F06.55)	RUN
F06.58 (0x063A)	Comparator 2 Bias	V/F SVC Set the comparator 2 bias.	(up to F06.55)	RUN
F06.59 (0x063B)	Comparator 2 Mode	V/F SVC 0: Keep operation(DO terminal only) 1: Report warning and stop freely 2: Report warning and keep operation 3: Forced stop	0 (0~3)	RUN

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

Code /Address	Designation	Content		Default (range)	Property
F06.60(0x063C) ~ F06.63(0x063F)	Vx1~Vx4 Function	V/F SVC See X terminal functions for details.		0 (0~95)	STOP
F06.64 (0x0640)	Vx Terminal ON Source	V/F SVC 0: Interconnect with the virtual vYn terminal; 1: Connect to the physical terminal Xn 2: Function code setting	LED "0": VX1 LED "00": VX2 LED "000": VX3 LED "0000": VX4	0000 (0000~0222)	RUN
F06.65 (0x0641)	Vx Terminal ON by Function Code Setting	V/F SVC 0: Invalid; 1: Valid; LED "0": VX1	LED "00": VX2 LED "000": VX3 LED "0000": VX4	0000 (0000~0111)	RUN
F06.66(0x0642) ~ F06.69(0x0645)	Vy1~Vy4 Function	V/F SVC See Y terminal functions for details.		0 (0~63)	RUN
F06.70(0x0646) ~ F06.73(0x0649)	Vy1~Vy4 ON Delay	V/F SVC Set the delay time when vY1~vY4starts output.		0.010s (0.000s~60.000s)	RUN

| F06.74(0x064A) ~ F06.77(0x064D) | Vy1~Vy4 OFF Delay | V/F   SVC
Set the delay time when vY1~vY4stops output. | 0.010s
(0.000s~60.000s) | RUN |

4.11 F07: Operation Control

F07.0x: Start Control

Code /Address	Designation	Content	Default (range)	Property
F07.00 (0x0700)	Start Mode	V/F SVC 0: Started by the starting frequency 1: DC braking before starting at the set starting frequency 2: Speed tracking and direction identification and then start	0 (0~2)	STOP
F07.01 (0x0701)	Pre-Excitation Time	V/F SVC Only AM SVC supports pre-excitation, so ignore this code on other motors.	0.00s (0.00s~60.00s)	STOP
F07.02 (0x0702)	Start Frequency	V/F SVC Remain stop and standby when the set frequency is lower than start frequency.	0.50Hz (0.00Hz~Panel giving upper limit frequency)	STOP
F07.03 (0x0703)	Start Protection	V/F SVC 0: OFF 1: ON LED "0": Terminal protection activated on exit exception LED "00": Jogging terminal protection activated exit exception LED "000": Terminal protection activated when the command channel switches to the terminal LED "0000": Reserved **Note**: When the free stop, emergency stop and forced stop commands are valid, the terminal protection is enabled by default. Report A. runx when protection is on.	0111 (0000~1111)	STOP
F07.05 (0x0705)	Direction	V/F SVC LED "0": Rotation direction 0: Remain; 1: Reverse the direction; LED "00": Rotation direction permission: 0: Forward and reverse commands allowed 1: Forward command only 2: Reverse command only LED "000": Frequency controlling command direction: 0: Controlling command direction invalid 1: Controlling command direction valid LED "0000": Reserved **Note**: Initialization will not restore this value. Parameter downloading will not change the ones digit value.	0000 (0000~1121)	STOP
F07.06 (0x0706)	Restart after Power Failure	V/F SVC 0: Invalid 1: Speed tracking and restart 2: Restart as the start mode.	0 (0~2)	STOP
F07.07 (0x0707)	Restart Waiting Time after Power Cut.	V/F SVC Set the waiting time to restart after power cut.	0.50s (0.00s~60.00s)	STOP

F07.1x: Stop Control

Code /Address	Designation	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 Detection Frequency	V/F SVC Stop when drive output frequency is lower than this value under deceleration stop.	0.50Hz (0.00Hz~ Panel giving upper limit frequency)	RUN
F07.12 (0x070C)	Restart Time after Stop	V/F SVC Set the waiting time to restart after stop.	0.000s (0.000s~60.000s)	STOP
F07.15 (0x070F)	Operation below Min. Frequency	V/F SVC 0: Run by frequency command 1: Stop freely and remains paused 2: Run at the minimum frequency 3: Run at zero speed	2 (0~3)	RUN
F07.16 (0x0710)	Zero-speed Torque Holding Current	V/F SVC Set the torque holding current at zero speed, 100.0% of rated current of the drive.	60.0% (0.0%~150.0%)	RUN
F07.17 (0x0711)	Zero-speed Torque Holding Time	V/F SVC Set the torque holding time at zero speed.	0.0s (0.0s~6000.0s)	RUN
F07.18 (0x0712)	FED/REV Dead Time	V/F SVC Set the zero-frequency holding time during forward & reverse switching.	0.0s (0.0s~120.0s)	STOP

F07.2x: DC Braking and Speed Tracking

Code /Address	Designation	Content		Default (range)	Property
F07.20 (0x0714)	Startup DC Braking Current	V/F SVC 100.0% of the motor rated current, and the upper limit of the braking current is the rated current of the drive.		60.0% (0.0%~150.0%)	STOP
F07.21 (0x0715)	Startup Braking Time	V/F SVC Set the braking time before starting		0.0s (0.0s~60.0s)	STOP
F07.22 (0x0716)	Stopping DC Braking Frequency	V/F SVC Set the DC braking start frequency to stop.		1.00Hz (0.00Hz~50.00Hz)	STOP
F07.23 (0x0717)	Stopping DC Braking Current	V/F SVC The reference is the rated current of the drive, and the internal limit shall not exceed the rated current of the motor.		60.0% (0.0%~150.0%)	STOP
F07.24 (0x0718)	Stopping DC Braking Time	V/F SVC Set the DC braking time in stop state.		0.0s (0.0s~60.0s)	STOP
F07.25 (0x0719)	Speed Tracking	V/F SVC LED "0": Tracking mode 0: Tracking from the maximum frequency; 1: Tracking from stop frequency; LED "00": Reverse tracking	0: OFF 1: ON LED "000": Tracking source 0: Software; 1: Hardware; LED "0000": Reserved	0000 (0000~1111)	STOP
F07.26 (0x071A)	Speed Tracking Time	V/F SVC Set the speed tracking time.		0.50s (0.00s~60.00s)	STOP
F07.27 (0x071B)	Speed Tracking Stop Delay	V/F SVC Set the delay time during speed tracking to stop.		1.00s (0.00s~60.00s)	STOP
F07.28 (0x071C)	Speed Tracking Current	V/F SVC Set the speed tracking current.		120.0% (0.0%~400.0%)	STOP

F07.3x: Jogging

Code /Address	Designation	Content	Default (range)	Property
F07.30 (0x071E)	Jogging Frequency	V/F SVC Set the running frequency of jogging.	5.00Hz (0.00Hz~Max. frequency)	RUN
F07.31 (0x071F)	Jogging Acceleration Time	V/F SVC Set the jogging acceleration time.	10.00s (0.00s~650.00s)	RUN
F07.32 (0x0720)	Jogging Deceleration Time	V/F SVC Set the jogging deceleration time.	10.00s (0.00s~650.00s)	RUN
F07.33 (0x0721)	Jogging S-Curve	V/F SVC 0: Invalid 1: Valid	1 (0~1)	RUN
F07.34 (0x0722)	Jogging Stop Mode	V/F SVC 0: Stop as F7.10 setting; 1: Decelerate and stop	0 (0~1)	RUN

F07.4x: Start & stop holding frequency and hopping frequency

Code /Address	Designation	Content	Default (range)	Property
F07.40 (0x0728)	Start Holding Frequency	V/F SVC Start holding frequency is higher than the start frequency and lower than the upper limit frequency via panel.	0.50Hz (0.00Hz~Panel giving upper limit frequency)	STOP
F07.41 (0x0729)	Start Holding Frequency Time	V/F SVC This shall be higher than the starting frequency, and the starting frequency should be taken when it is lower than it.	0.00s (0.00s~60.00s)	STOP
F07.42 (0x072A)	Stop Holding Frequency	V/F SVC Set the stop holding frequency.	0.50Hz (0.00Hz~ Panel giving upper limit frequency)	STOP
F07.43 (0x072B)	Stop Holding Frequency Time	V/F SVC Set the time for holding frequency to stop.	0.00s (0.00s~60.00s)	STOP
F07.44 (0x072C)	Jump Frequency 1	V/F SVC Set the jump frequency 1.	0.00Hz (0.00 Hz~ Max. frequency)	RUN
F07.45 (0x072D)	Jump Frequency Range 1	V/F SVC Set the jump frequency 1 range.	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 2	V/F SVC Set the jump frequency 2 range.	0.00Hz (0.00Hz~ Max. frequency)	RUN

4.12 F08: Auxiliary Control 1

F08.0x: Counting and Timing

Code /Address	Designation	Content		Default (range)	Property
F08.00 (0x0800)	Counter Input Source	V/F SVC 0: From common X terminal	1: Reserved 2: Reserved	0 (0~2)	RUN

F08.01 (0x0801)	Counter Input Frequency Division	V/F SVC Set the counter input frequency division		0 (0~6000)	RUN
F08.02 (0x0802)	Max. Counter	V/F SVC Set the counter maximum value.		1000 (0~65000)	RUN
F08.03 (0x0803)	Counter Value	V/F SVC Set the counter value.		500 (0~65000)	RUN
F08.04 (0x0804)	Pulses Per Meter	V/F SVC Set the pulses per meter.		10.0 (0.1~6553.5)	RUN
F08.05 (0x0805)	Length	V/F SVC Increase this parameter to reach output threshold, and reset it after reaching the terminal length		1000m (0m~65535m)	STOP
F08.06 (0x0806)	Actual Length	V/F SVC No power-off saving.		0m (0m~65535m)	STOP
F08.07 (0x0807)	Timer Time Unit	V/F SVC 0: Second (s)	1: Minute (m) 2: hour (h)	0 (0~2)	STOP
F08.08 (0x0808)	Timer Value	V/F SVC Set the timer value.		0 (0~65000)	STOP

F08.1x~F08.2x: Reserved

F08.3x: Swing Frequency

Code /Address	Designation	Content		Default (range)	Property
F08.30 (0x081E)	Swing Frequency	V/F SVC 0: Swing frequency invalid 1: Swing frequency valid		0 (0~1)	STOP
F08.31 (0x081F)	Swing Frequency Range	V/F SVC LED "0": Start mode 0: Auto; 1: Manual terminal setting LED "00": Amplitude control 0: Refer to center frequency	1: Refer to maximum frequency LED "000": Preset frequency 0: Unenabled 1: Enabled LED "0000": Reserved	0000 (0000~0111)	STOP
F08.32 (0x0820)	Preset Swing Frequency	V/F SVC Set the preset swing frequency.		0.00Hz (0.00Hz~ maximum frequency)	STOP
F08.33 (0x0821)	Preset Swing Frequency Waiting Time	V/F SVC Set the preset swing frequency waiting time.		0.0s (0.0s~3600.0s)	STOP
F08.34 (0x0822)	Swing Frequency Range	V/F SVC Set the swing frequency amplitude value.		10.0% (0.0%~50.0%)	STOP
F08.35 (0x0823)	Jump Frequency	V/F SVC Set the jump frequency.		10.0% (0.0%~50.0%)	STOP
F08.36 (0x0824)	Triangular Wave Rise Time	V/F SVC Set the triangular wave rise time.		5.00s (0.00s~650.00s)	STOP
F08.37 (0x0825)	Triangular Wave Fall Time	V/F SVC Set the triangular wave fall time.		5.00s (0.00s~650.00s)	STOP

4.13 F09: Auxiliary Control 2

F09.0x: Maintenance

Code /Address	Designation	Content	Default (range)	Property
F09.02 (0x0902)	Device Maintenance Alarm Selection	V/F SVC LED "0": Cooling fan 0: Invalid; 1: Valid LED "00": Main relay 0: Invalid; 1: Valid LED "000": Reserved LED "0000": Reserved	0x0000 (0x0000~0x1111)	RUN
F09.03 (0x0903)	Cooling Fan Maintenance	V/F SVC Set this parameter in hours and set it to 0 after replacing with a new one.	0 (0~65535)	STOP
F09.04 (0x0904)	Main Relay Maintenance	V/F SVC Set this parameter to 0.0% after replacing with a new relay.	0.0% (0.0%~150.0%)	STOP

4.14 F10: Protection Parameter

F10.0x: Current Protection

Code /Address	Designation	Content	Default (range)	Property
F10.00 (0x0A00)	Overcurrent Suppression	V/F SVC Automatically limited output current shall not exceed the set overcurrent suppression point to prevent overcurrent fault triggered by excessive current. 0: Always valid; 1: Valid during acceleration & deceleration, while invalid during constant speed	0 (0~1)	RUN
F10.01 (0x0A01)	Overcurrent Suppression Threshold	V/F SVC Set the load current limiting level, 100% of rated motor current.	160.0% (0.0%~300.0%)	RUN
F10.02 (0x0A02)	Overcurrent Suppression 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 the whether the current-related protection is activated: LED "0": CBC 0: OFF 1: ON LED "00": OC protection interference suppression 0: Normal 1: Primary interference suppression 2: Secondary interference suppression LED "000": SC protection interference suppression 0: Normal 1: Primary interference suppression 2: Secondary interference suppression LED "0000": Reserved	0001 (0000~F221)	STOP
F10.04 (0x0A04)	Current Protection 2	V/F SVC LED "0": Three-phase current sum protection 0: OFF ; 1: ON LED "00": Three-phase current unbalance protection, fault code E. oLF4. 0: OFF; 1: ON	0001 (0000~0011)	STOP

Code /Address	Designation	Content	Default (range)	Property
F10.05 (0x0A05)	Current Imbalance Threshold	V/F SVC The ratio of the maximum to the minimum phase in the three phases of the current, and the set value is compared to tell if it's current imbalance fault.	160% (0%~500%)	STOP
F10.06 (0x0A06)	Current Imbalance Filtering Factor	V/F SVC Increase this parameter on occasions with great current fluctuation.	2.0 (0.0~60.0)	STOP

F10.1x: Voltage Protection

Code /Address	Designation	Content	Default (range)	Property
F10.11 (0x0A0B)	Bus Overvoltage Suppression	V/F SVC When the bus voltage is greater than the overvoltage suppression point, the acceleration and deceleration will be slowed down or stopped to prevent the overvoltage fault. LED "0": Overvoltage suppression 0: OFF; 1: ON LED "00": Overexcitation 0: OFF; 1: Enabled during deceleration; 2: Enabled during running;	0011 (0000~0021)	STOP
F10.12 (0x0A0C)	Bus Overvoltage Suppression Threshold	V/F SVC Set the bus voltage value for triggering the overvoltage suppression function **Note**: T3 overpressure point: 820V(750V~840V) S2 overpressure point: 400V(360V~410V)	T3: 750V S2: 370V (0V~ OV threshold) Also limited by overvoltage point	STOP
F10.13 (0x0A0D)	Bus Overvoltage Suppression Gain	V/F SVC Set the response effect of overvoltage suppression。	100.0% (0.0%~500.0%)	RUN
F10.14 (0x0A0E)	Dynamic Braking	V/F SVC Set the dynamic braking on or off; 0: OFF; 1: ON with the overvoltage suppression off; 2: ON with the overvoltage suppression on;	2 (0~2)	RUN
F10.15 (0x0A0F)	Dynamic Braking Voltage	V/F SVC Set the dynamic braking working voltage. When the bus voltage is greater than this value, this function starts to act. **Note**: T3 overpressure point: 820V(750V~840V) S2 overpressure point: 400V(360V~410V)	T3: 740V S2: 360V (0V~ OV threshold) Also limited by overvoltage point	RUN
F10.16 (0x0A10)	Bus Undervoltage Suppression	V/F SVC When the bus voltage is lower than the undervoltage suppression point, the operating frequency will be automatically adjusted to stop the bus voltage reduction to prevent undervoltage fault reporting 0: OFF; 1: ON	0 (0~1)	STOP
F10.17 (0x0A11)	Bus Undervoltage Suppression Point	V/F SVC Set the bus voltage value to trigger the undervoltage suppression function. **Note**: T3 overpressure point: 820V(750V~840V) S2 overpressure point: 400V(360V~410V)	T3: 430 S2: 240 (0V~ OV threshold) Also limited by overvoltage point	STOP
F10.18 (0x0A12)	Busbar Undervoltage Suppression Gain	V/F SVC Set the response effect of undervoltage suppression.	100.0% (0.0%~500.0%)	RUN
F10.19 (0x0A13)	Busbar Undervoltage Protection Point	V/F SVC Set the allowable lower limit of busbar voltage, below which drive will report undervoltage fault. **Note** : T3 overpressure point : 820V(750V~840V) S2 overpressure point: 400V(360V~410V)	T3: 320V S2: 190V (0V~ OV threshold) Also limited by overvoltage point	STOP

F10.2x: Auxiliary Protection

Code /Address	Designation	Content	Default (range)	Property
F10.20 (0x0A14)	I/O Phase Loss Protection	V/F SVC Set the input & output phase loss protection on or off. LED "0": Output phase loss protection 0: OFF; 1: ON; LED "00": Input phase loss protection 0: OFF; 1: ON, report A. iLF warning when phase loss detected but go on running; 2: ON, report A. iLF warning when phase loss detected and stop freely. LED "000"; reserved; LED "0000": Reserved;	0021 (0000~1121)	STOP
F10.21 (0x0A15)	Input Phase Loss Threshold Value	V/F SVC Set the percentage of the input phase loss detected voltage, 100% of the rated bus voltage.	20.0% (0.0%~30.0%)	STOP
F10.22 (0x0A16)	Grounding Short Circuit Protection	V/F SVC Set the drive output & cooling fan grounding short circuit protection on or off; LED "0": Output grounding short circuit protection: 0: OFF; 1: ON; LED "00": Reserved LED "000": Reserved; LED "0000": Reserved;	0001 (0000~0001)	STOP
F10.23 (0x0A17)	Cooling Fan	Set the operation mode of the cooling fan 0: Fan runs after the drive is powered on 1: Fan runs or not up to temperature after shutdown; 2: Fan stops after the set time of F10.24 during shutdown, and runs or not up to temperature then.	1 (0~2)	RUN
F10.24 (0x0A18)	Cooling Fan Delay	V/F SVC Set the time from release of the running command to the cooling fan stops running	30.00s (0.00s~600.00s)	STOP
F10.25 (0x0A19)	Drive Overheating oH1 Warning Detection Level	V/F SVC Set the temperature of overheat warning of the drive, any value detected larger will cause overheating warning.	80.0°C (0.0°C~100.0°C)	RUN

F10.3x: Load Protection

Code /Address	Designation	Content	Default (range)	Property
F10.32 (0x0A20)	Load Detection Warning	V/F SVC Set the load detection mode and the corresponding warning mode LED "0": Load detection warning 1 0: Detection off; 1: Excessive load; 2: Excessive load only at constant speed; 3: Insufficient load; 4: Insufficient load only at constant speed; LED "00": Warning mode of load detection warning 1 0: Go on running, report A. Ld1 1: Stop freely, report E. Ld1 LED "000": Load detection warning 2 0: Detection off; 1: Excessive load; 2: Excessive load only at constant speed; 3: Insufficient load; 4: Insufficient load only at constant speed; LED "000": Warning mode of load detection warning 2 0: Go on running, report A. Ld2 1: Stop freely, report E. Ld2	0000 (0000~1414)	STOP

Code /Address	Designation	Content	Default (range)	Property
F10.33 (0x0A21)	Load Warning Detection Level 1	V/F SVC Set the detectable value of load warning 1; For V/F control, the value equals to 100% of the rated current of the motor; For vector control, the value equals to 100% of the rated output torque of the motor	130.0% (0.0%~200.0%)	STOP
F10.34 (0x0A22)	Load Warning Detection Time 1	V/F SVC Set the duration of load detection warning 1. If the load is greater than the load warning detection level, load detection warning 1 functions.	5.0s (0.0s~60.0s)	STOP
F10.35 (0x0A23)	Load Warning Detection Level 2	V/F SVC Set the detectable value of load warning 2; For V/F control, the value equals to 100% of the rated current of the motor; For vector control, the value equals to 100% of the rated output torque of the motor	30.0% (0.0%~200.0%)	STOP
F10.36 (0x0A24)	Load Warning Detection Time 2	V/F SVC Set the duration of load detection warning 2. If the load is greater than the load warning detection level, load detection warning 2 functions.	5.0s (0.0s~60.0s)	STOP

F10.4x: Stall Protection

Code /Address	Designation	Content	Default (range)	Property
F10.40 (0x0A28)	Excessive Speed Deviation Protection	V/F SVC Set the detection mode and warning mode when the deviation between the given motor speed and the feedback speed is too large LED "0": Detection mode selection 0: Detection off; 1: ON at constant speed only; 2: ON; LED "00": Warning mode 0: Stop freely and report warning; 1: Report warning and go on running	0000 (0000~0012)	STOP
F10.41 (0x0A29)	Excessive Speed Deviation Detection Threshold	V/F SVC Set the detectable value with excessive speed deviation, 100% of F01.10[maximum frequency]	10.0% (0.0%~60.0%)	STOP
F10.42 (0x0A2A)	Excessive Speed Deviation Detection Time	V/F SVC Set the duration of detecting speed deviation. If the given speed & feedback speed deviation is greater than F10.41 and lasts for this code, report excessive speed deviation warning.	2.0s (0.0s~60.0s)	STOP
F10.43 (0x0A2B)	Stall Protection	V/F SVC Set the detection mode and warning mode of motor stall. LED "0": Detection mode selection 0: Detection off; 1: ON at constant speed only; 2: ON; LED "00": Warning mode 0: Stop freely and report warning; 1: Report warning and go on running	0002 (0000~0012)	STOP
F10.44 (0x0A2C)	Stall Protection Detection Threshold	V/F SVC Set the detectable value of stall warning, which corresponds 100% of F01.10[maximum frequency]	110.0% (0.0%~150.0%)	STOP

Code /Address	Designation	Content	Default (range)	Property
F10.45 (0x0A2D)	Stall Protection Detection Time	V/F SVC Set the duration of stall detection. If feedback speed deviation is greater than F10.44 and lasts for this setting, report stall warning.	0.100s (0.000s~2.000s)	STOP

F10.5x: Fault Recovery Protection and Motor Overload

Code /Address	Designation	Content	Default (range)	Property
F10.50 (0x0A32)	Recovery No.	V/F SVC Set the allowable times of self-recovery. **Note**: 0 indicates that the fault self-recovery function is off. Otherwise, it's on.	0 (0~10)	STOP
F10.51 (0x0A33)	Interval	V/F SVC Set the waiting time between each drive failure and recovery.	1.0s (0.0s~100.0s)	STOP
F10.52 (0x0A34)	Recovered No.	V/F SVC The times of self-recoveries that have been performed. This parameter is read-only.	0	STOP
F10.55 (0x0A37)	Motor Overload Model	V/F SVC 0: Common motor 1: Drive motor (50Hz) 2: Drive motor (60Hz) 3: Motor without cooling fan	0 (0~3)	RUN
F10.56 (0x0A38)	Motor Insulation Level	V/F SVC 0: Insulation level A; 1: Insulation level E 2: Insulation level B; 3: Insulation level F 4: Insulation class H; 5: Special level S	3 (0~5)	STOP
F10.57 (0x0A39)	Motor Working System	V/F SVC 0-1: S1 working system (continuous working) 2: S2 working system 3-9: Corresponds to S3-S9	0 (0~9)	STOP
F10.58 (0x0A3A)	Motor Overload Threshold	V/F SVC Set the motor overload threshold. The actual current is greater than accumulated excess load.	105.0% (0.0%~130.0%)	STOP
F10.59 (0x0A3B)	Motor Overload Current Coefficient	V/F SVC Motor overload calculated current = actual current * motor overload current coefficient.	100.0% (0.0%~250.0%)	STOP

4.15 F11: Panel Parameter

F11.0x: Panel Operation (External Panel Required)

Code /Address	Designation	Content	Default (range)	Property
F11.00 (0x0B00)	Key Lock	V/F SVC 0: Lock off; 1: Panel parameters changing function locked; 2: Function parameters and the non-start & stop key locked; 3: All function parameters and keys are locked;	0 (0~3)	RUN
F11.01 (0x0B01)	Key Lock Password	V/F SVC Function together with the key lock; Remember the password after setting, otherwise, the operation cannot be performed if it is locked.	0 (0~65535)	RUN

Code /Address	Designation	Content	Default (range)	Property
F11.02 (0x0B02)	Multi-Function Key Selection	V/F SVC 0: Invalid; 1: Reverse running; 2: Forward jogging; 3: Reserve jogging; 4: Switch between the panel and the terminal; 5: Switch between the panel and the communication; 6: Switch between the terminal and the communication; 7: Switch between the panel, terminal, and communication;	0 (0~7)	STOP
F11.03 (0x0B03)	STOP	V/F SVC 0: Non-panel control invalid; 1: Non-panel control stops as stop mode; 2: Non-panel control stops as free mode;	0 (0~2)	STOP
F11.04 (0x0B04)	UP/DW on Status Interface (Knob)	V/F SVC LED "0": Panel up & down function 0: Invalid; 1: Change the frequency of F01.09; 2: Adjust PID setting of F13.01; 3: Change the parameter codes; LED "00": Power failure storage 0: OFF; 1: ON; LED "000": Operation limit 0: Adjustable both during running & shutdown; 1: Adjustable during running and keeping during shutdown; 2: Adjustable during running and clearing all after shutdown; LED "0000": Reserved	0011 (0000~0213)	STOP
F11.05 (0x0B05)	UP/DW Quick Change	V/F SVC LED "0": Set the yy from 00 to 99 to "Fxx.yy"; LED "00": Set the xx from 00 to 15 to "Fxx.yy"	0109 (0000~2999)	RUN

F11.1x: Cycle Monitoring on Status Interface

Code /Address	Designation	Content	Default (range)	Property
F11.10 (0x0B0A)	Left & Right Key	V/F SVC LED "0": Left key to adjust the first row; 0: Invalid; 1: Valid LED "00": Right key to adjust the second row; 0: Invalid; 1: Valid	0011 (0000~0011)	STOP
F11.11 (0x0B0B)	First Line Cyclic Parameter 1	V/F SVC LED "0"- & LED "00": Set the yy from 00 to 63 to monitoring parameter Cxx.yy; LED "000"-& LED "0000": Set the xx from 00 to 07 to monitoring parameter Cxx.yy;	0000 (0000~0763)	RUN
F11.12 (0x0B0C)	First Line Cyclic Parameter 2	V/F SVC LED "0"- &LED "00": Set the yy from 00 to 63 to monitoring parameter Cxx.yy; LED "000"-& LED "0000": Set the xx from 00 to 07 to monitoring parameter Cxx.yy;	0001 (0000~0763)	RUN

Code /Address	Designation	Content	Default (range)	Property
F11.13 (0x0B0D)	First Line Cyclic Parameter 3	V/F SVC LED "0"- & LED "00": Set the yy from 00 to 63 to monitoring parameter Cxx.yy; LED "000"-& LED "0000": Set the xx from 00 to 07 to monitoring parameter Cxx.yy;	0002 (0000~0763)	RUN
F11.14 (0x0B0E)	First Line Cyclic Parameter 4	V/F SVC LED "0"- &LED "00": Set the yy from 00 to 63 to monitoring parameter Cxx.yy; LED "000"-&LED "0000": Set the xx from 00 to 07 to monitoring parameter Cxx.yy;	0011 (0000~0763)	RUN
F11.15 (0x0B0F)	Second Line Cyclic Parameter 1	V/F SVC LED "0"- & LED "00": Set the yy from 00 to 63 to monitoring parameter Cxx.yy; LED "000"- & LED "0000": Set the xx from 00 to 07 to monitoring parameter Cxx.yy;	0002 (0000~0763)	RUN
F11.16 (0x0B10)	Second Line Cyclic Parameter 2	V/F SVC LED "0"- & LED "00": Set the yy from 00 to 63 to monitoring parameter Cxx.yy; LED "000"- & LED "0000": Set the xx from 00 to 07 to monitoring parameter Cxx.yy;	0004 (0000~0763)	RUN
F11.17 (0x0B11)	Second Line Cyclic Parameter 3	V/F SVC LED "0"- & LED "00": Set the yy from 00 to 63 to monitoring parameter Cxx.yy; LED "000"- & LED "0000": Set the xx from 00 to 07 to monitoring parameter Cxx.yy;	0010 (0000~0763)	RUN
F11.18 (0x0B12)	Second Line Cyclic Parameter 4	V/F SVC LED "0"- & LED "00": Set the yy from 00 to 63 to monitoring parameter Cxx.yy; LED "000"- & LED "0000": Set the xx from 00 to 07 to monitoring parameter Cxx.yy;	0012 (0000~0763)	RUN

F11.2x: Monitoring Parameters

Code /Address	Designation	Content	Default (range)	Property
F11.20 (0x0B14)	Keyboard Display Setting	LED "0" : Input frequency display 0: Target frequency 1: Running frequency >=2: Running frequency, filtering depth increases with this value. LED "00": Reserved 0: Invalid 1: Remove the active power of stator resistance loss LED "000": Power display dimension 0: Display percentage (%) 1: Display kW (kW) LED "0000": Reserved	0x0002 (0x0000~0x111F)	RUN
F11.21 (0x0B15)	Speed Factor Display	V/F SVC Set the panel monitoring speed parameter factor ratio display.	100.0% (0.0%~500.0%)	RUN
F11.22 (0x0B16)	Power Factor Display	V/F SVC Set the panel monitoring power parameter factor ratio display.	100.0% (0.0%~500.0%)	RUN

Code /Address	Designation	Content	Default (range)	Property
F11.23 (0x0B17)	Monitoring Parameter Group Display	V/F SVC LED "0": Reserved 0: Invalid; 1: Valid; LED "00": C05 display 0: Automatically switches with control modes 1: V/F mode related parameters; 2: V/C mode related parameters; LED "000": C00.40~C00.63 display 0: OFF; 1: ON; LED "0000": Reserved	0x0000 (0x0000~0xFFFF)	RUN
F11.24 (0x0B18)	Monitoring Parameter Filtering Selection	V/F SVC LED "0": Output current filtering displayed 0 to F: The larger the value, the deeper the filtering	0x0002 (0x0000~0x000F)	RUN
F11.25 (0x0B19)	Motor Auto-tuning Display	V/F SVC 0: Status of the auto-tuning process displayed 1: Status of the auto-tuning process not displayed **Note**: T/S2 models do not support this parameter.	0 (0~1)	RUN
F11.27 (0x0B1B)	Fault Display	LED "0": The fault display during self-recovery: 0: OFF 1: ON	0x0001 (0x0000~0x0001)	RUN

F11.3x: Special Panel Functions

Code /Address	Designation	Content	Default (range)	Property
F11.30 (0x0B1E)	AC01 Serial Port	V/F SVC 0: RS485 communication; 1: External panel; Choose one of the two functions of the 485 bus and the external panel.	0 (0~1)	STOP
F11.31 (0x0B1F)	Panel Potentiometer Lower Limit Voltage	V/F SVC Define the panel potentiometer voltage lower limit, any value smaller than this value will still be taken as this one(valid when there is an optional external panel).	0.50V (0.00V~3.00V)	RUN
F11.32 (0x0B20)	Panel Potentiometer Lower Limit Percentage	V/F SVC Set the input percentage of lower voltage limit of the panel potentiometer(valid when there is an optional external panel).	0.00% (0.00%~100.00%)	RUN
F11.33 (0x0B21)	Panel Potentiometer Upper Limit Voltage	V/F SVC Define the panel potentiometer upper voltage limit, any value bigger than this value will still be taken as this one (valid when there is an optional external panel).	2.80V (0.00V~3.00V)	RUN
F11.34 (0x0B22)	Panel Potentiometer Upper Limit Percentage	V/F SVC Set the input percentage of upper voltage limit of the panel potentiometer(valid when there is an optional external panel).	100.0% (0.0%~100.0%)	RUN
F11.35 (0x0B23)	Panel Potentiometer Source	V/F SVC Set the panel potentiometer source 0: Reserved 1: External panel potentiometer	0 (0~1)	STOP

4.16 F12: Communication Parameter

(**Note**: Communication parameters can be saved after adjustment)

F12.0x : Modbus Slave Parameters

Code /Address	Designation	Content		Default (range)	Property
F12.00 (0x0C00)	Master/Slave Selection	V/F SVC 0: Slave 1: Reserved		0 (0~1)	STOP
F12.01 (0x0C01)	Modbus Communication Address	V/F SVC Set the communication address of the Modbus slave computer.		1 (1~247)	STOP
F12.02 (0x0C02)	Communication 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 Communication 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: (O, 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 Communication Transmission Response	V/F SVC 0: Response to write operation valid; 1: Response to write operation invalid;		0 (0~1)	RUN
F12.05 (0x0C05)	Modbus Communication Response Delay	V/F SVC Set the time interval between receiving the data and replying to the master.		0ms (0ms~5000ms)	RUN
F12.06 (0x0C06)	Modbus Communication Timeout Failure Time	V/F SVC Set the interval time between two communication to tell communication disconnection.		1.0s (0.1s~100.0s)	RUN
F12.07 (0x0C07)	Communication Disconnection Mode	V/F SVC 0: Detected off; 1: Report fault and stop freely; 2: Report warning and keep operation; 3: Forced stop		0 (0~3)	RUN
F12.08 (0x0C08)	Received Data (Address 0x3000) with Zero Bias	V/F SVC Set the bias value of the set frequency of communication (100.00 corresponding to 100.00Hz)		0.00 (-100.00~100.00)	RUN
F12.09 (0x0C09)	Receive Data (Address 0x3000) Gain	V/F SVC Set the gain of communication at the set frequency Set the frequency = actual communication × gain + bias value.		100.0% (0.0%~500.0%)	RUN

Code /Address	Designation	Content		Default (range)	Property
F12.41 (0x0C29)	Communication Enable Force Reset Countdown	V/F SVC Set the countdown for force reset communication, when set to 0, the function will be turned off. When X1~X3 and COM terminal, VS and +24V terminal are on at the same time, and the time set in this parameter is met, the external panel can be forced to be effective, and the priority of this operation is higher than that of F11.30.		30s (0s~60s)	RUN
F12.51	Dual CPU Communication Mode	V/F SVC 0: Polling mode; 1: Trigger mode first		0 (0~2)	STOP

F12.1x : Reserved

4.17 F13: PID Control

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

Code /Address	Designation	Content		Default (range)	Property
F13.00 (0x0D00)	PID controller given signal source	V/F SVC 0: Keypad digital PID given 1: Keypad potentiometer given 2: Current analog AS given 3: Voltage analog VS given 4: Reserved	5: Reserved 6: RS485 communication given 7: Reservation 8: Terminal selection 9: Communication given active current	0 (0~9)	RUN
F13.01 (0x0D01)	Keypad numeric PID feed/feedback	V/F SVC The parameter is valid when F13.00 or F13.03 is selected with [Panel Giving PID Setting/Feedback].		50.0% (0.0%~100.0%)	RUN
F13.02 (0x0D02)	PID given change time	V/F SVC Set the PID time needed from 0.0% to 100%.		1.00s (0.00s~60.00s)	RUN
F13.03 (0x0D03)	PID controller feedback signal source	V/F SVC 0: Keypad digital PID feedback 1:Keypad potentiometer feedback 2: Current analog AS feedback 3: Voltage analog VS feedback	4: Reserved 5: Reserved 6: RS485 communication feedback 7: Reservation 8: Terminal selection 9: Local active current	2 (0~9)	RUN
F13.04 (0x0D04)	Feedback Signal Low-Pass Filter Time	V/F SVC The longer the filter time, the stronger the anti-interference, and the slower the reaction.		0.010s (0.000s~6.000s)	RUN
F13.05 (0x0D05)	Feedback Signal Gain	V/F SVC Used for linear proportional modulation of feedback input signal.		1.00 (0.00~10.00)	RUN
F13.06 (0x0D06)	Feedback Signal Range	V/F SVC PID feedback signal range is a dimensionless unit used to adjust PID feedback.		100.0 (0.0~100.0)	RUN

F13.07~F13.24: PID Modulation

Code /Address	Designation	Content	Default (range)	Property
F13.07 (0x0D07)	PID Control	V/F SVC LED "0" : Feedback characteristic selection 0: Positive characteristic; 1: Negative characteristic LED "00" : Reserved LED "000" : Reserved LED "0000" : Differential regulation characteristics 0: Differentiates the deviation 1: Differentiate the feedback	0100 (0000~1111)	RUN
F13.08 (0x0D08)	PID Preset Output	V/F SVC Output as PID preset value after PID starts.	100.0% (0.0%~100.0%)	RUN
F13.09 (0x0D09)	PID Preset Output Time	V/F SVC Set the PID preset output time and set output starts after countdown.	0.0s (0.0s~6500.0s)	RUN
F13.10 (0x0D0A)	PID Deviation Limit	V/F SVC Set the maximum deviation between PID feedback and PID set	0.0% (0.0%~100.0%)	RUN
F13.11 (0x0D0B)	Proportional Gain P1	V/F SVC Set the PID parameter group 1 proportional gain.	0.100 (0.000~4.000)	RUN
F13.12 (0x0D0C)	Integral Time I1	V/F SVC Set the PID parameter group 1 integral time.	1.0s (0.0s~600.0s)	RUN
F13.13 (0x0D0D)	Rate Time D1	V/F SVC Set the PID parameter group 1 rate time.	0.000s (0.000s~6.000s)	RUN
F13.14 (0x0D0E)	Proportional Gain P2	V/F SVC Set the PID parameter group 2 proportional gain.	0.100 (0.000~4.000)	RUN
F13.15 (0x0D0F)	Integral Time I2	V/F SVC Set the PID parameter group 2 integral time.	1.0s (0.0s~600.0s)	RUN
F13.16 (0x0D10)	Rate Time D2	V/F SVC Set the PID parameter group 2 rate time.	0.000s (0.000s~6.000s)	RUN
F13.17 (0x0D11)	PID Parameter Switching Condition	V/F SVC 0: OFF; 1: Switch via DI terminal; 2: Switch according to deviation;	0 (0~2)	RUN
F13.18 (0x0D12)	Set The Lower Deviation Value	V/F SVC Apply the gain 1 parameter when the PID deviation is smaller than this value.	20.0% (0.0%~100.0%)	RUN
F13.19 (0x0D13)	Set The Higher Deviation Value	V/F SVC Apply the gain 1 parameter when the PID deviation is larger than this value.	80.0% (0.0%~100.0%)	RUN
F13.21 (0x0D15)	Differential Limit	V/F SVC Differential limit is used to set the range of PID differential output.	5.0% (0.0%~100.0%)	RUN
F13.22 (0x0D16)	PID Upper Limit Output	V/F SVC Set the upper limit of PID output.	100.0% (0.0%~100.0%)	RUN
F13.23 (0x0D17)	PID Lower Limit Output	V/F SVC Set the lower limit of PID output.	0.0% (-100.0%~F13.22)	RUN
F13.24 (0x0D18)	PID Output Filter Time	V/F SVC Set the filter time for PID output.	0.000s (0.000s~6.000s)	RUN

F13.25~F13.28: PID Feedback Disconnection

Code /Address	Designation	Content	Default (range)	Property
F13.25 (0x0D19)	PID Disconnection Mode	V/F SVC 0: Keep operation and no fault is reported; 1: Stop running and report fault; 2: Keep operation and report warning; 3: Keep operation at the current frequency and report warning;	0 (0~3)	STOP
F13.26 (0x0D1A)	PID Disconnection Detection Time	V/F SVC Set the detection time of PID disconnection.	1.0s (0.0s~120.0s)	RUN
F13.27 (0x0D1B)	Disconnection Warning Upper Limit	V/F SVC If the feedback signal exceeds this value and lasts for [F13.26], the sensor is considered disconnected	100.0% (0.0%~100.0%)	RUN
F13.28 (0x0D1C)	Disconnection Warning Lower Limit	V/F SVC If the feedback signal is lower than this value and lasts for [F13.26], the sensor is considered disconnected.	0.0% (0.0%~100.0%)	RUN

F13.29~F13.33: PID Sleep Mode

Code /Address	Designation	Content	Default (range)	Property
F13.29 (0x0D1D)	Sleep Selection	V/F SVC 0: OFF; 1: ON	0 (0~1)	RUN
F13.30 (0x0D1E)	Sleep Frequency	V/F SVC When the sleep function is effective, PID output frequency is lower than [F13.30] and last for sleep delay of [F13.31], then starts the sleep mode.	10.00Hz (0.00Hz~Max. frequency)	RUN
F13.31 (0x0D1F)	Sleep Delay		60.0s (0.0s~3600.0s)	RUN
F13.32 (0x0D20)	Wakeup Deviation	V/F SVC PID feedback is lower than/greater than (positive characteristic/negative characteristic) PID minus/plus (positive characteristic/negative characteristic) wakeup deviation [F13.32] and lasts for wakeup delay [F13.33], sleep mode ends and running is resumed.	5.0% (0.0%~50.0%)	RUN
F13.33 (0x0D21)	Wakeup Delay		1.0s (0.0s~60.0s)	RUN

4.18 F14: Multi-seg Speed and Simple PLC

F14.00~F14.14: Multi-seg speed frequency setting

Code /Address	Designation	Content	Default (range)	Property
F14.00 (0x0E00) ~ F14.14 (0x0E0E)	Multi-Seg Speed 1~15	V/F SVC [F01.02] frequency source is 9: Program control (PLC) setting. Frequency and running direction of drive is controlled by PLC with up to 15 stages speed; See Setting [F14.15] for running mode. If one stage of speed time is set to "0", the program will skip that speed. 　[F01.02] frequency source is 11: Multi-seg speed setting. 　　Frequency is set via"multi-seg speed terminal". Running direction, acceleration & deceleration time are [F14.31~F14.45] respectively. If multi-seg speed terminals are invalid, multi-seg speed is set to 0."multi-seg speed terminal"parameters see [F5.00~F5.03]. Default values are set as follows: F14.00 multi-speed1 = 10.00Hz; F14.08 multi-speed9 = 10.00Hz F14.01 multi-speed2 = 20.00Hz; F14.09 multi-speed10 = 20.00Hz F14.02 multi-speed3 = 30.00Hz; F14.10 multi-speed11 = 30.00Hz F14.03 multi-speed4 = 40.00Hz; F14.11 multi-speed12= 40.00Hz F14.04 multi-speed5 = 50.00Hz; F14.12 multi-speed13= 50.00Hz F14.05 multi-speed6 = 40.00Hz; F14.13 multi-speed14= 40.00Hz F14.06 multi-speed7 = 30.00Hz; F14.14 multi-speed15= 30.00Hz F14.07 multi-speed8 = 20.00Hz;	See description on the left (0.00Hz~ maximum frequency)	RUN

F14.15: PLC Mode

Code /Address	Designation	Content		Default (range)	Property
F14.15 (0x0E0F)	PLC Mode	V/F SVC LED "0" : Cycle mode 0: Stops after a single cycle; 1: Continues with cycles; 2: Keep the final value after a single cycle; LED "00" : Timing unit 0: Second (s); 1: Minute (m); 2: Hour (h);	LED "000" : Power failure storage mode 0: OFF; 1: ON; LED "0000" : Start mode 0: Restart from stage 1; 1: Restart the interrupted stage all over again; 2: Restart the interrupted stage for the remaining time;	0000 (0000~2122)	RUN

F14.16~F14.30: PLC Duration

Code /Address	Designation	Content	Default (range)	Property
F14.16 (0x0E10) ~ F14.30 (0x0E1E)	1st~15th Segment Duration	V/F SVC Set the running time for 1st~15th segment speed on PLC.	10.0(s/m/h) (0.0(s/m/h)~6500.0(s/m/h))	RUN

F14.31~F14.45: PLC Direction and Time

Code /Address	Designation	Content	Default (range)	Property
F14.31 (0x0E1F) ~ F14.45 (0x0E2D)	1st~15th Segment Direction and Acceleration & Deceleration Time	V/F SVC LED "0" : Running direction of this segment (compared with running command) 0: In the same direction; 1: In the opposite direction LED "00" : Acceleration and deceleration time of this segment 0: Acceleration and deceleration time 1; 1: Acceleration and deceleration time 2; 2: Acceleration and deceleration time 3; 3: Acceleration and deceleration time 4; LED "000" : Reserved LED "0000" : Reserved	0000 (0000~0031)	RUN

4.19 F15: Reserved

4.20 F25: AS/VS Correction(Reserved)

4.21 C0x: Monitoring Parameter

C00.xx : Basic Monitoring

Code /Address	Designation	Code /Address	Designation	Code /Address	Designation
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)	Input terminal Y status	C00.29 (0x211D)	Reserved
C00.02 (0x2102)	Output current	C00.16(0x 2110)	Analog AS input	C00.30 (0x211E)	Timer
C00.03 (0x2103)	Input voltage	C00.17 (0x2111)	Analog VS input	C00.31 (0x211F)	PID output
C00.04 (0x2104)	Output voltage	C00.18 (0x2112)	Keypad potentiometer input	C00.32 (0x2120)	Drive software sub-version
C00.05 (0x2105)	Mechanical speed	C00.19 (0x2113)	Reserved	C00.33 (0x2121)	Reserved
C00.06	Given torque	C00.20	Reserved	C00.34	Reserved
C00.07	Output torque	C00.21	Reserved	C00.35	Reserved
C00.08	PID given	C00.22	Counter	C00.36	Fault warning code
C00.09	PID feedback	C00.23 (0x2117)	Runtime	C00.37 (0x2125)	Cumulative electricity consumption (low)
C00.10 (0x210A)	Output power	C00.24 (0x2118)	Accumulative runtime	C00.38 (0x2126)	Cumulative electricity consumption (high)
C00.11 (0x210B)	Busbar voltage	C00.25 (0x2119)	Drive power level	C00.39 (0x2127)	Power factor angle
C00.12 (0x210C)	Module temp. 1	C00.26 (0x211A)	Drive rated voltage	-	-
C00.13 (0x210D)	Module temp.2	C00.27 (0x211B)	Drive rated current	-	-

C01.xx: Fault Monitoring

Code /Address	Designation	Code /Address	Designation	Code /Address	Designation
C01.00 (0x2200)	Fault type	C01.08 (0x2208)	Fault input terminal status	C01.16 (0x2210)	Module temperature of last fault
C01.01 (0x2201)	Fault diagnosis information	C01.09 (0x2209)	Fault output terminal status	C01.17 (0x2211)	Drive status of last fault
C01.02 (0x2202)	Fault running frequency	C01.10 (0x220A)	Last fault type	C01.18 (0x2212)	Input terminal status of last fault
C01.03 (0x2203)	Fault output voltage	C01.11 (0x220B)	Diagnosis information of last fault	C01.19 (0x2213)	Fault type of last 2 faults
C01.04 (0x2204)	Fault output current	C01.12 (0x220C)	Frequency of last fault	C01.20 (0x2214)	Diagnosis information of last 2 faults
C01.05 (0x2205)	Fault bus voltage	C01.13 (0x220D)	Output voltage of last fault	C01.21 (0x2215)	Diagnosis information of last 2 faults
C01.06 (0x2206)	Fault module temperature	C01.14 (0x220E)	Output current of last fault	C01.22 (0x2216)	Fault type of last 3 faults
C01.07 (0x2207)	Fault drive status	C01.15 (0x220F)	Bus voltage of last fault	C01.23 (0x2217)	Diagnosis information of last 3 faults

Note: Fault status means：

· LED "0" : Running direction   0: Forward; 1: Reserve

· LED "00": Running state   0: Stop; 1: At steady speed; 2: Acceleration; 3: Deceleration

· LED "000": Overvoltage and overcurrent   0: Normal; 1: Overvoltage ; 2: Overcurrent; 3: Overvoltage and overcurrent

· LED "0000": Reserved

C02.xx: Monitoring

Code/Address	Designation	Code/Address	Designation
C02.00 (0x2300)	PID setting	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)	Drive overload timing factor
C02.03 (0x2303)	PID control status	C02.17 (0x2311)~C02.18 (0x2312)	Reserved
C02.05 (0x2305)	PLC segment	C02.19 (0x2313)	CBC No.
C02.06 (0x2306)	PLC segment frequency	C02.20 (0x2314)~C02.31 (0x231F)	Reserved
C02.07 (0x2307)	PLC segment runtime	C02.32 (0x2320)~C02.47 (0x232F)	Power-off storage parameter 1~ 16
C02.08 (0x2308)	Forward & reverse command	C02.48 (0x2330)~C02.49 (0x2331)	Reserved
C02.09 (0x2309)	Jogging command	C02.50 (0x2332)~C02.59 (0x233B)	Cache register 0 to cache register 9
C02.10 (0x230A)	AS current before correction	C02.60 (0x233C)~C02.61 (0x233D)	Expanded chip software/Sub-software version
C02.11 (0x230B)	VS voltage before correction	C02.62 (0x233E)	External panel version
C02.12 (0x230C)	Reserved	-	-

C03.xx: Maintenance parameter monitoring

Code/Address	Designation	Code/Address	Designation
C03.00 (0x2400)	Runtime	C03.23 (0x2417)	Reserved
C03.01 (0x2401)	Accumulative run time(h)	C03.24 (0x2418)	Reserved
C03.02 (0x2402)	Accumulative power-on time(h)	C03.25 (0x2419)	Reserved
C03.03 (0x2403)	Accumulative power-on time(m)	C03.26 (0x241A)	Reserved
C03.04 (0x2404)	Cooling fan run time	C03.27 (0x241B)	Reserved
C03.05 (0x2405)	Cooling 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 I/O Terminal Functions

X	Definition	X	Definition	X	Definition
0	Null	24	PID switch 1	48	Command channel switched to keyboard
1	Forward running	25	PID switch 2	49	Command channel switched to terminal
2	Reserve running	26	PID switch 3	50	Command channel switched to communication
3	Three-wire system control (xi)	27	PID feedback switch 1	51	Reserved
4	Forward jogging	28	PID feedback switch 2	52	Operation prohibited
5	Reserve jogging	29	PID feedback switch 3	53	Forward prohibited
6	Free stop	30	Program operation (PLC) pause	54	Reserve prohibited
7	Emergency stop	31	Program operation (PLC) restart	55	Reserved
8	Fault recovery	32	Terminal 1 acceleration & deceleration time	56	Reserved
9	External fault input	33	Terminal 2 acceleration & deceleration time	57	Reserved
10	Frequency increase (UP)	34	Acceleration & deceleration pause	58	Reserved
11	Frequency decrease (DW)	35	Swing frequency input	59	Reserved
12	Frequency increase & decrease clear (UP/DW reset)	36	Swing frequency pause	60	Speed torque control switch
13	Source A switched to B	37	Swing frequency reset	62	Jogging frequency as upper limit frequency of torque mode
14	Frequency channel combination switches to A	38	Keys & self - inspection display selection	63~87	Reserved
15	Frequency channel combination switches to B	39	Reserved	88	Reserved
16	Multi-seg speed terminal 1	40	Timer triggered terminal	89	Reserved
17	Multi-seg speed terminal 2	41	Timer clearing terminal	90	Reserved
18	Multi-seg speed terminal 3	42	Counter clock input terminal	91	Reserved
19	Multi-seg speed terminal 4	43	Counter clearing terminal	92	Reserved
20	PID control off	44	DC brake command	93	Reserved
21	PID control pause	45	Pre-excitation command terminal	94	Reserved
22	PID characteristic switch	46	Reserved	95	Reserved
23	PID parameter switch	47	Reserved	-	-
Y	**Definition**	**Y**	**Definition**	**Y**	**Definition**
0	Null	13	Upper frequency arrival	26	Emergency stop now
1	Drive in motion	14	Lower frequency arrival	27	Overload warning output 1
2	Drive backward running	15	Program cycle completed	28	Underload warning output 2
3	Drive forward running	16	Program stage completed	29	Drive warning
4	Fault trip warning 1(warning during fault self-recovery)	17	PID feedback over limit	30	0x3018 Control output
5	Fault trip warning 2 (no warning during fault self-recovery)	18	PID feedback below limit	31	Drive overheating warning
6	External failure shutdown	19	PID feedback sensor disconnected	32	Reserved
7	Drive undervoltage	20	Reserved	33~36	Reserved
8	Drive ready for operation	21	Timer time out	37	Comparator 1 detection
9	Output frequency level detection 1(FDT1)	22	Counter maximum value arrival	38	Comparator 2 detection
10	Output frequency level detection 2 (FDT 2)	23	Counter set value arrival	39~63	Reserved
11	Set the frequency arrival	24	Energy consumption braking	-	-
12	Running at zero speed	25	Reserved	-	-

4.23 Fault Code Table

Note:

1. Please refer to "Chapter 3 Indicator Lights, Panel and Operation Instructions" for details of the indicator lights of drive fault/operation status.

2. The numbers in parentheses in the code column are fault codes or warning codes (Dec indicates decimal), and the following codes need to be obtained from the external panel or by reading 0x3003/0x3010 through communication.

Display (DEC.)	Fault	Type	Display (DEC.)	Fault	Type
E. SC1(1)	System fault during acceleration	Fault	E. Ld2(80)	Load protection 2	Fault
E. SC2(2)	System fault during deceleration	Fault	E. CPu (81)	CPU timeout failure	Fault
E. SC3(3)	System fault during constant speed	Fault	Reserved (82-84)	Reserved	Fault
E. SC4(4)	Shutdown system fault	Fault	E. LoC (85)	Chip lock	Fault
E. oC1(5)	Overcurrent during acceleration	Fault	E. EEP (86)	Parameter storage failure	Fault
E. oC2(6)	Overcurrent during deceleration	Fault	Reserved (87-96)	Reserved	Fault
E. oC3(7)	Overcurrent during constant speed	Fault	E. CP1(97)	Monitor comparison output 1 failure	Fault
E. oC4(8)	AC01 software overcurrent	Fault	E. CP2(98)	Monitor comparison output 2 failure	Fault
E. ou1(9)	Overvoltage during acceleration	Fault	E. dAT (99)	Parameter setting failure	Fault
E. ou2(10)	Overvoltage during deceleration	Fault	reserved (100~109)	Reserved	Fault
E. ou3(11)	Overvoltage during constant speed	Fault	E. FA1(110)	Reserved external expansion 1	Fault
Reserved (12)	Reserved	Fault	E. FA2(111)	Reserved external expansion 2	Fault
E. Lu (13)	Undervoltage during operation	Fault	E. FA3(112)	Reserved external expansion 3	Fault
E. oL1(14)	Motor overload	Fault	E. FA4(113)	Reserved external expansion 4	Fault
E. oL2(15)	Drive overload 1	Fault	E. FA5(114)	Reserved external expansion 5	Fault
E. oL3(16)	Drive overload 2	Fault	E. FA6(115)	Reserved external expansion 6	Fault
E. oL4(17)	Drive overload 3	Fault	E. FA7(116)	Reserved external expansion 7	Fault
E. iLF (18)	Input phase loss	Fault	E. FA8(117)	Reserved external expansion 8	Fault
E. oLF (19)	Three-phase output phase loss	Fault	-	-	-
E. oLF1(20)	U-phase output phase loss	Fault		Here are the warnings	
E. oLF2(21)	V-phase output phase loss	Fault	A. Lu1(128)	Undervoltage shutdown	Warning
E. oLF3(22)	W-phase output phase loss	Fault	A. ou (129)	Overvoltage shutdown	Warning
Reserved (23-29)	Reserved	Fault	A. iLF (130)	Input phase loss	Warning
E. oH1(30)	Rectifier overheat	Fault	A. PID (131)	PID feedback disconnection	Warning
E. oH2(31)	Inverter overheat	Fault	A. EEP (132)	Parameter storage error	Warning
Reserved (32)	Reserved	Fault	A. dEF (133)	Excessive speed deviation	
E. EF (33)	External fault	Fault	A. SPd (134)	Stall warning	Warning

E. CE (34)	Modbus communication fault	Fault	A. GPS1(135)	GPS lock	Warning
E. HAL1(35)	U-phase excessive zero drift	Fault	A. GPS2(136)	GPS disconnection	Warning
E. HAL2(36)	V-phase excessive zero drift	Fault	A. CE (137)	Modbus disconnection	Warning
E. HAL (37)	Non-zero sum of three phase currents	Fault	A. Ld1(138)	Load protection 1	Warning
E. HAL3(38)	W-phase excessive zero drift	Fault	A. Ld2(139)	Load protection 2	Warning
Reserved (39)	Reserved	Fault	Reserved (140)	Reserved	Warning
E. SGxx (40)	Ground short circuit	Fault	A. oH1(141)	Module overheat	Warning
E. FSG (41)	Fan short circuit	Fault	Reserved (142)	Reserved	Warning
E. PID (42)	PID feedback disconnection	Fault	A. run1(143)	Warning 1 in operation	Warning
E. CoP (43)	Parameter copy failure	Fault	A. PA2(144)	External panel disconnection error	Warning
Reserved (44)	Reserved	Fault	A. CoP (145)	Parameter copy warning	Warning
Reserved (45-49)	Reserved	Fault	A. CP1(146)	Monitor comparison output 1 warning	Warning
E. bru (50)	Brake unit failure	Fault	A. CP2(147)	Monitor comparison output 2 warning	Warning
Reserved (51)	Reserved	Fault	A. run2(148)	Warning 2 in operation	Warning
E. TExx (52)	Output current over limit auto-tuning	Fault	A. run3(149)	Warning 3 in operation	Warning
reserved (53~70)	Reserved	Fault	A. FA1(150)	Reserved external expansion 1	Warning
E. iAE1(71)	Motor angle tuning fault 1	Fault	A. FA2(151)	Reserved external expansion 2	Warning
E. iAE2(72)	Motor angle tuning fault 2	Fault	A. FA3(152)	Reserved external expansion 3	Warning
E. iAE3(73)	Motor angle tuning fault 3	Fault	A. FA4(153)	Reserved external expansion 4	Warning
E. PST1(74)	Synchronous motor step out fault 1	Fault	A. FA5(154)	Reserved external expansion 5	Warning
E. PST2(75)	Synchronous motor step out fault 2	Fault	A. FA6(155)	Reserved external expansion 6	Warning
E. PST3(76)	Synchronous motor step out fault 3	Fault	A. FrA (157)	Reserved	Warning
E. dEF (77)	Excessive speed deviation	Fault	A. 161(161)	Cooling fan service life warning	Warning
E. SPd (78)	Stall protection	Fault	A. 163(163)	Main relay service life warning	Warning
E. Ld1(79)	Load protection 1	Fault	-	-	-

Chapter 5 Regular Inspection and Maintenance

5.1 Inspection

Drives are composed of semiconductor devices, passive electronic devices and motion devices, and these devices have a service life. Even under normal working conditions, some of the devices may have characteristics change or failures if the service life is exceeded, thus preventive maintenance such as routine check, periodic check, and component replacement must be performed. It is recommended to check the machine every 3 to 4 months after installation.

● Daily inspection: In order to avoid damage to drives and shortened service life, please check the following items daily.

Item	Content	Method
Power supply.	Check whether the power supply voltage meets requirements and any phase loss.	Address by requirements of the nameplate.
Surroundings	Check whether the installation environment meets requirements.	Identify the source and address it properly.
Cooling system	Check whether there is abnormal heating and discoloration of drive and motor, and the working condition of cooling fan.	Check whether it is overloaded, the heat sink of the converter is dirty or not, whether the fan is blocked, tighten the screws.
Motor	Check whether the motor has abnormal vibration and abnormal sound.	Tighten mechanical and electrical connections and lubricate mechanical parts.
Load status	Check whether the drive output current is higher than the motor or drive rated values for a certain period of time.	Confirm whether overload occurs and whether the selection of drive is correct.

● Regular inspection: Generally, it is appropriate to carry out regular inspection every 3 to 4 months, please determine the actual inspection period based on the use of each machine and working environment.

Item	Content	Method
Overall	● Check insulation resistance & environment.	● Tighten and replace defective parts; Clean and improve the working environment.
Electrical connection	● Check whether there is discoloration on wires and connected parts; whether there is discoloration, damage, cracking, aging traces on insulation layer; ● Check whether terminal are worn, damaged or loose; ● Check grounding;	● Replace the damaged wire; ● Tighten the loose terminals and replace damaged terminals; ● Measure the grounding resistance and tighten the corresponding grounding terminals;
Mechanical connection	● Check whether there is any abnormal vibration and sound, and connected parts loose;	● Tighten, lubricate and replace defective parts.
Semiconductor device	● Check whether there is garbage and dust; ● Check whether there is a significant change in appearance;	● Clean and improve the working environment; ● Replace the damaged parts;
Electrolytic capacitance	● Check whether there is liquid leakage, discoloration, cracking, and exposure, expansion, rupture or leakage on safety valves;	● Replace the damaged parts;
Peripheral device	● Check peripheral equipment appearance and insulation inspection;	● Clean and improve the working environment; ● Replace the damaged parts;
Printed circuit board	● Check whether there is abnormal odor, discoloration, serious rust, and connectors are correct and tight;	● Fasten connectors; ● Clean the printed circuit board; ● Replace the damaged printed circuit board;
Cooling system	● Check whether cooling fan is damaged and blocked ● Check whether heat sink is stained with garbage and dust; ● Check whether the air inlet and exhaust outlet are blocked or stained with foreign matters;	● Clean and improve the working environment; ● Replace the damaged parts;
keypad	● Check whether keypad is damaged and display complete or not;	● Replace the damaged parts;
Motor	● Check whether the motor has abnormal vibration and abnormal sound.	● Tighten the mechanical and electrical connection, and lubricate the motor shaft.

⚠ Caution : Do not perform any operations when the power supply is on, otherwise there is a risk of death by electric shock. When performing operations, cut off the power supply and ensure that the DC voltage of the main loop has been decreased to a safe level and then wait 5 minutes.

5.2 Maintenance

All devices and components have service life. Proper maintenance can prolong the service life, but will not make up for the damage of devices and components. Please replace the components as required.

Part	Service life	Part	Service life	Part	Service life
Fan	2~3 year	Electrolytic capacitance	4~5 year	Printed circuit board	8~10 year

The replacement of other components requires high maintenance technology and product familiarity, and they must pass strict testing before being put into use. Therefore, please don't replace other internal components by yourself. If you do need a replacement, please contact the purchasing agent or our sales department.

5.3 Product Guarantee

1. If the product fails within the warranty period, please refer to the clauses and scope in the warranty card.

2. Primary fault diagnosis is performed by customers in principle, but if required, we or our service network stations can provide according service. On the result of negotiation between us, if the fault is on the product or caused behavior of VEICHI, it's free, otherwise it will be charged;

3. Exemption from liability: Any inconvenience caused to our customers or secondary customers, any damage caused to non- VEICHI products due to the failure of our products, whether within the warranty period or not, shall not be within the scope of our company's liability

Appendix I: Modbus Communication Protocol

● **Communication frame structure**

The communication data format is as follows:

Byte composition: Includes the start bit, 8 data bits, check bit and stop bit.

start bit	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8	check bit	stop bit

The information of a frame must be transmitted as a continuous data stream. If the interval of more than 1.5 bytes is longer before the end of the frame transmission, the receiving device will clear the incomplete information and mistakenly assume that the next byte is the address domain part of the new frame. Similarly, if the interval between the start of a new frame and the previous frame is less than 3.5 bytes, the receiving device will consider it as a continuation of the previous frame. Due to the misalignment of the frame, the CRC check value will eventually be incorrect, resulting in a communication error.

● **Communication control parameter group address description**

Function description	Address definition	Data description		R/W characteristic
Frequency from communication	0x3000 or 0x2000	0~50000 corresponding to 0.00Hz~500.00Hz		W/R
Communication command	0x3001or 0x2001	0000H: Null 0001H: Forward running; 0002H: Reserve running; 0003H: Forward jogging; 0004H: Reserve jogging;	0005H: Decelerate and stop; 0006H: Free stop; 0007H: Fault reset 0008H: Operation prohibited	W/R
Drive status	0x3002 or 0x2002	Bit0 0: Stopped 1: Running Bit1 0: Non-accelerating 1: Accelerating Bit2 0: Non-decelerating state 1: Decelerating Bit3 0: Forward 1: Reserve Bit4 0: No faults 1: Drive failure Bit5 0: GPRS unlocking 1: GPRS locked Bit6 0: No warning 1: Drive warning		R
Drive fault code	0x3003 or 0x2003	Current drive fault code (see fault code table)		R
Upper limit frequency from communication	0x3004 or 0x2004	0~32000 corresponding to0.00Hz~320.00Hz		W/R
Torque setting from communication	0x3005 or 0x2005	0~1000 corresponding to0.0%~100.0%		W/R
Forward maximum frequency limited by torque	0x3006 or 0x2006	0~1000 corresponding to0.0%~100.0%		W/R
Reserve maximum frequency limited by torque	0x3007 or 0x2007	0~1000 corresponding to0.0%~100.0%		W/R
PID value setting from communication	0x3008 or 0x2008	0~1000 corresponding to0.0%~100.0%		W/R
PID feedback value setting from communication	0x3009 or 0x2009	0~1000 corresponding to0.0%~100.0%		W/R
Failure and warning code reading	0x3010 or 0x2010	0~63 are fault codes and 64~are warning codes		R

Output terminal status	0x3018 or 0x2018	External drive output terminal, BII0--Y	BIT1--TA1-TB1-TC1; BIT2--TA2-TB2-TC2	W
AO output	0x3019 or 0x2019	0~10000corresponding to output 0V~10V, 0mA~20mA		W

Note: For other function code addresses, see the "Communication Address" column in the function code table.

When the F00 to F15 parameter group parameters are written with write command (06H), if the highest bit in the address field of the function code parameter is 0, the parameters are only written into the RAM of the drive and are not stored after power failure. If the address field height of the function code parameter is 1, the parameter is written into the EEPROM. For example, F00 group : 0x00XX (write RAM)0x10XX(store in EEPROM).

When using the write command (06H) to write parameters of F16 to F29, if the highest bit in the address field of the function code parameter is 5, it is only written into the RAM of the drive, and is not stored after power failure. If the address field height of the function code parameter is D, the parameter is written into the EEPROM, which is power-off storage. For example, F16 group : 0x50XX(write RAM)0xD0XX(store in EEPROM); Group F17 : 0x51XX(write to RAM)0xD1XX(save to EEPROM).

● **Error code meaning from the slave's response to the exception message**

| Error code	Description	Error	Description	Error code	Description
1	Wrong command code	3	CRC check error	4	Illegal address
5	Illegal data	6	Unchangeable parameters in motion	8	Converter busy (EEPROM in storage)
9	Parameters out of range	10	Unchangeable saved parameters	11	The number of bytes in the parameter read incorrectly

Appendix II: External keyboard Size and Model

- **External double-row display keyboard shape and hole size**

    Model: KBD300-25(Note: LCD is fully compatible with LED panel dimensions and hole sizes (unit: Mm)).
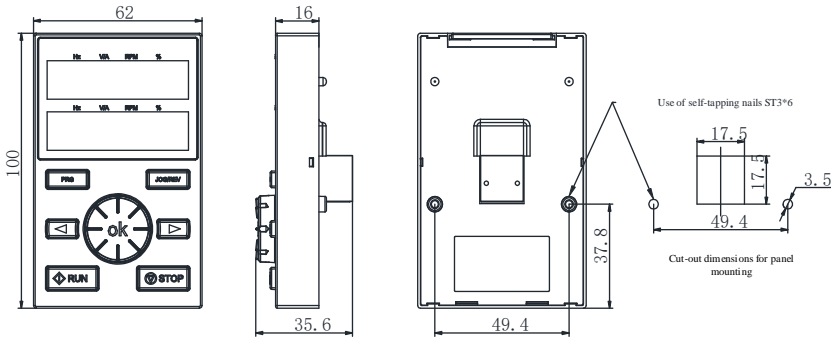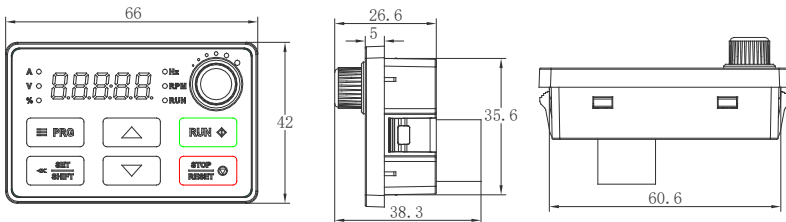

AC01 series external two-row display keyboard size
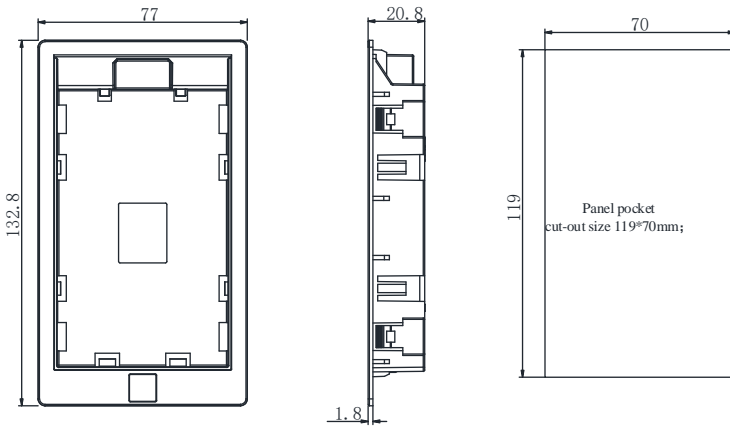
AC01 series external two-row display   keyboard shape and hole size

- **External single-row keyboard shape and hole size**

    Model: KBD10-15 (**Note**: Hole size of mounting plate : 61mmx36mm. (Unit in the figure: Mm))

Version Change Log

Data	Version	Content	Object
2024.03	V1.0	First version released	Software: Versions 2304_00029 and 601_00127
2024.05	V1.1	1. Added KBD01-15 dedicated **keyboard** related contents. 2. Optimized the description of 485 communication and the application of **keyboard**. 3. Adjust and refine the display parameters, parameter settings and parameter attributes of the drives.	Software: 2305_00003, 601_00128 and later versions

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Version:2024 V1.1