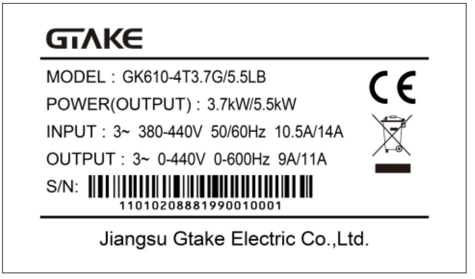
GK610 Compact Series AC Motor Drives

1. Preface

Thank you for choosing GTAKE GK610 Compact Series AC Motor Drives. This user manual presents a description of GK610 series with respect to product features, structural characteristics, functions, installation, parameter setting, troubleshooting, etc. Make sure to read the safety precautions carefully before use, and use this product on the premise that personnel and equipment safety is ensured. Telephone number for GTAKE International Technical Service Department is: +86- 0755-86392601.

2. Model Explanation



GK610 - 4 T 3.7G/5.5L B- XX - XX

- **GK610**: Master Series Code
- **4**: **2:** 220V; **4:** 380V
- **T**: **S:** 200V level; **T:** 400V level
- **3.7G/5.5L**: **3.7G:** 3.7kW (heavy duty); **5.5L:** 5.5kW (light duty)
- **B**: Default: without inbuilt brake chopper; B: with inbuilt brake chopper
- **XX**: 01-99: customized software
- **XX**: A0~Z9：code of customized

3. Information of Product Model

GK610-2T☐☐☐B single phase 220V

Drive model	Power rating (kW)	Rated output current (A)	Rated input current (A)	Applicable motor (kW)	Brake chopper
GK610-2S0.4B	0.4	2.6	5.5	0.4	Inbuilt
GK610-2S0.75B	0.75	4.5	9.2	0.75	
GK610-2S1.5B	1.5	7.5	18	1.5	
GK610-2S2.2B	2.2	10	23	2.2	

GK610-4T☐☐☐G☐☐☐L☐ three phase 380V heavy duty/light duty

Drive model	Power rating (kW)	Rated output current (A)	Rated input current (A)	Applicable motor (kW)	Brake chopper
GK610-4T0.75G/1.5LB	0.75G	0.75	2.5	0.75	Inbuilt
	1.5L	1.5	3.8	1.5	
GK610-4T1.5G/2.2LB	1.5G	1.5	3.8	1.5	
	2.2L	2.2	4.8	2.2	
GK610-4T2.2G/3.7LB	2.2G	2.2	5.5	2.2	
	3.7L	3.7	8.0	3.7	
GK610-4T3.7G/5.5LB	3.7G	3.7	9	3.7	
	5.5L	5.5	11	5.5	
GK610-4T5.5G/7.5LB	5.5G	5.5	13	5.5	
	7.5L	7.5	16	7.5	
GK610-4T7.5G/11LB	7.5G	7.5	17	7.5	
	11L	11	21	11	

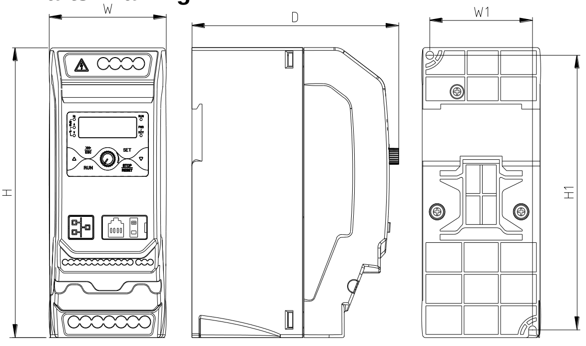
4. Technical Features of GK610

Power input	Rated input voltage & frequency	Single phase: 220V 50/60Hz
		Three phase: 380V 50/60Hz
	Voltage range	220V voltage level: 170V~240V； 380V voltage level: 330V~440V； Continuous voltage fluctuation ±10%, short fluctuation -15%~+10%, Voltage out-of-balance rate <3%;

		i.e. 200V: 170V~240V, 380V: 330V~440V
	Rated current (A)	3-phase: 0~ rated input voltage, error < ±3%
	Output frequency (Hz)	0.00~ 600.00Hz; unit: 0.01Hz
	Overload capacity	150% - 1min; 180% - 10s; 200% - 0.5s every 10 min
Control Features	V/f patterns	V/f control Sensor-less vector control 1 Sensor-less vector control 2 Synchronous motor sensor-less vector control
	Range of speed regulation	1:100 (V/f control, sensor-less vector control 1) 1:200 (sensor-less vector control 2, synchronous motor sensor-less vector control)
	Speed accuracy	±0.5% (V/f control) ±0.2% (sensor-less vector control 1 & 2, synchronous motor sensor-less vector control)
	Speed fluctuation	±0.3% (sensor-less vector control 1 & 2, synchronous motor sensor-less vector control)
	Torque response	< 10ms (sensor-less vector control 1 & 2, synchronous motor sensor-less vector control)
	Starting torque	0.5Hz: 180% (V/f control, sensor-less vector control 1) 0.25Hz: 180% (sensor-less vector control 2, synchronous motor sensor-less vector control)
Basic Functions	Start frequency	0.00~600.00Hz
	Accel/ Decel time	0.00~60000s
	Switching frequency	0.7kHz~16kHz
	Frequency setting	Digital setting + control panel ∧/∨ Digital setting + terminal UP/DOWN potentiometer Communication Analog setting (AI1) Terminal pulse setting
	Frequency setting	Started from starting frequency DC brake start-up Flying start
	Motor start-up methods	Ramp to stop Coast to stop Ramp stop + DC brake
	Motor stop	Brake chopper working voltage:

	methods	220V voltage level: 325~375V； 380V voltage level: 650~750V
		Service time: 0.0~100.0s
	DC brake capacity	DC brake start frequency: 0.00~600.00Hz DC brake current: 0.0~100.0% DC brake time: 0.0~30.00s
	Input terminals	4 digital inputs, one of which can be used for high-speed pulse input, and compatible with active open collectors NPN, PNP and dry contact input. 1 analog input, voltage/current programmable
	Output terminals	1 digital output 1 relay output
		1 analog output, voltage/current output programmable; can output signals such as frequency setting, or output frequency, etc.
Features	Parameter copy, parameter backup, common DC bus, free switchover between two motors' parameters, flexible parameter displayed & hidden, various master & auxiliary setting and switchover, flying start, a variety of Accel/Decel curves optional, automatic correction of analog, brake control, 16-step speed control programmable (2-step speed supports flexible frequency command), wobble frequency control, fixed length control, count function, three history faults, over excitation brake, over voltage stall protection, under voltage stall protection, restart on power loss, skip frequency, frequency binding, four kinds of Accel/Decel time, motor thermal protection, flexible fan control, process PID control, simple PLC, droop control, autotuning, field-weakening control, high-precision torque restraint, V/f separated control	
Environ-ment	Place of operation	Indoors, no direct sunlight, free from dust, corrosive gases, flammable gases, oil mist, water vapor, water drop or salt, etc.
	Altitude	0-2000m. De-rate 1% for every 100m when the altitude is above 1000 meters
	Ambient temperature	-10℃-40℃. The rated output current should be derated 1% for every 1℃ when the ambient is 40℃-50℃
	Relative humidity	0~95%, no condensation
	Vibration	Less than 5.9m/s^2 (0.6g)
	Storage temperature	-40℃~+70℃
Others	Efficiency	At rated power≥93%
	Installation	Wall-mounted, din-rail
	IP Grade	IP20
	Cooling method	Forced air

5. Parts Drawing



Model	External and installation dimensions (mm)						Weight (kg)
	W	H	D	W1	H1	Mounting hole dia	
GK610-2S0.4B	75	180	133	66	170.5	5	1.1
GK610-2S0.75B							
GK610-2S1.5B							
GK610-2S2.2B							
GK610-4T0.75G/1.5LB							
GK610-4T1.5G/2.2LB							
GK610-4T2.2G/3.7LB							
GK610-4T3.7G/5.5LB							
GK610-4T5.5G/7.5LB	100	224.5	152.5	88	214.5	5	1.8
GK610-4T7.5G/11LB							

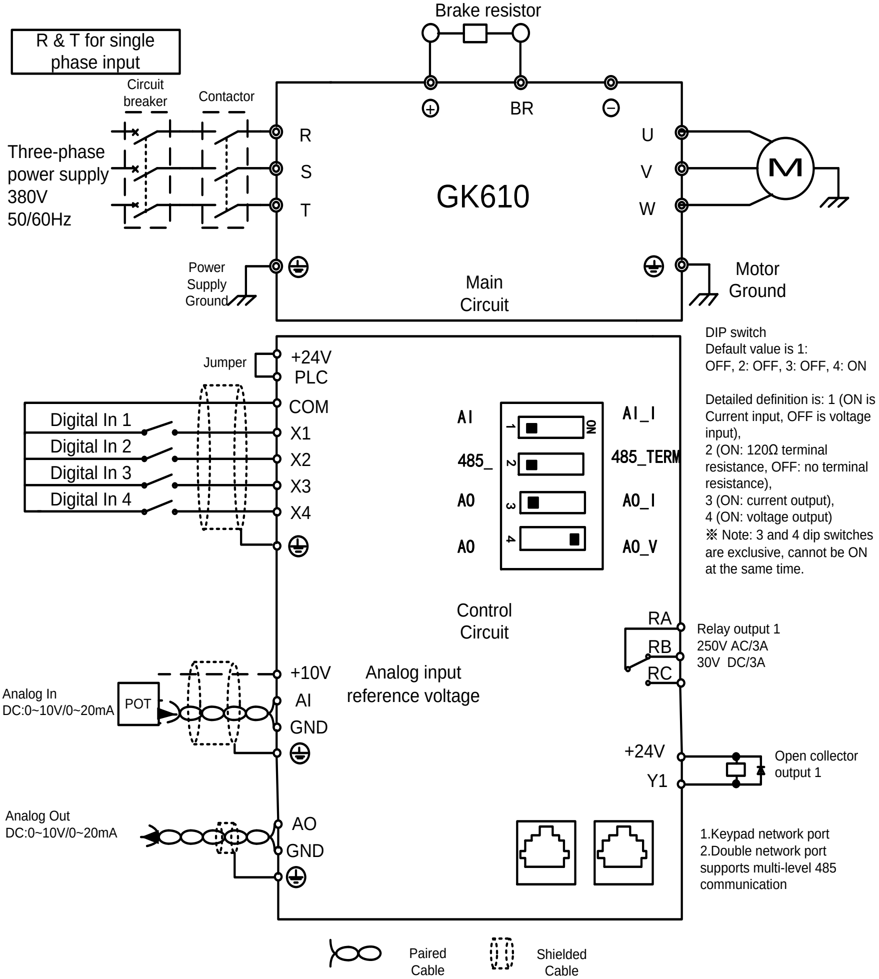
6. Selection of Peripheral Devices

Model		Circuit breaker (A)	Contactor (A)	Brake resistor /Brake chopper*	
				Power (W)	Resistance (Ω)
GK610-2S0.4B		16	10	70	≥35
GK610-2S0.75B		25	16	70	≥35
GK610-2S1.5B		32	25	260	≥35
GK610-2S2.2B		40	32	260	≥35
GK610-4T0.75G/1.5LB	0.75G	10	9	150	≥67
	1.5L	10	9		
GK610-4T1.5G/2.2LB	1.5G	10	9	300	≥67
	2.2L	10	9		

GK610-4T2.2G/3.7LB	2.2G	10	9	400	≥67
	3.7L	16	12		
GK610-4T3.7G/5.5LB	3.7G	16	12	500	≥67
	5.5L	20	18		
GK610-4T5.5G/7.5LB	5.5G	20	18	550	≥50
	7.5L	32	25		
GK610-4T7.5G/11LB	7.5G	32	25	550	≥50
	11L	40	32		

* The selection of the braking resistor needs to be determined according to the power rating of the motor in the actual application system, and is related to the system inertia, deceleration time, and the energy of the potential energy load, and user needs to choose according to the actual situation.

7. Wiring Diagram of GK610



Main Circuit Terminals and Wirings

⚠ WARNING

- ➢ Wiring should be in strict accordance with this manual, otherwise hazard of electric shock or equipment damage exists.
- ➢ Since leakage current of the drive may exceed 3.5mA, for safety's sake, the drive

and the motor must be grounded so as to avoid hazard of electric shock.

- Be sure to perform wiring in strict accordance with the drive terminal marks. Never connect three-phase power supply to output terminals U, V and W. Failure to comply will result in equipment damage.
- Only mount braking resistors at terminals ⊕ and BR when need. Failure to comply will result in equipment damage.
- Signal wires should be far away from main power lines to the best of possibility. If this cannot be ensured, vertical cross-arrangement shall be implemented, otherwise interference noise to control signal may occur.
- If motor cables are longer than 50m, it is recommended output AC reactor be used. Failure to comply may result in faults.

Control Circuit Wirings

WARNING

- AC 220V signal is prohibited from connecting to other terminals than control terminals RA, RB and RC. Failure to comply may result in equipment damage.
- Shielded cables are highly recommended and the cables should be as short as possible in order to avoid any faults caused by interference.

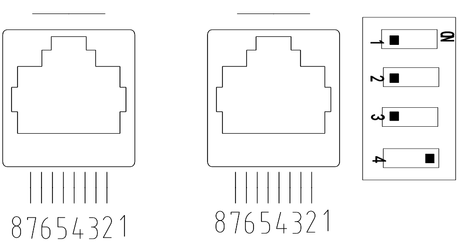
Control Terminal Specification

Category	Terminal	Terminal designation	Specification
Analog input	+10V	Analog input reference voltage	Maximum output current 5mA The resistance of external potentiometer should be larger than 2kΩ
	GND	Analog ground	Isolated from COM interiorly
	AI	Analog input	0~20mA: input impedance 500Ω, maximum input current 25mA; 0~10V: input impedance 22kΩ, maximum input voltage 10V; Switch on control board for jumping from 0~20mA and 0~10V, factory default: 0~10V
Analog output	AO	Analog output	0~20mA: impedance 200Ω~500Ω 0~10V: input impedance ≥10kΩ, Switch on control board for jumping from 0~20mA and 0~10V, factory default: 0~10V
	GND	Analog ground	Isolated from COM interiorly

Category	Terminal	Terminal designation	Specification
Digital input	+24V	+24V	24V±10%, Isolated from GND interiorly Maximum load: 200mA
	PLC	Digital input Common terminal	Used for switching between high and low levels, short-circuited with +24V when delivery, i.e. low value of digital input valid
	COM	+24V ground	Isolated from GND interiorly
	X1~X3	Digital input Terminals 1~3	Input: 24VDC, 5mA Range of frequency: 0~200Hz Range of voltage: 10V~30V
	X4	high-speed pulse input	Pulse input: 0.1Hz~20kHz Range of voltage: 10V~30V
Digital output	Y1	Open collector output	Range of voltage: 0~24V; Range of current: 0~50mA
Relay output	RA/RB/RC	Control board relay output	RA-RB: NC; RA-RC: NO
			Contact capacity: 250VAC/3A, 30VDC/3A
Communica-tion 485 terminal	CN6/CN7	Communica-tion 485	Standard network cable, maximum communication distance 3M recommended

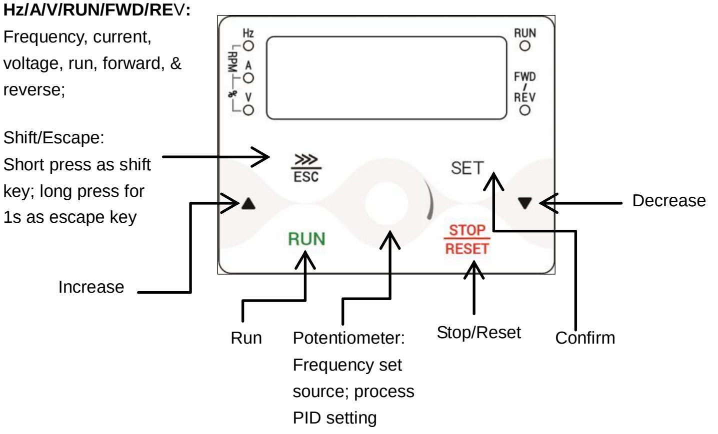
Functions of communication 485 terminal

Pin	1	2	3	4	5	6	7	8
Definition	+5V	GND	485+	485-	485+	485-	GND	+5V



Attention:
The pin definitions of the two network ports are the same. If connecting to a 120Ω terminal resistor is needed, turn the DIP switch No. 2 to the ON side; a common network cable can be used to connect, and shielded network cables are highly recommended.

8. Main functions on the keypad



9. Parameter Lists

📖 **ATTENTION:**

Change attribute:

"△" means the value of this parameter can be modified in stop and run status of drive;

"×" means the value of this parameter cannot be modified when drive is running;

"◎" means this parameter is a measured value that cannot be modified;

Factory default: The value when restored to factory default. Neither measured parameter value nor recorded value will be restored.

Scope: the scope of setting and display of parameter values

Param	Designation	Scope	Factory default	Attr
Group A: System Parameters and Parameter Management				
Group A0: System Parameters				
A0-00	Setting of user password	0000~FFFF	0000	△
A0-01	Parameter display	0: Display all parameters 1: Only display A0-00 and A0-01 2: Only display A0-00, A0-01 and user-defined A1-00~A1-19 3: Only display A0-00, A0-01, and the parameters different from factory default	0	△
A0-02	Parameter protection	0: All parameter programming allowed 1: Only A0-00 and this parameter programming allowed	0	×
A0-03	Parameter restoration	0: No operation 1: Clear fault record 2: Restore all parameters to factory default (excluding motor parameters) 3: Restore all parameters to factory default (including motor parameters) 4: Restore all parameters to backup parameters	0	×
A0-04	Parameter backup	0: No operation 1: Backup all parameters	0	×

Param	Designation	Scope	Factory default	Attr
A0-05	Parameter copy	0: No operation 1: Parameter copied to control panel 2: Parameter copied (excluding motor parameters) to control board 3: Parameter copied (including motor parameters) to control board **Noted:** Only external keypad has this function;	0	×
A0-06	Type of drive	0: Type G (applicable to constant-torque load) 1: Type L (applicable to light-duty load)	0	×
A0-08	Motor 1 / motor 2 selection	0: Motor 1 1: Motor 2	0	×
A0-09	Motor control technique	Ones place: motor 1 control mode 0: V/f control 1: Sensor-less vector control 1 2: Sensor-less vector control 2 3: SVC control for sync. motor Tens place: motor 2 control mode 0: V/f control 1: Sensor-less vector control 1 2: Sensor-less vector control 2 3: SVC control for sync. motor	00	×
Group A1: User-defined Display Parameters				
A1-00 ~A1-19	1~20 User-defined display parameter 1 to 20	Setting range of thousands place: A, b, C, d, E, F, H, L, U Setting range of hundreds place: 0~9 Setting range of tens place: 0~9 Setting range of ones place: 0~9	A0-00	×
A1-20	Parameter group display/hide setting 1	0000~FFFF	FFFF	×

Param	Designation	Scope	Factory default	Attr
A1-21	Parameter group display/hide setting 2	0000~FFFF	FFFF	×
A1-22	Fault masking	0~FF Ones: binary Bit3Bit2Bit1Bit0 Bit set 0:unmask; 1: mask Bit0: GdP fault Bit1: SP1 fault Bit2: SP2 fault Bit3: CPU fault Tens: binary Bit3Bit2Bit1Bit0 Bit set 0:unmask; 1: mask Bit0: AIP fault Bit1: OL3 fault Bit2: oCR fault Bit3: reserved Example: if faults of GdP, SP1, SP2, CPU need to be masked, then set ones as hexadecimal F (set binary Bit3Bit2Bit1Bit0 as 1). And it is similar meaning for tens.	08	△
Group b Run Parameter Setting				
Group b0 Frequency Setting				
b0-00	FREQ set mode	0: Master FREQ set 1: Master & auxiliary computation result 2: Switch between master and auxiliary set 3: Switch between master FREQ set, and master & auxiliary computation result 4: Switch between auxiliary FREQ set, and master & auxiliary computation result	0	×
b0-01	Master FREQ set	0: Digital setting (b0-02) + ∧/∨ adjustment on control panel 1: Digital setting (b0-02) + terminal UP/DOWN adjustment	0	×

Param	Designation	Scope	Factory default	Attr
		2: Terminal analog input 3: Potentiometer analog input 4: Reserve 5: X4 pulse input 6: Process PID output 7: PLC 8: Multi-step speed 9: Communication		
b0-02	Master FREQ digital setting	Lower limit freq ~ upper limit freq	50.00Hz	△
b0-03	Auxiliary FREQ set	0: No setting 1: Digital setting (b0-04) + ∧/∨ adjustment on control panel 2: Digital setting (b0-04) + terminal UP/DOWN adjustment 3: Analog input 4: Potentiometer analog input 5: Reserve 6: X4 pulse input 7: Process PID output 8: PLC 9: Multi-step speed 10: Communication	0	×
b0-04	Auxiliary FREQ digital setting	Lower limit frequency ~ upper limit frequency	0.00Hz	△
b0-05	Auxiliary frequency range	0: Relative to maximum frequency 1: Relative to master frequency	0	×
b0-06	Auxiliary frequency coeff	0.0%~100.0%	100.0%	×
b0-07	Computation of master and auxiliary frequency	0: Master + auxiliary 1: Master - auxiliary 2: Max {master, auxiliary} 3: Min {master, auxiliary}	0	×
b0-08	Maximum frequency	Upper limit frequency ~600.00Hz	50.00Hz	×
b0-09	Upper limit frequency	Lower limit freq ~ maximum freq	50.00Hz	×

Param	Designation	Scope	Factory default	Attr
b0-10	Lower limit frequency	0.00Hz~upper limit frequency	0.00Hz	×
b0-11	Operation when set frequency lower than lower limit frequency	0: Run at lower limit frequency 1: Run at 0 Hz 2: Stop	0	×
b0-12	Time-delay of stop when set frequency lower than lower limit frequency	0.0s~6553.5s	0.0s	×
b0-13	Lower limit of skip frequency band 1	0.00Hz~upper limit frequency	0.00Hz	×
b0-14	Upper limit of skip frequency band 1	0.00Hz~upper limit frequency	0.00Hz	×
b0-15 ~ b0-18	Lower limit and upper limit of skip frequency band 2, and 3	0.00Hz~upper limit frequency (Same as b0-13 and b0-14)	0.00Hz	×
b0-19	Jog frequency	0.00Hz~upper limit frequency	5.00Hz	△
b0-20	Zero clearing when master and auxiliary FREQ is switching	0~1 0: Zero clearing 1: Not zero clearing	0	△
Group b1 Start/Stop Control				
b1-00	Run command	0: Control panel control 1: Terminal control 2: Communication control	0	×
b1-01	Binding of run command and frequency setting	Ones place: frequency setting source bundled under control panel control: 0: No binding 1: Digital setting (b0-02) + ∧/∨ adjustment on control panel 2: Digital setting (b0-02) + terminal UP/DOWN adjustment 3: Terminal AI 4: Potentiometer AI 5: Reserve 6: X4 pulse input 7: Process PID output 8: PLC 9: Multi-step speed A: Communication input Tens place: frequency setting	000	×

Param	Designation	Scope	Factory default	Attr
		source bundled under terminal control (same as Ones place) Hundreds place: frequency setting source bundled under communication control (same as Ones place)		
b1-02	Run direction	0: Forward 1: Reverse	0	△
b1-03	Reverse disabled	0: Reverse enabled 1: Reverse disabled	0	×
b1-04	Dead time between forward and reverse	0.0s~3600.0s	0.0s	△
b1-05	Start method	0: From start FREQ 1: DC braking start 2: Flying start 1 3: Reserve 4. Flying start 3 5. Flying start 4 Note: Normally flying start 4 is used for SW search at best effect	0	×
b1-06	Start FREQ	0.00Hz~upper limit FREQ	0.00Hz	×
b1-07	Holding time of start FREQ	0.0s~3600.0s	0.0s	△
b1-08	DC braking current at start	0.0%~200.0%	0.0%	△
b1-09	DC braking time at start	0.00s~30.00s	0.00s	△
b1-10	Flying start current	0.0~200.0%	100.0%	×
b1-11	Flying start Decel time	0.1s~20.0s	2.0s	×
b1-12	Flying start adjustment coeff	0.0~100.0%	1.0%	×
b1-13	Stop method	0: Ramp to stop 1: Coast to stop 2: Ramp to stop + DC brake	0	×

Param	Designation	Scope	Factory default	Attr
b1-14	Start FREQ of DC brake stop	0.00Hz~upper limit FREQ	0.00Hz	×
b1-15	DC brake current	0.0%~200.0%	0.0%	△
b1-16	DC brake time	0.00s~30.00s	0.00s	△
b1-17	Over-excitation brake	0: Disabled 1: Enabled	1	×
b1-18	Dynamic brake	0: Disabled 1: Enabled	0	×
b1-19	Dynamic brake threshold voltage	650V~750V	720V	×
b1-20	Auto restart when power up again after power loss	0: Disabled 1: Enabled	0	×
b1-21	Time delay of auto restart when power up again	0.0s~10.0s	0.0s	△
Group b2 Accel/Decel Parameters				
b2-00	Accel/Decel time resolution	0: 0.01s 1: 0.1s 2: 1s	1	×
b2-01	Accel time 1	0s~600.00s/6000.0s/60000s	6.0s	△
b2-02	Decel time 1	0s~600.00s/6000.0s/60000s	6.0s	△
b2-03 ~ b2-08	Accel time 2 to 4 Decel time 2 to 4	0s~600.00s/6000.0s/60000s (same as b2-01 and b2-02)	6.0s	△
b2-09	Decel time for emergency stop	0s~600.00s/6000.0s/60000s	6.0s	△
b2-10	Jog Accel time	0s~600.00s/6000.0s/60000s	6.0s	△
b2-11	Jog Decel time	0s~600.00s/6000.0s/60000s	6.0s	△
b2-12	Accel/Decel curve selection	0: Linear Accel/Decel 1: Broken-line Accel/Decel 2: S-curve Accel/Decel A 3: S-curve Accel/Decel B 4: S-curve Accel/Decel C	0	×
b2-13	Accel time switching	0.00Hz~upper limit frequency	0.00Hz	△

Param	Designation	Scope	Factory default	Attr
	frequency of broken-line Accel/Decel			
b2-14	Decel time switching frequency of broken-line Accel/Decel	0.00Hz~upper limit frequency	0.00Hz	△
b2-15	Time of Accel S-curve first segment	0.00s~60.00s (S-curve A)	0.20s	△
b2-16	Time of Accel S-curve last segment	0.00s~60.00s (S-curve A)	0.20s	△
b2-17	Time of Decel S-curve first segment	0.00s~60.00s (S-curve A)	0.20s	△
b2-18	Time of Decel S-curve last segment	0.00s~60.00s (S-curve A)	0.20s	△
b2-19	Proportion of Accel S-curve first segment	0.0%~100.0% (S-curve B)	20.0%	△
b2-20	Proportion of Accel S-curve last segment	0.0%~100.0% (S-curve B)	20.0%	△
b2-21	Proportion of Decel S-curve first segment	0.0%~100.0% (S-curve B)	20.0%	△
b2-22	Proportion of Decel S-curve last segment	0.0%~100.0% (S-curve B)	20.0%	△
Group C Input and Output Terminals				
Group C0 Digital Input				
C0-00	Enabled condition of run command terminals when power up	0: Trigger edge detected + ON detected 1: ON detected	0	×
C0-01	Function of terminal X1	0: No function 1: JOG forward 2: JOG reverse 3: Run forward (FWD) 4: Run reverse (REV) 5: Three-wire control 6: Run suspended 7: External stop	3	×
C0-02	Function of terminal X2		4	×

<table>
<tr><th>Param</th><th>Designation</th><th>Scope</th><th>Factory default</th><th>Attr</th></tr>
<tr><td>C0-03</td><td>Function of terminal X3</td><td rowspan="4">8: Emergency stop
9: Stop command + DC brake
10: DC brake stop
11: Coast to stop
12: Terminal UP
13: Terminal DOWN
14: Clear UP/DOWN (including ∧/∨ key) adjustment
15: Multi-step FREQ terminal 1
16: Multi-step FREQ terminal 2
17: Multi-step FREQ terminal 3
18: Multi-step FREQ terminal 4
19: Accel/Decel time determinant 1
20: Accel/Decel time determinant 2
21: Accel/Decel disabled (ramp stop not inclusive)
22: External fault input
23: Fault reset (RESET)
24: Pulse input (valid only for X4)
25: Motor 1/2 switchover
26: Reserve
27: Run command switched to control panel control
28: Run command switched to terminal control
29: Run command switched to communication control
30: Frequency set mode shift
31: Master FREQ set switched to digital setting b0-02
32: Auxiliary FREQ set switched to digital setting b0-04
33: PID adjustment direction
34: PID paused
35: PID integration paused
36: PID parameter switch
37: Count input
38: Count clear</td><td>1</td><td>×</td></tr>
<tr><td>C0-04</td><td>Function of terminal X4</td><td>23</td><td>×</td></tr>
<tr><td>C0-08</td><td>Function of terminal AI1 (Digital enabled)</td><td>0</td><td>×</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>

Param	Designation	Scope	Factory default	Attr
		39: Length count 40: Length clear 41~62: Reserve 63: Simple PLC paused 64: Simple PLC disabled 65: Simple PLC stop memory clear 66: Start wobble frequency 67: Clear wobble frequency status 68: Run prohibited 69: DC brake in run 70: Analog input curve switching 71~99: Reserve		
C0-11	Filtering time of digital input terminal	0.000s~1.000s	0.01s	△
C0-12	Delay time of terminal X1	0.0s~3600.0s	0.0s	△
C0-13	Delay time of terminal X2	0.0s~3600.0s	0.0s	△
C0-14	Digital input terminal enabled status setting 1	Ones place: X1 0: Positive logic 1: Negative logic Tens place: X2 (same as ones place) Hundreds place: X3 (same as ones place) Thousands place: X4 (same as ones place)	0000	×
C0-16	Digital input terminal enabled status setting 3	Ones place: AI1 0: Positive logic 1: Negative logic Tens place/Hundreds place/Thousands place: Reserve	0000	×
C0-17	Terminal UP/DOWN FREQ adjustment action	Ones place: at stop 0: Cleared 1: Maintained Tens place: on power loss 0: Cleared 1: Maintained	0000	△

Param	Designation	Scope	Factory default	Attr
		Hundreds place: integral function 0: No integral function 1: Integral function enabled Thousands place: run direction 0: Changing run direction prohibited 1: Changing run direction allowed		
C0-18	Terminal UP/DOWN frequency change step size	0.00Hz/s~100.00Hz/s	0.03 Hz/s	△
C0-19	FWD/REV terminal control mode	0: Two-wire mode 1 1: Two-wire mode 2 2: Three-wire mode 1 3: Three-wire mode 2	0	×
C0-20	Option of virtual input terminal	000~30F 0: Actual terminal in effect 1: Virtual terminal in effect Ones place: BIT0~BIT3: X1~X4 Tens place: Reserve Hundreds place: BIT8~BIT9: AI~potentiometer input	000	×
C0-21	Enabled condition of run command terminal after fault reset (RESET)	0: Trigger edge detected + ON detected 1: ON detected	0	△
Group C1 Digital Output				
C1-00	Y1 output function	0: No output 1: Drive undervoltage 2: Drive run preparation completed 3: Drive is running 4: Drive running at 0Hz (there is no output at stop) 5: Drive running at 0Hz (there is output at stop) 6: Run direction 7: FREQ attained 8: Upper limit FREQ attained 9: Lower limit FREQ attained 10: Frequency detection FDT1 11: Frequency detection FDT2 12: Reserve 13: Torque limited 14: Fault output	0	△
C1-02	Control board relay output function		14	△

Param	Designation	Scope	Factory default	Attr
		15: Alarm output 16: Drive (motor) overloaded alarm 17: Drive overheat alarm 18: Zero current detection 19: X1 20: X2 21: Motor 1/ 2 indication 22: Set count value attained 23: Designated count value attained 24: Length attained 25: Consecutive run time attained 26: Accumulative run time attained 27: Brake control 28: Reserve 29: Reserve 30: PLC step completed 31: PLC cycle completed 32: Wobble frequency attains to upper or lower limit frequency 33: Upper/lower limit of set FREQ attained 34: Target FREQ attained (set by C2-29) 35~99: Reserve		
C1-04	Y1 output time delay	0.0s~3600.0s	0.0s	Δ
C1-06	Control board relay output time delay	0.0s~3600.0s	0.0s	Δ
C1-08	Enabled state of digital output	Ones place: Y1 0: Positive logic 1: Negative logic Tens place: Reserve Hundreds place: control board relay output (same as ones place) Thousands place: Reserve	0000	×
C1-09	Detected object of FREQ detection (FDT)	Ones place: FDT1 detected object 0: Speed set value (FREQ after Accel/Decel)	00	Δ

Param	Designation	Scope	Factory default	Attr
		1: Detected speed value Tens place: FDT2 detected object 0: Speed set value (FREQ after Accel/Decel) 1: Detected speed value		
C1-10	FDT1 upper value	0.00Hz~maximum FREQ	50.00Hz	△
C1-11	FDT1 lower value	0.00Hz~maximum FREQ	49.00Hz	△
C1-12	FDT2 upper value	0.00Hz~maximum FREQ	25.00Hz	△
C1-13	FDT2 lower value	0.00Hz~maximum FREQ	24.00Hz	△
C1-14	Detection width of FREQ attained	0.00Hz~maximum FREQ	2.50Hz	△
C1-15	Zero current detection value	0.0%~50.0%	5.0%	△
C1-16	Zero current detection time	0.01s~50.00s	0.50s	△
Group C2 Analog and Pulse Input				
C2-00	Analog input curve	Ones place: AI1 input curve 0: Curve 1 (2 points) 1: Curve 2 (4 points) 2: Curve 3 (4 points) 3: Curve 2 and curve 3 switchover Tens place: potentiometer input curve (same as ones place) Hundreds place/thousands place: Reserve	0000	×
C2-01	Curve 1 maximum input	Curve 1 minimum input ~ 110.0%	100.0%	△
C2-02	Corresponding set value of curve 1 maximum input	-100.0%~100.0%	100.0%	△
C2-03	Curve 1 minimum input	-110.0% ~ curve 1 maximum input	0.0%	△
C2-04	Corresponding set value of curve 1 minimum input	-100.0%~100.0%	0.0%	△

Param	Designation	Scope	Factory default	Attr
C2-05	Curve 2 maximum input	Range: input of curve 2 inflection point A~110.0%	100.0%	△
C2-06	Set value corresponding to curve 2 maximum input	Range: -100.0%~100.0%	100.0%	△
C2-07	Input of curve 2 inflection point A	Input of curve 2 inflection point B ~ curve 2 maximum input	0.0%	△
C2-08	Set value Cor. to input of curve 2 inflection point A	Range: -100.0%~100.0%	0.0%	△
C2-09	Input of curve 2 inflection point B	Range: Curve 2 minimum input ~ Input of curve 2 inflection point A	0.0%	△
C2-10	Set value corresponding to input of curve 2 inflection point B	Range: -100.0%~100.0%	0.0%	△
C2-11	Curve 2 minimum input	Range: -110.0%~ input of curve 2 inflection point B	-100.0%	△
C2-12	Set value corresponding to curve 2 minimum input	-100.0%~100.0%	-100.0%	△
C2-13 ~ C2-20	Curve 3 input and setting	Same as C2.05~C2.12	--	△
C2-21	AI terminal filtering time	0.000s~10.000s	0.1s	△
C2-22	Potentiometer input filter time	0.000s~10.000s	0.1s	△
C2-24	X4 pulse maximum input	C2-26~20.0kHz	20.0kHz	△
C2-25	Set value corresponding to X4 pulse maximum input	-100.0%~100.0%	100.0%	△
C2-26	X4 pulse minimum input	0.0kHz~C2-24	0.0kHz	△

Param	Designation	Scope	Factory default	Attr
C2-27	Set value corresponding to X4 pulse minimum input	-100.0%~100.0%	0.0%	△
C2-28	X4 pulse filter time	0.000s~1.000s	0.001s	△
C2-29	Target FREQ	0.00Hz~upper limit FREQ (enabled when C1-00 ~C1-02 is set to 34)	0.00Hz	△
Group C3 Analog and Pulse Output				
C3-00	AO output function	0: No output 1: Set FREQ 2: Output FREQ 3: Output current (to drive rated) 4: Output torque (absolute value) 5: Output voltage 6: Output power 7: Bus voltage 8: Reserve 9: Torque current 10: Magnetic flux current 11:AI 12:Potentiometer input 13-14:Reserve 15:X4 pulse input 16:Communication input percentage 17: Output FREQ before compensation 18:Output current (relative to motor rated current) 19:Output torque (direction hinted) 20:Set torque (direction hinted) 21~99: Reserve	2	△
C3-03	AO1 offset	-100.0%~100.0%	0.0%	×
C3-04	AO1 gain	-2.000~2.000	1.000	×
C3-05	AO1 filtering time	0.0s~10.0s	0.0s	△
Group C4 Automatic Correction of Analog Input				
C4-00	Analog correction	0: No correction 1:Correct AI 2:Correct potentiometer 3:Correct EAI	0	×

Param	Designation	Scope	Factory default	Attr
C4-01	Sampling value of AI calibration point 1	0.00V~10.00V	1.00V	◎
C4-02	Input value of AI calibration point 1	0.00V~10.00V	1.00V	×
C4-03	Sampling value of AI calibration point 2	0.00V~10.00V	9.00V	◎
C4-04	Input value of AI calibration point 2	0.00V~10.00V	9.00V	×
C4-05 ~ C4-08	Sampling value of calibration point 1 of potentiometer (same as C4-01~C4-04)	-10.00V~10.00V	--	--
Group d Motor and Control Parameters				
Group d0 Motor Parameters				
d0-00	Type of motor 1	0: Ordinary asyn. motor 1: Variable frequency asyn. motor 2: Synchronous motor	1	×
d0-01	Power rating of motor 1	0.4kW~6553.5kW	Model depend	×
d0-02	Rated voltage of motor 1	0V~480V (for 380V level)	380V	×
d0-03	Rated current of motor 1	0.0A~6553.5A	Model depend	×
d0-04	Rated frequency of motor 1	0.00Hz~upper limit frequency	50.00Hz	×
d0-05	Pole number of motor 1	1~80	4	×
d0-06	Rated speed of motor 1	0~65535r/min	Model depend	×
d0-07	Stator resistance R1 of asyn. motor 1	0.001Ω~65.535Ω	Model depend	×

Param	Designation	Scope	Factory default	Attr
d0-08	Leakage inductance L1 of asyn. motor 1	0.1mH~6553.5mH	Model depend	×
d0-09	Rotor resistance R2 of asyn. motor 1	0.001Ω~65.535Ω	Model depend	×
d0-10	Mutual inductance L2 of asyn. motor 1	0.1mH~6553.5mH	Model depend	×
d0-11	No-load current of asyn. motor 1	0.0A~6553.5A	Model depend	×
d0-12	Flux weakening coeff 1 of asyn. motor 1	0.0000~1.0000	Model depend	×
d0-13	Flux weakening coeff 2 of asyn. motor 1	0.0000~1.0000	Model depend	×
d0-14	Flux weakening coeff 3 of asyn. motor 1	0.0000~1.0000	Model depend	×
d0-15	Stator resistance of syn. motor 1	0.001Ω~65.535Ω	0.500Ω	×
d0-16	D-axis inductance of syn. motor 1	0.01mH~655.35mH	9.00 mH	×
d0-17	Q-axis inductance of syn. motor 1	0.01mH~655.35mH	9.00 mH	×
d0-18	Back EMF voltage of syn. motor 1	0.0~1000.0	380.0V	×
d0-19	Autotuning current of syn. motor 1	0.0%~100.0% 100% is rated current of motor	35.0%	×
d0-22	Autotuning of motor 1	0: Disabled 1: Static autotuning of asyn. motor 2: Rotary autotuning of asyn. motor 3: Reserve 4: Static autotuning of syn. motor	0	×

Param	Designation	Scope	Factory default	Attr
		5: No-load rotary autotuning of syn. motor		
d0-23	Overload protection of motor 1	0: No protection 1: Judged by motor current 2: Judged by temperature transducer	1	×
d0-24	Overload protection detection time of motor 1	0.1min~15.0min	5.0min	×
d0-27	SW rotary speed track Kp	0.00~655.35	0.00	×
d0-28	SW rotary speed track Ki	0.00~655.35	2.00	×
Group d1 V/f Control Parameters of Motor 1				
d1-00	V/f curve setting	0: Linear V/f 1: Multi-stage V/f (d1-01~d1-08) 2: 1.2nd power 3: 1.4th power 4: 1.6th power 5: 1.8th power 6: 2.0nd power 7: V/f separated mode 1 8: V/f separated mode 2	0	×
d1-01	V/f FREQ value f3	0.00Hz~motor rated FREQ	50.00Hz	×
d1-02	V/f voltage value V3	0.0%~100.0%	100.0%	×
d1-03	V/f FREQ value f2	d1-05~d1-01	0.00Hz	×
d1-04	V/f voltage value V2	0.0%~100.0%	0.0%	×
d1-05	V/f FREQ value f1	d1-07~d1-03	0.00Hz	×
d1-06	V/f voltage value V1	0.0%~100.0%	0.0%	×
d1-07	V/f FREQ value f0	0.00Hz~d1-05	0.00Hz	×
d1-08	V/f voltage value V0	0.0%~100.0%	0.0%	×
d1-09	Torque boost	0.0%~30.0%	0.0%	△
d1-10	Slip compensation gain	0.0%~400.0%	100.0%	△
d1-11	Droop control	0.00Hz~maximum FREQ	0.00Hz	△
d1-12	Current limitation mode	0: Disabled 1: Set by d1-13 2: Set by AI 3 and 4: Reserve 5: Set by X4 pulse setting	1	×

Param	Designation	Scope	Factory default	Attr
d1-13	Digital setting of current limited value	20.0%~200.0%	160.0%	×
d1-14	Current limit coeff on flux weakening	0.001~1.000	0.500	△
d1-15	Energy saving	0%~40.0%	0.0%	△
d1-16	V/f oscillation suppression gain 1	0~3000	38	△
d1-17	V/f oscillation suppression gain 2	0~3000	0	△
d1-18	Voltage setting on V/f separated pattern	0: d1-19 digital setting 1: Set by AI 2-3: Reserve 4: Process PID output 5: AI + process PID output	0	×
d1-19	Digital set voltage on V/f separated pattern	0.0%~100.0%	0.0%	△
d1-20	Voltage variation time on V/f separated pattern	0.00s~600.00s	0.01s	△
Group d2 Vector Control Parameters of Motor 1				
d2-00	Reserve	Reserve	Reserve	×
d2-01	ASR high-speed proportional gain Kp1	0.0~20.0	2.0	△
d2-02	ASR high-speed integration time Ti1	0.000s~8.000s	0.200	△
d2-03	ASR low-speed proportional gain Kp2	0.0~20.0	2.0	△
d2-04	ASR low-speed integration time Ti2	0.000s~8.000s	0.200	△
d2-05	ASR switching FREQ 1	0.00Hz~d2-06	5.00Hz	△
d2-06	ASR switching FREQ 2	d2-05~upper limit	10.00Hz	△
d2-07	ASR input filtering time	0.0ms~500.0ms	5.0ms	△

Param	Designation	Scope	Factory default	Attr
d2-08	ASR output filtering time	0.0ms~500.0ms	0.3ms	△
d2-09	ACR proportion coeff Kp	0.000~4.000	1.000	△
d2-10	ACR integration coeff Ki	0.000~4.000	1.000	△
d2-11	Pre-excitation time	0.000s~5.000s	0.200s	△
d2-12	Driven torque restriction source	0: d2-14 digital setting 1: AI 2-3: Reserve 4: X4 pulse input 5: Communication	0	×
d2-13	Braking torque restriction source	0: d2-15 digital setting 1: AI 2-3: Reserve 4: X4 pulse input 5: Communication	0	×
d2-14	Digital set of driven torque	0.0%~200.0%	180.0%	△
d2-15	Digital set of braking torque	0.0%~200.0%	180.0%	△
d2-16	Torque limit coefficient in flux weakening	0.0%~100.0%	50.0%	△
d2-17	Driven slip compensation gain	10.0%~300.0%	100.0%	△
d2-18	Brake slip compensation gain	10.0%~300.0%	100.0%	△
d2-30	Bandwidth of current loop	0.0Hz~3200.0Hz	200.0Hz	×
dGroup d3 Parameters of Motor 2 (same as d0)				
Group d4 V/f Control Parameter of Motor 2 (same as d1)				
Group d5 Vector Control Parameters of Motor 2 (same as d2)				
Group E Enhanced Function and Protection Parameters				
Group E0 Enhanced Function				

Param	Designation	Scope	Factory default	Attr
E0-00	Switching FREQ	≤15kW: 0.7kHz~16.0kHz, factory default: 8.0kHz 18.5kW~45kW: 0.7kHz~10.0kHz, factory default: 4.0kHz 55kW~75kW: 0.7kHz~8.0kHz, factory default: 3.0kHz ≥90kW: 0.7kHz~3.0kHz, factory default: 2.0kHz	Model depend	△
E0-01	PWM optimization	Ones place: switching FREQ relation with temperature 0: Self-adaption 1: No adaption Tens place: PWM modulation mode 0: Five-segment and seven-segment self-switchover 1: Five-segment mode 2: Seven-segment mode Hundreds place: over-modulation adaption 0: Disabled 1: Enabled Thousands place: PWM switching FREQ relation with output frequency 0: Self-adaption 1: No adaption	0120	×
E0-02	Action when run time attained	Ones place: action when consecutive run time attained: 0: Run continued 1: Stop and fault reported Tens place: action when accumulative run time attained: 0: Run continued 1: Stop and fault reported Hundreds place: unit of run time 0: Second 1: Hour	000	×
E0-03	Consecutive run time setting	0.0s (h) ~6000.0s (h)	0.0s(h)	×
E0-04	Accumulative run time setting	0.0s (h) ~6000.0s (h)	0.0s(h)	×

Param	Designation	Scope	Factory default	Attr
E0-05	Mechanical brake control	0: Disabled 1: Enabled	0	×
E0-06	Mechanical brake open frequency	0.00Hz~10.00Hz	2.50Hz	×
E0-07	Mechanical brake open current	0.0%~200.0%	120.0%	×
E0-08	Accel delay time after brake open	0.0s~10.0s	1.0s	×
E0-09	Mechanical brake FREQ	0.00Hz~10.00Hz	2.00Hz	×
E0-10	Mechanical brake close waiting time	0.0s~10.0s	0.0s	×
E0-11	Mechanical brake close holding time	0.0s~10.0s	1.0s	×
Group E1 Protection Parameters				
E1-00	Overvoltage stall	0: Invalid in all process 1: Valid in all process 2. Valid only for decelerating	1	×
E1-01	Overvoltage stall protection voltage	120%~150%	130%	×
E1-02	Undervoltage stall	0: Disabled 1: Enabled	0	×
E1-03	Overload alarm	Ones place: detection option: 0: Always detect 1: Detect at constant speed only Tens place: compared with: 0: Motor rated current 1: Drive rated current Hundreds place: drive action 0: Alarm but run continued 1: Alarm and coast to stop	000	×
E1-04	Overload alarm threshold	20.0%~200.0%	180.0%	△
E1-05	Overload alarm activation time	0.1s~60.0s	5.0s	△
E1-06	Protection action 1	Ones place/Tens place: Reserve Hundred: EEPROM abnormal.(EPr) 0: Coast to stop	0000	×

Param	Designation	Scope	Factory default	Attr
		1: Alarm but run continued Thousands place: abnormal terminal communication (TrC): 0: Coast to stop 1: Alarm but run continued		
E1-07	Protection action 2	Ones place: abnormal power supply when running (SUE): 0: Coast to stop 1: Alarm but run continued Tens place: current detection circuit failed (CtC) 0: Coast to stop 1: Alarm but run continued Hundreds place: abnormal contactor (CCL): 0: Coast to stop 1: Alarm but run continued Thousands place: input supply fault /output phase loss (ISF, oPL): 0: Protection for neither input supply fault nor output phase loss 1: No protection for input supply fault, protection enabled for output phase loss 2: Protection enabled for input supply fault, no protection for output phase loss 3: Protection enabled both for input supply fault and output phase loss	3001	×
E1-08	Fault memory after power loss	0: Not memorized after power loss 1: Memorized after power loss	0	×
E1-09	Fault auto-reset times	0~20	0	×
E1-10	Auto-reset interval	2.0s~20.0s	2.0s	×
E1-11	Relay action on drive fault	Ones place: when undervoltage fault occurs 0: No action 1: Action enabled Tens place: when fault locked	010	×

Param	Designation	Scope	Factory default	Attr
		0: No action 1: Action enabled Hundreds place: at interval of auto- reset 0: No action 1: Action enabled		
E1-12	Cooling fan control	0: Auto run 1: Always run after power up	0	△
E1-13	Drive overheat alarm threshold	0.0℃~100.0℃	80.0℃	△
Group F Application				
Group F0 Process PID				
F0-00	PID setting	0: F0-01 digital setting 1: AI 2: Potentiometer input 3: Reserve 4: X4 pulse input 5: Communication	0	×
F0-01	PID digital setting	0.0%~100.0%	50.0%	△
F0-02	PID feedback	0: AI 1~6: Reserve 7: X4 pulse input 8: Communication	0	×
F0-03	PID adjustment	Ones place: output FREQ 0: Must be the same direction as the set run direction 1: Opposite direction allowed Tens place: integration selection 0: Integral continued when FREQ attains upper/lower limit 1: Integral stopped when FREQ attains upper/lower limit	11	×
F0-04	PID positive and negative adjustment	0: Positive adjustment 1: Negative adjustment	0	×
F0-05	Filtering time of PID setting	0.00s~60.00s	0.00s	△
F0-06	Filtering time of PID feedback	0.00s~60.00s	0.00s	△
F0-07	Filtering time of PID output	0.00s~60.00s	0.00s	△
F0-08	Proportional gain Kp1	0.0~200.0	50.0	△

Param	Designation	Scope	Factory default	Attr
F0-09	Integration time Ti1	0.000s~50.000s	0.500s	△
F0-10	Derivative time Td1	0.000s~50.000s	0.000s	△
F0-11	Proportional gain Kp2	0.0~200.0	50.0	△
F0-12	Integration time Ti2	0.000s~50.000s	0.500s	△
F0-13	Derivative time Td2	0.000s~50.000s	0.000s	△
F0-14	PID parameter switch	0: No switch, determined by parameters Kp1, Ti1 and Td1 1: Auto-switched on the basis of input offset 2: Switched by terminal	0	×
F0-15	Input offset under PID auto-switch	0.0%~100.0%	20.0%	△
F0-16	Sampling period T	0.001s~50.000s	0.002s	△
F0-17	PID offset limit	0.0%~100.0%	0.0%	△
F0-18	PID derivative limit	0.0%~100.0%	0.5%	△
F0-19	PID initial value	0.0%~100.0%	0.0%	×
F0-20	PID initial value holding time	0.0s~3600.0s	0.0s	△
F0-21	PID feedback loss detection value	0.0%~100.0%	0.0%	△
F0-22	PID feedback loss detection time	0.0s~30.0s	1.0s	△
F0-23	Cutoff FREQ when opposite to rotary set direction	0.00Hz~maximum FREQ	50.00Hz	△
F0-24	PID computation option	0: No computation in stop status 1: Computation continued in stop status	0	△
Group F1 Multi-step frequency				
F1-00	FREQ set source of multi-step 0	0: Digital setting F1-02 1: Digital setting b0-02 + control panel ∧/∨ adjustment 2: Digital setting b0-02 + terminal UP/DOWN adjustment 3: AI 4: Potentiometer input 5: Reserve 6: X4 pulse input 7: Process PID output	0	×

Param	Designation	Scope	Factory default	Attr
		8: Communication		
F1-01	FREQ set source of multi-step 1	0: Digital setting F1-03 1: Digital setting b0-04+ control panel ∧/∨ adjustment 2: Digital setting b0-04 + terminal UP/DOWN adjustment 3: AI 4: Potentiometer input 5: Reserve 6: X4 pulse input 7: Process PID output 8: Communication	0	×
F1-02 ~ F1-17	Multi-step FREQ 0 ~ Multi-step FREQ 15	-100.0%~100.0% Note: percentage against upper limit FREQ b0-09. Meaning of F1-03~F1-17 is the same with F1-02	0.0%	△
Group F2 Simple PLC				
F2-00	Simple PLC run mode	Ones place: PLC run mode 0: Stop after a single cycle 1: Continue to run in the last FREQ after a single cycle 2: Cycle repeated Tens place: power loss memory 0: No memory on power loss 1: Memorized on power loss Hundreds place: starting mode 0: Run from the first step "multi-step frequency 0" 1: Continue to run from the step of stop (or fault) 2: Continue to run from the step and FREQ at which run stopped (or fault occurred) Thousands place: unit of simple PLC run time 0: Second (s) 1: Minute (min)	0000	×

Param	Designation	Scope	Factory default	Attr
F2-01	Setting of multi-step 0	Ones place: FREQ setting 0: Multi-step FREQ 0 (F1-02) 1: AI 2: Potentiometer input 3: Reserve 4: X4 pulse input 5: Process PID output 6: Multi-step FREQ 7: Communication Tens place: run direction 0: Forward 1: Reverse 2: Determined by run command Hundreds place: Accel/Decel time 0: Accel/Decel time 1 1: Accel/Decel time 2 2: Accel/Decel time 3 3: Accel/Decel time 4	000	×
F2-02	Run time of step 0	0.0s (min) ~6000.0s (min)	0.0s	∆
F2-03 ~ F2-32	Setting and run time of step 1 to 15	Same as F2-01 and F2-02 Note: If the Nth step of the freq. reference is multi-step, the setting value of multi-step freq. is n, (n is 0, 1….15).	--	--
Group F3　Wobble Frequency and Fixed Length Count				
F3-00	Wobble FREQ function setting	0: Wobble FREQ function disabled 1: Wobble FREQ function enabled	0	×
F3-01	Wobble FREQ run setting	Ones place: started method 0: Automatically 1: Started by terminal Tens place: amplitude control 0: Relative to center FREQ 1: Relative to maximum FREQ Hundreds place: wobble FREQ memorized when stop 0: Memory enabled 1: Memory disabled Thousands place: wobble FREQ memorized on power loss 0: Memory enabled 1: Memory disabled	0000	×

Param	Designation	Scope	Factory default	Attr
F3-02	Pre-wobble FREQ	0.00Hz~600.00Hz	0.00Hz	△
F3-03	Pre-wobble FREQ holding time	0.0s~3600.0s	0.0s	△
F3-04	Wobble FREQ amplitude	0.0%~50.0%	0.0%	△
F3-05	Hop FREQ	0.0%~50.0% (relative to F3-04)	0.0%	△
F3-06	Cycle of wobble FREQ	0.1s~999.9s	0.0s	△
F3-07	Triangular wave ramp-up time	0.0%~100.0% (of wobble FREQ cycle)	0.0%	△
F3-08	Length unit	0: m 1: 10m	0	△
F3-09	Length setting	0~65535	1000	△
F3-10	Pulse number per meter	0.1~6553.5	100.0	△
F3-11	Action when the length attained	0: Not stop 1: Stop	0	△
F3-12	Set count value	1~65535	1000	△
F3-13	Designated count value	1~65535	1000	△
Group F5 Vector control without PG for synchronous motor				
F5-00	Recognition of rotor initial magnetic pole position	0~2 0: Detecting forbidden 1: Recognition of pulse injection initial position 2: Reserve	0	△
F5-04	Initial pull-in current	0.0%~200.0%	50.0%	△
F5-05	Cut-off FREQ of pull-in current	0.00Hz~b0-09	0.00Hz	△
F5-09	Max. torque current ratio coefficient	0: forbid MTPA control Not 0: MTPA coefficient Note: generally 0, no need to modify	0.000	△
F5-12	Speed observer bandwidth coefficient	0.000~32.000	4.000	△

Param	Designation	Scope	Factory default	Attr
F5-13	Speed observer filter coeff.	0.000~32.000	0.200	△
F5-17	Open-loop vector mode selection	0000~1111 Ones: dead-time compensating enabled Tens: current loop feedforward enabled Hundreds: start step-out self-recovery enabled Thousands: speed loop integral separating enabled	0011	△
F5-20	Max. flux weakening current allowed	-8000~8000	-6000	△
F5-21	Max voltage utilization ratio	0~65535	31767	△
F5-24	Flux weakening loop proportional gain	0~65535	0	△
F5-25	Flux weakening loop integral gain	0~65535	800	△
Group H Communication Parameters				
Group H0 MODBUS Communication Parameters				
H0-00	485/Keypad selection	0: Local 485 1: Keypad	0	×
H0-01	SCI port communication configuration	Ones place: baud rate 0: 4800bps 1: 9600bps 2: 19200bps 3: 38400bps 4: 57600bps 5: 115200bps Tens place: data format 0: 1-8-2-N format, RTU 1: 1-8-1-E format, RTU 2: 1-8-1-O format, RTU 3: 1-7-2-N format, ASCII 4: 1-7-1-E format, ASCII 5: 1-7-1-O format, ASCII Hundreds place: connection type 0: Direct cable connection (232/485) 1: MODEM (232)	0001	×

Param	Designation	Scope	Factory default	Attr
		Thousands place: communication data handling at power loss 0: Not saved at power loss 1: Saved at power loss		
H0-02	Local address of SCI port communication	0~247, 0 is broadcast address	1	×
H0-03	Time out detection of SCI port communication	0.0s~1000.0s	0.0s	×
H0-04	Time delay of SCI port communication	0ms~1000ms	0ms	×
H0-05	Master/Slave option	0: PC controls this drive 1: As master 2: As slave	0	×
H0-06	Parameter store address when this drive working as master	0: b0-02 1: F0-01	0	×
H0-07	Proportional factor of received FREQ	0.0~1000.0	100.0	△
Group L Keys and Display of Control panel				
Group L0 Keys of Control panel				
L0-00	MF key setting	0: No function 1: Forward jog 2: Reverse jog 3: Forward/reverse switchover 4: Emergency stop 1 (set Decel time by b2-09) 5: Emergency stop 2 (coast to stop) 6: Run command sources shifted (Note: this function is available with external keypad)	0	△
L0-01	Keys locked option	0: Not locked 1: All locked 2: Keys locked except RUN, STOP/RESET 3: Keys locked except STOP/RESET	0	△

Param	Designation	Scope	Factory default	Attr
		4: Keys locked other than >>		
L0-02	Function of STOP key	0: STOP key active only at control panel control 1: STOP key deactivated under any command source	0	△
L0-03	FREQ adjustment through keys ∧/∨	Ones place: option at stop 0: Clear at stop 1: Holding at stop Tens place: option at power loss 0: Clear at power loss 1: Holding at power loss Hundreds place: integrating option 0: Integrating disabled 1: Integrating enabled Thousands place: run direction 0: Direction changing prohibited 1: Direction changing permitted	0100	△
L0-04	Step size of FREQ adjustment through keys ∧/∨	0.00Hz/s~10.00Hz/s	0.03 Hz/s	△
Group L1 Control Panel Display Setting				
L1-00	Display parameter setting 1 on run status	Binary system setting: 0: No display 1: Display Ones place: BIT0: Run FREQ (Hz) BIT1: Set FREQ (Hz) BIT2: Bus voltage (V) BIT3: Output current (A) Tens place: BIT0: Output torque (%) BIT1: Output power (kW) BIT2: Output voltage (V) BIT3: Motor speed (r/min) Hundreds place: BIT0: AI (V) BIT1: Potentiometer input (V) BIT2: Reserve BIT3: Output sync FREQ (Hz) Thousands place: BIT0: X4 pulse input BIT1: External count value	080F	△

Param	Designation	Scope	Factory default	Attr
		BIT2: Reserve BIT3: Reserve Note: when this parameter value is set to 0000, run FREQ (Hz) would be displayed as default		
L1-01	Display parameter setting 2 on run status	Binary system setting: 0: No display 1: Display Ones place: BIT0: Run linear speed (m/s) BIT1: Set linear speed (m/s) BIT2: Input terminal status BIT3: Output terminal status Tens place: BIT0: PID setting (%) BIT1: PID feedback (%) BIT2: Set length (m) BIT3: Actual length (m) Hundreds place: Reserve Thousands place: Reserve	0000	△
L1-02	Display parameter setting on stop status	Binary system setting: 0: No display 1: Display Ones place: BIT0: FREQ setting (Hz) BIT1: Bus voltage (V) BIT2: Input terminal status BIT3: Output terminal status Tens place: BIT0: AI (V) BIT1: Potentiometer input (V) BIT2: Reserve BIT3: Reserve Hundreds place: BIT0: PID setting (%) BIT1: PID feedback (%) BIT2: Set length (m) BIT3: Actual length (m) Thousands place: BIT0: Run linear speed (m/s) BIT1: Set linear speed (m/s) BIT2: External count value	0003	△

Param	Designation	Scope	Factory default	Attr
		BIT3: X4 pulse input Note: when this parameter value is set to 0000, the set FREQ would be displayed as default (Hz)		
L1-03	Linear speed COEFF	0.1%~999.9%	100.0%	△
Group U Monitoring				
Group U0 Status Monitoring				
U0-00	Run FREQ	0.00Hz~600.00Hz	0.00Hz	◎
U0-01	Set FREQ	0.00Hz~600.00Hz	0.00Hz	◎
U0-02	Bus voltage	0V~65535V	0V	◎
U0-03	Output voltage	0V~65535V	0V	◎
U0-04	Output current	0.0A~6553.5A	0.0A	◎
U0-05	Output torque	-300.0%~300.0%	0.0%	◎
U0-06	Output power	0.0%~300.0%	0.0%	◎
U0-07	Master FREQ set source	0: Digital setting + adjustment through ∧/∨ on control panel 1: Digital setting + terminal UP/DOWN adjustment 2: Analog input AI 3: Potentiometer input 4: Reserve 5: X4 pulse input 6: Process PID output 7: PLC 8: Multi-step FREQ 9: Communication	0	◎
U0-08	Auxiliary FREQ set source	0: No set 1: Digital setting + adjustment through ∧/∨ on control panel 2: Digital setting + terminal UP/DOWN adjustment 3: Analog input AI 4: Potentiometer input 5: Reserve 6: X4 pulse input 7: Process PID output 8: PLC 9: Multi-step FREQ 10: Communication	0	◎

Param	Designation	Scope	Factory default	Attr
U0-09	Master FREQ setting	0.00Hz~600.00Hz	0.00Hz	◎
U0-10	Auxiliary FREQ setting	0.00Hz~600.00Hz	0.00Hz	◎
U0-11	Drive status	Ones place: run status 0: Accelerating 1: Decelerating 2: Constant speed run Tens place: drive status 0: Stop 1: Running 2: Autotuning	00	◎
U0-12	AI input voltage	0.00V~10.00V	0.00V	◎
U0-13	Potentiometer input voltage	-10.00V~10.00V	0.00V	◎
U0-15	AO output	0.0%~100.0%	0.0%	◎
U0-17	X4 high freq. pulse freq.	0.0kHz~50.0kHz	0.0kHz	◎
U0-18	Digital input terminal status	00~7F	00	◎
U0-19	Digital output terminal status	0~7	0	◎
U0-20	PID set	0.0%~100.0%	0.0%	◎
U0-21	PID feedback	0.0%~100.0%	0.0%	◎
U0-22	PID input offset	-100.0%~100.0%	0.0%	◎
U0-23	PLC step	0~15	0	◎
U0-24	V/f separated target voltage	0.0%~100.0%	0.0%	◎
U0-25	V/f separated actual output voltage	0.0%~100.0%	0.0%	◎
U0-26 ~ U0-29	Reserve	Reserve	Reserve	◎
U0-30	Cumulative power-up time	0h~65535h	0h	◎
U0-31	Cumulative run time	0h~65535h	0h	◎
U0-33	Heat sink temperature	-40.0℃~100.0℃	0.0℃	◎
U0-35	Terminal count value	0~65535	0	◎

Param	Designation	Scope	Factory default	Attr
U0-36	Run command log at LoU	0~1	0	◎
U0-37	Fault code log at LoU	0~100	0	◎
U0-38	Reserve	Reserve	Reserve	◎
U0-39	CtC fault source	0: No fault 1: U-phase current detection circuit fault 2: V-phase current detection circuit fault 3: W-phase current detection circuit fault	0	◎
U0-40	Higher-bit numbers of actual length	0~65	0	◎
U0-41	Lower-bit numbers of actual length	0~65535	0	◎
U0-42	Higher-bit numbers of control panel ∧/∨ stored value	-1~1	0	◎
U0-43	Lower-bit numbers of control panel ∧/∨ stored value	0.00~655.35 Hz	0.00Hz	◎
U0-44	Higher-bit numbers of terminal UP/DOWN stored value	-1~1	0	◎
U0-45	Lower-bit numbers of terminal UP/DOWN stored value	0.00~655.35 Hz	0.00Hz	◎
U0-52	Center FREQ of wobble FREQ	0.00Hz~600.00Hz	0.00Hz	◎
U0-53	Initial position angle	0.0~6000.0	0.0	◎
Group U1 History Fault				
U1-00	History fault 1 (latest)	0~48	0	◎
U1-01	Run frequency at fault 1	0.00Hz~600.00Hz	0.00Hz	◎
U1-02	Output current at fault 1	0.0A~6553.5A	0.0A	◎

Param	Designation	Scope	Factory default	Attr
U1-03	Bus voltage at fault 1	0V~1000V	0V	◎
U1-05	Temperature of heat sink at fault 1	-40.0℃~100.0℃	0.0℃	◎
U1-06	Input terminal status at fault 1	0000~FFFF	0000	◎
U1-07	Output terminal status at fault 1	0000~FFFF	0000	◎
U1-08	Cumulative run time at fault 1	0h~65535h	0h	◎
U1-09 ~ U1-17	History fault 2	Same as U1-00~ U1-08	--	◎
U1-18 ~ U1-26	History fault 3	Same as U1-00~ U1-08	--	◎

10. Fault Causes and Troubleshooting

Once drive fault occurs, please identify the causes carefully and make a detailed record of fault symptom. To seek service, please contact distributors. Parameters U1-00, U1-09, and U1-18 are used to view fault 1, fault 2 and fault 3. Faults are recorded with numeric codes (1~48), while the fault information that corresponds to each numeric fault code is specified in the table below.

Fault code	Fault display	Fault description	Causes	Solutions
1	oC1	Accel overcurrent	Torque boost is too big under V/f control	Reduce torque boost value
			Start frequency is too high	Drop start frequency
			Accel time is too short	Prolong the Accel time
			Motor parameters are improperly set	Set the parameters correctly according to motor nameplate
			Overload is too heavy	Reduce the load
			Inappropriate V/f curve under V/f control	Set V/f curve correctly
			Restart the rotating motor	Reduce current limit value or try flying start

2	oC2	Canst-speed overcurrent	Overload is too heavy	Reduce the load
			Power rating of the drive is relatively small	Select appropriate drive power rating
			Input voltage is too low	Check power grid voltage
3	oC3	Decel overcurrent	Load inertia is too big	Use dynamic brake
			Decel time is too short	Prolong the Decel time
			Input voltage is too low	Check power grid voltage
4	ov1	Accel overvoltage	Load inertia is too big	Use dynamic brake
			Abnormal input voltage	Check power grid voltage
5	ov2	Constant-speed overvoltage	Load variation is too big	Check the load
			Abnormal input voltage	Check power grid voltage
			Improper parameter setting of regulator under SVC control	Properly set regulator parameters
6	ov3	Decel overvoltage	Load inertia is too big	Use dynamic braking
			Abnormal input voltage	Check power grid voltage
			Improper parameter setting of regulator under SVC control	Properly set regulator parameters
			Decel time is too short	Prolong the Decel time
8	tUN	Autotuning failed	Bad motor connection	Check motor connection
			Autotuning during rotation of the motor	Autotuning in stationary status of the motor
			Big error between real motor parameters and the setting	Set the parameters correctly according to motor nameplate

9	oL1	Drive overloaded	Torque boost is too big under V/f control	Reduce torque boost value
			Start FREQ is too high	Drop start frequency
			Accel/Decel time is too short	Prolong the Accel/Decel time
			Motor parameters are improperly set	Set the parameters correctly according to motor nameplate
			Load is too heavy	Reduce the load
			Inappropriate V/f curve under V/f control	Set V/f curve correctly
			Restart the rotary motor	Reduce current limited value or flying start
10	oL2	Motor overloaded	Torque boost is too big under V/f control	Reduce torque boost value
			Inappropriate V/f curve under V/f control	Set V/f curve correctly
			Motor parameters are improperly set	Set the parameters correctly according to motor nameplate
			Improper setting of motor overloaded protection time	Properly set the motor overloaded protection time
			Motor stalled or sharp variation of load	Identify the causes of motor stalling or check the load condition
			Long-time running of ordinary motor at low speed with heavy load	Select variable frequency motor
11	CtC	Current detection abnormal	Abnormal connection between control board and drive board	Check and re-connection
			Abnormal current detection circuit	Seek services
12	GdP	Output ground short-circuit	Output connection ground short circuit	Check motor connection and output

		protection		ground impedance
			Motor insulation abnormal	Check the motor
13	ISF	Input power supply abnormal	Severe voltage imbalance among power supply phases	Check power grid voltage
			Abnormal bus capacitance	Seek services
14	oPL	Output phase loss	Motor cable connection abnormal	Check motor connection
			Imbalance among motor three phases	Check or replace the motor
			Incorrect setting of vector control parameters	Correctly set vector control parameters
16	oH1	Module thermal protection	Ambient temperature is too high	Drop ambient temperature
			Fan failed	Replace the fan
			Air duct blocked	Clear air duct
			Temperature sensor abnormal	Seek services
18	oH3	Module temperature detection disconnected	Temperature sensor not well connected with socket	Pull out and re-insert
			Ambient temperature is too low	Raise ambient temperature
			Module detection circuit failed	Seek services
			Thermistor failed	Seek services
23	TEr	Function conflict between analog terminals	Analog input terminals are set to the same function	Do not set analog inputs to the same function
24	PEr	External equipment error	External fault terminal is enabled	Check the status of external fault terminal

			Stall condition lasts too long	Check if the load is abnormal
26	to2	Consecutive run time attained	Consecutive run time attained" enabled	See specification of Group E0
27	to3	Cumulative run time attained	Cumulative run time attained" enabled	See specification of Group E0
28	SUE	Power supply abnormal at run	DC bus voltage fluctuation is too big or the power is lost	Check input power grid voltage and load
29	EPr	EEPROM read/write fault	Parameter read/write abnormal at control board	Seek services
31	TrC	Port communication abnormal	Improper setting of baud rate	Set properly
			Communication port disconnected	Reconnected
			Upper computer/device does not work	Make upper computer/device work
			Drive communication parameter error	Set properly
32	PdC	Control panel communication abnormal	Control panel disconnected	Reconnected
			Severe EMI	Check peripheral equipment or seek services
33	CPy	Parameter copy failure	Parameter uploading or downloading abnormal	Seek services
			No parameters stored at control panel	Seek services
35	SFt	Software version compatibility failure	Version of control panel is not consistent with that of control board	Seek services
36	CPU	Abnormal power loss	Abnormal power loss in last operation	RESET the fault
			Faulty control board	Seek services

37	oCr	Overcurrent benchmark error	SMPS failed	Seek services
			Control board failed	Seek services
38	SP1	5V supply out-of-limit	SMPS failed	Seek services
			Control board failed	Seek services
39	bEF	EMF abnormal	Not PMSM	Confirm motor type
			PMSM demagnetizing	Change motor
40	AIP	AI input out-of-limit	Control board failed	Seek services
			AI input is too high or low	Set AI input within correct range
41	LoU	Undervoltage protection	DC bus voltage is too low	Check input voltage if it is too low or the drive is the process of power loss
45	Plo	PID feedback lost	Abnormal PID feedback channel abnormal	Check the feedback channel
			Inappropriate setting of PID parameters	Set properly
47	Oc4	Overcurrent protection	Short circuit between output phases or short circuit to ground	Check the motor wiring and output impedance to ground
			The inverter module is damaged	Seek service
48	Ov4	Overvoltage protection	Abnormal input voltage	Check the grid voltage
			The control board voltage detection circuit is abnormal	Seek service

ATTENTION:

When a fault occurs, please identify the causes and seek solutions according the guidance in the table. If the fault fails to be solved, do not apply power to the drive again. Contact the supplier for service in time.

34.01.0098 A03