

# USER MANUAL

## A100 High Performance Vector Frequency inverter



Table 2-1 A100 frequency inverter model and technical data

Model	Power capacity (KVA)	Input Current (A)	Output Current (A)	Adapted motor	
				kW	HP
<b>Single phase: 220V, 50/60Hz</b>					
A100-0K4S2GB	1	6.5	2.5	0.4	0.5
A100-0K7S2GB	1.5	9.0	4.2	0.55	1.0
A100-1K5S2GB	3.0	15.5	7.5	0.75	2.0
A100-2K2S2GB	4.0	23.0	10.0	2.2	3.0
<b>Three phase: 220V, 50/60Hz</b>					
A100-0K4S2GB	1	3.7	2.5	0.4	0.5
A100-0K7S2GB	1.5	5.1	4.2	0.55	1.0
A100-1K5S2GB	3.0	7.8	7.5	0.75	2.0
A100-2K2S2GB	4.0	11.3	10.0	2.2	3.0
<b>Three phase: 380V, 50/60Hz</b>					
A100-0K7T4GB	1.5	3.4	2.5A	0.75	1
A100-1K5T4GB	3.0	5.0	4.2A	1.5	2
A100-2K2T4GB	4.0	5.8	5.5A	2.2	3
A100-3K0T4GB	5.0	8.5	7.0A	3.0	4
A100-4K0T4GB	5.9	13.3	9.5A	4.0	5
A100-5K5T4GB	8.9	19.6	14.0A	5.5	7.5
A100-7K5T4GB	11.0	24.0	18.5A	7.5	10
A100-11T4GB	17.0	32.0	25.0A	11.0	15
A100-15T4GB	21.0	40.0	32.0A	15.0	20
A100-18T4GB	24.0	46	38.0A	18.5	25
A100-22T4GB	30.0	49.5	45.0A	22	30
A100-30T4GB	40.0	68.0	60.0A	30	40
A100-37T4GB	57.0	78.0	75.0A	37	50

### 2.3 Product technical specifications

Table 2-2 Technical specifications of A100 frequency inverter

Item		Specification
Power Supply	Input power supply voltage	Single/Three Phase 220V Model: 200V ~ 240V Three Phase 380V Model: 380V ~ 440V
	Voltage fluctuation range	-15% ~ 10%
	Input Power	50Hz or 60Hz, Less than 5% fluctuation
Output	Maximum output voltage	3 phase: 0 ~ Input voltage
	Overload capacity	150% rated output current for 60s, 180% rated output current for 10s, 200% rated output current for 1s

Control feature	Control method	VVVF control Speed sensorless vector control (FOC Sensorless)
	Run mode	Speed control, torque control (FOC Sensorless)
	Speed range	1: 100 (VVVF) 1: 200 (FOC Sensorless)
	Speed control accuracy	±0.5% (VVVF) ±0.2% (FOC Sensorless)
	Speed response	5Hz (VVVF) 20Hz (FOC Sensorless)
	Frequency control range	0.00 ~ 650.00Hz
	Input frequency resolution	Digital input: 0.01Hz Analog input: 0.1% of maximum frequency
	Starting torque	150%/0.5Hz (VVVF) 150%/0.25Hz (FOC Sensorless)
	Torque control accuracy	FOC Sensorless: 10%
	VVVF Feature	VVVF curve type: straight line, multi-point, power function, VF separation; Torque boost support: automatic torque boost (factory setting), manual torque boost
	Frequency given ramp	Support linear and S-curve acceleration and deceleration; 4 groups of acceleration and deceleration time, setting range: 0.0s ~ 3600.0s
	DC bus voltage control	OVC (Bus overvoltage control), LVC (Bus undervoltage control)
	Carrier frequency	1kHz ~ 15kHz
	Start method	Direct start (DC braking can be superimposed); speed tracking start
Stop method	Deceleration to stop (DC braking can be superimposed); free stop	
Function	Communication	MODBUS communication
	Input terminal	5 digital input terminals, one of which is high-speed pulse HDI input 2 analog input terminals
	Output terminal	2 digital output terminals; one of which is high-speed pulse HDO output 2 relay output terminals; 1 analog output terminal, supporting 0 ~ 20mA current output or 0 ~ 10V voltage output;
Protection	For the protection function, please refer to Chapter 6 "Fault Analysis and Treatment"	
Environment	Use place	Indoors, free from direct sunlight, no dust, corrosive gas, flammable gas, oil mist, water vapor, dripping water or salt, etc.
	Altitude	0 ~ 3000m. Derating is required for use above 1000 m, the rated output current will be reduced by 1% for each increase of 100 m.
	Ambient temperature	-10°C ~ +40°C, Maximum 50°C. Starting from 40°C, the rated output current will decrease by 1.5% for every 1°C increase
	Humidity	Less than 95%RH, non condensing
	Vibration	Less than 5.9m/s <sup>2</sup> (0.5g)
	Storage temperature	-20°C ~ +60°C
Other	Installation method	Wall-mounted, floor-to-ceiling electric control cabinet type, through-wall type
	Protection level	IP20
	Cooling method	Forced air cooling

## 3.2 Wiring

### 3.2.1 Standard wiring diagram

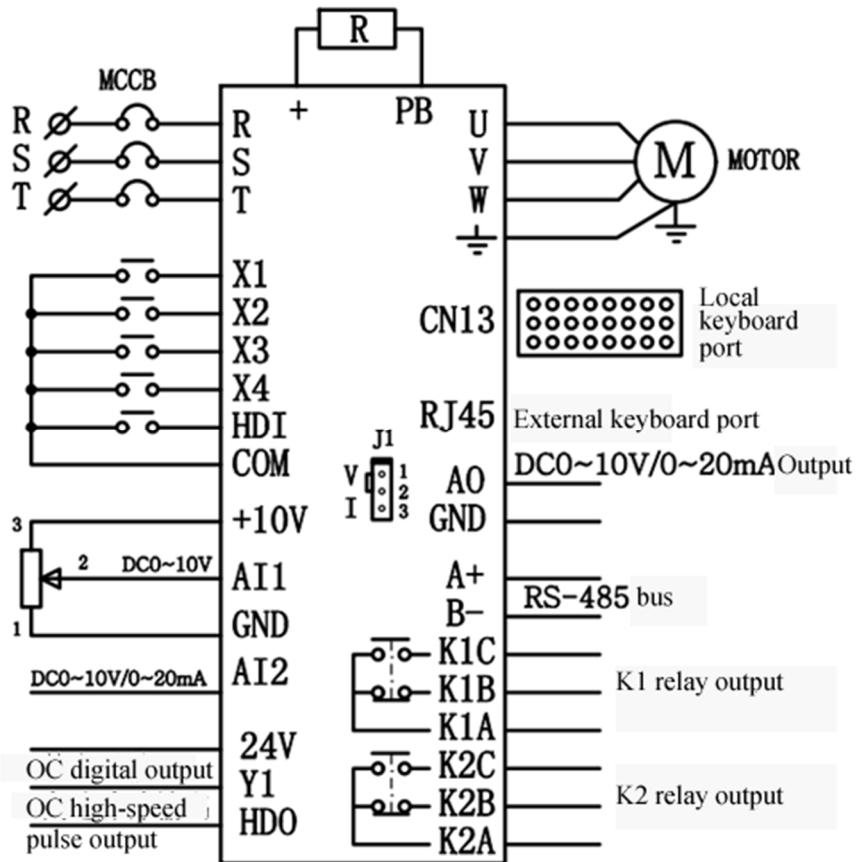




Figure 3-3 Standard wiring diagram

### 3.2.2 Main circuit connection terminal

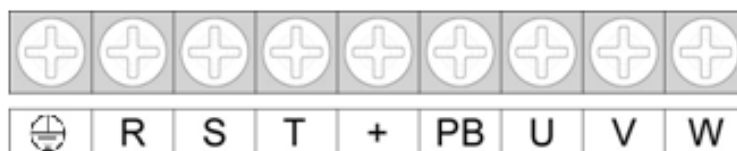
1) Description of main circuit terminals of single-phase frequency inverter:

Terminal mark	Name	Description
R、 T	Single-phase power input terminal	Single-phase 220V AC power connection point, S terminal is suspended
(+)、 (-)	DC bus positive and negative terminals	Common DC bus input point, can also be used for the connection point of external braking unit
(+)、 PB	Braking resistor connection terminal	Connect braking resistor
U、 V、 W	Output terminal	Connect the three-phase motor
	Ground terminal	Ground terminal

2) Description of the main circuit terminals of the three-phase frequency inverter

Terminal mark	Name	Description
R、 S、 T	Three-phase power input terminal	AC input three-phase power connection point
(+)、 (-)	DC bus positive and negative terminals	Common DC bus input point, can also be used for the connection point of external braking unit
(+)、 PB	Braking resistor connection terminal	Connecting point of braking resistor below 30kW (220V is below 15kW)
P、 (+)	Connecting terminal of external reactor	Connection point of external reactor
U、 V、 W	Output terminal	Connect the three-phase motor
	Ground terminal	Ground terminal

The main circuit terminals of each power section are as shown in the following figure..



380V 0.4-7.5kw main circuit terminal (220V model terminal T is empty)

Figure 3-4 Schematic diagram of main circuit terminals

### 3.2.3 Control circuit terminal



Figure 3-5 Schematic diagram of A100 control circuit terminals

**Table 3-2 Description of A100 control circuit terminal definition**

Category	Terminal symbol	Terminal name	Function Description
Power supply	10V-GND	Output 10V power	Provide 10V power to the outside, maximum output current: 50mA Generally used as the power supply for external potentiometers, the resistance range of the potentiometer: 1kΩ~10kΩ
	24V-COM	Output 24V power	Provide 24V power to the outside, generally used as power for digital input and output terminals and external sensor Maximum output current of the power supply: 100mA
Analog input	AI1-GND	Analog input terminal 1	1. Input range: DC 0V~10V/0mA~20mA, voltage/current can be selected from the (06-10) menu. 2. Input impedance: voltage input impedance 20kΩ, current input impedance 510Ω.
	AI2-GND	Analog input terminal 2	
Digital input	X1-COM	Digital input 1	1. Isolation of Opto-couplers 2. Input impedance: 3.3kΩ 3. Input voltage level range: 9V~30V 4. HDI can be used as a digital input, or as a high-speed pulse input
	X2-COM	Digital input 2	
	X3-COM	Digital input 3	
	X4-COM	Digital input 4	
	HDI-COM	Digital input	
Analog output	AO1-GND	Analog output 1	The voltage or current output is determined by the J1 line on the control board. Output voltage range: 0V~10V Output current range: 0mA~20mA
Digital Output	DO1-COM	Digital Output 1	Isolation of Opto-couplers , unipolar OC output Output voltage range: 0V~24V Output current range: 0mA~50mA Note: HDO can be used as a digital output or as a high-speed pulse output
	HDO-COM	Digital Output 2	
Relay Output	K1A-K1B K2A-K2B	Normally Closed Terminal	Contact drive capability: AC250V, 3A, COSφ=0.4。 DC 30V, 1A
	K1A-K1C K2A-K2C	Normally Open Terminal	

## Function Code List

Symbol Description:

"○" means that the set value of this parameter can be changed when the frequency inverter is in stop or running state.

"●" means that the set value of this parameter cannot be changed when the frequency inverter is in the running state.

"※" means that the value of this parameter is the actual test record value and cannot be changed.

Function Code	Name	Description	Factory Default	Attributes
<b>Group 00 Basic Parameters</b>				
<b>00-00</b>	Frequency inverter type G/P	0: Type G: Constant torque load 1: Type P: fan and water pump load	0	●
<b>00-01</b>	Motor control method	0: Reserve 1: Vector Control without speed sensor 2 (with torque control) 2: VF Control	2	●
<b>00-02</b>	Operation command source selection	0: keyboard command (L/R light off) 1: Terminal command (L/R light flashes) 2: Communication command (L/R light is on)	0	●
<b>00-03</b>	Frequency source A selection	0: Digital setting (preset frequency 00-08, UP/DOWN or keyboard encoder can be modified, power-down memory) 1: AI1 (0 ~ 10V or 0 ~ 20mA) 2: AI2 (0 ~ 10V or 0 ~ 20mA) 3: AI3 (extended) 4: HDI (High Speed Pulse Input) 5: Simple PLC 6: Multi-speed 7: PID 8: RS-485 communication 9: Keyboard analog potentiometer	0	●
<b>00-04</b>	Frequency source B selection	Same as above (00-03)	3	●
<b>00-05</b>	Frequency source B reference range selection	0: Maximum frequency 1: Frequency source A	0	○
<b>00-07</b>	Frequency Source Combination	0: Frequency source A 1: Frequency source 2: Frequency source A+Frequency source B 3: Frequency source A -Frequency source B 4: Maximum of both MAX(A,B) 5: Minimum of both MIN(A,B)	0	○
<b>00-08</b>	Keyboard	0.00Hz ~ (00-08)	50.00Hz	○

Function Code	Name	Description	Factory Default	Attributes
	preset frequency			
<b>00-09</b>	Motor Rotation Direction	0: Same direction 1: Opposite direction 2: Reversal is prohibited	0	●
<b>00-10</b>	Maximum frequency	00-09 ~ 400.00Hz	50.00Hz	●
<b>00-12</b>	Upper limit frequency	00-10 ~ (00-08)	50.00Hz	●
<b>00-14</b>	Lower limit frequency	0.00Hz ~ (00-09)	0.00Hz	●
<b>00-15</b>	Carrier frequency	1.0 ~ 15.0kHz	Model Related	○
<b>00-16</b>	Zero frequency output selection	0: No output 1: There is output 2: DC braking output (set by 05-11 size)	0	○
<b>00-17</b>	Acceleration time 1	0.0 ~ 3600.0s	Model Related	○
<b>00-18</b>	Deceleration time 1	0.0 ~ 3600.0s	Model Related	○
<b>00-19</b>	Industry application macro selection	0~65535	0	○
<b>Group 01 Motor parameters</b>				
<b>01-01</b>	Automatic measurement of motor parameters	0: No function 1: Dynamic test 2: Static test 1 3: Static test 2	0	●
<b>01-02</b>	Motor rated power	0.1 ~ 1000.0kW	Model Related	●
<b>01-03</b>	Motor rated frequency	0.01Hz ~ Maximum frequency (00-08)	50.00Hz	●
<b>01-04</b>	Motor rated speed	1 ~ 36000rpm	Model Related	●
<b>01-05</b>	Motor rated voltage	0~2000V	Model Related	●
<b>01-06</b>	Motor rated current	0.1 ~ 6553.5A	Model Related	●
<b>01-07</b>	Motor Stator Resistance	0.001~65.535Ω	Model Related	○
<b>01-08</b>	Motor Rotor Resistance	0.001~65.535Ω	Model Related	○
<b>01-09</b>	Motor leakage inductance	0.1~6553.5mH	Model Related	○
<b>01-10</b>	Motor mutual inductance	0.1~6553.5mH	Model Related	○
<b>01-11</b>	Motor idle current	0.1~6553.5A	Model Related	○
<b>Group 02 VF control</b>				
<b>02-00</b>	VF Curve Setting	0: Straight line VF 1: Multipoint VF(V1 < V < V3, F1 < F2 < F3) 2: 1.3 power VF 3: 1.7 power VF 4: 2.0 power VF 5: VF separation 6: Reserved	0	●
<b>02-01</b>	VF Torque Boost	0.0%: Automatic Torque Boost 0.1~10.0%: Manually set	0.0%	○
<b>02-02</b>	VF Torque Boost Cutoff Frequency	0.0 ~ 50.0%	20.0%	○



Function Code	Name	Description	Factory Default	Attributes
	Level			
<b>02-03</b>	Multipoint VF maximum frequency F3	0.00Hz ~ (01-02)	0.00Hz	
<b>02-04</b>	Multipoint VF maximum voltage V3	0.0% ~ 110.0%	0.0%	○
<b>02-05</b>	Multipoint VF Intermediate Frequency F2	0.00Hz ~ F3	0.00Hz	○
<b>02-06</b>	Multipoint VF Intermediate Voltage V2	0.0% ~ V3	0.0%	○
<b>02-07</b>	Multipoint VF minimum frequency F1	0.00Hz ~ F2	0.00Hz	○
<b>02-08</b>	Multi-point VF minimum voltage V1	0.0% ~ V2	0.0%	○
<b>02-09</b>	VF slip compensation gain	0.0 ~ 200.0%	100.0%	○
<b>02-10</b>	VF low frequency Oscillation suppression coefficient	0~100	10	○
<b>02-11</b>	VF high frequency oscillation suppression coefficient	0 ~ 100	10	○
<b>02-12</b>	VF oscillation suppression frequency switching	0.00Hz ~ Maximum frequency	30.00Hz	○
<b>02-13</b>	Automatic voltage regulator function AVR	0: Cancel AVR 1: Full AVR 2: Reserved	1	○
<b>02-14</b>	Automatic power saving operation	0: No function 1: Turn on automatic power saving operation	0	○
<b>02-15</b>	VF constant power weak magnetic constant	1.00~1.30	1.00	○
<b>02-16</b>	VF separate voltage source	0: Digital setting (02-17) 1: AI1 2: AI2 3: AI3 (extended) 4: HDI 5: Multi-speed	0	○

Function Code	Name	Description	Factory Default	Attributes
		6: PID 7: RS-485 communication 8: Keyboard analog potentiometer		
02-17	Digital setting of VF separation voltage	0.0~100.0%	0.0%	○
02-18	VF separation voltage acceleration time	0.0 ~ 3600.0s	0.0s	○
02-19	VF separation voltage deceleration time	0.0 ~ 3600.0s	0.0s	○
02-20	VF separation voltage upper limit	(02-21)~100.0%	100.0%	●
02-21	The lower limit of VF separating voltage	0.0~(02-20)	0.0%	●
<b>Group 03 Motor Vector Control Parameters</b>				
03-00	ASR Proportional Gain P1	0.0~200.0	20.0	○
03-01	ASR integration time I1	0.000 ~ 10.000s	0.200s	○
03-02	ASR Proportional Gain P2	0.0~200.0	20.0	○
03-03	ASR integration time I2	0.000 ~ 10.000s	0.200s	○
03-04	ASR Switch frequency 1	0.00Hz~(03-22)	5.00Hz	○
03-05	ASR switch frequency 2	(03-21)~ Maximum frequency	10.00Hz	○
03-06	ASR Low Pass Filter Constant	0~10	0	○
03-07	Electric slip compensation gain	50~200%	100%	○
03-08	Braking slip compensation gain	50~200%	100%	○
03-09	ACR Current Ring KP	0~65535	1000	○
03-10	ACR Current Ring KI	0~65535	1000	○
03-11	Vector 2 constant power weak magnetic constant	0.1~2.0	0.3	○
03-12	Constant power minimum weak magnetic level	10%~100%	20%	○

Function Code	Name	Description	Factory Default	Attributes
03-13	Field weakening proportional gain	0~8000	1000	○
03-14	Vector output voltage upper limit	0.0~120.0%	100.0%	○
03-15	Motor pre-excitation time	0.000~10.000s	0.300s	○
<b>Group 04 Torque Control Parameters</b>				
04-00	Torque setting source selection	0: Speed control (torque is invalid) 1: Torque digital setting (04-01) 2: Torque is set by AI1 3: Torque is set by AI2 4: Torque is set by AI3 5: Torque is set by HDI 6: Torque is set by multi-speed 7: Torque RS-485 communication setting 8: Keyboard analog potentiometer setting	0	○
04-01	Torque digital setting	-300.0~300.0%	50.0%	○
04-02	Torque filter time	0.000~10.000s	0.010s	○
04-03	Frequency source of positive torque upper limit	0: Torque upper limit frequency digital setting (04-05 and 04-06) 1: AI1 2: AI2 3: AI3 (extended) 4: HDI 5: Multi-speed 6: RS-485 communication 7: Keyboard analog potentiometer	0	○
04-04	Reverse torque upper limit frequency source	Same as above	0	○
04-05	Positive torque upper limit frequency Digital setting	0.00Hz ~ Maximum frequency	50.00Hz	○
04-06	Reverse torque upper limit frequency Digital setting	0.00Hz ~ Maximum frequency	50.00Hz	○
04-07	Electric torque limit mode selection	0: Digital setting of torque upper limit value (04-09 and 04-10) 1: AI1 2: AI2 3: AI3		○

Function Code	Name	Description	Factory Default	Attributes
		4: HDI 5: RS-485 communication 6: Keyboard analog potentiometer		
04-08	Braking torque limit mode selection	Same as above		○
04-09	Electric torque limit digital setting	0.0~300.0%	180.0%	○
04-10	Braking torque limit digital setting	0.0~300.0%	180.0%	○
04-11	Vector Low Frequency Torque Compensation	0.0~100.0%	0.0%	○
04-12	Vector High Frequency Torque Compensation	0.0~100.0%	0.0%	○
<b>Group 05 Start and stop control parameters</b>				
05-00	Start method	0: Start directly 1: DC braking first, then start 2: Speed tracking start	0	●
05-01	Start frequency	0.00~50.00Hz	0.50Hz	●
05-02	Starting frequency holding time	00.0~50.0s	0.0s	●
05-03	Start DC braking current	0.0~100.0%	0.0%	●
05-04	Start DC braking time	0.00~50.00s	0.00s	●
05-05	Acceleration and deceleration method	0: Linear acceleration/ deceleration 1: S curve acceleration /deceleration	0	●
05-06	Acceleration time at the beginning of S curve	0.0~50.0s	0.1s	○
05-07	Deceleration time at the end of S curve	0.0~50.0s	0.1s	○
05-08	Stop method	0: Decelerate to stop 1: Free stop	0	○
05-09	Start frequency of DC braking at stop	0.00~ Maximum frequency	0.00Hz	○
05-10	DC braking waiting time at stop	0.00~50.00s	0.00s	○
05-11	DC brake current	0.0~100.0%	0.0%	○

Function Code	Name	Description	Factory Default	Attributes
	at stop			
05-12	DC braking time at stop	0.00~50.00s	0.00s	○
05-16	Dead time of forward and reverse rotation	0.0~3600.0s	0.00s	○
05-17	Forward and reverse switching mode	0: Zero frequency switching 1: Starting frequency switch 2: Stop speed switching	0	●
05-18	Stopping speed	0.00~100.00Hz	0.50Hz	●
05-19	Stop speed detection method	0: Detect according to the speed setting value 1: Detect according to speed feedback value	1	●
05-20	Feedback speed detection time	0.00~100.00s	0.05s	●
05-21	Start delay	0.0~60.0s	0.0s	○
05-22	Stopping speed delay	0.0~100.0s	0.0s	○
05-23	Braking unit operation	0: Disable 1: Enable	1	○
05-24	Braking unit operating voltage	200.0~2000.0V (220V model: 380V, 380V model: 700V)	Model related	○
05-25	Excitation braking intensity	0~150 0: Disable Greater than 0: the larger the value, the better the braking effect	0	○
<b>Group 06 Input Terminal Parameters</b>				
06-00	HDI Input Mode	0: High-speed pulse input 1: Terminal switch value input	1	●
06-01	X1 terminal function selection	13: Switch between A setting and B setting 14: Switch between combination setting and A setting 15: Switch between combination setting and B setting 16: Multi-speed terminal 1	1	●

Function Code	Name	Description	Factory Default	Attributes
06-02	X2 terminal function selection	17: Multi-speed terminal 2 18: Multi-speed terminal 3 19: Multi-speed terminal 4 20: Multi-speed pause 21: Acceleration/Deceleration time selection 1 22: Acceleration/Deceleration time selection 2 23: Simple PLC stop reset	2	•
06-03	X3 terminal function selection	24: Simple PLC pause 25: PID control pause 26: Swing frequency pause (stop at the current frequency) 27: Swing frequency reset (return to center frequency) 28: Counter reset	4	•
06-04	X4 terminal function selection	29: Torque/Speed control switching 30: Prohibition of acceleration and deceleration 31: Counter trigger 32: Length reset 33: Temporarily clear the frequency increase or decrease setting 34: DC Brake	5	•
06-09	HDI terminal function selection	35: Reserved, (Motor 1 switches to motor 2) 36: Command switch to keyboard 37: Command switch to terminal 38: Command switch to communication 39: Pre-excitation command 40: Reset power consumption 41: Keep power consumption 42: Emergency stop (extreme speed braking, vector mode has a stronger effect) 43: External terminal stop (stop according to deceleration time)	0	•
06-10	Input terminal logic selection	Bit0~3: X1~X4, Bit8: HDI 0 is positive logic, 1 is negative logic;	000	○
06-11	Input terminal filter time	0.000~1.000s	0.010s	○

Function Code	Name	Description	Factory Default	Attributes
06-12	Virtual terminal setting	0x000~0x1FF 0: Disable, 1: Enable Bit0~bit3: X1~X4 Bit8: HDI	0x000	●
06-13	Terminal command mode	0: Two-line type 1 1: Two-wire type 2 2: Three-wire type 1 3: Three-wire type 2	0	●
06-14	X1 terminal turn-on delay	0.00~50.000s	0.000s	○
06-15	X1 terminal turn-off delay	0.00~50.000s	0.000s	○
06-16	X2 terminal turn-on delay	0.00~50.000s	0.000s	○
06-17	X2 terminal turn-off delay	0.00~50.000s	0.000s	○
06-18	X3 terminal turn-on delay	0.00~50.000s	0.000s	○
06-19	X3 terminal turn-off delay	0.00~50.000s	0.000s	○
06-20	X4 terminal turn-on delay	0.00~50.000s	0.000s	○
06-21	X4 terminal turn-off delay	0.00~50.000s	0.000s	○
06-30	HDI terminal turn-on delay	0.00~50.000s	0.000s	○
06-31	HDI terminal turn-off delay	0.00~50.000s	0.000s	○
06-33	Terminal start protection selection when power is on	0: Protect 1: Not protect	0	○
06-34	UP/DOWN terminal control setting	Ones place: UP/DOWN terminal enable 0: effective 1: invalid Tens place: frequency source control selection 0: Only valid for digital settings of frequency source A and B 1: All frequency sources are valid 2: Multi-speed is invalid when Multi-speed has priority Hundred's place: Stop selection 0: The setting is valid 1: Effective running, cleared after shutdown 2: The operation is effective, and the stop	000	○

Function Code	Name	Description	Factory Default	Attributes
		command is cleared		
<b>06-35</b>	UP terminal frequency change rate	0.01~50.00Hz/s	0.50Hz/s	○
<b>06-36</b>	DOWN terminal frequency change rate	0.01~50.00Hz/s	0.50Hz/s	○
<b>06-37</b>	HDI Input lower limit	0.000kHz~(06-35)	0.000kHz	○
<b>06-38</b>	HDI lower limit corresponding setting	-100.0%~100.0%	0.0%	○
<b>06-39</b>	HDI Input the upper limit	(06-33)~50.000kHz	50.000kHz	○
<b>06-40</b>	HDI upper limit corresponding setting	-100.0%~100.0%	100.0%	○
<b>06-41</b>	HDI filter time	0.000s~10.000s	0.100s	○
<b>06-42</b>	AI1 lower limit value	0.00V~(06-44)	0.00V	○
<b>06-43</b>	AI1 lower limit corresponding setting	-100.0%~100.0%	0.0%	○
<b>06-44</b>	AI1 upper limit value	(06-42)~10.00V	10.00V	○
<b>06-45</b>	AI1 upper limit corresponding setting	-100.0%~100.0%	100.0%	○
<b>06-46</b>	AI1 Input filter time	0.000s~10.000s	0.100s	○
<b>06-47</b>	AI2 lower limit value	0.00V~(06-39)	0.00V	○
<b>06-48</b>	AI2 lower limit corresponding setting	-100.0~100.0%	0.0%	○
<b>06-49</b>	AI2 upper limit value	(06-47)~10.00V	10.00V	○
<b>06-50</b>	AI2 upper limit corresponding setting	-100.0~100.0%	100.0%	○
<b>06-51</b>	AI2 Input filter time	0.000s~10.000s	0.100s	○
<b>06-52</b>	AI3 lower limit value	-10.00V~(06-54)	0.00V	○



Function Code	Name	Description	Factory Default	Attributes
06-53	AI3 lower limit corresponding setting	-100.0~100.0%	0.0%	○
06-56	AI3 upper limit value	(06-54)~10.00V	10.00V	○
06-57	AI3 upper limit corresponding setting	-100.0~100.0%	100.0%	○
06-58	AI3 Input filter time	0.000s~10.000s	0.100s	○
06-59	AI input IV type selection	unit's digit: AI1 ten' s digit: AI2 0: AI terminal voltage input, 1: AI terminal current input	10	○
<b>Group 07 Output Terminal Parameters</b>				
07-00	HDO Terminal Output Mode	0: High-speed pulse output 1: Terminal switching output	1	●
07-01	Y1 Terminal Output Function Selection	0: Invalid 1: Running 2: Forward running 3: Reverse running 4: Jog running	0	○
07-02	HDO Terminal Output Function Selection	5: Frequency inverter failure 6: Frequency level detection FDT1 7: Frequency level detection FDT2 8: Frequency arrives	0	○
07-03	K1 Relay output function selection	9: Running at zero speed 10: Upper limit frequency reached 11: Lower limit frequency reached 12: Ready to run 13: Pre-excitation	1	○
07-04	K2 Relay output function selection	14: Overload alarm 15: Underload alarm 16: Simple PLC stage completed 17: Simple PLC cycle completed 18: The set count value is reached 19: The designated count value arrives 20: External fault 22: The running time arrives	5	○

Function Code	Name	Description	Factory Default	Attributes
		23: Communication virtual terminal output		
<b>07-05</b>	AO1 Output function selection	0: Running frequency 1: Setting frequency 2: Ramp given frequency 3: Running speed 4: Output current (2 times the rated value of the frequency inverter) 5: Output current (2 times the rated value of the motor)	0	○
<b>07-07</b>	HDO Pulse Output Function Selection	6: Output voltage 7: Output power 8: Set torque 9: Output torque 10: Analog AI1 input value 11: Analog AI2 input value 12: Analog AI3 input value 13: High-speed pulse HDI input value 14: Communication setting value output 15: Reserved 22: Torque current (3 times the rated value of the motor)	0	○
<b>07-08</b>	AO1 Output Lower Limit	-100.0%~(07-10)	0.0%	
<b>07-09</b>	AO1 Output Lower Limit Corresponding Value	0.00~10.00V	0.00V	○
<b>07-10</b>	AO1 Output Upper Limit	(07-08)~100.0%	100.0%	○
<b>07-11</b>	AO1 Output Upper Limit Corresponding Value	0.00~10.00V	10.00V	○
<b>07-12</b>	AO1 Output filter	0.000s~10.000s	0.000s	○

Function Code	Name	Description	Factory Default	Attributes
	time			
<b>07-18</b>	HDO Output Lower Limit	-100.0%~(07-20)	0.0%	○
<b>07-19</b>	HDO Output Lower Limit Corresponding Value	0.00~50.00kHz	0.00kHz	○
<b>07-20</b>	HDO Output Upper Limit	(07-18)~100.0%	100.0%	○
<b>07-21</b>	HDO Output Upper Limit Corresponding Value	0.00~50.00kHz	50.00kHz	○
<b>07-22</b>	HDO Output filter time	0.000s~10.000s	0.000s	○
<b>07-23</b>	Y1 Turn-on delay	0.00~50.000s	0.000s	○
<b>07-24</b>	Y1 turn-off delay	0.00~50.000s	0.000s	○
<b>07-25</b>	HDO Turn-on delay	0.00~50.000s	0.000s	○
<b>07-26</b>	HDO OFF delay	0.00~50.000s	0.000s	○
<b>07-27</b>	K1 Turn-on delay	0.00~50.000s	0.000s	○
<b>07-28</b>	K1 turn-off delay	0.00~50.000s	0.000s	○
<b>07-29</b>	K2 Turn-on delay	0.00~50.000s	0.000s	○
<b>07-30</b>	K2 turn-off delay	0.00~50.000s	0.000s	○
<b>07-31</b>	Output terminal polarity selection	0~F (Bit0~3: Y1, HDO, K1, K2)	0	○
<b>Group 08 Keyboard Display Parameters</b>				
<b>08-00</b>	User Password	0~65535 (00000: No password)	00000	○
<b>08-01</b>	MFK/JOG Key function selection	0: No Function 1: Jog Running JOG 2: Shift Key (SHIFT) 3: Forward/Reverse switching 4: Clear UP/DOWN settings 5: Free Stop 6: The operating command source is switched in order (08-02)	1	●
<b>08-02</b>	MFK Key operation command source switch	0: Keyboard control → terminal control → communication control 1: Keyboard control ↔ terminal control 2: Keyboard control ↔ communication control 3: Terminal control ↔ communication control	0	○

Function Code	Name	Description	Factory Default	Attributes
08-03	STOP/RESET Key Function	0: Only valid for panel control 1: Valid for both panel and terminal control at the same time 2: Valid for panel and communication control at the same time 3: Valid for all control modes	0	○
08-04	Restore factory parameters	0: No operation 1: Restore the default value 2: Clear fault record 3: Lock the keyboard	0	●
08-05	Keyboard digital control setting	0000~1223 unit's digit: frequency enable selection 0: ^/√ keys and encoder are both valid 1: Only ^/√ keys are valid 2: Only encoder 3: Both the ^/√ key and the encoder are invalid ten's digit: frequency control selection 0: Only valid for keyboard number setting 1: All frequency modes are valid 2: Multi-speed is invalid when Multi-speed is given priority hundred's digit: Action selection when stopping 0: The setting is valid 1: Valid during running, cleared after shutdown 2: Valid during running, cleared after receiving stop command thousand's digit: ^/√ key and encoder integral function 0: The integral function is valid 1: The integral function is invalid	0000	○
08-06	Keyboard Encoder and UP/DOWN Key resolution adjustment selection	1: unit's digit adjustment 2: ten's digit adjustment 3: hundred's digit; adjustment 4: thousand's digit adjustment Note: From the right side of the digital tube, ignore the frequency decimal point	2	○
08-07	Frequency setting	00~11	00	○

Function Code	Name	Description	Factory Default	Attributes
	action selection when power off	unit's digit: action selection when the encoder adjusts the frequency when the power is off ten's digit: Action selection when the communication setting frequency is powered off 0: Store when power off 1: Cleared when power off		
<b>08-08</b>	Function code parameter copy	0: No operation 1: Upload function parameters to the keyboard 2: Download keyboard function parameters to the Frequency inverter (including motor parameters) 3: Download keyboard function parameters to the Frequency inverter (excluding motor parameters) 4: Download keyboard function parameters to the Frequency inverter (only motor parameters)	0	•
<b>08-09</b>	LED Running Status Display parameters 1	0000~FFFF BIT0: Operating frequency (Hz is on) BIT1: Set frequency (Hz flashing) BIT2: Bus voltage (V is on) BIT3: Output voltage (V is on) BIT4: Output current (A is on) BIT5: Running speed (rpm is on) BIT6: output power (% is on) BIT7: Output torque (% is on) BIT8: PID given value (% flashing) BIT9: PID feedback value (% is on) BIT10: Input terminal status BIT11: Output terminal status BIT12: Torque setting value (% is on) BIT13: Pulse counting value BIT15: Current segment number of PLC and multi-speed	033F	○
<b>08-10</b>	LED Running Status Display parameters 2	0000~FFFF BIT0: Analog AI1 value (V is on) BIT1: Analog AI2 value (V is on)	0000	○

Function Code	Name	Description	Factory Default	Attributes
		BIT2: Analog AI3 value (V is on) BIT3: High-speed pulse HDI frequency BIT4: Motor overload percentage (% is on) BIT5: Frequency inverter overload percentage (% is on) BIT6: Ramp frequency given value (Hz is on) BIT7: Linear speed BIT8: AC incoming line current BIT9: Upper limit frequency		
<b>08-11</b>	LED Stop display parameters	0000~FFFF BIT0: Set frequency (Hz is on, the frequency flashes slowly) BIT1: Bus voltage (V is on) BIT2: Input terminal status BIT3: Output terminal status BIT4: PID given value (% flashing) BIT5: PID feedback value (% is on) BIT6: Torque setting value (% is on) BIT7: Analog AI1 value (V is on) BIT8: Analog AI2 value (V is on) BIT9: Analog AI3 value (V is on) BIT10: High-speed pulse HDI frequency BIT11: Current segment number of PLC and multi-speed BIT12: Pulse count value BIT14: Upper limit frequency	038B	○
<b>08-12</b>	Software version	0.00~655.35	-	※
<b>08-13</b>	Rectifier temperature	0~120.0°C	-	※
<b>08-14</b>	Frequency inverter temperature	0~120.0°C	-	※
<b>08-15</b>	Frequency display coefficient	0.01~10.00	1.00	○
<b>08-16</b>	Rotational speed display coefficient	0.1~999.9%	97.3%	○
<b>08-17</b>	Line speed display	0.1~999.9%	1.0%	○

Function Code	Name	Description	Factory Default	Attributes			
	coefficient						
08-18	Input power factor display coefficient	0.00~1.00	0.56	○			
08-19	Cumulative running time	0~65535h	-	※			
08-20	Monitor the high level of accumulated power consumption	Accumulated power consumption =(08-20)*1000+(08-21)	0kWh	※			
08-21	Monitor the low level of accumulated power consumption		0.0kWh	※			
08-22	Set high initial value of power consumption	Initial power consumption =(08-22)*1000+(08-23)	0kWh	○			
08-23	Set low initial value of power consumption		0.0kWh	○			
08-24	Barcode1			※			
08-25	Barcode2			※			
08-26	Barcode3			※			
08-27	Barcode4			※			
08-28	Barcode5			※			
08-29	Barcode6			※			
08-30	Motor power display correction coefficient	0.00~3.00	1.00	○			
<b>Group 09 Fault Record Parameters</b>							
09-00	Current fault code	Fault Code	Fault name	Fault Code	Fault name		※
09-01	Previous failure code						※
09-02	The previous two fault codes	0	No failure	29	-		※
09-03	The previous three failure codes	1	Frequency inverter unit protection	30	Underload fault		※
09-04	The previous four failure codes	2	Acceleration overcurrent	31	PID feedback disconnection		※
09-05	The previous five failure codes						※
09-06	Current fault operation	3	Deceleration	40	Fast current		※

Function Code	Name	Description				Factory Default	Attributes
	frequency		overcurrent		limiting fault		
<b>09-07</b>	Current fault ramp given frequency	4	Constant speed overcurrent	42	Speed deviation is too large		※
<b>09-08</b>	Current fault output voltage	5	Acceleration overvoltage	48	Electronic overload fault		※
<b>09-09</b>	Current fault output current	6	Deceleration overvoltage	51	Initial position misalignment		※
<b>09-10</b>	Current fault bus voltage	7	Constant speed overvoltage	60	Brake tube protection		※
<b>09-11</b>	Temperature of the current faulty module	8	-				※
<b>09-12</b>	Current fault input terminal status	9	Bus undervoltage				※
<b>09-13</b>	Current fault output terminal status	10	Frequency inverter overload				※
<b>09-14</b>	Operating frequency of the previous fault	11	Motor overload				※
<b>09-15</b>	The given frequency of the previous fault ramp	12	Input phase loss				※
<b>09-16</b>	The output voltage of the previous failure	13	Output phase loss				※
<b>09-17</b>	Output current of previous fault	14	IGBT overheating				※
<b>09-18</b>	Bus voltage at the previous failure	15	External fault				※
<b>09-19</b>	The temperature of the previous faulty module	16	Communication fault				※
<b>09-20</b>	Input terminal status of previous fault	17	-				※
<b>09-21</b>	Output terminal status of previous fault	18	Current detection fault				※
<b>09-22</b>	Operating frequency of the previous two faults	19	Motor tuning fault				※
<b>09-23</b>	The given	20	-				※
		21	EEPROM fault				※
		23	Short circuit to ground fault				※
		26	Running time arrives				※



Function Code	Name	Description	Factory Default	Attributes
	frequency of the previous two fault ramps			
<b>09-24</b>	Output voltage of the previous two faults			※
<b>09-25</b>	The output current of the previous two faults			※
<b>09-26</b>	Bus voltage of the previous two faults			※
<b>09-27</b>	The temperature of the previous two faulty modules			※
<b>09-28</b>	Input terminal status of the previous two faults			※
<b>09-29</b>	Output terminal status of the previous two faults			※
<b>Group 10 Protection Parameters</b>				
<b>10-00</b>	Motor overload protection selection	0: No action 1: Common motor 2: Variable frequency motor	2	●
<b>10-01</b>	Motor Overload Protection Coefficient	20.0%~120.0%	100.0%	○
<b>10-02</b>	Overvoltage stall protection enable	0: Invalid 1: Valid	1	○
<b>10-03</b>	Overvoltage stall action voltage	220V mode: 120~150%	120%	○
		380V mode: 120~150%	140%	
<b>10-04</b>	Overcurrent protection selection	unit's digit: software over-current protection enable 0: invalid, 1: valid ten's digit: hardware current limit protection enable 0: valid, 1: invalid Hundred's digit: Frequency inverter unit over-current fault release blockade selection 0: can be released 1: The blockade can be released after 60 seconds	101	●

Function Code	Name	Description	Factory Default	Attributes
		2: Always block, re-power on to release		
10-05	Over-current stall protection current	50.0~200.0%	Model Related	●
10-06	Over-churn rate	0.00~50.00Hz(Change value per second)	10.00Hz	●
10-07	Input and output phase loss protection	unit's digit: input phase loss protection enable ten's digit: output phase loss protection enable 0 invalid, 1 valid	11	○
10-08	Underload and overload protection action	unit's digit : Underload and overload early warning option 0: Early warning of motor under-overload 1: Early warning for frequency inverter under-overload ten's digit:: underload and overload action selection 0: Frequency inverter under-overload early warning and continue to run 1: Frequency inverter underload early warning, stop after overload 2: Frequency inverter overload pre-warning and continue to run, stop after under load 3: The frequency inverter will stop after underload Hundreds' digit: underload and overload protection enable 0: Valid for the whole process, 1: Valid for constant speed	000	○
10-09	Overload Detection Level	(10-11)~200%	Model Related	○
10-10	Overload detection time	0.1~3600.0s	1.0s	○
10-11	Underload detection level	0~(10-09)	50%	○
10-12	Underload detection time	0.1~3600.0s	1.0s	○
10-13	Automatic fault reset times	0~10	0	○
10-14	Fault automatic reset interval	0.1~3600.0s	1.0s	○
10-15	Overvoltage point setting	0~2500.0V	Model Related	○

Function Code	Name	Description	Factory Default	Attributes
10-16	Undervoltage point setting	0~2000.0V	Model Related	○
10-17	Special function selection	unit's digit: Unstable voltage, automatically reduce frequency ten's digit: Frequency reaches the second acceleration and deceleration time for switching 0: invalid, 1: valid	00	○
10-18	Output terminal fault action selection	unit's digit: undervoltage fault action ten's digit: action during automatic reset 0: valid, 1: invalid	00	○
10-19	Restart option after instantaneous power failure	0: Do not continue to run 1: Continue to run	0	○
10-20	Waiting time for instantaneous power failure and re operation	0.0~3600.0s	1.0s	○
10-21	Instantaneous power-down frequency reduction enable	0: invalid, 1: valid	0	○
10-22	Instantaneous power down frequency reduction constant	0.00Hz~ Maximum frequency (change value per second)	10.00Hz	○
10-23	Speed deviation detection value	0.0~50.0%	10.0%	○
10-24	Speed deviation detection time	0.0~10.0s	0.5s	○
<b>Group 11 Auxiliary Function Parameters</b>				
11-00	Jog operation frequency	0.00Hz~ Maximum frequency	5.00Hz	○
11-01	Jog acceleration time	0.0~3600.0s	Model related	○
11-02	Jog deceleration time	0.0~3600.0s	Model Related	○
11-03	Acceleration time 2	0.0~3600.0s	Model Related	○
11-04	Deceleration time 2	0.0~3600.0s	Model Related	○
11-05	Acceleration time 3	0.0~3600.0s	Model Related	○

Function Code	Name	Description	Factory Default	Attributes
11-06	Deceleration time 3	0.0~3600.0s	Model Related	○
11-07	Acceleration time 4	0.0~3600.0s	Model Related	
11-08	Deceleration time 4	0.0~3600.0s	Model Related	
11-09	Operating frequency is lower than the lower limit frequency	0: Run at lower frequency limit 1: Stop 2: Hibernation	0	○
11-10	Hibernation recovery delay	0.0~3600.0s	0.0s	○
11-11	Droop frequency	0.00~10.00Hz	0.00Hz	○
11-12	Cooling fan control	0: Follow the frequency inverter to run 1: Always running	0	○
11-19	Set count value	(11-20)~65535	0	○
11-20	Specified count value	0~(11-19)	0	○
11-21	Timing running time	0~65535min	0min	○
11-22	Jump frequency 1	0.00~ Maximum frequency	0.00Hz	○
11-23	Jump frequency amplitude 1	0.00~ Maximum frequency	0.00Hz	○
11-24	Jump frequency 2	0.00~ Maximum frequency	0.00Hz	○
11-25	Jump frequency amplitude 2	0.00~ Maximum frequency	0.00Hz	○
11-26	Jump frequency 3	0.00~ Maximum frequency	0.00Hz	○
11-27	Jump frequency amplitude 3	0.00~ Maximum frequency	0.00Hz	○
11-28	Swing frequency amplitude	0.0~100.0% (Relative setting frequency)	0.0%	○
11-29	Sudden jump frequency amplitude	0.0~50.0% (Swing frequency amplitude)	0.0%	○
11-30	Swing frequency rise time	0.1~3600.0s	5.0s	○
11-31	Swing frequency fall time	0.1~3600.0s	5.0s	○
11-32	FDT1 frequency detection value	0.00~ P00.03	50.00Hz	○
11-33	FDT1 frequency detection lag value	0.0~100.0%	5.0%	○
11-34	FDT2 frequency detection value	0.00~ Maximum frequency	50.00Hz	○

Function Code	Name	Description	Factory Default	Attributes
11-35	FDT2 frequency detection lag value	0.0~100.0%	5.0%	○
11-36	Frequency reached detection value	0.0~ Maximum frequency	0.00Hz	○
11-37	Overmodulation selection	Unit' s digit: overmodulation enable 0: invalid, 1: valid ten's digit: over modulation intensity selection 0: slight, 1: deep	01	○
11-38	PWM mode selection	Unit' s digit: PWM mode selection 0: Two-phase and three-phase modulation 1: Three-phase modulation ten's digit: Low-speed carrier frequency limit selection 0: 2kHz limit 1: 4kHz limit 2: No limit	00	○
<b>Group 12 Process PID Parameters</b>				
12-00	PID given source	0: Digital given 1: AI1 2: AI2 3: AI3 4: HDI 5: Multi-speed 6:RS-485 communication 7: Keyboard analog potentiometer	0	○
12-01	PID Digital given	-100.0 ~ 100.0%	0.0%	○
12-02	PID Feedback Source	0: AI1 1: AI2 2: AI3 3: HDI 4:RS-485 communication 5: Keyboard analog potentiometer	0	○
12-03	PID action direction	0: positive effect 1: Counteraction	0	○
12-04	Proportional gain KP1	0.00 ~ 100.00	1.00	○
12-05	Integration time TI1	0.01 ~ 10.00s	0.10s	○
12-06	Derivative time TD1	0.00s ~ 10.00s	0.00s	○
12-07	PID sampling period T1	0.000~10.000s	0.100s	○
12-08	PID parameter switching deviation	0.0 ~ 100.0%	0.0%	○
12-09	PID output upper limit	(12-10) ~ 100.0%	100.0%	○
12-10	PID output lower limit	-100.0% ~ (12-09)	0.0%	○

Function Code	Name	Description	Factory Default	Attributes
12-11	PID command acceleration/deceleration time	0.0~1000.0s	0.0s	○
12-12	PID output filter time	0.000~10.000s	0.000s	○
12-13	Low frequency proportional gain	0.00~100.00	1.00	○
12-14	PID feedback loss detection value	0.0%( No detection) ~ 100.0%	0.0%	○
12-15	PID feedback loss detection time	0.0s ~ 3600.0s	1.0s	○
12-16	PID adjustment function	unit's digit: 0: The frequency reaches the upper and lower limits to continue the integral adjustment 1: The frequency reaches the upper and lower limits to stop the integral adjustment ten's digit: 0: Consistent with the setting direction 1: Opposite to the setting direction hundred's digit: 0: Reference maximum frequency limit 1: Reference frequency source A limited amplitude thousand's digit: 0: A+B, the acceleration and deceleration time of frequency source A is invalid 1: A+B, frequency source A is determined by acceleration and deceleration time 4	0001	○
<b>Group 13 Multi-speed and Simple PLC Parameters</b>				
13-00	Multi-speed 0 frequency setting value	-100.0%~100.0%	0.0%	○
13-01	Multi-speed 1 frequency setting value	-100.0%~100.0%	0.0%	○
13-02	Multi-speed 2 frequency setting value	-100.0%~100.0%	0.0%	○
13-03	Multi-speed 3 frequency setting value	-100.0%~100.0%	0.0%	○
13-04	Multi-speed 4 frequency setting value	-100.0%~100.0%	0.0%	○

Function Code	Name	Description	Factory Default	Attributes
13-05	Multi-speed 5 frequency setting value	-100.0%~100.0%	0.0%	○
13-06	Multi-speed 6 frequency setting value	-100.0%~100.0%	0.0%	○
13-07	Multi-speed 7 frequency setting value	-100.0%~100.0%	0.0%	○
13-08	Multi-speed 8 frequency setting value	-100.0%~100.0%	0.0%	○
13-09	Multi-speed 9 frequency setting value	-100.0%~100.0%	0.0%	○
13-10	Multi-speed 10 frequency setting value	-100.0%~100.0%	0.0%	○
13-11	Multi-speed 11 frequency setting value	-100.0%~100.0%	0.0%	○
13-12	Multi-speed 12 frequency setting value	-100.0%~100.0%	0.0%	○
13-13	Multi-speed 13 frequency setting value	-100.0%~100.0%	0.0%	○
13-14	Multi-speed 14 frequency setting value	-100.0%~100.0%	0.0%	○
13-15	Multi-speed 15 frequency setting value	-100.0%~100.0%	0.0%	○
13-16	PLC operating time of segment 0	0.0 ~ 6553.5 s(min)	0.0	○
13-17	PLC operating time of segment 1	0.0 ~ 6553.5 s(min)	0.0	○
13-18	PLC operating time of segment 2	0.0 ~ 6553.5 s(min)	0.0s(min)	○
13-19	PLC operating time of segment 3	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-20	PLC operating time of segment 4	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-21	PLC operating time	0.0 ~ 6553.5 s(min)	0.0 s(min)	○

Function Code	Name	Description	Factory Default	Attributes
	of segment 5			
13-22	PLC operating time of segment 6	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-23	PLC operating time of segment 7	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-24	PLC operating time of segment 8	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-25	PLC operating time of segment 9	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-26	PLC operating time of segment 10	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-27	PLC operating time of segment 11	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-28	PLC operating time of segment 12	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-29	PLC operating time of segment 13	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-30	PLC operating time of segment 14	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-31	PLC operating time of segment 15	0.0 ~ 6553.5 s(min)	0.0 s(min)	○
13-32	The acceleration and deceleration time of PLC segment 0~7	Segment 0: Bit0-1: Two bit values select acceleration and deceleration time 1,2,3,4 Segment 1: Bit2-3: Two bit values select acceleration and deceleration time 1, 2, 3, 4 Segment 2: Bit4-5: Two-bit value selected acceleration/deceleration time 1, 2, 3, 4 3 segments: Bit6-7: Two bit values select acceleration and deceleration time 1,2,3,4 4 segments: Bit8-9: Two bit values select acceleration and deceleration time 1,2,3,4 5 segments: Bit11-10: Two bit values select acceleration and deceleration time 1,2,3,4 6 segments: Bit12-13: Two bit values select acceleration and deceleration time 1,2,3,4 7 segment: Bit14-15: two bit value selected acceleration and deceleration time 1, 2, 3, 4	0000	○
13-33	PLC's 8th~15th segment acceleration/deceleration time	8 segments: Bit0-1: Two bit values select acceleration and deceleration time 1,2,3,4 9 segments: Bit2-3: Two bit value selected acceleration and deceleration time 1,2,3,4 10 segments: Bit4-5: Two-bit value selected acceleration and deceleration time 1, 2, 3, 4 11 segments: Bit6-7: Two bit values select acceleration and deceleration time 1,2,3,4 12 segments: Bit8-9: Two bit values select acceleration and deceleration time 1,2,3,4	0000	○



Function Code	Name	Description	Factory Default	Attributes
		13 segments: Bit11-10: Two-bit value selected acceleration and deceleration time 1,2,3,4 14 segments: Bit12-13: Two bit values select acceleration and deceleration time 1,2,3,4 15 segments: Bit14-15: two bit value selected acceleration and deceleration time 1,2,3,4		
13-34	PLC running time unit	0: second (s) 1: minutes (min)	0	●
13-35	PLC running mode	0: stop at the end of a single operation 1: Single running speed keeps the final value to run 2: Always run in a loop	0	●
13-36	PLC power down memory selection	0: no memory when power off 1: Power-down memory	0	○
13-37	PLC stop memory start selection	0: Re-run from the first segment 1: Continue to run from the stage frequency at the time of shutdown	0	○
13-38	Multi-speed 0 frequency given source	0: 13-00 given 1: AI1 2: AI2 3: AI3 4: HDI 5: PID 6: Keyboard analog potentiometer 7: The preset frequency can be fine-tuned	0	○
13-39	Multi-speed 1 frequency reference source	0: 13-01 given, 1~7 same as above	0	○
<b>Group 14 SCI Communication Parameters</b>				
14-00	Local communication address	0 Broadcast address, 1~247	1	○
14-01	Communication baud rate	0: 1200BPS 1: 2400BPS 2: 4800BPS 3: 9600BPS 4: 19200BPS 5: 38400BPS 6: 57600BPS	3	○
14-02	MODBUS Data Format	0: No parity (N, 8, 1) for RTU 1: Even parity (E, 8, 1) for RTU 2: Odd parity (O, 8, 1) for RTU 3: No parity (N, 8, 2) for RTU	3	○

Function Code	Name	Description	Factory Default	Attributes
		4: Even parity (E, 8, 2) for RTU 5: Odd parity (O, 8, 2) for RTU		
14-03	MODBUS Communication response delay	0~200ms	5	○
14-04	Serial communication timeout period	0.0: invalid, 0.1~60.0s	0.0s	○
14-05	Communication error action selection	0: Alarm and free stop 1: Do not alarm and continue to run 2: Stop according to the stop mode without alarm (only communication control mode) 3: Stop according to the stop mode without alarm (all control modes)	0	○
14-06	Communication processing action selection	LED units: 0: Write operation has response 1: No response from write operation	0	○
14-07	Communication protocol selection	0: Compatible with 380 protocol (including 00 groups, 30 groups of partial menus) 1: Compatible with GD protocol (only communication control)	0	○

Function Code	Name	Minimum unit	Correspondence address (HEX)	Correspondence address (DEC)
<b>Group 30 Monitoring Parameters</b>				
30-00	Operating frequency	0.01Hz	0x7000	28672
30-01	Setting frequency	0.01Hz	0x7001	28673
30-02	Bus voltage	0.1V	0x7002	28674
30-03	Output voltage	1V	0x7003	28675
30-04	Output current	0.1A	0x7004	28676
30-05	Motor Power (%)	0.1%	0x7005	28677
30-06	Output torque (%)	0.1%	0x7006	28678
30-07	Input terminal status	See detailed description of 30 groups	0x7007	28679
30-08	Output terminal status	See detailed description of 30 groups	0x7008	28680
30-09	AI1 Input voltage	0.01V	0x7009	28681
30-10	AI2 Input voltage	0.01V	0x700A	28682
30-11	AI3 Input voltage	0.01V	0x700B	28683
30-12	Count value	1	0x700C	28684

<b>30-13</b>	Length value	1	0x700D	28685
<b>30-14</b>	Motor speed	1rpm	0x700E	28686
<b>30-15</b>	PID Given value	0.1%	0x700F	28687
<b>30-16</b>	PID Feedback value	0.1%	0x7010	28688
<b>30-17</b>	PLC and multi-speed current segment number	1	0x7011	28689
<b>30-18</b>	HDI input frequency	0.01kHz	0x7012	28690
<b>30-24</b>	Line speed	1m/Min	0x7018	28696
<b>30-25</b>	This running time	1Min	0x7019	28697
<b>30-26</b>	Ramp given frequency	0.01Hz	0x701A	28698
<b>30-27</b>	Torque given amount	0.1%	0x701B	28699
<b>30-28</b>	Output torque	0.1Nm	0x701C	28700
<b>30-29</b>	Digital adjustment	0.01Hz	0x701D	28701
<b>30-32</b>	Motor power factor	0.01	0x7020	28704
<b>30-33</b>	Estimate motor frequency	0.01Hz	0x7021	28705
<b>30-34</b>	AC incoming line current	0.1A	0x7022	28706
<b>30-35</b>	Motor overload count value	1	0x7023	28707

## Chapter 6 Fault Analysis and Treatment

The following fault types will be encountered during the use of the frequency inverter. Please refer to the following table for simple fault analysis and handling. If the fault cannot be rectified, please contact technical support in time.

Numerical fault codes and English alphabetic fault codes are all listed, which is convenient for users of different habits to compare.

Fault code	Fault name	Trouble shooting	Fault handling countermeasures
<b>Err01 (Out)</b>	Frequency inverter unit protection	<ol style="list-style-type: none"> <li>1. Short circuit of frequency inverter output circuit</li> <li>2. The wiring between the motor and the frequency inverter is too long</li> <li>3. The module is overheated</li> <li>4. The internal wiring of the frequency inverter is loose</li> <li>5. The main control board is abnormal</li> <li>6. The drive board is abnormal</li> <li>7. The frequency inverter module is abnormal</li> <li>8. Leakage or short circuit of the motor wire or motor</li> </ol>	<ol style="list-style-type: none"> <li>1. Eliminate external faults</li> <li>2. Install reactor or output filter</li> <li>3. Check the air ducts and fans and eliminate the problems</li> <li>4. Plug in all connecting wires</li> <li>5. Seek technical support</li> <li>6. Seek technical support</li> <li>7. Seek technical support</li> <li>8. Check the motor wire or motor to ensure normal</li> </ol>
<b>Err02 (OC1)</b>	Accelerating overcurrent	<ol style="list-style-type: none"> <li>1. The output circuit of the frequency inverter is grounded or short-circuited</li> <li>2. The control mode is vector and no parameter identification is performed</li> <li>3. The acceleration time is too short</li> <li>4. Manual torque boost or V/F curve is not suitable</li> <li>5. Low voltage</li> <li>6. Start the rotating motor</li> <li>7. Sudden load during acceleration</li> <li>8. The frequency inverter selection is too small</li> </ol>	<ol style="list-style-type: none"> <li>1. Eliminate external faults</li> <li>2. Identify the motor parameters</li> <li>3. Increase acceleration time</li> <li>4. Adjust the manual lifting torque or V/F curve</li> <li>5. Adjust voltage to normal range</li> <li>6. Speed tracking starts or waits for the motor to stop before starting</li> <li>7. Cancel the sudden load</li> <li>8. Choose a frequency converter with a higher power rating</li> </ol>
<b>Err03 (OC2)</b>	Decelerating overcurrent	<ol style="list-style-type: none"> <li>1. The output circuit of the frequency inverter is grounded or short-circuited</li> <li>2. The control mode is vector without parameter identification</li> <li>3. The deceleration time is too short</li> <li>4. Low voltage</li> <li>5. Sudden load added during deceleration</li> <li>6. No additional braking unit and braking resistor</li> </ol>	<ol style="list-style-type: none"> <li>1. Eliminate peripheral faults</li> <li>2. Perform motor parameter identification</li> <li>3. Increase the deceleration time</li> <li>4. Adjust the voltage to the normal range</li> <li>5. Cancel the sudden load</li> <li>6. Install braking unit and resistor</li> </ol>
<b>Err04 (OC3)</b>	Constant speed overcurrent	<ol style="list-style-type: none"> <li>1. The output circuit of the frequency inverter is grounded or short-circuited</li> <li>2. The control mode is vector and no parameter identification is performed</li> <li>3. Low voltage</li> <li>4. Whether there is a sudden load during operation</li> <li>5. The selection of frequency converter is too small</li> </ol>	<ol style="list-style-type: none"> <li>1. Eliminate peripheral faults</li> <li>2. Perform motor parameter identification</li> <li>3. Adjust the voltage to the normal range</li> <li>4. Cancel the sudden load</li> <li>5. Choose a frequency converter with a higher power level</li> </ol>

Fault code	Fault name	Trouble shooting	Fault handling countermeasures
<b>Err05</b> <b>(Ov1)</b>	Acceleration overvoltage	<ol style="list-style-type: none"> <li>1. The input voltage is too high</li> <li>2. There is an external force that drives the motor to run during acceleration</li> <li>3. The acceleration time is too short</li> <li>4. There is no additional braking unit and braking resistor</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust voltage to normal range</li> <li>2. Cancel the external power or install a braking resistor</li> <li>3. Increase acceleration time</li> <li>4. Install brake unit and resistor</li> </ol>
<b>Err06</b> <b>(Ov2)</b>	Deceleration overvoltage	<ol style="list-style-type: none"> <li>1. The input voltage is too high</li> <li>2. There is an external force to drive the motor during deceleration</li> <li>3. The deceleration time is too short</li> <li>4. There is no additional braking unit and braking resistor</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the voltage to the normal range</li> <li>2. Cancel the external power or install a braking resistor</li> <li>3. Increase the deceleration time</li> <li>4. Install brake unit and resistor</li> </ol>
<b>Err07</b> <b>(Ov3)</b>	Constant speed overvoltage	<ol style="list-style-type: none"> <li>1. The input voltage is too high</li> <li>2. There is an external force that drives the motor during operation</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the voltage to the normal range</li> <li>2. Cancel the external power or install a braking resistor</li> </ol>
<b>Err09</b> <b>(Uv)</b>	Undervoltage of busbar	<ol style="list-style-type: none"> <li>1. Instantaneous blackout</li> <li>2. The input voltage of the frequency converter is not within the range required by the specification</li> <li>3. The bus voltage is abnormal</li> <li>4. Rectifier bridge and buffer resistance are abnormal</li> <li>5. The drive board is abnormal</li> <li>6. The control board is abnormal</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset the fault</li> <li>2. Adjust the voltage to the normal range</li> <li>3. Seek technical support</li> <li>4. Seek technical support</li> <li>5. Seek technical support</li> <li>6. Seek technical support</li> </ol>
<b>Err10</b> <b>(oL2)</b>	Frequency converter overload	<ol style="list-style-type: none"> <li>1. Check whether the load is too large or the motor is blocked</li> <li>2. The frequency inverter selection is too small</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the load and check the condition of the motor and machinery</li> <li>2. Choose a frequency converter with a higher power level</li> </ol>
<b>Err11</b> <b>(oL1)</b>	Motor overload	<ol style="list-style-type: none"> <li>1. Whether the motor protection parameter setting is proper</li> <li>2. Whether the load is too large or the motor is blocked</li> <li>3. The motor selection is too small</li> </ol>	<ol style="list-style-type: none"> <li>1. Correctly set this parameter</li> <li>2. Reduce the load and check the condition of the motor and machinery</li> <li>3. Choose a motor with a higher power rating</li> </ol>
<b>Err12</b> <b>(SPI)</b>	Input phase loss	<ol style="list-style-type: none"> <li>1. The three-phase input power is abnormal</li> <li>2. The drive board is abnormal</li> <li>3. The lightning protection board is abnormal</li> <li>4. The main control board is abnormal</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and eliminate the problems in the peripheral circuit</li> <li>2. Seek technical support</li> <li>3. Seek technical support</li> <li>4. Seek technical support</li> </ol>
<b>Err13</b> <b>(Spo)</b>	Output phase loss	<ol style="list-style-type: none"> <li>1. The lead from the frequency converter to the motor is abnormal</li> <li>2. The three-phase output of the frequency inverter is unbalanced when the motor is running</li> <li>3. The drive board is abnormal</li> <li>4. The module is abnormal</li> </ol>	<ol style="list-style-type: none"> <li>1. Eliminate peripheral faults</li> <li>2. Check whether the motor winding is normal and eliminate the fault</li> <li>3. Seek technical support</li> <li>4. Seek technical support</li> </ol>

Fault code	Fault name	Trouble shooting	Fault handling countermeasures
<b>Err14</b> <b>(oH2)</b>	IGBT is overheated	<ol style="list-style-type: none"> <li>1. The ambient temperature is too high</li> <li>2. The air duct is blocked</li> <li>3. The fan is damaged</li> <li>4. The module thermistor is damaged</li> <li>5. The frequency inverter module is damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the ambient temperature</li> <li>2. Clean the air duct</li> <li>3. Replace the fan</li> <li>4. Replace the thermistor</li> <li>5. Replace the frequency inverter module</li> </ol>
<b>Err15</b> <b>(EF)</b>	External fault	Xi terminal input external fault signal	Check external wiring, clear fault operation
<b>Err16</b> <b>(CE)</b>	485 communication fault	<ol style="list-style-type: none"> <li>1. The upper computer is not working properly</li> <li>2. The communication line is abnormal</li> <li>3. The communication parameter group is not set correctly</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the upper computer wiring</li> <li>2. Check the communication cable</li> <li>3. Set the communication parameters correctly</li> </ol>
<b>Err18</b> <b>(ItE)</b>	Current detection fault	<ol style="list-style-type: none"> <li>1. Check the abnormality of the Hall device</li> <li>2. The drive board is abnormal</li> <li>3. The main control board is abnormal</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the Hall device</li> <li>2. Replace the drive board</li> <li>3. Seek technical support</li> </ol>
<b>Err19</b> <b>(tE)</b>	Motor tuning fault	<ol style="list-style-type: none"> <li>1. The motor parameters are not set according to the nameplate</li> <li>2. The parameter identification process is overtime</li> </ol>	<ol style="list-style-type: none"> <li>1. According to the nameplate, set the parameters correctly</li> <li>2. Check the lead from the frequency converter to the motor</li> </ol>
<b>Err21</b> <b>(EEP)</b>	EEPROM read and write fault	<ol style="list-style-type: none"> <li>1. EEPROM operation is too frequent</li> <li>2. The EEPROM chip is damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. The upper computer operates EEPROM reasonably</li> <li>2. Replace the main control board</li> </ol>
<b>Err23</b> <b>(ETH)</b>	Short-to-ground fault	<ol style="list-style-type: none"> <li>1. The motor is short-circuited to the ground</li> <li>2. Motor wiring UVW grounding</li> <li>3. The frequency inverter module is damaged</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the motor</li> <li>2. Replace the motor cable or eliminate the short circuit fault</li> <li>3. Replace the module or drive board</li> </ol>
<b>Err26</b> <b>(End)</b>	Accumulated running time arrives	Accumulated running time reaches the set value	Reset running time
<b>Err30</b> <b>(LL)</b>	Underload fault	1. The running current of the frequency inverter is less than the set parameter	<ol style="list-style-type: none"> <li>1. Check whether the load is separated</li> <li>2. Whether the parameter setting conforms to the actual operating conditions</li> </ol>
<b>Err31</b> <b>(PidE)</b>	PID feedback is disconnected	<ol style="list-style-type: none"> <li>1. The PID feedback signal is disconnected</li> <li>2. The setting of PID feedback loss detection value is unreasonable</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the PID feedback signal</li> <li>2. Check the PID feedback loss and set a reasonable value</li> </ol>
<b>Err40</b> <b>(oL4)</b>	Fast current limiting fault	<ol style="list-style-type: none"> <li>1. Whether the load is too large or the motor is blocked</li> <li>2. The frequency inverter selection is too small</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the load and check the condition of the motor and machinery</li> <li>2. Choose a frequency converter with a higher power level</li> </ol>
<b>Err42</b> <b>(dEU)</b>	Speed deviation is too large	<ol style="list-style-type: none"> <li>1. Parameter identification is not carried out</li> <li>2. The speed deviation is too large to detect the unreasonable parameter setting</li> <li>3. The load is too heavy or blocked</li> </ol>	<ol style="list-style-type: none"> <li>1. Perform motor parameter identification</li> <li>2. Reasonable reset of speed deviation detection parameters</li> <li>3. Check the load to ensure that the load is normal</li> </ol>
<b>Err48</b> <b>(oL3)</b>	Electronic overload fault	The frequency inverter reports a fault according to the electronic overload	Detect load or adjust electronic overload value reasonably

Fault code	Fault name	Trouble shooting	Fault handling countermeasures
<b>Err51 (Sto)</b>	Initial position misadjustment failure	<ol style="list-style-type: none"> <li>1. The motor parameter setting is unreasonable</li> <li>2. Parameter identification is not carried out</li> <li>3. The motor wire is not connected properly</li> </ol>	<ol style="list-style-type: none"> <li>1. Set motor parameters and perform motor parameter identification</li> <li>2. Perform motor parameter identification</li> <li>3. Check the motor wiring to make sure it is normal</li> </ol>
<b>Err60 (bCE)</b>	Brake tube protection fault	Braking resistor is short-circuited or braking module is abnormal	Check the braking resistor or seek technical support
<b>P-Lu</b>	Power supply undervoltage	<ol style="list-style-type: none"> <li>1. The frequency inverter power supply voltage is insufficient</li> <li>2. Frequency inverter internal switching power supply or busbar detection failure</li> <li>3. The mainboard power section or voltage section does not match the current power supply</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the power supply of the frequency converter</li> <li>2. Check the internal power supply or bus circuit of the frequency inverter</li> <li>3. Check whether the rated voltage matches and seek support</li> </ol>

**One and three-line operation:**

Example:

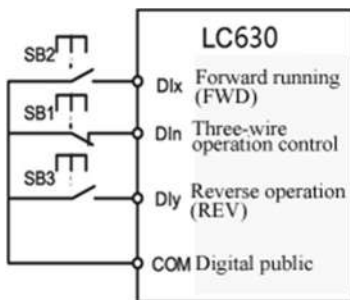
00-02: 1; External terminal control

06-01: 1; Press the DI1 terminal to run forward, this terminal is a normally open button

06-02: 2; press the DI2 terminal to run in reverse, this terminal is a normally open button

06-03: 3; Three-wire operation control, press DI3 to stop, this terminal should be a normally

closed switch



## 06-13: 2; Three-line type 1

Among:

SB1: Stop button    SB2: Forward button    SB3: Reverse button

Multi-speed setting

00-02=1; set as terminal control

00-03=6; select multi-segment instructions

06-03=16, 06-04=17; set DI3 and DI4 as multi-segment command terminals 1 and 2;

The terminal command combination table is as follows:

When the frequency source is selected as multi-speed, 100.0% of the function code 13-00~13-15 corresponds to the maximum power 00-10.

**Attached Table 1    Description of Multi-segment Command Function**

The 4 multi-segment command terminals can be combined into 16 states. These 16 states correspond to 16 command setting values, as shown in Table 1:

K4	K3	K2	K1	Command setting	Corresponding parameters
OFF	OFF	OFF	OFF	Multi-segment instructions 0	13-00
OFF	OFF	OFF	ON	Multi-segment instructions 1	13-01
OFF	OFF	ON	OFF	Multi-segment instructions 2	13-02
OFF	OFF	ON	ON	Multi-segment instructions 3	13-03
	ON	OFF	OFF	Multi-segment instructions 4	13-04
	ON	OFF	ON	Multi-segment instructions 5	13-05
	ON	ON	OFF	Multi-segment instructions 6	13-06
	ON	ON	ON	Multi-segment instructions 7	13-07
ON	OFF	OFF	OFF	Multi-segment instructions 8	13-08



ON	OFF	OFF	ON	Multi-segment instructions 9	13-09
ON		ON	OFF	Multi-segment instructions 10	13-10
ON		ON	ON	Multi-segment instructions 11	13-11
ON	ON	OFF	OFF	Multi-segment instructions 12	13-12
ON	ON	OFF	ON	Multi-segment instructions 13	13-13
ON	ON	ON	OFF	Multi-segment instructions 14	13-14
ON	ON	ON	ON	Multi-segment instructions 15	13-15

**Example:**

Set terminal 1 (DI3) to 30Hz, terminal 2 (DI4) to 40Hz, (terminal is a changeover switch), then the starting segment is 13-00, which can be set to other values, and multiple commands are required according to the combination 0 and multi-segment instruction 1 and multi-segment instruction 3, respectively set 13-00, 13-01, 13-02, the value inside 100% corresponds to the percentage of the maximum frequency 00-10, the maximum frequency in this example is 50Hz.

**Multi-speed operation:**

Example:

00-02: 1; external terminal operation control

00-03: 6;

06-03: 16; DI3 terminal is set to multi-segment command terminal 1

06-04: 17; DI4 terminal is set to multi-segment command terminal 2

13-00:0; when DI1 is closed, run 0Hz

13-01: 60;  $(30/\text{maximum frequency } 50\text{Hz}) \times 100$ , when only DI1 and DI3 are closed, this is set to 30Hz

13-02: 80;  $(40/\text{maximum frequency } 50\text{Hz}) \times 100$ , when only DI1 and DI4 are closed, this is set to 40Hz

### **Constant pressure water supply:**

00-03=7 Set as PID control

12-00=0 The set pressure is given by 12-01

12-01=Set pressure percentage       $\text{Set pressure value}/\text{pressure gauge range} \times 100\%$

12-02=0 Pressure feedback source is AI1

Pressure gauge connection	}	Red	GND
		Yellow	AI1
		Green	+10V

### **Hibernation:**

Set the lower limit frequency parameter 00-14

Set 11-09 to 2, sleep

When the pressure is reached and the frequency drops to the lower limit frequency, the frequency inverter sleeps.