

TECO

INVERTER



TECO INVERTER

E710 Series

Chapter 1 Safety Precautions

1.1 Before Supplying Power to the Inverter



Warning

The main circuit must be correctly wired. For single phase supply use input terminals (R/L1, T/L3) and for three phase supply use input terminals (R/L1, S/L2, T/L3). Terminals U/T1, V/T2, W/T3 must only be used to connect the motor. Connecting the input supply to any of the U/T1, V/T2 or W/T3 terminals will cause damage to the inverter.



Caution

- To avoid the front cover from disengaging or other physical damage, do not carry the inverter by its cover. Support the unit by its heat sink when transporting. Improper handling can damage the inverter or injure personnel, and should be avoided.
- To avoid the risk of fire, do not install the inverter on or near flammable objects. Install on nonflammable objects such as metal surfaces.
- If several inverters are placed inside the same control panel, provide adequate ventilation to maintain the temperature below 40°C/104°F (50°C/122°F without a dust cover) to avoid overheating or fire.
- When removing or installing the digital operator, turn off the power first, and then follow the instructions in our instruction manual to avoid operator error or loss of display caused by faulty connections.



Warning

- This product is sold subject to IEC 61800-3. In a domestic environment this product may cause radio interference in which case the user may need to apply corrective measures.
- Motor over temperature protection is provided.

1.2 Wiring



Warning

- Always turn OFF the power supply before attempting inverter installation and wiring of the user terminals.
- Wiring must be performed by a qualified personnel / certified electrician.
- Make sure the inverter is properly grounded. (200V Class: Grounding impedance shall be less than 100Ω. 400V Class: Grounding impedance shall be less than 10Ω.)
- Make sure the inverter is properly grounded. It is required to disconnect the ground wire in the control board to avoid the sudden surge causing damage on electronic parts if it is improperly grounded.
- RCD is required to be in compliance with the protection norm of B-type leakage current.
- Please check and test emergency stop circuits after wiring. (Installer is responsible for the correct wiring.)
- Never touch any of the input or output power lines directly or allow any input or output power lines to come in contact with the inverter case.
- Do not perform a dielectric voltage withstand test (megger) on the inverter this will result in inverter damage to the semiconductor components.



Caution

- The line voltage applied must comply with the inverter's specified input voltage. (See product nameplate section 2.1)
- Connect braking resistor and braking unit to the designated terminals. (See section 3.10)
- Do not connect a braking resistor directly to the DC terminals P (+) and N (-), otherwise fire may result.

- Use wire gauge recommendations and torque specifications. (See Wire Gauge and Torque Specification in section 3.6)
- Never connect input power to the inverter output terminals U/T1, V/T2, W/T3.
- Do not connect a contactor or switch in series with the inverter and the motor.
- Do not connect a power factor correction capacitor or surge suppressor to the inverter output.
- Ensure the interference generated by the inverter and motor does not affect peripheral devices.

1.3 Before Operation



Warning

- Make sure the inverter capacity matches the parameters 13-00.
- Reduce the carrier frequency (parameter 11-01) if the cable from the inverter to the motor is greater than 80 ft (25m). A high-frequency current can be generated by stray capacitance between the cables and result in an overcurrent trip of the inverter, an increase in leakage current, or an inaccurate current readout.
- Be sure to install all covers before turning on power. Do not remove any of the covers while power to the inverter is on, otherwise electric shock may occur.
- Do not operate switches with wet hands, otherwise electric shock may result.
- Do not touch inverter terminals when energized even if inverter has stopped, otherwise electric shock may result.

1.4 Parameters Setting



Caution

- Do not connect a load to the motor while performing a rotational auto-tune.
- Make sure the motor can freely run and there is sufficient space around the motor when performing a rotational auto-tune.

1.5 Operation



Warning

- Be sure to install all covers before turning on power. Do not remove any of the covers while power to the inverter is on, otherwise electric shock may occur.
 - Do not connect or disconnect the motor during operation. This will cause the inverter to trip and may cause damage to the inverter.
 - Operations may start suddenly if an alarm or fault is reset with a run command active. Confirm that no run command is active upon resetting the alarm or fault, otherwise accidents may occur.
 - Do not operate switches with wet hands, otherwise electric shock may result.
 - It provides an independent external hardware emergency switch, which emergently shuts down the inverter output in the case of danger.
 - If automatic restart after power recovery (parameter 07-00) is enabled, the inverter will start automatically after power is restored.
 - Make sure it is safe to operate the inverter and motor before performing a rotational auto-tune.
 - Do not touch inverter terminals when energized even if inverter has stopped, otherwise electric shock may result.
 - Do not check signals on circuit boards while the inverter is running.
- After the power is turned off, the cooling fan may continue to run for some time.



Caution

- Do not touch heat-generating components such as heat sinks and braking resistors.
- Carefully check the performance of motor or machine before operating at high speed, otherwise Injury may result.
- Note the parameter settings related to the braking unit when applicable.

- Do not use the inverter braking function for mechanical holding, otherwise injury may result.
Do not check signals on circuit boards while the inverter is running.

1.6 Maintenance, Inspection and Replacement



Warning

- Wait a minimum of five minutes after power has been turned OFF before starting an inspection. Also confirm that the charge light is OFF and that the DC bus voltage has dropped below 25Vdc.
- Never touch high voltage terminals in the inverter.
- Make sure power to the inverter is disconnected before disassembling the inverter.
- Only authorized personnel should perform maintenance, inspection, and replacement operations. (Take off metal jewelry such as watches and rings and use insulated tools.)



Caution

- The Inverter can be used in an environment with a temperature range from 14° ~104(140) °F (-10~+40(60)°C) and relative humidity of 95% non-condensing.
- The inverter must be operated in a dust, gas, mist and moisture free environment.

1.7 Disposal of the Inverter



Caution

- Please dispose of this unit with care as an industrial waste and according to your required local regulations.
- The capacitors of inverter main circuit and printed circuit board are considered as hazardous waste and must not be burned.
- The Plastic enclosure and parts of the inverter such as the top cover board will release harmful gases if burned.



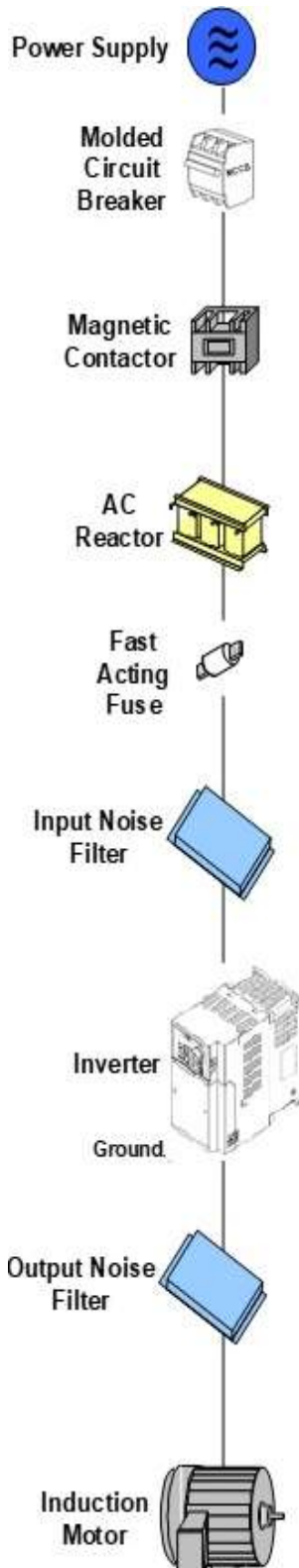
Equipment containing electrical components may not be disposed of together with domestic waste. It must be separately collected with electrical and electronic waste according to local and currently valid legislation.

1.8 Guaranteed liability exemption

- Loss of opportunity caused by the company's products, damage to customers of your company or your company, damage to non-company products, or compensation for other businesses, whether within the warranty period or not, is not covered by the company.

Chapter 2 Environment and Installation

2.1 System Diagram



Power supply:



Make sure the correct voltage is applied to avoid damaging the inverter.

Molded-case circuit breaker (MCCB) or fused disconnect:

A molded-case circuit breaker or fused disconnect must be installed between the AC source and the inverter that conforms to the rated voltage and current of the inverter to control the power and protect the inverter.



Do not use the circuit breaker as the run/stop switch for the inverter.

Ground fault detector / breaker:



Install a ground fault breaker to prevent problems caused by current leakage and to protect personnel. Select current range up to 200mA, and action time up to 0.1 second to prevent high frequency failure.

Magnetic contactor:

Normal operations do not need a magnetic contactor. When performing functions such as external control and auto restart after power failure, or when using a brake controller, install a magnetic contactor.



Do not use the magnetic contactor as the run/stop switch for the inverter.

AC line reactor for power quality:

- When inverters are supplied by a high capacity power source (> 600KVA), an AC reactor can be connected to improve the power factor.

Install Fast Acting Fuse:

To protect peripheral equipment, install fast acting fuses in accordance with the specifications in the instruction manual for peripheral devices.

Input Noise filter:

A filter must be installed when there are inductive loads affecting the inverter. The inverter meets EMC standard when the special filter is used. See the instruction manual for peripheral devices.

Inverter:

Output terminals T1, T2, and T3 are connected to U, V, and W terminals of the motor. If the motor runs in reverse while the inverter is set to run forward, swap any two terminals connections for T1, T2, and T3.



To avoid damaging the inverter, do not connect the output terminals T1, T2, and T3 to AC input power.



Connect the ground terminal properly. (200V class: $R_g < 100\Omega$; 400V class: $R_g < 10\Omega$.)

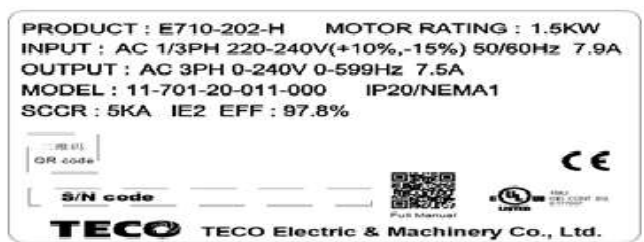
Output Noise filter:

An output noise filter may reduce system interference and induced noise.

Motor:

If the inverter drives multiple motors the output rated current of the inverter must be greater than the total current of all the motors.

2.1.1 Inverter Nameplate



← Input Power Specifications
← Output Power Specifications
← UL and CE Marks

2.1.2 Model

E710 - 4 01 - H 3 E F

E710 series

Input Voltage :

2 : 200V class

4 : 400V class

Maximum applicable
motor capacity :

P5: 0.5HP

01 : 1HP

02 : 2HP

∫

10 : 10HP

EMC Filter :

F: with Filter Biult-in

Blank : without

Filter Biult-in

E: Easy
S: Standard

Product Pattern :

H : Standard(LED)

C: Standard (LCD)

Blank : Without Display

Power Phase :

1 : Single Phase input

3 : Three Phase input

Blank : Single/ Three
Phase

Mode List :

Inverter Model	Input Voltage (Vac)	Frequency (Hz)	Power (HP)	Motor (KW)	Filter built-in	
					with	without
E710-2P5-HE	1ph/3ph · 200~240V +10%/-15%	50/60Hz	0.5	0.4		⊙
E710-201-HE			1	0.75		⊙
E710-202-HS			2	1.5		⊙
E710-203-HS			3	2.2		⊙
E710-2P5-H1EF	1ph · 200~240V +10%/-15%		0.5	0.4	⊙	
E710-201-H1EF			1	0.75	⊙	
E710-202-H1SF			2	1.5	⊙	
E710-203-H1SF			3	2.2	⊙	
E710-205-H3S	3ph · 200~240V +10%/-15%		5	3.7		⊙
E710-208-H3S			7.5	5.5		⊙
E710-401-H3E	3ph · 380~480V +10%/-15%		1	0.75		⊙
E710-402-H3E			2	1.5		⊙
E710-403-H3S			3	2.2		⊙
E710-405-H3S			5	3.7		⊙
E710-408-H3S			7.5	5.5		⊙
E710-410-H3S			10	7.5		⊙
E710-401-H3EF			1	0.75	⊙	
E710-402-H3EF			2	1.5	⊙	
E710-403-H3SF			3	2.2	⊙	
E710-405-H3SF			5	3.7	⊙	
E710-408-H3SF			7.5	5.5	⊙	
E710-410-H3SF			10	7.5	⊙	

2.1.3 Electrical specification of product

200V Series :

E710-□□□	2P5	201	202	203	205	208
Horse Power(HP)	0.5	1	2	3	5	7.5
Suitable motor capacity (kW)	0.4	0.75	1.5	2.2	3.7	5.5
Rated output current (A)	2.8	4.8	7.5	11	17	25
Rated capacity (kVA)	1.2	1.7	2.9	4.0	6.7	9.9
Input voltage range	200 ~ 240V (+10%-15%), 50/60HZ					
Output voltage range	0 ~ 240V					
Input current (A)	5.0/2.9	8.7/5.0	13.7/7.9	20.1/11.6	17.9	26.3
Allowable momentary power loss time (Sec)	2.0	2.0	2.0	2.0	2.0	2.0
Enclosure	IP20/NEMA1					

400 V Series :

E710-□□□	401	402	403	405	408	410
Horse Power(HP)	1	2	3	5	7.5	10
Suitable motor capacity (kW)	0.75	1.5	2.2	3.7	5.5	7.5
Rated output current (A)	2.7	4.2	5.5	9.0	13	17
Rated capacity (kVA)	1.7	2.9	4.0	6.7	9.9	13.3
Input voltage range	380 ~ 480V (+10%-15%), 50/60HZ					
Output voltage range	0 ~ 480V					
Input current (A)	2.8	4.4	5.8	9.5	13.7	17.9
Allowable momentary power loss time (Sec)	1.5	2.0	2.0	2.0	2.0	2.0
Enclosure	IP20/NEMA1					

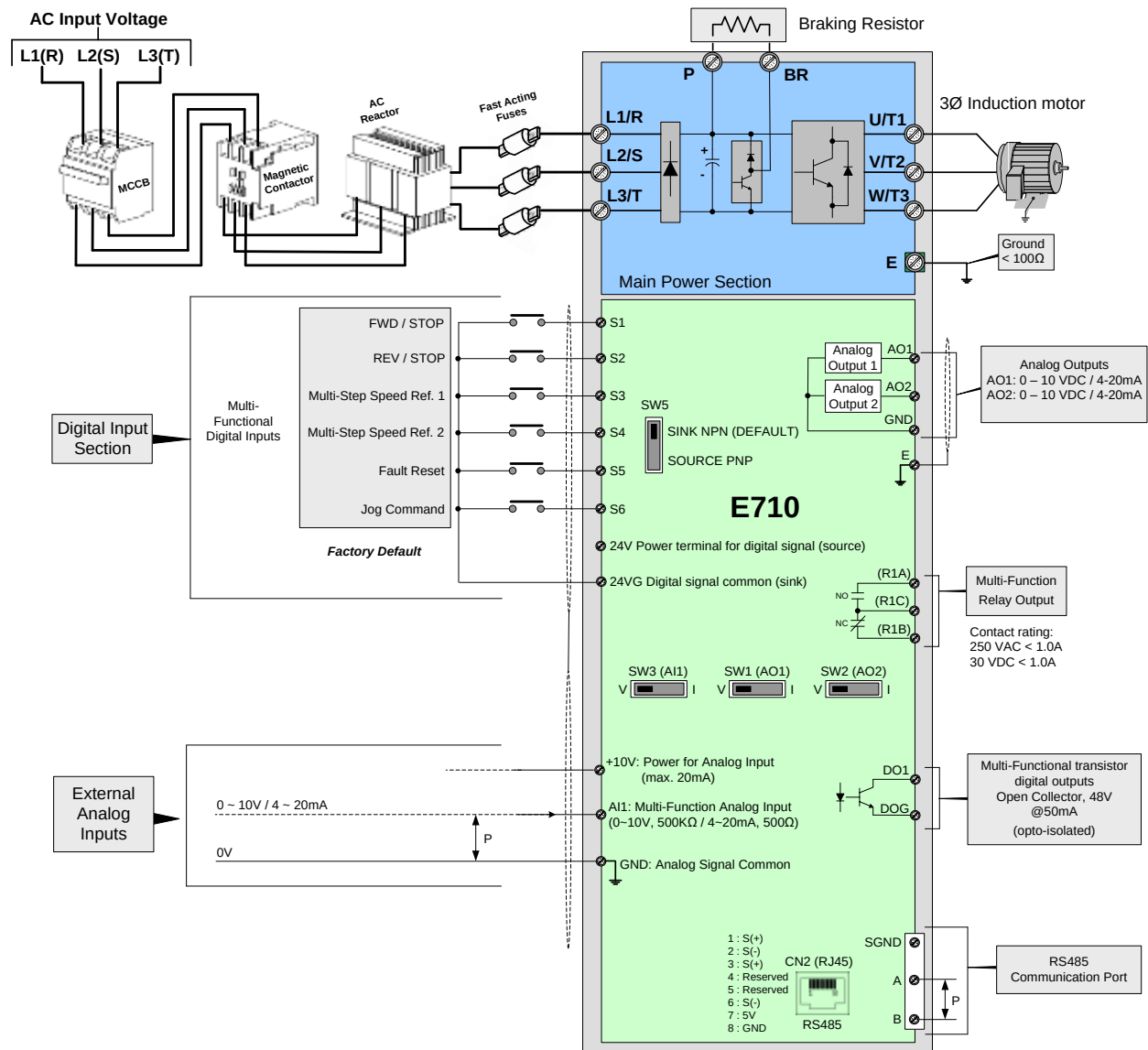
• 2.2 Product specifications and wiring diagram (for simple E type)

•2.2.1 General Specifications

ITEM		Basic Specifications
Control mode		IM: V/F、SLV PM: SLV
Frequency	Frequency control range	0.01 ~ 599Hz
	starting torque	150%/3Hz(VF), 150% / 0.5Hz (SLV)
	Frequency setting resolution	Digital references: 0.01Hz Analog references: 0.06Hz/60Hz
	Frequency setting	keypad : Set directly with ▲ ▼ keys or the VR on the keypad

ITEM		Basic Specifications
		External Input Terminas: AI1、AI2 (0 ~ 10V / 2 ~ 10V / 0 ~ 20mA / 4 ~ 20mA) input Multifunction input up/down function
		Setting frequency by communication method.
	Frequency limit	Lower and upper frequency limits 3 skip frequency settings.
	Speed control accuracy	V/F : $\pm 2 \sim 3\%$ SLV : $\pm 1\%$
Run	Operation set	Keypad run, stop button
		External terminals: Multi- operation-mode2 / 3 wire selection Jog operation
		Run signal by communication method.
Main Control Features	V / F curve setting	18 fixed curves and one customized curve
	Carrier frequency	2 ~ 16KHz (default value : 4kHz)
	Acceleration and deceleration control	2 off Acc / dec time parameters. 4 off S curve parameters.
	Multifunction input	29 functions (refer to description on group3)
	Multifunction output	21 functions (refer to description on group3)
	Multifunction analog output	5 functions (refer to description on group4)
	Main features	Overload Detection,16 preset speeds,Auto-run,Acc/Dec Switch (2 Stages),Main/Alt run Command select,Main/Alt Frequency Command select,PID control, torque boost, V/F start Frequency, Fault reset,
Display	LED	Display :parameter / parameter value / frequency / line speed / DC voltage / output voltage / output current / PID feedback / input and output terminal status / Heat sink temperature / Program Version / Fault Log.
	LED Status Indicator	FWD · REV · SEQ · REF
Protective Functions	Overload Protection	The relays to protect the motor and the inverter. (150%/1min)
	Over voltage	·220V: >410V ,380V: >820V
	Under Voltage	·220V: <190V ,380V: <380V
	Momentary Power Loss Restart	Inverter auto-restart after a momentary power loss.
	Stall Prevention	Stall prevention for Acceleration/ Deceleration/ Operation.
	Short-circuit output terminal	Electronic Circuit Protection.
	Ground fault	Using current detector protection.
	Other protection features	Protection for overheating of heat sink,The carrier frequency decreasing with the temperature function,fault output,reverse prohibit,prohibit for direct start after power up and error recovery ,parameter lock up
Communication control		Standard built-in RS485 communication (Modbus), One to one or One to many control.
Environment	Operating temperature	IP20 /NEMA 1: -10 ~ 50°C (without stick on type dust cover.) -10 ~40°C (with stick on type dust cover.)
	Storage temperature	-20 ~ 70°C
	Humidity	95% RH or less (no condensation) (Compliance with IEC 60068 - 2-78)
	Shock	10Hz $\leq f \leq$ 57Hz : ± 0.075 mm Amplitude ; 57Hz $\leq f \leq$ 150Hz : 1.0G Acceleration:(依據 IEC60068-2-6 標準)
	Protection class	IP20/NEMA1
Certification		UL、CE、RoHS、REACH

2.2.2 General Wiring Diagram (for simple E type)



Notes:

- *1: Use SW5 to select between Sink (NPN, with 24VG common) or Source (PNP, with +24V common) for multi-function digital input terminals S1~S6.
- *2: Use SW3 to switch between voltage (0~10V) and current (4~20mA) input for Multi-function analog input 1 (AI1). Besides please also check parameter 04-00 for proper setting.
- *3: When using the open collector for multi-function digital input, it doesn't need resistance because of built-in pull-up resistance.
- *4: AO1/AO2 default setting is 0~+10V. Use SW1/SW2 to switch between voltage (0~10V) and current (4~20mA) output. Besides please also check parameter 04-19 for proper setting.

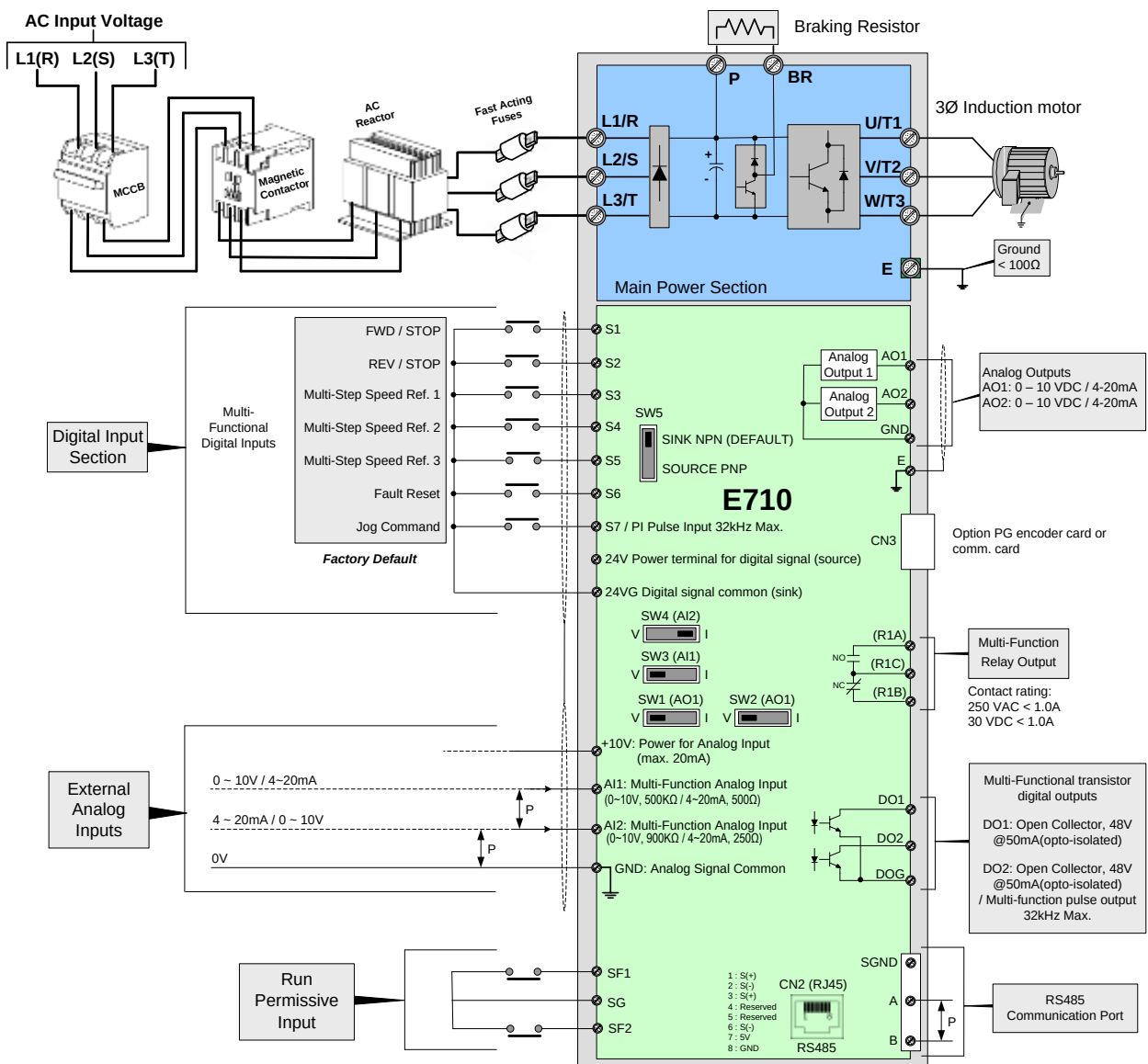
2.3 Product specifications and wiring diagram (for standard S type)

2.3.1 General Specifications

ITEM		Basic Specifications
Control mode		IM: V/F、V/F+PG(In development)、SLV、SV(In development) PM: SV(In development)、SLV SRM(In development): PMA-SyRM-SLV、SyRM-SLV
Frequency	Frequency control range	0.01 ~ 599Hz
	starting torque	150%/3Hz(VF), 150% / 0.5Hz (SLV)
	Frequency setting resolution	Digital references: 0.01Hz Analog references: 0.06Hz/60Hz
	Frequency setting	Keypad : Set directly with ▲ ▼ keys or the VR on the keypad
		External Input Terminlas: AI1、AI2 (0 ~ 10V / 2 ~ 10V / 0 ~ 20mA / 4 ~ 20mA) input Multifunction input up/down function
		Setting frequency by communication method.
	Frequency limit	Lower and upper frequency limits 3 skip frequency settings.
	Speed control accuracy	V/F : ±2~3% SLV : ± 1%
Run	Operation set	Keypad run, stop button
		External terminals: Multi- operation-mode2 / 3 wire selection
		Jog operation
		Run signal by communication method.
Main Control Features	V / F curve setting	18 fixed curves and one customized curve
	Carrier frequency	2 ~ 16KHz (default value : 4kHz)
	Acceleration and deceleration control	2 off Acc / dec time parameters. 4 off S curve parameters.
	Multifunction input	29 functions (refer to description on group3)
	Multifunction output	21 functions (refer to description on group3)
	Multifunction analog output	5 functions (refer to description on group4)
	Main features	Overload Detection,16 preset speeds,Auto-run,Acc/Dec Switch (2 Stages),Main/Alt run Command select,Main/Alt Frequency Command select,PID control, torque boost, V/F start Frequency, Fault reset,
Display	LED	Display :parameter / parameter value / frequency / line speed / DC voltage / output voltage / output current / PID feedback / input and output terminal status / Heat sink temperature / Program Version / Fault Log.
	LED Status Indicator	FWD · REV · SEQ · REF
Protective Functions	Overload Protection	The relays to protect the motor and the inverter. (150%/1min)
	Over voltage	·220V: >410V ,380V: >820V
	Under Voltage	·220V: <190V ,380V: <380V
	Momentary Power Loss Restart	Inverter auto-restart after a momentary power loss.
	Stall Prevention	Stall prevention for Acceleration/ Deceleration/ Operation.
	Short-circuit output terminal	Electronic Circuit Protection.
	Ground fault	Using current detector protection.
	STO Functions	Output quick break
	Other protection features	Protection for overheating of heat sink,The carrier frequency decreasing with the temperature function,fault output,reverse

ITEM		Basic Specifications
		prohibit,prohibit for direct start after power up and error recovery ,parameter lock up
Communication control		Standard built-in RS485 communication (Modbus), One to one or One to many control.
Environment	Operating temperature	IP20 /NEMA 1: -10 ~ 50°C (without stick on type dust cover.) -10 ~40°C (with stick on type dust cover.)
	Storage temperature	-20 ~ 70°C
	Humidity	95% RH or less (no condensation) (Compliance with IEC 60068 - 2-78)
	Shock	10Hz≤f≤57Hz : ±0.075mm Amplitude ; 57Hz≤f≤150Hz : 1.0G Acceleration:(依據 IEC60068-2-6 標準)
	Protection class	IP20/NEMA1
Certification		UL 、 CE 、 RoHS 、 REACH

2.3.2 General Wiring Diagram (for standard S type)



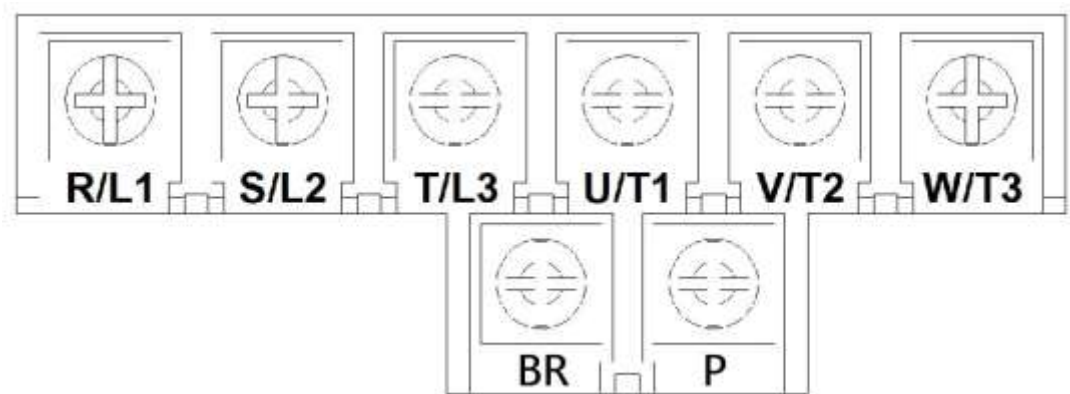
Notes:

- *1: Use SW5 to select between Sink (NPN, with 24VG common) or Source (PNP, with +24V common) for multi-function digital input terminals S1~S7.
- *2: Use SW3/SW4 to switch between voltage (0~10V) and current (4~20mA) input for Multi-function analog input 1/2 (AI1/AI2). Besides please also check parameter 04-00 for proper setting.
- *3: When using the open collector for multi-function digital input, it doesn't need resistance because of built-in pull-up resistance.
- *4: Run Permissive input SF1 and SF2 is a normally closed input. This input should be closed to enable the inverter output. To activate this input remove the jumper wire between SF1/ SF2 and SG.
- *5: AO1/AO2 default setting is 0~10V. Use SW1/SW2 to switch between voltage (0~10V) and current (4~20mA) output. Besides please also check parameter 04-19 for proper setting.
- *6: When using the open collector for pulse output of DO2, the recommend pull-up resistance is 200 Ω.

2.4 General Terminals

2.4.1 Power Terminals

220V : 2P5~201HP/440V : 401~402HP



220V : 202~208HP/440V : 403~410HP

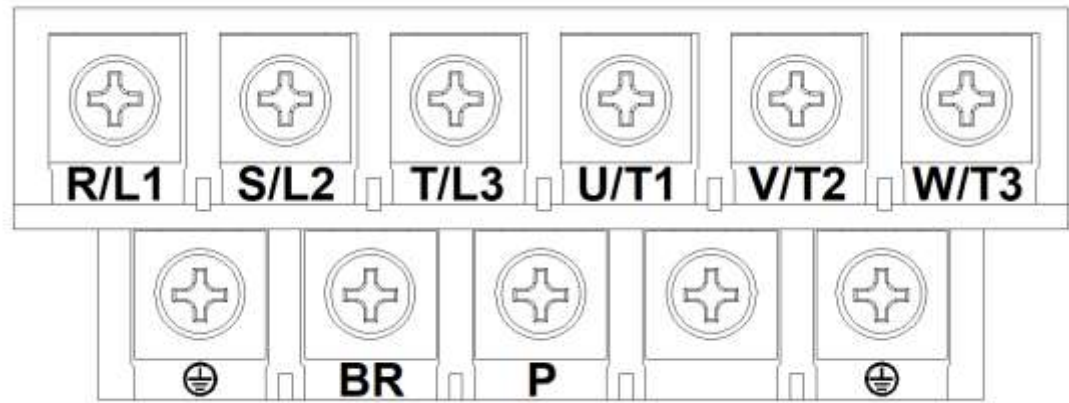


Table1 Main Power terminal definition

Terminal	200V : 0.5~8HP 400V : 1~10HP
R/L1	Main power input
S/L2	
T/L3	
P	P - BR : External brake resistor
BR	
U/T1	Inverter Output
V/T2	
W/T3	
E/PE/⊕	Ground Terminal

2.4.2 Control Terminals

■Type E

220V : 2P5~201HP/440V : 401~402HP

24V	S1	S2	S3	S4	S5	S6	24VG	DO1	DOG	A	B	SGND	E
R1A	R1B	R1C	+10V	GND	AI1	AO1	AO2	GND	RS485				

Table 2 Control terminal definition (Type E)

Type	Terminal	Terminal Function
Digital input signal	S1	Multifunction Input Terminal
	S2	Multifunction Input Terminal
	S3	Multifunction Input Terminal
	S4	Multifunction Input Terminal
	S5	Multifunction Input Terminal
	S6	Multifunction Input Terminal
24V power supply	24V	Digital signal SOURCE point (SW6 switched to SOURCE)
	24VG	Common terminal of Digital signals Common point of digital signal SINK (SW6 switched to SINK)

Type	Terminal	Terminal Function
Analog input signal	+10V	Positive power for external speed potentiometer
	AI1	Multi-function analog input terminal (0~10V)/(4-20mA)
	GND	Analog signal ground terminal
	E	Shielding wire's connecting terminal (Ground)
Analog output signal	AO1	Multi-function analog output terminal(0~10V)/(4-20mA)
	AO2	Multi-function analog output terminal(0~10V)/(4-20mA)
	GND	Analog signal ground terminal
Digital output	DO1	Multi-function(open collector transistor) output
	DOG	Open collector transistor digital ground
Relay output	R1A	Relay A contact (multi-function output terminal)
	R1B	Relay B contact (multi-function output terminal)
	R1C	Relay contact common terminal,
RS-485	A	RS485/MODBUS
	B	
	SGND	Grounding to earth Shield the connecting terminal

■Type S

220V : 202~208HP/440V : 403~410HP

R1A	R1B	R1C	A	B	SGND	F1	SG	F2	+10V	GND	AI1	AI2	AO1	AO2	GND
RS485			24V	S1	S2	S3	S4	S5	S6	S7	24VG	DO1	DO2	DOG	

Table 3 Control terminal definition (Type S)

Type	Terminal	Terminal Function
Digital input signal	S1	Multifunction Input Terminal
	S2	Multifunction Input Terminal
	S3	Multifunction Input Terminal
	S4	Multifunction Input Terminal
	S5	Multifunction Input Terminal
	S6	Multifunction Input Terminal
	S7	Multifunction Input Terminal/ Pulse command input, Bandwidth: 32KHz
24V power supply	24V	Digital signal SOURCE point (SW6 switched to SOURCE)
	24VG	Common terminal of Digital signals Common point of digital signal SINK (SW6 switched to SINK)

Type	Terminal	Terminal Function
Analog input signal	+10V	Positive power for external speed potentiometer
	AI1	Multi-function analog input terminal (0~10V)/(4-20mA)
	GND	Analog signal ground terminal
	E	Shielding wire's connecting terminal (Ground)
Analog output signal	AO1	Multi-function analog output terminal(0~10V)/(4-20mA)
	AO2	Multi-function analog output terminal(0~10V)/(4-20mA)
	GND	Analog signal ground terminal
Digital output	DO1	Multi-function(open collector transistor) output
	DOG	Open collector transistor digital ground
Relay output	R1A	Relay A contact (multi-function output terminal)
	R1B	Relay B contact (multi-function output terminal)
	R1C	Relay contact common terminal,
Safety Functions	F1	On: normal operation. Off: stop.
	F2	(Jumper wired between SF1/ SF2 and SG has to be removed by using external contact to stop.)
	SG	Safety command common terminal
RS-485	A	RS485/MODBUS
	B	
	SGND	Grounding to earth Shield the connecting terminal



Caution

- Maximum output current capacity for terminal 10V is 20mA.
- Multi-function analog output AO1 and AO2 are used for an analog output meter. Do not use these outputs for feedback control.
- Control board's 24V and +10V are to be used for internal control only, Do not use the internal power-supply to power external devices.

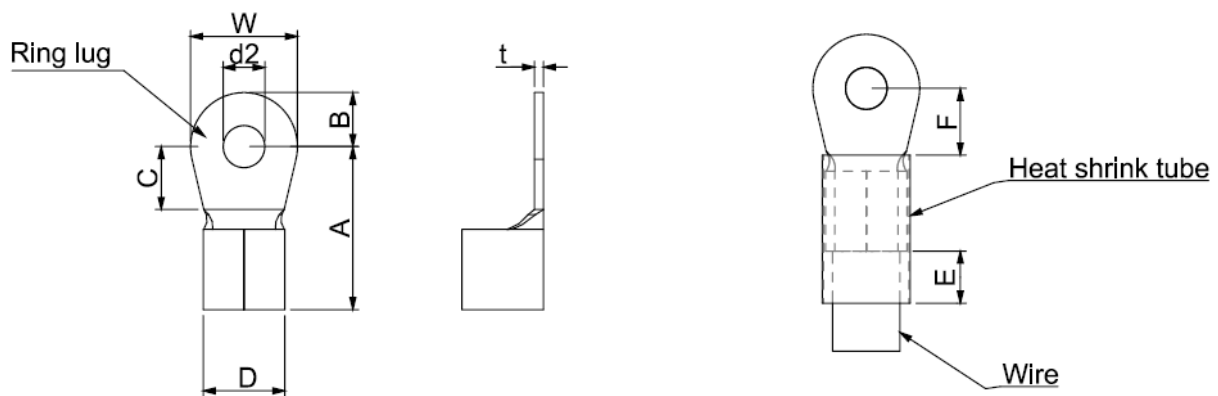
- **2.5 Specifications of terminal wiring**

- **2.5.1** Wiring specification

E710 series			Wiring diameter AWG (mm ²)			NFB* ⁴	MC* ⁴
Power Supply	Motor(HP)* ¹	Rated Current (A)	main Terminal* ²	Ground E(G)	Control Terminal* ³		
200V	0.5HP	2.8	14~12	14~12	24~16 (0.2 ~ 1.5)	TO-50EC(15A)	CU-11
	1HP	4.8	(2 ~ 3.5)	(2 ~ 3.5)			
	2HP	7.5	12~10	12~10		TO-50EC(20A)	CU-11
	3HP	11	(3.5 ~ 5.3)	(3.5 ~ 5.3)			
	5HP	17	10 (5.3)	10 (5.3)		TO-50EC(30A)	CU-11
	7.5HP	25	8 (8.4)	8 (8.4)		TO-50EC(30A)	CU-16
400V 3 Ø	1HP	2.7	14~12	14~12		TO-100S(50A)	CU-18
	2HP	4.2	(2 ~ 3.5)	(2 ~ 3.5)		TO-50EC(15A)	CU-11
	3HP	5.5	14~12	14~12		TO-50EC(15A)	CU-11
	5HP	9	(2 ~ 3.5)	(2 ~ 3.5)		TO-50EC(15A)	CU-11
	7.5HP	13	14~10	14~10		TO-50EC(15A)	CU-18
	10HP	17	(3.5 ~ 5.3)	(3.5 ~ 5.3)		TO-50EC(20A)	CU-18
			10 (5.3)	10 (5.3)		TO-50EC(30A)	CU-25

- **2.5.2** Terminal specification suggestion

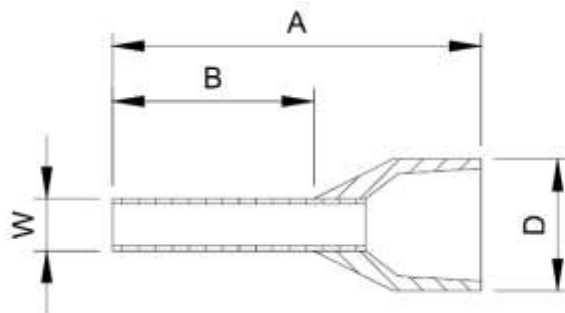
- 2.5.2.1 Main Terminal**



unit : mm

*AWG	Kit P/N	A (MAX)	B (MAX)	C (MIN)	D (MAX)	d2 (MIN)	E (MIN)	F (MIN)	W (MAX)	t (MAX)
18	RNBS 1-3.7	9.8	3.2	4.8	4.1	3.7	13.0	4.2	6.6	0.8
16	RNBS 2-3.7									
14	RNBS 2-3.7									
18	RNBS1-4	12.1	3.6	6.1	5.6	4.3	13.0	4.5	7.2	1
16	RNBS1-4									
14	RNBS2-4									
12	RNBS5-4									
14	RNBS2-4	17.8	5.0	6.1	7.2	4.3	13.0	5.5	10.5	1.2
12	RNBS5-4									
10	RNBS5-4									
8	RNBS8-4									
10	RNBS5-4	17.8	5.0	6.1	7.2	4.3	13.0	5.5	10.5	1.2
8	RNBS8-4									
6	RNB14-5	27.1	6.1	10.5	11.5	5.3	13.0	6.5	12.6	1.7
4	RNBS22-5									
6	RNBS14-6	35.0	9.0	13.3	14.0	6.2	13.0	10.0	19.5	1.8
4	RNBS22-6									
2	RNBS38-6									

2.5.2.2 Control Terminal



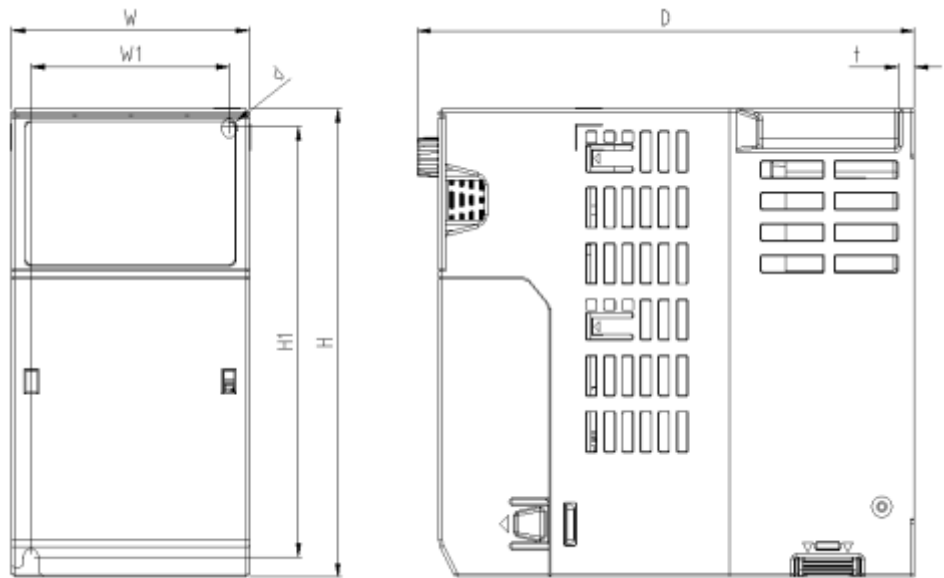
unit mm

wire diameter	manufacture	material number	A (MAX)	B (MAX)	D (MAX)	W (MAX)
0.2mm ² (24AWG)	PHOENIX CONTACT	Al 0,25- 8 YE	12.5	8	2.6	1.1
0.34mm ² (22AWG)	PHOENIX CONTACT	Al 0,34- 8 TQ	12.5	8	3.3	1.3
0.5mm ² (20AWG)	PHOENIX CONTACT	Al 0,5 - 8 WH	14	8	3.5	1.4

2.6 Outline Dimensions and installation

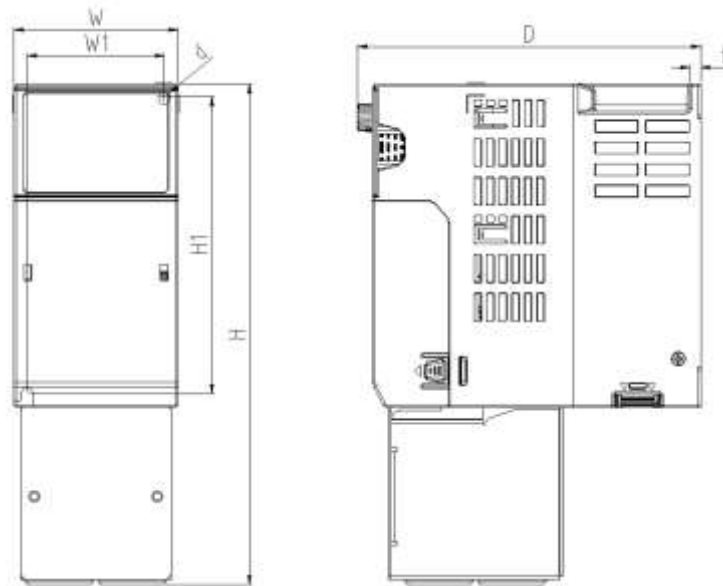
2.6.1 Standard

(a) 220V : 2P5~201HP/440V : 401~402HP (IP00)



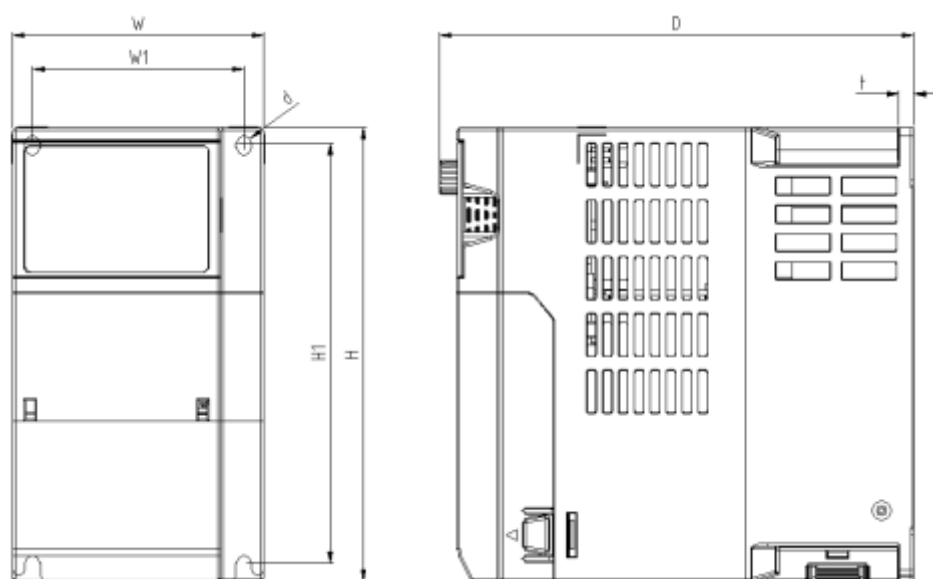
Inverter model	Outline Dimensions (mm)								remark
	W	H	D	W1	H1	t	d	Gross Weight(kg)	
E710-2P5-HE	72	142	150	60	130.5	5	M4	1.2	
E710-201-HE	72	142	150	60	130.5	5	M4	1.2	
E710-401-H3E	72	142	150	60	130.5	5	M4	1.2	
E710-402-H3E	72	142	150	60	130.5	5	M4	1.2	

(b) 220V : 2P5~201HP/440V : 401~402HP (NEMA1)



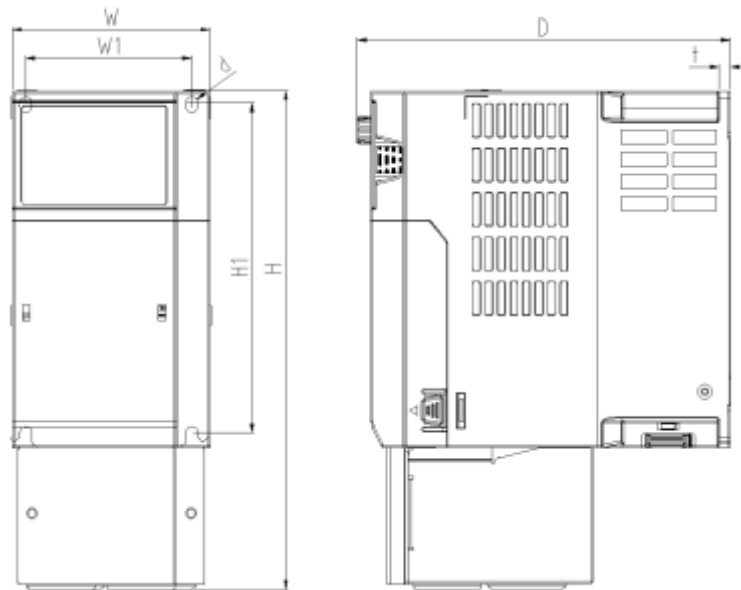
Inverter model	Outline Dimensions (mm)								remark
	W	H	D	W1	H1	t	d	Gross Weight(kg)	
E710-2P5-HE	72	220	150	60	130.5	5	M4	1.5	
E710-201-HE	72	220	150	60	130.5	5	M4	1.5	
E710-401-H3E	72	220	150	60	130.5	5	M4	1.5	
E710-402-H3E	72	220	150	60	130.5	5	M4	1.5	

(c) 220V : 202~205HP/440V : 403~405HP (IP00)



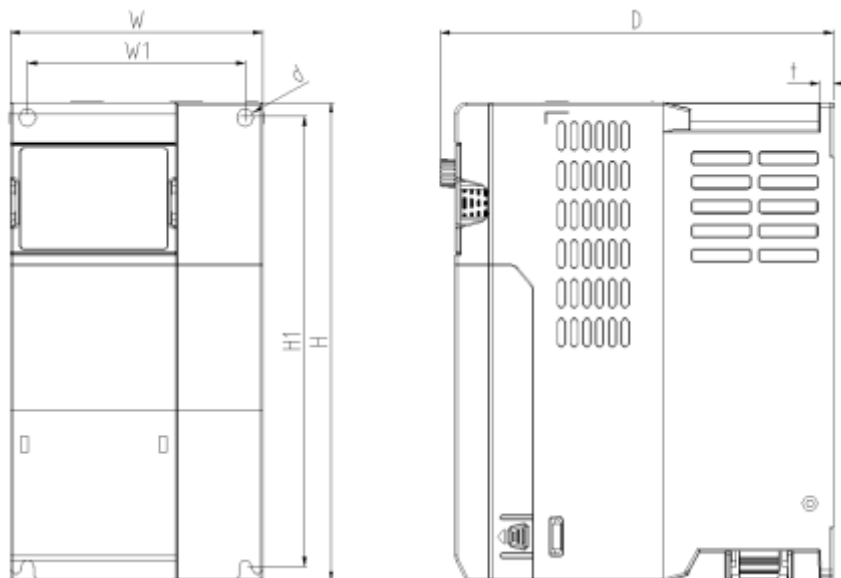
Inverter model	Outline Dimensions (mm)								remark
	W	H	D	W1	H1	t	d	Gross Weight(kg)	
E710-202-HS	87	157	164	73	145	5	M4	1.9	
E710-203-HS	87	157	164	73	145	5	M4	1.9	
E710-205-H3S	87	157	164	73	145	5	M4	1.9	
E710-403-H3S	87	157	164	73	145	5	M4	1.9	
E710-405-H3S	87	157	164	73	145	5	M4	1.9	

(d) 220V : 202~205HP/440V : 403~405HP (NEMA1)



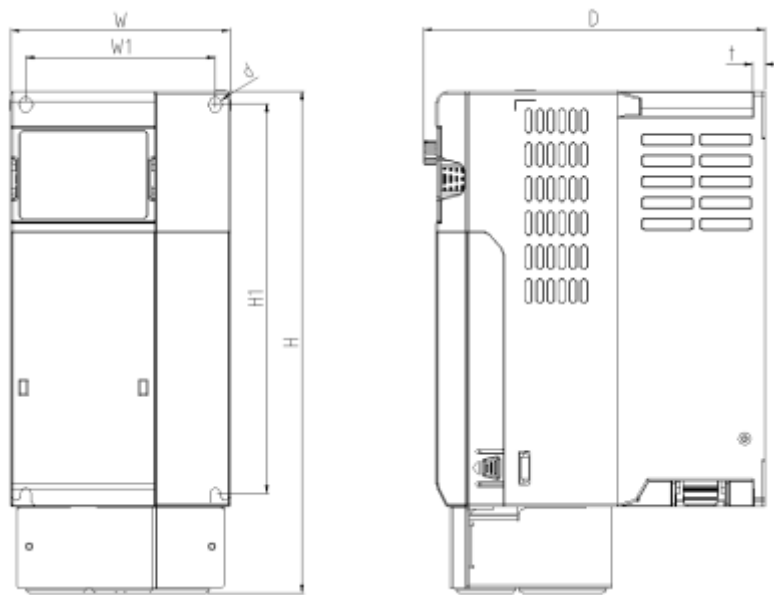
Inverter model	Outline Dimensions (mm)								remark
	W	H	D	W1	H1	t	d	Gross Weight(kg)	
E710-202-HS	87	220	164	73	145	5	M4	2.0	
E710-203-HS	87	220	164	73	145	5	M4	2.0	
E710-205-H3S	87	220	164	73	145	5	M4	2.0	
E710-403-H3E	87	220	164	73	145	5	M4	2.0	
E710-405-H3S	87	220	164	73	145	5	M4	2.0	

(e) 220V : 208HP/440V : 408-410HP (IP00)



Inverter model	Outline Dimensions (mm)								remark
	W	H	D	W1	H1	t	d	Gross Weight(kg)	
E710-208-H3S	109	207	169	94	194.5	6	M4	2.3	
E710-408-H3S	109	207	169	94	194.5	6	M4	2.3	
E710-410-H3S	109	207	169	94	194.5	6	M4	2.3	

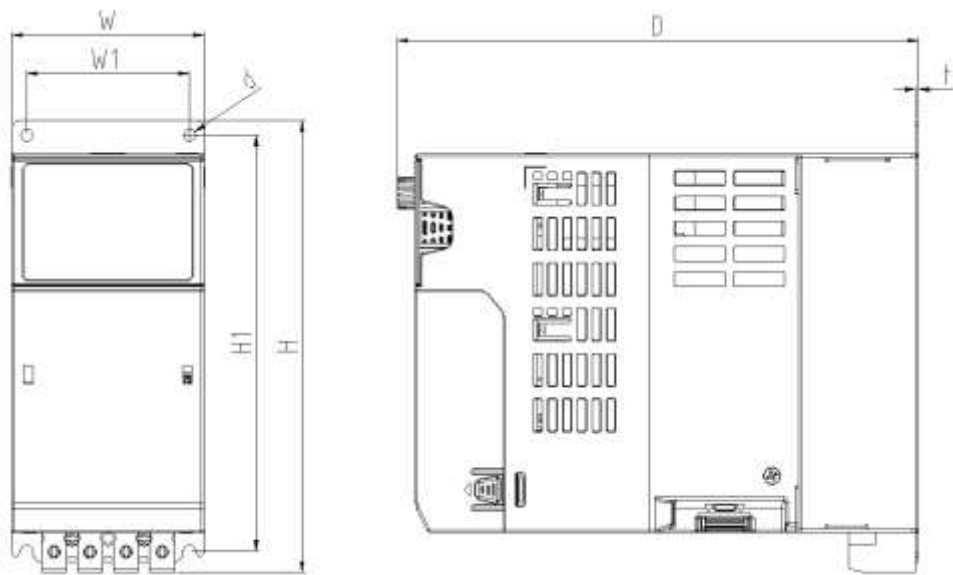
(f) 220V : 208HP/440V : 408-410HP (NEMA1)



Inverter model	Outline Dimensions (mm)								remark
	W	H	D	W1	H1	t	d	Gross Weight(kg)	
E710-208-H3S	109	250	169	94	194.5	6	M4	2.3	
E710-408-H3S	109	250	169	94	194.5	6	M4	2.3	
E710-410-H3S	109	250	169	94	194.5	6	M4	2.3	

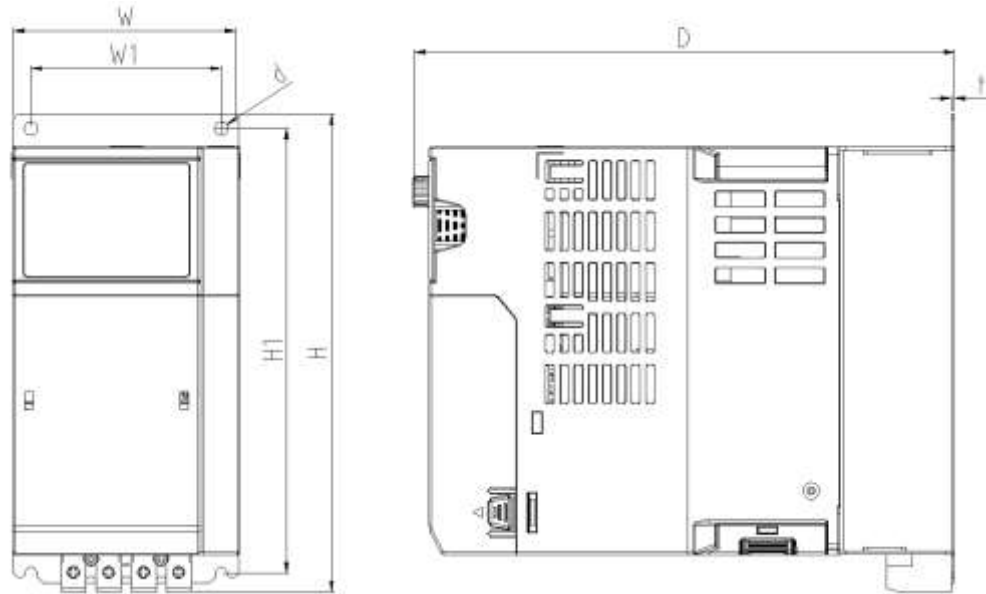
2.6.2 Filter built-in (440V 1~10HP)

(a) 440V : 401~402HP



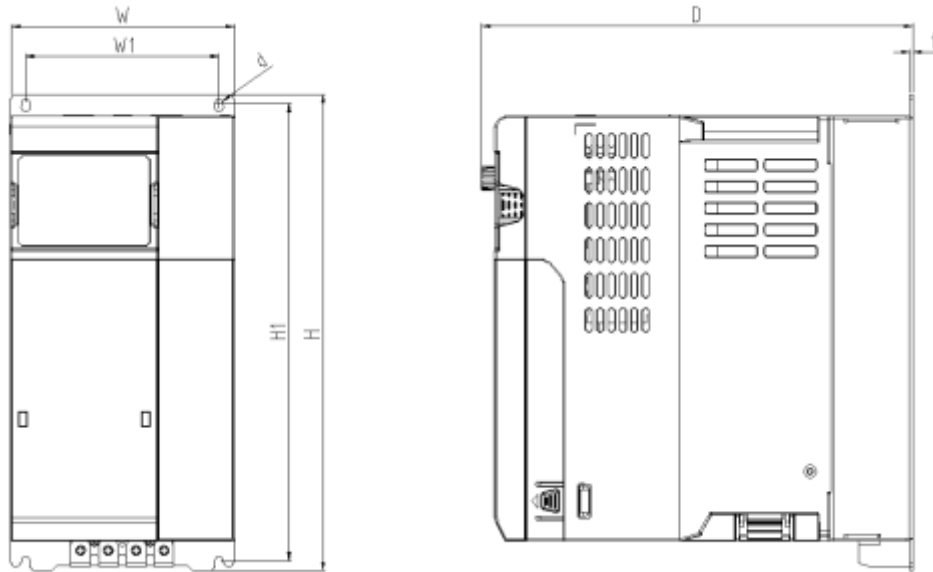
Inverter model	Outline Dimensions (mm)								remark
	W	H	D	W1	H1	t	d	Gross Weight(kg)	
E710-401-H3EF	72	169.5	195.5	60	156	1.2	M4		Weight to be determined
E710-402-H3EF	72	169.5	195.5	60	156	1.2	M4		

(b) 440V : 403-405HP



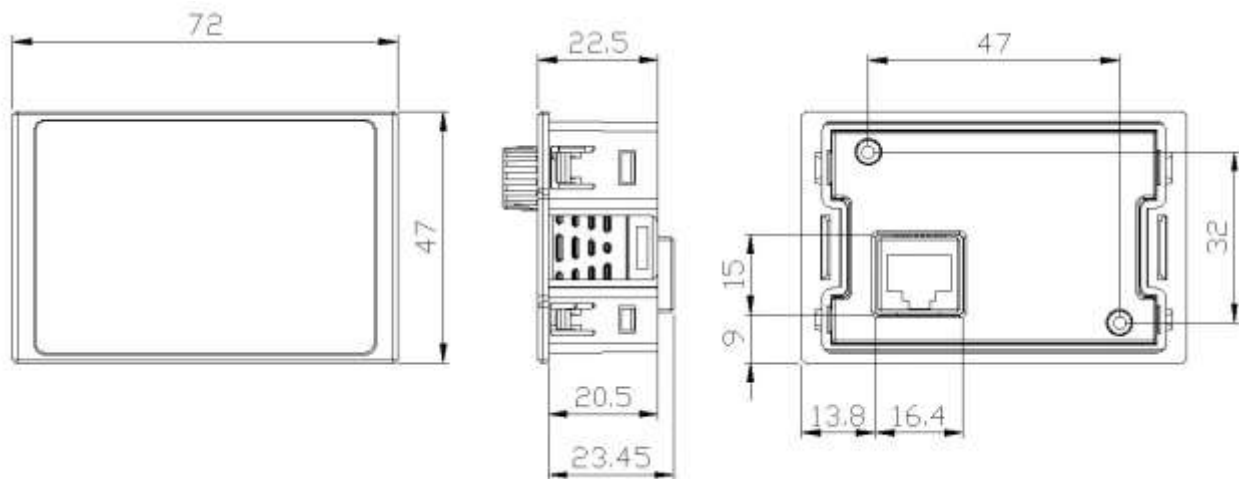
Inverter model	Outline Dimensions (mm)								remark
	W	H	D	W1	H1	t	d	Gross Weight(kg)	
E710-403-H3SF	87	184	207	73	171	1.2	M4		Weight to be determined
E710-405-H3SF	87	184	207	73	171	1.2	M4		

(c) 440V : 408-410HP



Inverter model	Outline Dimensions (mm)								remark
	W	H	D	W1	H1	t	d	Gross Weight(kg)	
E710-408-H3SF	109	232	210	94	222.5	1.2	M4		Weight to be determined
E710-410-H3SF	109	232	210	94	222.5	1.2	M4		

2.6.3 KeyPad Outline Dimensions



Installation position

Install the product in an easy to operate environment and avoid exposure to:

- to avoid direct sunlight
- prevent rain drops of rain or damp environment
- to prevent oil mist, the erosion of salt
- prevent the corrosive liquid and gas
- to prevent dust, lint and metal fines
- to prevent electromagnetic interference (welding machine, power machine)
- from radioactive material and fuel

→ to prevent vibration (punch), if cannot avoid please add shock pads to reduce the vibration

Chapter 3 Parameters

Parameter group	Group Name
Group 00	Basic Parameters
Group 01	V/F Control Parameters
Group 02	IM Motor Parameters
Group 03	External Digital Input and Output Parameters
Group 04	External Analog Input and Output Parameters
Group 05	Multi-Speed Parameters
Group 06	Automatic Program Operation Parameters
Group 07	Start /Stop Parameters
Group 08	Protection Parameters
Group 09	Communication Parameters
Group 10	PID Parameters
Group 11	Auxiliary Parameters
Group 12	Monitoring Parameters
Group 13	Maintenance Parameters
Group 14	PLC Parameters
Group 15	PLC Monitoring Parameters
Group 16	LCD Parameters
Group 17	Automatic Tuning Parameters
Group 18	Slip Compensation Parameters
Group 19	Wobble Frequency Parameters
Group 20	Speed Control Parameters
Group 21	Torque And Position Control Parameters
Group 22	PM Motor Parameters

Parameter Attribute		
*1	Parameters can be changed during run operation.	
*2	Reserved	
*3	Parameter will not reset to default during a factory reset (initialization).	
*4	Read-only parameter	
*5	Parameter will be displayed in being coupled with the option card.	
*6	Parameter will be displayed only in LED keypad.	
*7	Parameter will be displayed only in LCD keypad.	
*8	When 13-08 setting is changed, the value will be also changed.	
*9	Reserved	
*10	Only available after I/O expansion card installed (In development)	
*11	In development	

Group 00: Basic Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
00-00	Control Mode Selection	0: V/F	0	*3
		1: Reserved		
		2: SLV		
		3: Reserved		
		4: Reserved		
		5: PMSLV		
00-01	Motor's Rotation Direction	0: Forward	0	*1
		1: Reverse		
00-02	Main Run Command Source Selection	0: Keypad	0	
		1: External Terminal (Control Circuit)		
		2: Communication Control (RS-485)		
		3: PLC		
00-03	Alternative Run Command Selection	0: Keypad	0 (Note4)	
		1: External Terminal (Control Circuit)		
		2: Communication Control (RS-485)		
		3: PLC		
00-04	Language	0: English	0	*7
		1: Simplified Chinese		
		2: Traditional Chinese		
00-05	Main Frequency Command Source Selection	0: Keypad	1	
		1: External Terminal (Analog 1)		
		2: Terminal Command UP/DOWN		
		3: Communication Control (RS-485)		
		4: Pulse Input		
		5: Reserved		
		6: RTC (*11)		
		7: AI2 Auxiliary Frequency		
		8: Keypad VR		
		9: Manual Pulse Generator (MPG) (*11)		
00-06	Alternative Frequency	0: Keypad	0 (Note4)	
		1: VR (Analog 1)		

Group 00: Basic Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
	Source Selection	2: External Terminal (Analog 1)		
		3: Communication Control (RS-485)		
		4: Terminal Command UP/DOWN		
		5: Pulse Input		
		6: Reserved		
		7: RTC (*11)		
		8: AI2 Auxiliary Frequency		
00-07	Main and Alternative Frequency Command Modes	0: Main Frequency	0	
		1: Main frequency +Alternative Frequency		
00-08	Communication Frequency Command Range	0.00~599.00	0.00	
00-09	Communication Frequency Command Memory Selection	0: Don't save when power supply is off. (00-08)	0	
		1: Save when power is off. (00-08)		
00-10	Minimum frequency detection	0: Show warning if lower than minimum frequency	0	Note1
		1: Run as minimum frequency if lower than minimum frequency		
		2: No STP0 warning, output frequency command		
00-11	PID Lower Limit of Frequency Selection	0: PID Sleep Limit is Lower Limit of Frequency	0	
		1: PID Sleep Limit is 0Hz		
00-12	Upper Frequency limit	0.1~109.0	100.0	
00-13	Lower	0.0~109.0	0.0	

Group 00: Basic Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
	Frequency limit			
00-14	Acceleration Time 1	0.1~6000.0	*	*1
00-15	Deceleration Time 1	0.1~6000.0	*	*1
00-16	Acceleration Time 2	0.1~6000.0	*	*1
00-17	Deceleration Time 2	0.1~6000.0	*	*1
00-18	*Jog Frequency	0.00~599.00	6.00	*1
00-19	Jog Acceleration Time	0.1~0600.0	-	*1
00-20	Jog Deceleration Time	0.1~0600.0	-	*1
00-21	Acceleration time 3	0.1~6000.0	*	*1
00-22	Deceleration time 3	0.1~6000.0	*	*1
00-23	Acceleration time 4	0.1~6000.0	*	*1
00-24	Deceleration time 4	0.1~6000.0	*	*1
00-25	Switch-Over Frequency of Acc/Dec Time 1 and Time 4	0.00~599.00	0.0	
00-26	Emergency Stop Time	0.1~6000.0	5.0	
00-27	Reserved			
00-28	Command Characteristic selection of master frequency	0: Positive Characteristic (0~10V/4~20mA is corresponding to 0~100%)	0	
		1: Negative Characteristic (0~10V/4~20mA is corresponding to 100~0%)		
00-29	Zero-Speed Operation Selection	0: Operation Based on Frequency Command	0	
		1: Stop		
		2: Operation Based on the Lowest Frequency		
		3: Zero-Speed Operation		
00-30 00-31	Reserved			

Group 00: Basic Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
00-32	Application Selection Presets**	0: General	0	
		1: Reserved		
		2: Conveyor		
		3: Exhaust Fan		
		4: Reserved		
		5: Compressor		
		6: Hoist**		
		7: Crane**		
		8: Manual Pulse Generator (MPG) (Note4)		
		9: Band Saw		
		10: Stamping Press		
00-33	Modified Parameters (only for LCD keypad)	0:Disable	0	*7
		1:Enable		
00-34 ~ 00-40	Reserved			
00-41	User parameter 0	Set 13-06 = 1, start user parameter. The setting range is 00-01 ~22-31, but except 00-41~00-56 and group 17 (only for LCD keypad)	00-41	*7
00-42	User parameter 1		00-42	*7
00-43	User parameter 2		00-43	*7
00-44	User parameter 3		00-44	*7
00-45	User parameter 4		00-45	*7
00-46	User parameter 5		00-46	*7
00-47	User parameter 6		00-47	*7
00-48	User parameter 7		00-48	*7
00-49	User parameter 8		00-49	*7
00-50	User parameter 9		00-50	*7
00-51	User parameter 10		00-51	*7
00-52	User parameter 11		00-52	*7
00-53	User parameter 12		00-53	*7
00-54	User parameter 13		00-54	*7
00-55	User parameter 14		00-55	*7
00-56	User parameter 15		00-56	*7
00-57	SV High Speed Mode	0: SV High Speed Mode1	0	
		1: SV High Speed Mode2		

*: Refer to the attachment 1 in our instruction manual.

** Before to set up 00-32 Application, it should do initialized setting (parameter 13-08) first. When setting 00-32, the I/O port function changed automatically. To avoid accident, be sure to confirm the I/O port signal of inverter and external terminal control.

*** If parameter 00-27 is set to ND mode, group 02 motor 1 parameter will automatically adjust to more than 1 class of it.

If parameter 00-27 is set to HD mode, group 02 motor 1 parameter will automatically adjust to the same class of it.

It is suggested that parameter 00-27 be set first before motor performs auto-tuning because the parameter will make the motor parameter automatically be changed.

***** If the maximum output frequency of motor is over 300HZ, the frequency resolution is changed to 0.1Hz.

Group 01: V/F Control Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
01-00	V/F Curve Selection	0~FF	F	*3
01-01	Reserved			
01-02	Maximum Output Frequency of Motor 1	4.8~599.0	50.0/60.0	*8
01-03	Maximum Output Voltage of Motor 1	200V: 0.1~255.0	-	*8
		400V: 0.2~510.0	-	
		575V: 0.1~670.0	-	
		690V: 0.1~804.0	-	
01-04	Middle Output Frequency 2 of Motor 1	0.0~599.0	0.0	
01-05	Middle Output Voltage 2 of Motor 1	200V: 0.0~255.0	0.0	*8
		400V: 0.0~510.0		
		575V: 0.0~670.0		
		690V: 0.0~804.0		
01-06	Middle Output Frequency 1 of Motor 1	0.0~599.0	3.0	
01-07	Middle Output Voltage 1 of Motor 1	200V: 0.0~255.0	*	*8
		400V: 0.0~510.0		
		575V: 0.0~670.0		
		690V: 0.0~804.0		
01-08	Minimum Output Frequency of Motor 1	0.0~599.0	VF: 1.3/1.5	
			VF+PG:-	
			SLV:0.5/0.6	
			SV:-	
			PMSV:-	
			PMSLV: 0.8	
01-09	Minimum Output	200V: 0.0~255.0	-	*8
		400V: 0.0~510.0		

Group 01: V/F Control Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
	Voltage of Motor 1	575V: 0.0~670.0 690V: 0.0~804.0	-	
01-10	Torque Compensation Gain	0.0~2.0	0.5	*1
01-11	Selection of Torque Compensation Mode	0: Torque Compensation Mode 0	0	
		1: Torque Compensation Mode 1		
01-12	Base Frequency of Motor 1	4.8~599.0	50.0/60.0	*8
01-13	Base Output Voltage of Motor 1	200V: 0.0~255.0	-	*8
		400V: 0.0~510.0	-	
		575V: 0.0~670.0	-	
		690V: 0.0~804.0	-	
01-14	Input Voltage Setting	200V: 155.0~255.0	-	*8
		400V: 310.0~510.0	-	
		575V: 540.0~670.0	-	
		690V: 648.0~804.0	-	
01-15	Torque Compensation Time	0~10000	200	
01-16	Maximum Output Frequency of Motor 2	4.8~599.0	50.0/60.0	*8
01-17	Maximum Output Voltage of Motor 2	200V: 0.1~255.0	-	*8
		400V: 0.2~510.0	-	
		575V: 0.1~670.0	-	
		690V: 0.1~804.0	-	
01-18	Middle Output Frequency 2 of Motor 2	0.0~599.0	0.0	
01-19	Middle Output Voltage 2 of Motor 2	200V: 0.0~255.0	0.0	
		400V: 0.0~510.0		
		575V: 0.0~670.0		
		690V: 0.0~804.0		
01-20	Middle Output Frequency 1 of Motor 2	0.0~599.0	-	
01-21	Middle Output Voltage 1 of Motor 2	200V: 0.0~255.0	KVA	
		400V: 0.0~510.0		
		575V: 0.0~670.0		
		690V: 0.0~804.0		
01-22	Minimum Output Frequency of Motor 2	0.0~599.0	-	
01-23	Minimum Output Voltage of Motor 2	200V: 0.0~255.0	KVA	
		400V: 0.0~510.0		
		575V: 0.0~670.0		
		690V: 0.0~804.0		

Group 01: V/F Control Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
01-24	Base Frequency of Motor 2	4.8~599.0	50.0/ 60.0	*8
01-25	Base Output Voltage of Motor 2	200V: 0.0~255.0	-	*8
		400V: 0.0~510.0	-	
		575V: 0.0~670.0	-	
		690V: 0.0~804.0	-	
01-26	V/F Curve Selection of Motor 2	0~FF	F	*3

KVA: The default value of this parameter will be changed by different capacities of inverter.

Group 02: IM Motor Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
02-00	No-Load Current of Motor1	0.01~600.00	-	
02-01	Rated Current of Motor1	Modes of V/F, V/F+PG are 10%~200% of inverter's rated current. Modes of SLV, SV are 25%~200% of inverter's rated current.	-	
02-02	Reserved			
02-03	Rated Rotation Speed of Motor1	0~60000	-	
02-04	Rated Voltage of Motor1	200V: 50.0~240.0	-	*8
		400V: 100.0~480.0	-	
		575V: 150.0~670.0	-	
		690V: 200.0~804.0	-	
02-05	Rated Power of Motor1	0.01~600.00	-	
02-06	Rated Frequency of Motor1	4.8~599.0	50.0/ 60.0	*8
02-07	Poles of Motor 1	2~16(Even)	4	
02-08	Reserved			
02-09	Excitation Current of Motor 1	15%~70% of Motor Rated Current	-	
02-10	Core Saturation Coefficient 1 of Motor 1	1~100	-	
02-11	Core Saturation Coefficient 2 of Motor 1	1~100	-	

Group 02: IM Motor Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
02-12	Core Saturation Coefficient 3 of Motor 1	80~300	-	
02-13	Core loss of Motor 1	0.0~15.0	-	
02-14	Reserved			
02-15	Resistance between Wires of Motor 1	0.001~60.000	-	
02-16	rotor resistance of Motor 1	0.001~60.000		
02-17	leakage inductance of Motor 1	0.01~200.00		
02-18	mutual inductance of Motor 1	0.1~6553.4		
02-19	No-Load Voltage of Motor 1	200V: 50~240	-	
		400V: 100~480	-	
		575V: 420~600	-	
		690V: 504~720	-	
02-20	No-Load Current of Motor 2	0.01~600.00	-	
02-21	Rated Current of Motor 2	25%~200% of inverter's rated current	-	
02-22	Rated Rotation Speed of Motor 2	0~60000	-	
02-23	Rated Voltage of Motor 2	200V: 50.0~240.0	-	*8
		400V: 100.0~480.0	-	
		575V: 150.0~670.0	-	
		690V: 200.0~804.0	-	
02-24	Rated Power of Motor 2	0.01~600.00	-	
02-25	Rated Frequency of Motor 2	4.8~599.0	50.0/ 60.0	*8
02-26	Poles of Motor 2	2~16 (Even)	4	
02-27 ~ 02-31	Reserved			
02-32	Resistance between Wires of Motor 2	0.001~60.000	-	
02-33	Proportion of Motor 1 Leakage Inductance	0.1~15.0	-	
02-34	Motor 1 Slip Frequency	0.10~20.00	-	

Group 02: IM Motor Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
02-35 ~ 02-36	Reserved			
02-37	Motor Mechanical Loss	0.0~10.0	4.0	

Group 03: External Digital Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
03-00	Multi-Function Terminal Function Setting-S1	0: 2-Wire Sequence (ON: Forward Run Command)	0	
		1: 2-Wire Sequence (ON: Reverse Run Command)		
		2: Multi-Speed/Position Setting Command 1		
		3: Multi-Speed/Position Setting Command 2		
		4: Multi-Speed/Position Setting Command 3		
		5: Multi-Speed/Position Setting Command 4		
		6: Forward Jog Run Command		
		7: Reverse Jog Run Command		
03-01	Multi-Function Terminal Function Setting-S2	8: UP Frequency Increasing Command	1	
		9: DOWN Frequency Decreasing Command		
		10: Acceleration/Deceleration Time Selection 1		
		11: Inhibit Acceleration/Deceleration Command		
		12: Main/Alternative Run Switch Function		

Group 03: External Digital Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		13: Main/Alternative Frequency Switch Function		
03-02	Multi-Function Terminal Function Setting-S3	14: Emergency Stop (decelerate to zero and stop)	2	
		15: External Baseblock Command (rotation freely to stop)		
		16: PID Control Disable		
		17: Fault Reset (RESET)		
		18: Reserved		
		19: Speed Search 1 (from the maximum frequency)		
		20: Manual Energy Saving Function		
03-03	Multi-Function Terminal Function Setting-S4	21: PID Integral Reset	3	
		22~23 : Reserved		
		24: PLC Input		
		25: External Fault		
		26: 3-Wire Sequence (Forward/Reverse command)		
03-04	Multi-Function Terminal Function Setting-S5	27: Local/Remote Selection	4	
		28: Remote Mode Selection		
		29: Jog Frequency Selection		
		30: Acceleration/Deceleration Time Selection 2		
		31: Inverter Overheating Warning		
		32: Sync Command		
		33: DC Braking		
		34: Speed Search 2 (from the frequency command)		
		35: Timing Function Input		

Group 03: External Digital Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		36: PID Soft Start Disable		
03-05	Multi-Function Terminal Function Setting-S6	37: Traversing Operation	17	
		38: Upper Deviation of Traverse Operation		
		39: Lower Deviation of Traverse Operation		
		40: Switching between Motor 1/Motor 2		
		41: PID Sleep		
		42: PG Disable		
		43: PG Integral Reset		
03-06	Multi-Function Terminal Function Setting-S7	44: Mode Switching between Speed and Torque	29*	
		45: Negative Torque Command		
		46: Zero-Servo Command		
		47: Fire mode(Forced Operation mode)		
		48: KEB Acceleration		
		49: Parameters Writing Allowable		
		50: Unattended Start Protection (USP)		
03-07	Reserved			
03-08	(S1~S7) DI Scan Time	0: Scan Time 4ms 1: Scan Time 8ms	1	
03-09	Multi-Function Terminal S1-S4 Type Selection	xxx0b: S1 A Contact	0000b	
		xxx1b: S1 B Contact		
		xx0xb: S2 A Contact		
		xx1xb: S2 B Contact		
		x0xxb: S3 A Contact		
		x1xxb: S3 B Contact		
		0xxxb: S4 A Contact		

Group 03: External Digital Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		1xxxb: S4 B Contact		
03-10	Multi-Function Terminal S5-S7 Type Selection	xxx0b: S5 A Contact	0000b	
		xxx1b: S5 B Contact		
		xx0xb: S6 A Contact		
		xx1xb: S6 B Contact		
		x0xxb: S7 A Contact		
		x1xxb: S7 B Contact		
		0xxxb: S8 A Contact		
		1xxxb: S8 B Contact		
03-11	Relay (R1A-R1C) Output	0: During Running	1 (Note4)	
		1: Fault Contact Output		
		2: Frequency Agree		
		3: Setting Frequency Agree		
		4: Frequency Detection 1 ($\geq$ 03-13+03-14)		
		5: Frequency Detection 2 ($\leq$ 03-13+03-14)		
		6: Automatic Restart		
		7~8: Reserved		
		9: Baseblock		
		10~11: Reserved		
		12: Over-Torque Detection		
		13: Current Agree		
		14: Mechanical Braking Control (03-17~18)		
		15~17: Reserved		
		18: PLC status		
03-12 (Note)	Photo-coupler Output(DO1-DOG)	19: PLC Control Contact	0 (Note4)	
		20: Zero Speed		
		21: Inverter Ready		
		22: Under Voltage Detection		

Group 03: External Digital Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		23: Source of Operation Command		
		24: Source of Frequency Command		
		25: Low Torque Detection		
		26: Frequency Reference Missing		
		27: Timing Function Output		
		28: Traverse Operation UP Status		
		29 : During Traverse Operation Status		
		30 : Motor 2 Selection		
		31 : Zero Speed Servo Status (Position Mode)		
		32: Communication Control Contacts		
		33: RTC Timer 1		Note8
		34: RTC Timer 2		Note8
		35: RTC Timer 3		Note8
		36: RTC Timer 4		Note8
		37: PID Feedback Loss Detection Output		
		38: Brake Release		
		39: Frequency Detection 1 (dedicated for Crane)		
		40: Frequency Output		
		41: Position Agree (Position Mode)		
		42~44: Reserved		
		45: PID sleep		
		46~49: Reserved		
		50: Frequency Detection 3 ($\geq$ 03-44+03-45)		
		51: Frequency Detection 4 ($\leq$ 03-44+03-45)		
		52: Frequency Detection 5 ($\geq$ 03-46+03-47)		

Group 03: External Digital Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		53: Frequency Detection 6 ($\leq$ 03-46+03-47)		
		54: Turn on short-circuit braking		Note1
		57: Low Current Detection		Note2
		58: Frequency Deceleration Detection		Note4
		59: Over-Temperature Detection		Note4
		60: Life warning period		
03-13	Frequency Detection Level	0.0~599.0	0.0	
03-14	Frequency Detection Width	0.1~25.5	2.0	
03-15	Current Agree Level	0.1~999.9	0.1	
03-16	Delay Time of Current Agree Detection	0.1~10.0	0.1	
03-17	**Mechanical Braking Release Level	0.00~599.00	0.00	
03-18	**Mechanical Braking Level Set	0.00~599.00	0.00	
03-19	Relay &DO1 Type	xxx0b: R1 A Contact xxx1b: R1 B Contact	0000b	*10
		xx0xb: Photo-coupler 1 A Contact xx1xb: Photo-coupler 1 B Contact		
03-20	Reserved			
03-21	Reserved			
03-22 ~ 03-26	Reserved			
03-27	UP/DOWN Frequency Hold/Adjust Selection	0: Hold last set frequency when stopped 1: Set frequency to 0 when stopped	0	

Group 03: External Digital Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		2: Allow speed changes from last set frequency when stopped		
		3: Refresh frequency at acceleration.		
03-28	Photo-coupler Output (DO1-DOG)	Range and definition are the same as those of 03-11, 03-12 (03-28 Set to 8 is pulse output function)	0	
03-29	Photo-coupler Output Selection (DO1-DOG) (DO2-DOG)	xx0xb: Photo-coupler 2 A Contact xx1xb: Photo-coupler 2 B Contact	0000b	
				*10
03-30	Selection of Pulse Input	0: General Pulse Input	0	
		1: PWM		
03-31	Scale of Pulse Input	Depending on the setting of 03-30 03-30 = 0: 50~32000Hz 03-30 = 1: 10~1000Hz	1000	*1
03-32	Pulse Input Gain	0.0~1000.0	100	*1
03-33	Pulse Input Bias	-100.0~100.0	0.0	*1
03-34	Filter Time of Pulse Input	0.00~2.00	0.1	*1
03-35	Function Setting of Pulse Output	1: Frequency Command	2	*1
		2: Output Frequency		
		3: Output Frequency after Soft-Start		
		4: Motor Speed		
		5: PID Feedback		
		6: PID Input		
		7: PG Output (with PG card)		
03-36	Scale of Pulse Output	1~32000	1000	*1
03-37	Timer ON Delay (DIO)	0.0~6000.0	0.0	
03-38	Timer OFF Delay (DIO)	0.0~6000.0	0.0	

Group 03: External Digital Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
03-39	Reserved			
03-40	Up/Down Frequency Width Setting	0.00~5.00	0.00	
03-41	Torque Detection Level	0~150	10	
03-42	Brake Release Delay Time	0.00~65.00	0.00	
03-43	UP/DOWN Acceleration/Deceleration Selection	0: Acceleration/Deceleration Time 1	0	
		1: Acceleration/Deceleration Time 2		
03-44	Frequency Detection Level 2	0.0~599.0	0.0	
03-45	Frequency Detection Width 2	0.1~25.5	2.0	
03-46	Frequency Detection Level 3	0.0~599.0	0.0	
03-47	Frequency Detection Width 3	0.1~25.5	2.0	
03-48	Low Current Detection Level	0.0~999.9	0.1	Note2
03-49	Low Current Detection Delay Time	0.00~655.34 (Note4)	0.01	Note2
03-50	Frequency Detection Level 4	0.0~599.0	0.0	Note3
03-51	Frequency Detection Level 5	0.0~599.0	0.0	Note3
03-52	Frequency Detection Level 6	0.0~599.0	0.0	Note3
03-53	Current Agree Level 2	0.0~999.9	0	Note4
03-54	counter ON delay	0~12	0	
03-55	counter OFF delay	0~12	0	

* 2-wire operation mode: 29; 3-wire operation mode: 26.

* *If the maximum output frequency of motor is over 300HZ, the frequency resolution is changed to 0.1Hz
Note: For standard H & C type frame 1, the DO2 function is setting by 03-12.

Group 04: External Analog Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
04-00	AI Input Signal Type	0: AI1:0~10V AI2:0~10V	1	
		1: AI1:0~10V AI2:4~20mA		
		2: Reserved		
		3: Reserved		
		4: AI1: 4~20mA AI2: 0~10V		*9
		5: AI1: 4~20mA AI2: 4~20mA		*9
04-01	AI1 Signal Scanning and Filtering Time	0.00~2.00	0.03	
04-02	AI1 Gain	0.0~1000.0	100.0	*1
04-03	AI1 Bias	-100.0~100.0	0	*1
04-04	Negative AI	0: Disable	0	Note4
		1: Enable		
04-05	AI2 Function Setting	0: Auxiliary Frequency	10	
		1: Frequency Reference Gain		
		2: Frequency Reference Bias		
		3: Output Voltage Bias		
		4: Coefficient of Acceleration and Deceleration Reduction		
		5: DC Braking Current		
		6: Over-Torque Detection Level		
		7: Stall Prevention Level During Running		
		8: Frequency Lower Limit		
		9: Jump Frequency 4		
		10: Added to AI1		
		11: Positive torque limit		
		12: Negative torque limit		
		13: Regenerative Torque Limit		
		14: Positive / Negative Torque Limit		
		15: Torque Reference/ Torque Limit (in Speed Control)		
		16: Torque Compensation		

Group 04: External Analog Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		17: PTC Overheat Protection		
04-06	AI2 Signal Scanning and Filtering Time	0.00~2.00	0.03	
04-07	AI2 Gain	0.0~1000.0	100.0	*1
04-08	AI2 Bias	-100.0~100.0	0	*1
04-09	Reserved			
04-10	Reserved			
04-11	AO1 Function Setting	0: Output Frequency	0	
		1: Frequency Command		
		2: Output Voltage		
		3: DC Voltage		
		4: Output Current		
		5: Output Power		
		6: Motor Speed		
		7: Output Power Factor		
		8: AI1 Input		
		9: AI2 Input		
		10: Torque Command		
		11: q-axis Current (reserved above Frame2)		
		12: d-axis Current (reserved above Frame2)		
		13: Speed Deviation		
		14: Reserved		
		15: ASR Output		
		16: Reserved		
		17: q-axis Voltage (reserved above Frame2)		
		18: d-axis Voltage (reserved above Frame2)		
		19~20: Reserved		
		21: PID Input		
		22: PID Output		
		23: PID Target Value		
		24: PID Feedback Value		

Group 04: External Analog Input and Output Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		25: Output Frequency of the Soft Starter		
		26: PG Feedback		
		27: Reserved		
		28: Communication control		
04-12	AO1 Gain	0.0~1000.0	100.0	*1
04-13	AO1 Bias	-100.0~100.0	0	*1
04-14	Reserved			
04-15				
04-16	AO2 Function Setting	Range and definition are the same as those of 04-11.	3	
04-17	AO2 Gain	0.0~1000.0	100.0	*1
04-18	AO2 Bias	-100.0~100.0	0	*1
04-19	AO Output Signal Type	0: AO1 0~10V AO2 0~10V	0	
		1: AO1 0~10V AO2 4~20mA		
		2: AO1 4~20mA AO2 0~10V		*9
		3: AO1 4~20mA AO2 4~20mA		*9
04-20	Filter Time of AO Signal Scan	0.00~0.50	0.00	*1
04-21	Reserved			
04-22	Reserved			
04-23	Reserved			

Group 05: Multi-Speed Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
05-00	Acceleration and Deceleration Selection of Multi-Speed	0: Acceleration and deceleration time are set by 00-14 ~ 00-24	0	
		1: Acceleration and Deceleration Time are set by 05-17 ~ 05-48		
05-01	*Frequency Setting of Speed-Stage 0	0.00~599.00	5.00	*1
05-02	*Frequency Setting of Speed-Stage 1	0.00~599.00	5.00	*1

Group 05: Multi-Speed Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
05-03	*Frequency Setting of Speed-Stage 2	0.00~599.00	10.00	*1
05-04	*Frequency Setting of Speed-Stage 3	0.00~599.00	20.00	*1
05-05	*Frequency Setting of Speed-Stage 4	0.00~599.00	30.00	*1
05-06	*Frequency Setting of Speed-Stage 5	0.00~599.00	40.00	*1
05-07	*Frequency Setting of Speed-Stage 6	0.00~599.00	50.00	*1
05-08	*Frequency Setting of Speed-Stage 7	0.00~599.00	50.00	*1
05-09	*Frequency Setting of Speed-Stage 8	0.00~599.00	5.00	*1
05-10	*Frequency Setting of Speed-Stage 9	0.00~599.00	5.00	*1
05-11	*Frequency Setting of Speed-Stage 10	0.00~599.00	5.00	*1
05-12	*Frequency Setting of Speed-Stage 11	0.00~599.00	5.00	*1
05-13	*Frequency Setting of Speed-Stage 12	0.00~599.00	5.00	*1
05-14	*Frequency Setting of Speed-Stage 13	0.00~599.00	5.00	*1
05-15	*Frequency Setting of Speed-Stage 14	0.00~599.00	5.00	*1
05-16	*Frequency Setting of Speed-Stage 15	0.00~599.00	5.00	*1
05-17	Acceleration Time Setting of Multi Speed 0	0.1~6000.0	10.0	
05-18	Deceleration Time Setting of Multi Speed 0	0.1~6000.0	10.0	
05-19	Acceleration Time Setting of Multi Speed 1	0.1~6000.0	10.0	
05-20	Deceleration Time Setting of Multi Speed 1	0.1~6000.0	10.0	

Group 05: Multi-Speed Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
05-21	Acceleration Time Setting of Multi Speed 2	0.1~6000.0	10.0	
05-22	Deceleration Time Setting of Multi Speed 2	0.1~6000.0	10.0	
05-23	Acceleration Time Setting of Multi Speed 3	0.1~6000.0	10.0	
05-24	Deceleration Time Setting of Multi Speed 3	0.1~6000.0	10.0	
05-25	Acceleration Time Setting of Multi Speed 4	0.1~6000.0	10.0	
05-26	Deceleration Time Setting of Multi Speed 4	0.1~6000.0	10.0	
05-27	Acceleration Time Setting of Multi Speed 5	0.1~6000.0	10.0	
05-28	Deceleration Time Setting of Multi Speed 5	0.1~6000.0	10.0	
05-29	Acceleration Time Setting of Multi Speed 6	0.1~6000.0	10.0	
05-30	Deceleration Time Setting of Multi Speed 6	0.1~6000.0	10.0	
05-31	Acceleration Time Setting of Multi Speed 7	0.1~6000.0	10.0	
05-32	Deceleration Time Setting of Multi Speed 7	0.1~6000.0	10.0	
05-33	Acceleration Time Setting of Multi Speed 8	0.1~6000.0	10.0	
05-34	Deceleration Time Setting of Multi Speed 8	0.1~6000.0	10.0	
05-35	Acceleration Time Setting	0.1~6000.0	10.0	

Group 05: Multi-Speed Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
	of Multi Speed 9			
05-36	Deceleration Time Setting of Multi Speed 9	0.1~6000.0	10.0	
05-37	Acceleration Time Setting of Multi Speed 10	0.1~6000.0	10.0	
05-38	Deceleration Time Setting of Multi Speed 10	0.1~6000.0	10.0	
05-39	Acceleration Time Setting of Multi Speed 11	0.1~6000.0	10.0	
05-40	Deceleration Time Setting of Multi Speed 11	0.1~6000.0	10.0	
05-41	Acceleration Time Setting of Multi Speed 12	0.1~6000.0	10.0	
05-42	Deceleration Time Setting of Multi Speed 12	0.1~6000.0	10.0	
05-43	Acceleration Time Setting of Multi Speed 13	0.1~6000.0	10.0	
05-44	Deceleration Time Setting of Multi Speed 13	0.1~6000.0	10.0	
05-45	Acceleration Time Setting of Multi Speed 14	0.1~6000.0	10.0	
05-46	Deceleration Time Setting of Multi Speed 14	0.1~6000.0	10.0	
05-47	Acceleration Time Setting of Multi Speed 15	0.1~6000.0	10.0	
05-48	Deceleration Time Setting of Multi Speed 15	0.1~6000.0	10.0	

*** If the maximum output frequency of motor is over 300HZ, the frequency resolution is changed to 0.1Hz**

Group 06: Automatic Program Operation Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
06-00	Automatic Operation Mode Selection	0: Disable	0	
		1: Execute a single cycle operation mode. Restart speed is based on the previous stopped speed.		
		2: Execute continuous cycle operation mode. Restart speed is based on the previous stopped speed.		
		3: After the completion of a single cycle, the on-going operation speed is based on the speed of the last stage. Restart speed is based on the previous stopped speed.		
		4: Execute a single cycle operation mode. Restart speed will be based on the speed of stage 0.		
		5: Execute continuous cycle operation mode. Restart speed will be based on the speed of stage 0.		
		6: After the completion of a single cycle, the on-going operation speed is based on the speed of the last stage. Restart speed is based on the speed of stage 0.		
06-01	*Frequency Setting of Operation-Stage 1	0.00~599.00	5.00	*1
06-02	*Frequency Setting of Operation-Stage 2	0.00~599.00	10.00	*1
06-03	*Frequency Setting of Operation-Stage 3	0.00~599.00	20.00	*1
06-04	*Frequency Setting of Operation-Stage 4	0.00~599.00	30.00	*1

Group 06: Automatic Program Operation Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
06-05	*Frequency Setting of Operation-Stage 5	0.00~599.00	40.00	*1
06-06	*Frequency Setting of Operation-Stage 6	0.00~599.00	50.00	*1
06-07	*Frequency Setting of Operation-Stage 7	0.00~599.00	50.00	*1
06-08	*Frequency Setting of Operation-Stage 8	0.00~599.00	5.00	*1
06-09	*Frequency Setting of Operation-Stage 9	0.00~599.00	5.00	*1
06-10	*Frequency Setting of Operation-Stage 10	0.00~599.00	5.00	*1
06-11	*Frequency Setting of Operation-Stage 11	0.00~599.00	5.00	*1
06-12	*Frequency Setting of Operation-Stage 12	0.00~599.00	5.00	*1
06-13	*Frequency Setting of Operation-Stage 13	0.00~599.00	5.00	*1
06-14	*Frequency Setting of Operation-Stage 14	0.00~599.00	5.00	*1
06-15	*Frequency Setting of Operation-Stage 15	0.00~599.00	5.00	*1
06-16	Operation Time Setting of Speed-Stage 0	0.0~6000.0	0.0	*1
06-17	Operation Time Setting of Speed-Stage 1	0.0~6000.0	0.0	*1
06-18	Operation Time Setting of Speed-Stage 2	0.0~6000.0	0.0	*1
06-19	Operation Time Setting	0.0~6000.0	0.0	*1

Group 06: Automatic Program Operation Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
	of Speed-Stage 3			
06-20	Operation Time Setting of Speed-Stage 4	0.0~6000.0	0.0	*1
06-21	Operation Time Setting of Speed-Stage 5	0.0~6000.0	0.0	*1
06-22	Operation Time Setting of Speed-Stage 6	0.0~6000.0	0.0	*1
06-23	Operation Time Setting of Speed-Stage 7	0.0~6000.0	0.0	*1
06-24	Operation Time Setting of Speed-Stage 8	0.0~6000.0	0.0	*1
06-25	Operation Time Setting of Speed-Stage 9	0.0~6000.0	0.0	*1
06-26	Operation Time Setting of Speed-Stage 10	0.0~6000.0	0.0	*1
06-27	Operation Time Setting of Speed-Stage 11	0.0~6000.0	0.0	*1
06-28	Operation Time Setting of Speed-Stage 12	0.0~6000.0	0.0	*1
06-29	Operation Time Setting of Speed-Stage 13	0.0~6000.0	0.0	*1
06-30	Operation Time Setting of Speed-Stage 14	0.0~6000.0	0.0	*1
06-31	Operation Time Setting of Speed-Stage 15	0.0~6000.0	0.0	*1
06-32	Operation Direction Selection of Speed-Stage 0	0: Stop 1: Forward 2: Reverse	0	
06-33	Operation Direction Selection of Speed-Stage 1	0: Stop 1: Forward 2: Reverse	0	

Group 06: Automatic Program Operation Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
06-34	Operation Direction Selection of Speed-Stage 2	0: Stop 1: Forward 2: Reverse	0	
06-35	Operation Direction Selection of Speed-Stage 3	0: Stop 1: Forward 2: Reverse	0	
06-36	Operation Direction Selection of Speed-Stage 4	0: Stop 1: Forward 2: Reverse	0	
06-37	Operation Direction Selection of Speed-Stage 5	0: Stop 1: Forward 2: Reverse	0	
06-38	Operation Direction Selection of Speed-Stage 6	0: Stop 1: Forward 2: Reverse	0	
06-39	Operation Direction Selection of Speed-Stage 7	0: Stop 1: Forward 2: Reverse	0	
06-40	Operation Direction Selection of Speed-Stage 8	0: Stop 1: Forward 2: Reverse	0	
06-41	Operation Direction Selection of Speed-Stage 9	0: Stop 1: Forward 2: Reverse	0	
06-42	Operation Direction Selection of Speed-Stage 10	0: Stop 1: Forward 2: Reverse	0	
06-43	Operation Direction Selection of Speed-Stage 11	0: Stop 1: Forward 2: Reverse	0	
06-44	Operation Direction Selection of Speed-Stage 12	0: Stop 1: Forward 2: Reverse	0	
06-45	Operation Direction Selection of Speed-Stage 13	0: Stop 1: Forward 2: Reverse	0	
06-46	Operation Direction Selection of Speed-Stage 14	0: Stop 1: Forward 2: Reverse	0	
06-47	Operation Direction Selection of Speed-Stage 15	0: Stop 1: Forward 2: Reverse	0	

* If the maximum output frequency of motor is over 300Hz, the frequency resolution is changed to 0.1Hz

Group 07: Start /Stop Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
07-00	Momentary Power Loss/Fault Restart Selection	0: Disable	0	
		1: Enable		
07-01	Fault Auto-Restart Time	0~7200	0	
07-02	Number of Fault Auto-Restart Attempts	0~10	0	
07-03	Reserved			
07-04	Direct Start at Power on	0: When the external run command is enabled, direct start at power up	1	
		1: When the external run command is enabled, unable to direct start at power-up.		
07-05	Delay of Direct Start at Power on	1.0~300.0	3.5	
07-06	DC Injection Braking Starting Frequency	0.0~10.0	0.5	
07-07	DC Injection Braking Current	0~100	50	
07-08	DC Injection Braking Time at Stop	0.00~100.00	0.50	
07-09	Stop Mode Selection	0: Deceleration to Stop	0	
		1: Coast to Stop		
		2: DC Braking Stop in All Fields		
		3: Coast to Stop with Timer		
07-10 ~ 07-12	Reserved			
07-13	Low Voltage Detection Level	200V: 150~300	190	
		400V: 250~600	380	
		575V: 500~600	546	
		690V: 500~600	546	
07-14	Pre-excitation Time	0.00~10.00	2.00	
07-15	Pre-excitation Level	50~200	100	

Group 07: Start /Stop Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
07-16	DC Injection Braking Time at Start	0.00~100.00	0.00	
07-17	Reserved			
07-18	Minimum Base block Time	0.1~5.0	-	
07-19	Direction-Detection Speed Search Operating Current	0~100	50	
07-20	Speed Search Operating Current	0~100	20	
07-21	Integral Time of Speed Searching	0.1~10.0	2.0	
07-22	Delay Time of Speed Searching	0.0~20.0	0.2	
07-23	Voltage Recovery Time	0.1~5.0	2.0	
07-24	Reserved			
07-25	Low Voltage Detection Time	0.00~1.00	0.02	
07-26	Start-up Mode Selection of SLV Coast to Stop	0: Start with speed search	0	
		1: Normal start		
07-27	Start Selection after Fault during SLV Mode	0: Start with speed search	0	
		1: Normal start		
07-28	Start after External Base Block	0: Start with speed search	0	
		1: Normal start		
07-29	Run Command Selection at the Action of DC Braking	0: Not Allowable to Run	0	
		1: Allowable to Run		
07-30	Low Voltage Level Selection	0: Disable	0	
		1: Enable		
07-31	**Low Voltage Run Frequency	0.00~599.00	10.00	
07-32	Speed Search Mode Selection	0: Disable	0	
		1: Mode1: Execute a Speed Search at Power On		

Group 07: Start /Stop Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		2: Execute a Speed Search each time		
07-33	Start Frequency of Speed Search Selection	0: Maximum Output Frequency of Motor 1: Frequency Command	0	
07-34	Start short-circuit braking time	0.00~100.00	0.00	Note1
07-35	Stop Short-circuit braking time	0.00~100.00	0.50	Note1
07-36	Short-circuit braking current limited	0.0~200.0	100.0	Note1
07-37 ~ 07-41	Reserved			
07-42	Voltage Limit Gain	0.0~50.0	0	Note2
07-43	Short-circuit Braking Time of PM Speed Search	0.00~100.00	0.00	Note3
07-44	DC Braking Time of PM Speed Search	0.00~100.00	0.00	Note3
07-45	STP2 Function Selection	0: STP2 Enable 1: STP2 Disable	0	Note4
07-46	DC Injection Current Limit	0~150	100	Note5
07-47	PM Speed Switching Frequency Mode	0: Disabled 1: Mode 1 2: Mode 2	0	Note8

***07-13 Low Voltage Detection Level, it is enable when 07-30 Low Voltage Level Selection set 0 (Enable) and lower frequency limit set to 250V. This application is for Emergency power supply (EPS)**

*** *If the maximum output frequency of motor is over 300HZ, the frequency resolution is changed to 0.1Hz**

Group 08: Protection Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
08-00	Stall Prevention Function	xxx0b: Stall prevention is enabled in acceleration. xxx1b: Stall prevention is	0000b	

Group 08: Protection Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		disabled in acceleration. xx0xb: Stall prevention is enabled in deceleration. xx1xb: Stall prevention is disabled in deceleration. x0xxb: Stall prevention is enabled in operation x1xxb: Stall prevention is disabled in operation 0xxxb: Stall prevention in operation is based on deceleration time of speed-stage 1. 1xxxb: Stall prevention in operation is based on deceleration time of speed-stage 2.		
08-01	Stall Prevention Level in Acceleration	20~200	150	
08-02	Stall Prevention Level in Deceleration	200V: 330V~410V 400V: 660V~820V 575V: 900~1000 690V: 1080~1200	385V 770V 950V 1140V	
08-03	Stall Prevention Level in Operation	30~200	160	
08-04	Reserved			
08-05	Selection for Motor Overload Protection (OL1)	xxx0b: Overload Protection is disabled. xxx1b: Overload Protection is enabled. xx0xb: Cold Start of Motor Overload xx1xb: Hot Start of Motor Overload x0xxb: Standard Motor x1xxb: Inverter Duty Motor 0xxxb: Reserved 1xxxb: Reserved	0001b	

Group 08: Protection Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
08-06	Start-up Mode of Overload Protection Operation (OL1)	0: Stop Output after Overload Protection	0	
		1: Continuous Operation after Overload Protection.		
08-07	Motor Overload (OL1) Protection Level	0: Motor Overload (OL1) Protection 0	0	Note2
		1: Motor Overload (OL1) Protection 1		
		2: Motor Overload (OL1) Protection 2		
08-08	Automatic Voltage Regulation (AVR)	0: Enable	0	
		1: Disable		
08-09	Selection of Input Phase Loss Protection	0: Disable	0	
		1: Enable		
08-10	Selection of Output Phase Loss Protection	0: Disable	0	
		1: Enable		
08-11	Reserved			
08-12				
08-13	Selection of Over-Torque Detection	0: Over-Torque Detection is Disabled.	0	
		1: Start to Detect when Reaching the Set Frequency.		
		2: Start to Detect when the Operation is Begun.		
08-14	Selection of Over-Torque Operation	0: Deceleration to Stop when Over Torque is Detected.	0	
		1: Display Warning when Over Torque is Detected. Go on Operation.		
		2: Coast to Stop when Over Torque is Detected		
08-15	Level of Over-Torque Detection	0~300	150	
08-16	Time of Over-Torque Detection	0.0~10.0	0.1	

Group 08: Protection Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
08-17	Selection of Low-Torque Detection	0: Low-Torque Detection is Disabled.	0	
		1: Start to Detect when Reaching the Set Frequency.		
		2: Start to Detect when the Operation is Begun.		
08-18	Selection of Low-Torque Operation	0: Deceleration to Stop when Low Torque is Detected.	0	
		1: Display Warning when Low Torque is Detected. Go on Operation.		
		2: Coast to Stop when Low Torque is Detected		
08-19	Level of Low-Torque Detection	0~300	30	
08-20	Time of Low-Torque Detection	0.0~10.0	0.1	
08-21	Limit of Stall Prevention in Acc over Base Speed	1~100	50	
08-22	Stall Prevention Detection Time in Operation	2~100	100	
08-23	Ground Fault (GF) Selection	0: Disable	0	
		1: Enable		
08-24	External Fault Operation Selection	0: Deceleration to Stop	0	
		1: Coast to Stop		
		2: Continuous Operation		
08-25	Detection Selection of External Fault	0: Immediately Detect when the Power is Supplied.	0	
		1: Start to Detect when the Operation is Started.		
08-26 ~ 08-29	Reserved			

Group 08: Protection Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
08-30	Run Permissive Function Selection	0: Deceleration to Stop	0	
		1: Coast to Stop		
08-31 ~ 08-34	Reserved			
08-35	Motor Overheating Fault Selection	0: Disable	0	
		1: Deceleration to Stop		
		2: Coast to Stop		
		3: Continue Running		
08-36	PTC Input Filter Time Constant	0.00 ~ 5.00	2.00	
08-37	Fan Control Function	0: Start in operation	0	
		1: Permanent Start		
		2: Start in high temperature (Note)		
08-38	Delay Time of Fan Off	0~600	60	
08-39	Delay Time of Motor Overheat Protection	1~300	60	
08-40	Motor2 Acceleration Stall Prevention Level	20~200	150	
08-41	Motor2 Acceleration Stall Prevention Limit	1~100	50	
08-42	PTC Protection Level	0.1~10.0V	0.7	
08-43	PTC Restart Level	0.1~10.0V	0.3	
08-44	PTC Warning Level	0.1~10.0V	0.5	
08-45	Reserved			
08-46	Temperature Agree Level	0~254℃	0	
08-47	Temperature Reset Level	0~254℃	0	
08-48	Selection of Fire Mode	0: Disable 1: Enable	0	
08-49	Multi-Function Input Terminal Status of Fire Mode	0 : Reset after Power Off 1 : Reset after Terminal Removed	0	

Group 08: Protection Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
08-50	Multi-Function Terminal Status of Fire Mode	XXX0b: S6 A contact XXX1b: S6 B contact	0000b	
08-51	Motor Speed Setting Source of Fire Mode	0 : Fire Mode Speed (08-52) 1 : PID Control 2 : AI2	0	
08-52	Motor Speed of Fire Mode	0.00~100.00	100.00	
08-53	PID Detection Level of Fire Mode	0~100	0	
08-54	Delay Time of Fire Mode PID Loss	0.0~10.0	1.0	
08-55	PID Feedback Loss Detection Selection of Fire Mode	0 : Keep Running 1 : Fire Mode Speed (08-52) 2 : Maximum Output Frequency (01-02)	1	
08-56	Detection Level of Fire Mode AI2 Signal	0.0~100.0	80.0	
08-57	Delay Time of Fire Mode AI2 Signal Loss	0.0~10.0	1.0	
08-58	Selection of Fire Mode AI2 Signal Loss	0 : Keep Running 1: Fire Mode Speed (08-52) 2: Maximum Output Frequency (01-02)	1	
08-59	Fire Mode Motor Direction	0: Forward 1: Reverse	0	
08-60	Fire Mode Password	00000~65534	0	
08-61	Capacitor maintenance settings	0: Disable	0	
		1: Enable		
08-64	choose of keypad	0 : E710 1 : T310 2 : A510S	0	
08-65	Cooling fan maintenance settings	0~9999	0	

Group 08: Protection Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
08-66	IGBT maintenance settings	0~150	0	

Note: Models of 200V 50HP and 400V 100HP and above don't have this function.

Group 09: Communication Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
09-10	Reserved			
09-11	Bluetooth	0: Disable 1: Enable	0	
09-12	Bluetooth Password	0~65534	0	*7

*3: Parameter 09 does not be influenced by 13-08 (Restore Factory Setting)

Group 09: Communication Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
09-00	INV Communication Station Address	1~31	1	*3
09-01	Communication Mode Selection	0: MODBUS	0	*3
09-02	Baud Rate Setting (bps)	0: 1200 1: 2400 2: 4800 3: 9600 4: 19200 5: 38400	4	*3
09-03	Stop Bit Selection	0: 1 Stop Bit 1: 2 Stop Bit	0	*3
09-04	Parity Selection	0: No Parity 1: Even Bit 2: Odd Bit	0	*3
09-05	Communication Data Bit Selection	0: 8 Bit Data 1: 7 Bit Data	0	*3
09-06	Communication Error Detection Time	0.0~25.5	0.0	*3
09-07	Fault Stop Selection	0: Deceleration to Stop Based on Deceleration Time 1 when Communication Fault Occurs. 1: Coast to Stop when Communication Fault Occurs. 2: Deceleration to Stop Based on Deceleration Time 2 when Communication Fault Occurs. 3: Keep Operating when Communication Fault Occurs.	3	*3
09-08	Comm. Fault Tolerance Count	1~20	1	*3
09-09	Waiting Time	5~65	5	*3

Group 10: PID Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
10-00	PID Target Value Source Setting	1: AI1 given 2: AI2 given 3: PI given 4: 10-02 given 5: Reserved 6: Frequency Command (00-05)	1	
10-01	PID Feedback Value Source Setting	1: AI1 given 2: AI2 given 3: PI given	2	
10-02	PID Target Value	0.00~100.00	0.00	*1
10-03	PID Control Mode	xxx0b: PID Disable xxx1b: PID Enable xx0xb: PID Positive Characteristic xx1xb: PID Negative Characteristic x0xxb: PID Error Value of D Control x1xxb: PID Feedback Value of D Ctrl 0xxxb: PID Output 1xxxb: PID Output + Frequency Command	0000b	
10-04	Feedback Gain	0.01~10.00	1.00	*1
10-05	Proportional Gain (P)	0.00~10.00	1.00	*1
10-06	Integral Time (I)	0.00~100.00	1.00	*1
10-07	Differential Time (D)	0.00~10.00	0.00	*1

Group 10: PID Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
10-08	AI1 Frequency Limit	0.00~599.00	0	Note2
10-09	PID Bias	-100.0~100.0	0	*1
10-10	PID Output Delay Time	0.00~10.00	0.00	*1
10-11	PID Feedback Loss Detection Selection	0: Disable	0	
		1: Warning		
		2: Fault		
10-12	PID Feedback Loss Det. Lev.	0~100	0	
10-13	PID Feedback Loss Det. Time	0.0~10.0	1.0	
10-14	PID Integral Limit	0.0~100.0	100.0	*1
10-15	PID Trim Mode	0~2	0	Note2
10-16	PID Trim Scale	0~100	100	Note2
10-17	*Start Frequency of PID Sleep	0.00~599.00	0.00	
10-18	Delay Time of PID Sleep	0.0~255.5	0.0	
10-19	*Frequency of PID Waking up	0.00~599.00	0.00	
10-20	Delay Time of PID Waking up	0.0~255.5	0.0	
10-21	Reserved			
10-22				
10-23	PID Output Limit	0.00~100.0	100.0	*1
10-24	PID Output Gain	0.0~25.0	1.0	
10-25	PID Reversal Output Selection	0: No Allowing Reversal Output	0	
		1: Allow Reversal Output		
10-26	PID Target Acceleration/Deceleration Time	0.0~25.5	0.0	
10-27	PID Feedback Display Bias	0~9999	0	
10-28	Reserved			
10-29	PID Sleep Selection	0: Disable	1	
		1: Enable		
		2: set by DI		
10-30	Upper Limit of PID Target	0.0 ~ 100.0	100.0	
10-31	Lower Limit of PID Target	0.0 ~ 100.0	0.0	
10-32	Reserved			

Group 10: PID Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
10-33	Maximum Value of PID Feedback	1 ~ 10000	999	
10-34	PID Decimal Width	0 ~ 4	1	
10-35	PID Unit	0: %	0	*7
		1: FPM		
		2: CFM		
		3: SPI		
		4: GPH		
		5: GPM		
		6: IN		
		7: FT		
		8: /s		
		9: /m		
		10: /h		
		11: °F		
		12: inW		
		13: HP		
		14: m/s		
		15: MPM		
		16: CMM		
		17: W		
		18: KW		
		19: m		
		20: °C		
		21: RPM		
		22: Bar		
		23: Pa		
		24: KPa		
10-36	Proportional Gain 2 (P)	0.00~10.00	3.00	Note2
10-37	Integral Time 2 (I)	0.00~100.00	0.50	Note2
10-38	Differential Time 2 (D)	0.00~10.00	0.00	Note2
10-39	*Output Frequency Setting of PID Disconnection	00.00~599.00	30.00	
10-40	Selection of PID forced Sleep Frequency	0: Disable	0	
		1: Enable		
10-41	PID Mode Switch	0: General PID 1: D Type PID	0	Note2
10-42 ~ 10-46	Reserved			
10-47	Proportional Gain 3(P)	0.00~10.00	3.00	Note4
10-48	Integral Time 3(I)	0.00~100.00	0.50	Note4
10-49	Differential Time 3(D)	0.00~10.00	0.00	Note4

* If the maximum output frequency of motor is over 300HZ, the frequency resolution is changed to 0.1Hz

Group 11: Auxiliary Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
11-00	Direction Lock Selection	0: Allow Forward and Reverse Rotation	0	
		1: Only Allow Forward Rotation		
		2: Only Allow Reverse Rotation		
11-01	Carrier frequency	2~16: 2~16KHz	*	*1
11-02	Soft PWM Function Selection	0: Disable 1: Soft PWM 1 2: Soft PWM 2	0	
11-03	Automatic carrier lowering selection	0: Disable 1: Enable	0	
11-04	S-curve Time Setting at the Start of Acceleration	0.00~2.50	0.20	
11-05	S-curve Time Setting at the Stop of Acceleration	0.00~2.50	0.20	
11-06	S-curve Time Setting at the Start of Deceleration	0.00~2.50	0.20	
11-07	S-curve Time Setting at the Stop of Deceleration	0.00~2.50	0.20	
11-08	Jump Frequency 1	0.0~599.0	0.0	
11-09	Jump Frequency 2	0.0~599.0	0.0	
11-10	Jump Frequency 3	0.0~599.0	0.0	
11-11	Jump Frequency Width	0.0~25.5	1.0	
11-12	Manual Energy Saving Gain	0~100	80	
11-13	Automatic Return Time	0~120	60	*1
11-14 ~ 11-17	Reserved			
11-18	Manual Energy Saving Frequency	0.0~599.0	0.00	

Group 11: Auxiliary Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
11-19	Automatic Energy Saving Function	0: Automatic energy saving is disabled. 1: Automatic energy saving is enabled.	0	
11-20	Filter Time of Automatic Energy Saving	0~200	140	
11-21	Voltage Upper Limit of Energy Saving Tuning	0~100	100	
11-22	Adjustment Time of Automatic Energy Saving	0~5000	20	*1
11-23	Detection Level of Automatic Energy Saving	0~100	10	
11-24	Coefficient of Automatic Energy Saving	0.00~655.34 (Note4)	-	
11-25	Reserved			
11-26	Carrier Output Frequency Tuning Upper Limit (%)	10~100	80	
11-27	Carrier Output Frequency Tuning Lower Limit (%)	2~100	20	
11-28	Frequency Gain of Over Voltage Prevention 2	1~200	100	
11-29	Auto De-rating Selection	0: Disable 1: Enable	0	
11-30	Variable Carrier Frequency Upper Limit	2~16	-	
11-31	Variable Carrier Frequency Lower Limit	1~16	-	
11-32	Variable Carrier Frequency Proportional Gain	00~99	00	
11-33	DC Voltage Filter Rise Amount	0.1~10.0	0.1	*1
11-34	DC Voltage Filter Fall Amount	0.1~10.0	5.0	*1
11-35	DC Voltage Filter Dead band Level	0.0~99.0	10.0	*1
11-36	Frequency Gain of OV Prevention	0.000~1.000	0.050	*1

Group 11: Auxiliary Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
11-37	**Frequency Limit of OV Prevention	0.00~599.00	5.00	
11-38	Deceleration Start Voltage of OV Prevention	200V: 200~400V	300	
		400V: 400~800V	700	
		575V: 500~1000V	900	
		690V: 600~1200V	1080	
11-39	Deceleration Stop Voltage of OV Prevention	200V: 300~400V	350	
		400V: 600~800V	750	
		575V: 500~1000V	950	
		690V: 600~1200V	1140	
11-40	OV Prevention Selection	0: Disable	0	
		1: OV Prevention Mode 1		
		2: OV Prevention Mode 2		
		3: OV Prevention Mode 3		
		4: OV Prevention Mode 4		
11-41	Selection of Reference Frequency Disappearance Detection	0: Decelerate to Stop when Reference Frequency Disappears	0	
		1: Operation is set by Parameter 11-42 when Reference Frequency Disappears		
11-42	Disappearance Level of Reference Frequency	0.0~100.0	80.0	
11-43	Hold Frequency at Start	0.0~599.0	0.0	
11-44	Frequency Hold Time at Start	0.0~10.0	0.0	
11-45	Hold Frequency at Stop	0.0~599.0	0.0	
11-46	Frequency Hold Time at Stop	0.0~10.0	0.0	
11-47	KEB Deceleration Time	0.0~25.5	0.0	*1
11-48	KEB Detection Level	200V: 190~210	200	
		400V: 380~420	400	
		575V: 540~570	555	
		690V: 540~684	555	
11-49	Zero-servo Gain	0.01~5.00	1.00	

Group 11: Auxiliary Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
11-50	Zero-servo Count	0~4096	12	
11-51	Braking Selection of Zero Speed	0: Disable	0	
		1: Enable		
11-52	Droop Control Level	0.0~100.0%	0.0	*1
11-53	Droop Control Delay	0.01~2.00	0.2	*1
11-54	Initialization of Cumulative Energy	0: Do not Clear Cumulative Energy	0	*1
		1: Clear Cumulative Energy		
11-55	STOP Key Selection	0: Stop Key is Disabled when the Operation Command is not Provided by Operator.	1	
		1: Stop Key is Enabled when the Operation Command is not Provided by Operator.		
11-56	UP/DOWN Selection	0: When UP/DOWN in Keypad is Disabled, it will be Enabled if Pressing ENTER after Frequency Modification.	0	
		1: When UP/DOWN in Keypad is Enabled, it will be Enabled upon Frequency Modification.		
11-57	Reserved			
11-58	Record Reference Frequency	0: Disable	0	*1
		1: Enable		
11-59	Gain of Preventing Oscillation	0.00~2.50	*	
11-60	Upper Limit of Preventing Oscillation	1~100	*	
11-61	Time Parameter of Preventing Oscillation	0~100	0	

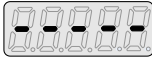
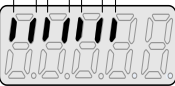
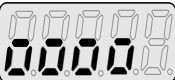
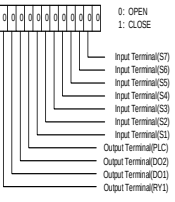
Group 11: Auxiliary Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
11-62	Selection of Preventing Oscillation	0: Mode1	2	
		1: Mode2		
		2: Mode3		
11-63	Strong Magnetic Selection	0: Disable	1	
		1: Enable		
11-64	Acceleration Speed Gain Adjustment	0.1~10.0	1.0	
11-65	Target Main Circuit Voltage	200V: 200V~400V	370	
		400V: 400V~800V	740	
		575V: 520V~1040V	962	
		690V: 624V~1248V	1154	
11-66	2 Phase/ 3 Phase PWM Switch Frequency	6.00~60.00	20	Note2
11-67	Soft PWM 2 Frequency Range	0~12000	0	Note2
11-68	Soft PWM 2 Switch Frequency	6.00~60.00	20	Note2
11-69	Gain of Preventing Oscillation 3	0.00~200.00	2.00	Note1
11-70	Upper Limit of Preventing Oscillation 3	0.01~100.00	5.00	Note1
11-71	Time Parameter of Preventing Oscillation 3	0~30000	100	Note1
11-72	Gain of Preventing Oscillation for switch frequency 1	0.01~300.00	2.00	Note1
11-73	Gain of Preventing Oscillation for switch frequency 2	0.01~300.00	7.00	Note1
11-76	Droop Frequency Level 1	0.00~599.00	0.00	Note4
11-77	Droop Frequency Level 2	0.00~599.00	0.00	Note4
11-78	Droop Torque Offset Value	0.00~100.00	0.00	Note4
11-79	LOC/REM Keypad Button Selection	0: Forward / Reverse control 1: Local / Remote control	0	
11-80	Local / Remote selection mode	0: Mode 1 Allow direct	0	

Group 11: Auxiliary Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		switching 1: Mode 2 No switching in operation 2: Mode 3 Stop running after switching		
11-81	OVP4 Level (%)	1.00~2.00	1.10	
11-82	OVP4 Gain	0~256	64	

*: Refer to the attachment 1 in our instruction manual..

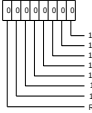
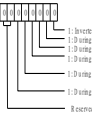
Note: The parameter of 11-01 can be changed during run operation, the range is 1~16KHz.

Group 12: Monitoring Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
12-00	Display Screen Selection (LED)	00000~77777 From the leftmost bit, it displays the screen when press DSP key in order. 0:no display 1: Output Current 2: Output Voltage 3: DC Bus Voltage 4: Heatsink Temperature* 5: PID Feedback 6: AI1 Value 7: AI2 Value	00321 (Note4)	1 *6
12-01	PID Feedback Display Mode (LED)	0: Display the Feedback Value by Integer (xxx)	0	*6
		1: Display the Feedback Value by the Value with One Decimal Place (xx.x)		
		2: Display the Feedback Value by the Value with Two Decimal Places (x.xx)		
12-02	PID Feedback Display Unit Setting (LED)	0: xxxxx (no unit)	0	*6
		1: xxxPb (pressure)		
		2: xxxFL (flow)		
12-03	Line Speed Display (LED)	0~60000	1500/1800	*6

Group 12: Monitoring Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
12-04	Modes of Line Speed Display (LED)	0: Display Inverter Output Frequency	0	*6
		1: Display Line Speed with integer (xxxxx)		
		2: Display Line Speed with the First Decimal Place (xxxx.x)		
		3: Display Line Speed with the Second Decimal Place (xxx.xx)		
		4: Display Line Speed with the Third Decimal Place (xx.xxx)		
12-05	Status Display of Digital Input & Output Terminal (LED / LCD)	LED display is shown as below no input 	-	
		correspondences to input and output S1 S2 S3 S4 S5 S6 S7  RY1 DO1 DO2 PLC LCD display is shown as below  0: OPEN 1: CLOSE 		
12-06 ~ 12-10	Reserved			
12-11	Output Current of Current Fault	Display the output current of current fault	-	
12-12	Output Voltage of Current Fault	Display the output voltage of current fault	-	

Group 12: Monitoring Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
12-13	Output Frequency of Current Fault	Display the output frequency of current fault	-	
12-14	DC Voltage of Current Fault	Display the DC voltage of current fault	-	
12-15	Frequency Command of Current Fault	Display the frequency command of current fault	-	
12-16	Frequency Command	If LED enters this parameter, it only allows monitoring frequency command.	-	
12-17	Output Frequency	Display the current output frequency	-	
12-18	Output Current	Display the current output current	-	
12-19	Output Voltage	Display the current output voltage	-	
12-20	DC Voltage (Vdc)	Display the current DC voltage	-	
12-21	Output Power (kw)	Display the current output power	-	
12-22	Motor's Rotation Speed (rpm)	Display motor's current rotation speed in VF/SLV mode Motor's rotation speed = output frequency x (120/motor's pole number) In PG/SV mode, motor's rotation speed is calculated by feedback frequency. Max limit is 65535	-	
12-23	Output Power Factor (Pfo)	Display the current output power factor	-	
12-24	Control Mode	Display control mode 0: VF 1: PG 2: SLV	-	

Group 12: Monitoring Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		3: SV 4: PSV 5: PMSLV 6: SLV2		
12-25	AI1 Input	Display the current AI1 input (-10V corresponds to -100%, 10V corresponds to 100%)	-	
12-26	AI2 Input	Display the current AI2 input (0V or 4mA corresponds to 0%, 10V or 20mA corresponds to 100%)	-	
12-27	Motor Torque	Display the current torque command (100% corresponds to motor torque)	-	
12-28	Motor Torque Current (Iq)	Display the current q-axis current	-	
12-29	Motor Excitation Current (Id)	Display the current d-axis current	-	
12-30	ASR Deviation	Display deviation of speed controller (speed command - speed feedback) (100% corresponds to the maximum frequency set by 01-02)	-	
12-31	Reserved			
12-32	ASR Output	Display output value of speed controller (100% corresponds to the maximum frequency set by 01-02)	-	
12-33	PG Feedback	Display feedback's speed value of speed controller (100% corresponds to the maximum frequency set by 01-02)	-	
12-34	PG Pulse Number	Display PG pulse number	-	Note4

Group 12: Monitoring Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		of speed controller		
12-35	Zero-servo Pulse Number	When display SV position mode, the position error pulse number of the zero speed servo (the pulse number of a circle is four times of set values of 20-27)	-	
12-36	PID Input	Display input error of the PID controller (PID target value - PID feedback) (100% corresponds to the maximum frequency set by 01-02 or 01-16)	-	
12-37	PID Output	Display output of the PID controller (100% corresponds to the maximum frequency set by 01-02 or 01-16)	-	
12-38	PID Setting	Display the target value of the PID controller (100% corresponds to the maximum frequency set by 01-02 or 01-16)	-	
12-39	PID Feedback	Display the feedback value of the PID controller (100% corresponds to the maximum frequency set by 01-02 or 01-16)	-	
12-40	Reserved			
12-41	Heatsink Temperature*	Display the heatsink temperature of IGBT temperature**	*	
12-42	RS-485 Error Code		-	
12-43	Inverter Status		-	
12-44	Pulse Input Frequency	Display the frequency	-	

Group 12: Monitoring Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		value of pulse input		
12-45	Recent Fault Message	Display current fault message	-	
12-46	Previous Fault Message	Display previous fault message	-	
12-47	Previous Two Fault Messages	Display previous two fault messages	-	
12-48	Previous Three Fault Messages	Display previous three fault messages	-	
12-49	Previous Four Fault Messages	Display previous four fault messages	-	
12-50	DIO Status of Current Fault	Display the DI/DO status of current fault Description is similar to 12-05	-	
12-51	Inverter Status of Current Fault	Display the inverter status of current fault Description is similar to 12-43	-	
12-52	Trip Time 1 of Current Fault	Display the operation time of current fault, 12-53 is the days, while 12-52 is the remaining hours.	-	
12-53	Trip Time 2 of Current Fault		-	
12-54	Frequency Command of Previous Fault	Display frequency command of previous fault	-	
12-55	Output Frequency of Previous Fault	Display output frequency of previous fault	-	
12-56	Output Current of Previous Fault	Display output current of previous fault	-	
12-57	Output Voltage of Previous Fault	Display output voltage of previous fault	-	
12-58	DC Voltage of Previous Fault	Display DC voltage of previous fault	-	
12-59	DIO Status of Previous Fault	Display DI/DO status of previous fault Description is similar to 12-05	-	
12-60	Inverter Status of Previous Fault	Display inverter status of previous fault	-	

Group 12: Monitoring Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		Description is similar to 12-43		
12-61	Trip Time 1 of Last Fault	Display the operation time of last time's fault, 12-62 is the days, while 12-61 is the remaining hours.	-	
12-62	Trip Time 2 of Last Fault		-	
12-63	Recent Warning Messages	Display the recent warning messages	-	
12-64	Previous Warning Message	Display the previous warning message	-	
12-65	Motor Start Angle	0~360	-	
12-66	Encoder Angle	0~360	-	
12-67	Cumulative Energy (KWHr)	0.0 ~ 999.9		
12-68	Cumulative Energy (MWHr)	0 ~ 60000		
12-69 ~ 12-71	Reserved			
12-72	RTC Date	12.01.01 ~ 99.12.31	-	Note8
12-73	RTC Time	00:00 ~ 23:59	00:00	Note8
12-76	No-Load Voltage Output	0.0~600.0	-	
12-77	Reserved			
12-78	Z-Phase Bias Value	-9999~9999	-	
12-79	Pulse Input Percentage	0.0~100.0	-	
12-80	AI1 Frequency Command	0.0~599.0	0	Note2
12-81	Reserved			
12-82	Motor Load	0~200.0	-	Note4
12-85	Reserved			
12-86	Error code of Recent Warning	0~65534	-	
12-87	Capacitor Lifetime Percentage	0.0~200.0	0	

*: Refer to the attachment 1 in our instruction manual.

** A510s 200V 50HP (and the above) and 400V 100HP (and the above) don't support heatsink temperature display function.

Group 13: Maintenance Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
13-00	Inverter Capacity Selection	----	-	*4
13-01	Software Version	0.00-9.99	-	*4
13-02	Clear Cumulative Operation Hours	0: Disable to Clear Cumulative Operation Hours	0	*1
		1: Clear Cumulative Operation Hours		
13-03	Cumulative Operation Hours 1	0~23	-	*4
13-04	Cumulative Operation Hours 2	0~65534 (Note4)	-	*4
13-05	Selection of Cumulative Operation Time	0: Cumulative time in power on	0	*1
		1: Cumulative time in operation		
13-06	Parameters Locked	0: Parameters are read-only except 13-06 and main frequency	2	*1
		1: User defined parameters		
		2: All Parameters are Writable		
13-07	Parameter Password Function	00000~65534	00000	Note2
13-08	Restore Factory Setting	0: No initialization	-	
		2: 2 wire initialization (60Hz)(220/440V/690V)		
		3: 3 wire initialization (60Hz)(220/440V/690V)		
		4: 2 wire initialization (50Hz)(230/415V)		
		5: 3 wire initialization (50Hz)(230/415V)		
		6: 2 wire initialization (50Hz)(200/380V/575V)		
		7: 3 wire initialization		

Group 13: Maintenance Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		(50Hz)(200/380V/575V)		
		8: PLC initialization		
		9: 2 wire Initialization (60Hz)(230/460V)		
		10: 3 wire Initialization (60Hz)(230/460V)		
		11: 2 wire Initialization (60Hz)(230/400V)		
		12: 3 wire Initialization (60Hz)(230/400V)		
		13: 2 wire Initialization (50Hz)(230/400V)		
		14: 3 wire Initialization (50Hz)(230/400V)		
		15: 2 wire Initialization (50Hz)(220/380V) (Note4)		
		16: 3 wire Initialization (50Hz)(220/380V) (Note4)		
13-09	Fault History Clearance Function	0: No Clearing Fault History 1: Clear Fault History	0	*1
13-10	Reserved			
13-11	Reserved			
13-12	PG Card Id	0~255	0	*5
13-13	PG Card Ver.	0.00~9.99	-	*5
13-14	Fault Storage Selections	0: Fault Messages of Auto Restart are not saved.	0	
		1: Fault Messages of Auto Restart are saved.		
13-15 ~ 13-20	Reserved			
13-21	Last time Fault History	Exhibit Last time Fault History	-	Note1
13-22	Previous two Fault History	Exhibit Previous two Fault History	-	Note1
13-23	Previous three Fault History	Exhibit Previous three Fault History	-	Note1
13-24	Previous four Fault History	Exhibit Previous four Fault History	-	Note1

Group 13: Maintenance Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
13-25	Previous five Fault History	Exhibit Previous five Fault History	-	Note1
13-26	Previous six Fault History	Exhibit Previous six Fault History	-	Note1
13-27	Previous seven Fault History	Exhibit Previous seven Fault History	-	Note1
13-28	Previous eight Fault History	Exhibit Previous eight Fault History	-	Note1
13-29	Previous night Fault History	Exhibit Previous night Fault History	-	Note1
13-30	Previous ten Fault History	Exhibit Previous ten Fault History	-	Note1
13-31	Previous eleven Fault History	Exhibit Previous eleven Fault History	-	Note1
13-32	Previous twelve Fault History	Exhibit Previous twelve Fault History	-	Note1
13-33	Previous thirteen Fault History	Exhibit Previous thirteen Fault History	-	Note1
13-34	Previous fourteen Fault History	Exhibit Previous fourteen Fault History	-	Note1
13-35	Previous fifteen Fault History	Exhibit Previous fifteen Fault History	-	Note1
13-36	Previous sixteen Fault History	Exhibit Previous sixteen Fault History	-	Note1
13-37	Previous seventeen Fault History	Exhibit Previous seventeen Fault History	-	Note1
13-38	Previous eighteen Fault History	Exhibit Previous eighteen Fault History	-	Note1
13-39	Previous nineteen Fault History	Exhibit Previous nineteen Fault History	-	Note1
13-40	Previous twenty Fault History	Exhibit Previous twenty Fault History	-	Note1

Group 13: Maintenance Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
13-41	Previous twenty one Fault History	Exhibit Previous twenty one Fault History	-	Note1
13-42	Previous twenty two Fault History	Exhibit Previous twenty two Fault History	-	Note1
13-43	Previous twenty three Fault History	Exhibit Previous twenty three Fault History	-	Note1
13-44	Previous twenty four Fault History	Exhibit Previous twenty four Fault History	-	Note1
13-45	Previous twenty five Fault History	Exhibit Previous twenty five Fault History	-	Note1
13-46	Previous twenty six Fault History	Exhibit Previous twenty six Fault History	-	Note1
13-47	Previous twenty seven Fault History	Exhibit Previous twenty seven Fault History	-	Note1
13-48	Previous twenty eight Fault History	Exhibit Previous twenty eight Fault History	-	Note1
13-49	Previous twenty nine Fault History	Exhibit Previous twenty nine Fault History	-	Note1
13-50	Previous thirty Fault History	Exhibit Previous thirty Fault History	-	Note1
13-51	Cooling fan cumulative operation time	0~99999	0	
13-52	Cooling fan life detection percentage	0~150	0	
13-53	IGBT life detection percentage	0~150	0	

Note: Main frequency setting is 12-16 in LCD. It's equal to Frequency Setting of Speed-Stage 0 (05-01)

Group 14: PLC Setting Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
14-00	T1 Set Value 1	0~9999	0	Note6
14-01	T1 Set Value 2 (Mode 7)	0~9999	0	Note6
14-02	T2 Set Value 1	0~9999	0	Note6
14-03	T2 Set Value 2 (Mode 7)	0~9999	0	Note6
14-04	T3 Set Value 1	0~9999	0	Note6
14-05	T3 Set Value 2 (Mode 7)	0~9999	0	Note6
14-06	T4 Set Value 1	0~9999	0	Note6
14-07	T4 Set Value 2 (Mode 7)	0~9999	0	Note6
14-08	T5 Set Value 1	0~9999	0	Note6
14-09	T5 Set Value 2 (Mode 7)	0~9999	0	Note6
14-10	T6 Set Value 1	0~9999	0	Note6
14-11	T6 Set Value 2 (Mode 7)	0~9999	0	Note6
14-12	T7 Set Value 1	0~9999	0	Note6
14-13	T7 Set Value 2 (Mode 7)	0~9999	0	Note6
14-14	T8 Set Value 1	0~9999	0	Note6
14-15	T8 Set Value 2 (Mode 7)	0~9999	0	Note6
14-16	C1 Set Value	0~65534 (Note4)	0	Note6
14-17	C2 Set Value	0~65534 (Note4)	0	Note6
14-18	C3 Set Value	0~65534 (Note4)	0	Note6
14-19	C4 Set Value	0~65534 (Note4)	0	Note6
14-20	C5 Set Value	0~65534 (Note4)	0	Note6
14-21	C6 Set Value	0~65534 (Note4)	0	Note6
14-22	C7 Set Value	0~65534 (Note4)	0	Note6
14-23	C8 Set Value	0~65534 (Note4)	0	Note6
14-24	AS1 Set Value 1	0~65534 (Note4)	0	Note6
14-25	AS1 Set Value 2	0~65534 (Note4)	0	Note6
14-26	AS1 Set Value 3	0~65534 (Note4)	0	Note6
14-27	AS2 Set Value 1	0~65534 (Note4)	0	Note6
14-28	AS2 Set Value 2	0~65534 (Note4)	0	Note6
14-29	AS2 Set Value 3	0~65534 (Note4)	0	Note6
14-30	AS3 Set Value 1	0~65534 (Note4)	0	Note6
14-31	AS3 Set Value 2	0~65534 (Note4)	0	Note6
14-32	AS3 Set Value 3	0~65534 (Note4)	0	Note6
14-33	AS4 Set Value 1	0~65534 (Note4)	0	Note6
14-34	AS4 Set Value 2	0~65534 (Note4)	0	Note6
14-35	AS4 Set Value 3	0~65534 (Note4)	0	Note6
14-36	MD1 Set Value 1	0~65534 (Note4)	1	Note6
14-37	MD1 Set Value 2	0~65534 (Note4)	1	Note6
14-38	MD1 Set Value 3	0~65534 (Note4)	1	Note6
14-39	MD2 Set Value 1	0~65534 (Note4)	1	Note6
14-40	MD2 Set Value 2	0~65534 (Note4)	1	Note6
14-41	MD2 Set Value 3	0~65534 (Note4)	1	Note6
14-42	MD3 Set Value 1	0~65534 (Note4)	1	Note6
14-43	MD3 Set Value 2	0~65534 (Note4)	1	Note6
14-44	MD3 Set Value 3	0~65534 (Note4)	1	Note6
14-45	MD4 Set Value 1	0~65534 (Note4)	1	Note6
14-46	MD4 Set Value 2	0~65534 (Note4)	1	Note6
14-47	MD4 Set Value 3	0~65534 (Note4)	1	Note6

Group 15: PLC Monitoring Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
15-00	T1 Current Value1	0~9999	0	
15-01	T1 Current Value 2 (Mode7)	0~9999	0	
15-02	T2 Current Value 1	0~9999	0	
15-03	T2 Current Value 2 (Mode7)	0~9999	0	
15-04	T3 Current Value 1	0~9999	0	
15-05	T3 Current Value 2 (Mode7)	0~9999	0	
15-06	T4 Current Value 1	0~9999	0	
15-07	T4 Current Value 2 (Mode7)	0~9999	0	
15-08	T5 Current Value 1	0~9999	0	
15-09	T5 Current Value 2 (Mode7)	0~9999	0	
15-10	T6 Current Value 1	0~9999	0	
15-11	T6 Current Value 2 (Mode7)	0~9999	0	
15-12	T7 Current Value 1	0~9999	0	
15-13	T7 Current Value 2 (Mode7)	0~9999	0	
15-14	T8 Current Value 1	0~9999	0	
15-15	T8 Current Value 2 (Mode7)	0~9999	0	
15-16	C1 Current Value	0~65534 (Note4)	0	
15-17	C2 Current Value	0~65534 (Note4)	0	
15-18	C3 Current Value	0~65534 (Note4)	0	
15-19	C4 Current Value	0~65534 (Note4)	0	
15-20	C5 Current Value	0~65534 (Note4)	0	
15-21	C6 Current Value	0~65534 (Note4)	0	
15-22	C7 Current Value	0~65534 (Note4)	0	
15-23	C8 Current Value	0~65534 (Note4)	0	
15-24	AS1 Current Value	0~65534 (Note4)	0	
15-25	AS2 Current Value	0~65534 (Note4)	0	
15-26	AS3 Current Value	0~65534 (Note4)	0	
15-27	AS4 Current Value	0~65534 (Note4)	0	
15-28	MD1 Current Value	0~65534 (Note4)	0	
15-29	MD2 Current Value	0~65534 (Note4)	0	
15-30	MD3 Current Value	0~65534 (Note4)	0	
15-31	MD4 Current Value	0~65534 (Note4)	0	
15-32	TD Current Value	0~65534 (Note4)	0	

Group 16: LCD Function Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
16-00	Main Screen Monitoring	5~82 (Note4) when using LCD to operate, the monitored item displays in the	16	*1

Group 16: LCD Function Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		first line. (default is frequency command)		
16-01	Sub-Screen Monitoring 1	5~82 (Note4) when using LCD to operate, the monitored item displays in the second line. (default is output frequency)	17	*1
16-02	Sub-Screen Monitoring 2	5~82 (Note4) when using LCD to operate, the monitored item displays in the third line. (default is output current)	18	*1
16-03	Display Unit	0~39999 Determine the display way and unit of frequency command 0: Frequency display unit is 0.01Hz 1: Frequency display unit is 0.01% 2: Frequency display unit is rpm. 3~39: Reserved 40~9999: Users specify the format, Input 0XXXX represents the display of XXXX at 100%. 10001~19999: Users specify the format; Input 1XXXX represents the display of XXX.X at 100%. 20001~29999: Users specify the format, Input 2XXXX	0	

Group 16: LCD Function Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		represents the display of XX.XX at 100%.		
		30001~39999: Users specify the format, Input 3XXXX represents the display of X.XXX at 100%.		
16-04	Engineering Unit	0: without using engineering unit 1: FPM 2: CFM 3: PSI 4: GPH 5: GPM 6: IN 7: FT 8: /s 9: /m 10: /h 11: °F 12: inW 13: HP 14: m/s 15: MPM 16: CMM 17: W 18: KW 19: m 20: °C 21: RPM 22: Bar 23: Pa 24: KPa 25: PRS 26: SPM	0	
16-05	LCD Backlight	0~7	5	*1
16-06	Reserved			
16-07	Copy Function Selection	0: Do not copy parameters 1: Read inverter parameters and save to the operator. 2: Write the operator parameters to inverter. 3: Compare parameters of	0	

Group 16: LCD Function Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		inverter and operator.		
16-08	Selection of Allowing Reading	0: Do not allow to read inverter parameters and save to the operator. 1: Allow to read inverter parameters and save to the operator.	0	
16-09	Selection of Operator Removed (LCD)	0: Keep operating when LCD operator is removed. 1: Display fault when LCD operator is removed	0	*1
16-10	RTC Time Display Setting	0: Hide 1: Display	0	Note8
16-11	RTC Date Setting	12.01.01 ~ 99.12.31	12.01.01	Note8
16-12	RTC Time Setting	00:00 ~ 23:59	00:00	Note8
16-13	RTC Timer Function	0: Disable 1: Enable 2: Set by DI	0	Note8
16-14	P1 Start Time	00:00 ~ 23:59	08:00	Note8
16-15	P1 Stop Time	00:00 ~ 23:59	18:00	Note8
16-16	P1 Start Date	1:Mon 2:Tue 3:Wed 4:Thu	1	Note8
16-17	P1 Stop Date	5:Fri 6:Sat 7:Sun	5	Note8
16-18	P2 Start Time	00:00 ~ 23:59	08:00	Note8
16-19	P2 Stop Time	00:00 ~ 23:59	18:00	Note8
16-20	P2 Start Date	1:Mon 2:Tue 3:Wed 4:Thu	1	Note8
16-21	P2 Stop Date	5:Fri 6:Sat 7:Sun	5	Note8
16-22	P3 Start Time	00:00 ~ 23:59	08:00	Note8
16-23	P3 Stop Time	00:00 ~ 23:59	18:00	Note8
16-24	P3 Start Date	1:Mon 2:Tue 3:Wed 4:Thu	1	Note8
16-25	P3 Stop Date	5:Fri 6:Sat 7:Sun	5	Note8

Group 16: LCD Function Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
16-26	P4 Start Time	00:00 ~ 23:59	08:00	Note8
16-27	P4 Stop Time	00:00 ~ 23:59	18:00	Note8
16-28	P4 Start Date	1:Mon 2:Tue 3:Wed 4:Thu	1	Note8
16-29	P4 Stop Date	5:Fri 6:Sat 7:Sun	5	Note8
16-30	Selection of RTC Offset	0: Disable 1: Enable 2: Set by DI	0	Note8
16-31	RTC Offset Time Setting	00:00 ~ 23:59	00:00	Note8
16-32	Source of Timer 1	0: None, 1:P1, 2:P2, 3:P1+P2	1	Note8
16-33	Source of Timer 2	4:P3, 5:P1+P3, 6:P2+P3,	2	Note8
16-34	Source of Timer 3	7:P1+P2+P3, 8:P4, 9:P1+P4, 10:P2+P4, 11:P1+P2+P4 12:P3+P4 13:P1+P3+P4, 14:P2+P3+P4 15:P1+P2+P3+P4, 16:Off, 17:Off+P1 18:Off+P2, 19:Off+P1+P2 20:Off+P3, 21:Off+P1+P3 22:Off+P2+P3 23:Off+P1+P2+P3 24:Off+P4 25:Off+P1+P4 26:Off+P2+P4 27:Off+P1+P2+P4 28:Off+P3+P4 29:Off+P1+P3+P4 30:Off+P2+P3+P4 31:Off+P1+P2+P3+P4	4	Note8
16-35	Source of Timer 4		8	Note8
16-36	Selection of RTC Speed	0: Off 1: By Timer 1 2: By Timer 2 3: By Timer 3 4: By Timer 4 5: By Timer 1+2	0	Note8
16-37		xxx0b: RTC Run1	0000b	Note8

Group 16: LCD Function Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
	Selection of RTC Rotation Direction	Forward Rotation		
		xxx1b: RTC Run1 Reverse Rotation		
		xx0xb: RTC Run2 Forward Rotation		
		xx1xb: RTC Run2 Reverse Rotation		
		x0xxb: RTC Run3 Forward Rotation		
		x1xxb: RTC Run3 Reverse Rotation		
		0xxxb: RTC Run4 Forward Rotation		
		1xxxb: RTC Run4 Reverse Rotation		

Group 17: Automatic Tuning Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
17-00	Mode Selection of Automatic Tuning*	0: Rotation Auto-tuning	VF:2 VF+PG :2 SLV:6 SV:6 SLV2:6	
		1: Static Auto-tuning		
		2: Stator Resistance Measurement		
		3: Reserved		
		4: Loop Tuning		
		5: Rotation Auto-tuning Combination (item: 4+2+0)		
		6: Static Auto-tuning Combination (item: 4+2+1)		
17-01	Motor Rated Output Power	0.00~600.00	KVA	
17-02	Motor Rated Current	0.1~1200.0	KVA	

Group 17: Automatic Tuning Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
17-03	Motor Rated Voltage	200V: 50.0~240.0	-	
		400V: 100.0~480.0	-	
		575V: 150.0~670.0	-	
		690V: 180.0~804.0	-	
17-04	Motor Rated Frequency	4.8~599.0	50.0/60.0	
17-05	Motor Rated Speed	0~24000	KVA	
17-06	Pole Number of Motor	2~16 (Even)	4	
17-07	PG Pulse Number	0~60000	1024	
17-08	Motor no-load Voltage	200V: 50~240	-	
		400V: 100~480		
		575V: 420~600		
		690V: 504~720		
17-09	Motor Excitation Current	0.01~600.00	-	▪1
17-10	Automatic Tuning Start	0: Disable	0	
		1: Enable		
17-11	Error History of Automatic Tuning	0: No error	0	
		1: Motor data error		
		2: Stator resistance tuning error		
		3: Leakage induction tuning error		
		4: Rotor resistance tuning error		
		5: Mutual induction tuning error		
		6: Encoder error		
		7: DT Error		
		8: Motor's acceleration error		
		9: Warning		
17-12	Proportion of Motor Leakage Inductance	0.1~15.0	3.4	
17-13	Motor Slip Frequency	0.10~20.00	1.00	
17-14	Selection of Rotation Auto-tuning	0: VF Rotation Auto-tuning	0	
		1: Vector Rotation Auto-tuning		

KVA: The default value of this parameter will be changed by different capacities of inverter.

*: The default value is 1 in VF/ VF+PG mode while the default value is 0 in SLV/ SV/ SLV2 mode.

*: It is suggested that HD/ ND mode (00-27) and application presets (00-32) be selected first before motor performs auto-tuning.

Note: The value of mode selection of automatic tuning is 6 (Static Auto-tuning Combination). When do auto-tuning with no-load motor, it suggest select 17-00=5 (Rotation Auto-tuning Combination)

▪1: It can be set when 17-00=1, 2, 6.

Group 18: Slip Compensation Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
18-00	Slip Compensation Gain at Low Speed.	0.00~2.50	VF:0.00	*1
			SLV*	
18-01	Slip Compensation Gain at High Speed.	-1.00~1.00	0.0	*1
18-02	Slip Compensation Limit	0~250	200	
18-03	Slip Compensation Filter Time	0.0~10.0	1.0	
18-04	Regenerative Slip Compensation Selection	0: Disable	0	
		1: Enable		
18-05	FOC Delay Time	1~1000	100	
18-06	FOC Gain	0.00~2.00	0.1	

*: Refer to the attachment 1 in our instruction manual.

Group 19: Wobble Frequency Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
19-00	Center Frequency of Wobble Frequency	5.00~100.00	20.00	*1
19-01	Amplitude of Wobble Frequency	0.1~20.0	10.0	*1
19-02	Jump Frequency of Wobble Frequency	0.0~50.0	0.0	*1
19-03	Jump Time of Wobble Frequency	0~50	0	*1

Group 19: Wobble Frequency Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
19-04	Wobble Frequency Cycle	0.0~1000.0	10.0	*1
19-05	Wobble Frequency Ratio	0.1~10.0	1.0	*1
19-06	Upper Offset Amplitude of Wobble Frequency	0.0~20.0	0.0	*1
19-07	Lower Offset Amplitude of Wobble Frequency	0.0~20.0	0.0	*1

Group 20: Speed Control Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
20-00	ASR Gain 1	0.00~250.00	-	*1
20-01	ASR Integral Time 1	0.001~10.000	-	*1
20-02	ASR Gain 2	0.00~250.00	-	*1
20-03	ASR Integral Time 2	0.001~10.000	-	*1
20-04	ASR Integral Time Limit	0~300	200	
20-05	ASR Positive Limit	0.1 ~ 10.0	5.0	
20-06	ASR Negative Limit	0.1 ~ 10.0	1.0	
20-07	Selection of Acceleration and Deceleration of P/PI	0: PI speed control will be enabled only in constant speed. For the speed acceleration and deceleration, only use P control. 1: Speed control is enabled either in acceleration or deceleration.	0	
20-08	ASR Delay Time	0.000~0.500	0.004	
20-09	Speed Observer Proportional (P) Gain1	0.00~2.55	0.61	*1
20-10	Speed Observer Integral(I) Time 1	0.01~10.00	0.05	*1
20-11	Speed Observer Proportional (P) Gain2	0.00~2.55	0.61	*1
20-12	Speed Observer Integral(I) Time 2	0.01~10.00	0.06	*1
20-13	Low-pass Filter Time Constant	1~1000	4	

Group 20: Speed Control Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
	of Speed Feedback 1			
20-14	Low-pass Filter Time Constant of Speed Feedback 2	1~1000	30	
20-15	ASR Gain Change Frequency 1	0.0~599.0	4.0	
20-16	ASR Gain Change Frequency 2	0.0~599.0	8.0	
20-17	Torque Compensation Gain at Low Speed	0.00~2.50	1.00	*1
20-18	Torque Compensation Gain at High Speed	-10~10	0	*1
20-19	Over Speed (OS) Selection	0: Deceleration to stop 1: Coast to stop 2: Continue to operate	1	
20-20	Over Speed (OS) Detection Level	0~120	115	
20-21	Over Speed (OS) Detection Time	0.0~2.0	0.5	
20-22	Speed Deviation (DEV) Selection	0: Deceleration to Stop 1: Coast to Stop 2: Continue to Operate	2	
20-23	Speed Deviation (DEV) Detection Level	0~50	10	
20-24	Speed Deviation (DEV) Detection Time	0.0~10.0	0.5	
20-25	Selection of PG Open	0: Deceleration to Stop 1: Coast to Stop 2: Continue to Operate	1	
20-26	Detection Time of PG Open	0.0~10.0	2.0	
20-27	PG Pulse Number	0~9999	1024	
20-28		0: Forward as Counter -	0	

Group 20: Speed Control Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
	Selection of PG Rotation Direction	Clockwise Rotation 1: Forward as Clockwise Rotation		
20-29	PG Pulse Dividing Ratio	001~132	1	
20-30	PG Gear Ratio 1	1~1000	1	
20-31	PG Gear Ratio 2	1~1000	1	
20-32	Selection of Specific Encoder	0: None 1: Resolver	0	
20-33	Detection Level at Constant Speed	0.1~5.0	1.0	*1
20-34	Compensation Gain of Derating	0~25600	0	*1
20-35	Compensation Time of Derating	0~30000	100	*1
20-36 ~ 20-42	Reserved			
20-43	MPG Speed Magnification Calculation	1~500	20	Note5
20-44	MPG Speed Command Limit	0.1~30.0	6.0	Note5

Group 21: Torque And Position Control Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
21-00	Torque Control Selection	0: Speed Control 1: Torque Control	0	
21-01	Filter Time of Torque Reference	0~1000	0	
21-02	Speed Limit Selection	0: According to AI Input 1: According to the Set Value of 21-03 2: According to communication position input (2502H)	0	
21-03	Speed Limit Value	-120~120	0	*1
21-04	Speed Limit Bias	0~120	10	*1

Group 21: Torque And Position Control Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
21-05	Positive Torque Limit	0~300	*	
21-06	Negative Torque Limit	0~300	*	
21-07	Forward Regenerative Torque Limit	0~300	*	
21-08	Reversal Regenerative Torque Limit	0~300	*	
21-09	Maximum Frequency of Position Control	0.1~100.0	20.0	
21-10	The Command of Rotation Cycle Number of Section 0	-9999 ~ 9999	0	
21-11	The Command of the Pulse Number of Section 0	-9999 ~ 9999	0	
21-12	The Command of Rotation Cycle Number of Section 1	-9999 ~ 9999	0	
21-13	The Command of the Pulse Number of Section 1	-9999 ~ 9999	0	
21-14	The Command of Rotation Cycle Number of Section 2	-9999 ~ 9999	0	
21-15	The Command of the Pulse Number of Section 2	-9999 ~ 9999	0	
21-16	The Command of Rotation Cycle Number of Section 3	-9999 ~ 9999	0	
21-17	The Command of the Pulse Number of Section 3	-9999 ~ 9999	0	
21-18	The Command of Rotation Cycle Number of Section 4	-9999 ~ 9999	0	
21-19	The Command of the Pulse Number of Section 4	-9999 ~ 9999	0	

Group 21: Torque And Position Control Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
21-20	The Command of Rotation Cycle Number of Section 5	-9999 ~ 9999	0	
21-21	The Command of the Pulse Number of Section 5	-9999 ~ 9999	0	
21-22	The Command of Rotation Cycle Number of Section 6	-9999 ~ 9999	0	
21-23	The Command of the Pulse Number of Section 6	-9999 ~ 9999	0	
21-24	The Command of Rotation Cycle Number of Section 7	-9999 ~ 9999	0	
21-25	The Command of the Pulse Number of Section 7	-9999 ~ 9999	0	
21-26	The Command of the Pulse Number of Section 8	-9999 ~ 9999	0	
21-27	The Command of Rotation Cycle Number of Section 8	-9999 ~ 9999	0	
21-28	The Command of the Pulse Number of Section 9	-9999 ~ 9999	0	
21-29	The Command of Rotation Cycle Number of Section 9	-9999 ~ 9999	0	
21-30	The Command of Rotation Cycle Number of Section 10	-9999 ~ 9999	0	
21-31	The Command of the Pulse Number of Section 10	-9999 ~ 9999	0	
21-32	The Command of Rotation Cycle Number of Section 11	-9999 ~ 9999	0	
21-33	The Command of the Pulse Number of Section 11	-9999 ~ 9999	0	

Group 21: Torque And Position Control Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
21-34	The Command of Rotation Cycle Number of Section 12	-9999 ~ 9999	0	
21-35	The Command of the Pulse Number of Section 12	-9999 ~ 9999	0	
21-36	The Command of Rotation Cycle Number of Section 13	-9999 ~ 9999	0	
21-37	The Command of the Pulse Number of Section 13	-9999 ~ 9999	0	
21-38	The Command of Rotation Cycle Number of Section 14	-9999 ~ 9999	0	
21-39	The Command of the Pulse Number of Section 14	-9999 ~ 9999	0	
21-40	The Command of Rotation Cycle Number of Section 15	-9999 ~ 9999	0	
21-41	The Command of the Pulse Number of Section 15	-9999 ~ 9999	0	
21-42	Pos. Mode Sel	0: Switch to position mode when output frequency < 01-08. 1: Z Phase Locked Function	0	
21-43	Offset Angle	0 ~ 9999	0	

* Refer to the attachment 1 in our instruction manual.

Group 22: PM Motor Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
22-00	PM Motor Rated Power	0.00~600.00	KVA	
22-01	PM Motor Rated Voltage	200V: 50.0~240.0 400V: 100.0~480.0	220.0 440.0	Note7

Group 22: PM Motor Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
22-02	PM Motor Rated Current	25%~200% inverter's rated current	KVA	
22-03	PM Motor's Pole Number	2~96	6	
22-04	PM Motor's Rotation Speed	6~60000	1500	
22-05	PM Motor's Maximum Rotation Speed	6~60000	1500	
22-06	PM Motor Rated Frequency	4.8~599.0	75.0	
22-07	PM Type Selection	0:SPM 1:IPM	0	Note7
22-08	PM Encoder Type	0: TAMAGAWA Non Wire-Saving Encoder 1: TAMAGAWA Wire-Saving Encoder 2: SUMTAK Wire-Saving Encoder 3: General Incremental Encoder 4: Sine Wave	0	
22-09	Reserved			
22-10	PM SLV Start Current	20% ~ 200% Motor Rated Current	80	
22-11	I/F Mode Start Frequency Switching Point	10 ~ 100 (Note7)	10	
22-12	Reserved (Note4)			
22-13				
22-14	Armature Resistance of PM Motor	0.001 ~ 30.000	1.000	
22-15	D-axis Inductance of PM Motor	0.01 ~ 300.00	10.00	
22-16	Q-axis Inductance of PM Motor	0.01 ~ 300.00	10.00	
22-17	PM No-Load Voltage	200V: 0~250 400V: 0~500	150 300	Note7
22-18	Flux-Weakening Limit	0~120	90	
22-19	Reserved			
22-20	Offset Angle of the Magnetic Pole and PG Origin	0~360	0	*4

Group 22: PM Motor Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
22-21	PM Motor Tuning	0: PM Motor Tuning is not Active.	0	
		1: Parameter Auto-tune (for PMSLV Tuning)		
		2: Magnetic Pole Alignment and Loop Adjustment (for PMSV Tuning)		
		3: Rotation Auto-tuning		
22-22	Fault History of PM Motor Tuning	0. No Error	0	*4
		1. Static Magnetic Alignment Fault		
		2. Without PG Option Card		
		3. Rotation Pole Alignment is Forced to Stop		
		4. Error of Encoder Feedback Direction		
		5. Loop Adjustment is Time out		
		6. Encoder Error		
		7. Other Errors of Motor Tuning		
		8. Current Abnormity Occurs when Aligning Rotation Magnetic Pole.		
		9. Current Abnormity Occurs while Loop Adjustment.		
		10.Reserved		
		11. Stator Resistance Measurement Timeout		
22-23	Reserved			
22-24	Reserved			
22-25	Detection Mode Selection of	0: Upon the angle before stopping	1 (Note7)	

Group 22: PM Motor Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
	Initial Magnetic Pole	1: Mode 1		
		2: Mode 2		
22-26	High speed control ratio enable (For PMSLV)	0: Low Speed Open Loop Control 1: Low Speed High Frequency Estimate Control 2: Full Closed Loop Control	0	
22-27	Voltage Command of Mode 2	5~120 (Note7) (22-25=2 or 22-26=1 is enabled)	50	
22-28	Divider Ratio of Mode 2	0~8 (Note7) (22-25=2 or 22-26=1 is enabled)	2	
22-29	Flux-weakening Voltage Command Restriction	80~110 (Note7) (relative to parameter 22-18)	100	
22-30	SPM Speed Estimation Gain (Note7)	1~150	85	Note4
22-31	SPM Speed Estimation Filter Value (Note7)	1~2000	60	Note4
22-32	MTPA Selection	0: Disabled 1: Mode 1 2: Mode 2 3: Mode 3	0	Note7
22-33	MTPA Gain	000~400%	200	Note7
22-34	IPM Estimator Gain	1~300.0	180	Note7
22-36	PM Motor Type Selection	0: Normal PM motor	0	Note 8
		1: DVEN Motor		
22-37	PM Motor Horse Power & RPM	1.0.75KW 1800RPM	0	Note 8
		4.1.5KW 1800RPM		
		7.2.2KW 1800RPM		
		10.3.7KW 1800RPM		
		13.5.5KW 1800RPM		
		16.7.5KW 1800RPM		
		19.11KW 1800RPM		
		22.15KW 1800RPM		

Group 22: PM Motor Parameters				
Code	Parameter Name	Setting Range	Default	Attribute
		25.18.5KW 1800RPM		
		28.22KW 1800RPM		
22-38	Open and closed loop switching point frequency width (%)	1.0~40.0	5.0	
22-39	Preliminary DC injection time	0~20.00	0.10	
22-40	High frequency angle finding time	0.01~1.00	0.01	
22-41	PM stop method	0: Decelerate or stop below 22-11 and brake directly 1: Decelerate or stop below 22-11 and open loop stop	0	
22-42	Fully closed loop low speed Correction constant Ka	64~8192	200	
22-43	Fully closed loop high speed Correction constant Kb	64~8192	500	
22-44	Fully closed loop high speed Position low pass filter	1~256	4	
22-45	Flux linkage coefficient	0.001~10.000	0.700	
22-52	Low speed coefficient	3000~60000	4000	
22-53	Low speed velocity integral filtering time	1~256	32	
22-54	Motor voltage standard	50.0~600.0	300.0	
22-55	Full closed loop high speed speed filter coefficient	1~256	32	
22-56	Full closed loop low speed speed filter coefficient	1~256	64	

Chapter 4 Troubleshooting and Fault Diagnostics

4.1 General

Inverter fault detection and early warning / self-diagnosis function. When the inverter detects a fault, a fault message is displayed on the keypad. The fault contact output energizes and the motor will coast to stop (The stop method can be selected for specific faults).

When the inverter detects a warning / self-diagnostics error, the digital operator will display a warning or self-diagnostic code, the fault output does not energize in this case. Once the warning is removed, the system will automatically return to its original state.

4.2 Fault Detection Function

When a fault occurs, please refer to Table 4.1 for possible causes and take appropriate measures.

Use one of the following methods to restart:

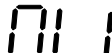
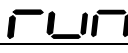
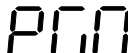
1. Set one of multi-function digital input terminals (03-00, 03-07) to 17 (Fault reset); activate input
2. Press the reset button on the keypad.
3. Power down inverter wait until keypad goes blank and power-up the inverter again.

When a fault occurs, the fault message is stored in the fault history (see group 12 parameters).

Table 4.1 Fault information and possible solutions

LED display	Possible solutions
OC over current	• Extend acceleration / deceleration time. • Check the motor wiring. • Disconnect motor and try running inverter.
	
OCA over current	• Set the longer acceleration time • Change to bigger capacity of inverter • Examine motor • Check the wire • Replace IGBT module
	

LED display	Possible solutions
OCC over current	• Change to bigger capacity of inverter • Add reactor to power source
	
OCd over current	• Set the longer acceleration time
	
SC short circuit	• Check the motor wiring. • Disconnect motor and try running inverter.
	
GF Ground fault	• Replace motor. • Check the motor wiring. • Disconnect motor and try running inverter. • Check resistance between cables and ground. • Reduce carrier frequency.
	
OV Over voltage	• Increase deceleration time • Reduce input voltage to comply with the input voltage requirements or install an AC line reactor to lower the input voltage. • Remove the power factor correction capacitor. • Use dynamic braking unit. • Replace braking transistor or resistor. • Adjust speed search parameters.
	
UV Under voltage	• Check the input voltage. • Check input wiring. • Increase acceleration time. • Check power source • Replace pre-charge contactor • Replace control board or complete inverter.
	
IPL input phase loss	• Check input wiring / faster screws. • Check power supply.
	
OPL output phase loss	• Check output wiring / faster screws. • Check motor & inverter rating.
	

LED display	Possible solutions
OH1 Heatsink overheat	• Install fan or AC to cool surroundings. • Replace cooling fan. • Reduce carrier frequency. • Reduce load / Measure output current
	
OL1 Motor overload	• Check V/f curve. • Check motor rated current • Check and reduce motor load, check and operation duty cycle.
	
OL2 Inverter overload	• Check V/f curve. • Replace inverter with larger rating. • Check and reduce motor load, check and operation duty cycle.
	
OT Over torque detection	• Check over torque detection parameters (08-15 / 08-16). • Check and reduce motor load, check and operation duty cycle.
	
UT Under torque detection	• Check under torque detection parameters (08-19 / 08-20). • Check load / application.
	
run Switch for Motor1/Motor2	• Revise the sequence control and switch motor in top time.
	
OS Over speed	• Check ASR parameters group 21. • Check PG parameters • Check overspeed parameters 20-20/20-12.
	
PGO PG Open circuit	• Check PG wiring. • Check PG power-supply. • Make sure brake is released.
	
DEV Speed deviation	• Check load • Make sure brake is released. • Check PG wiring. • Check PG parameters 20-23/20-24. • Increase Acceleration / deceleration time.
	

LED display	Possible solutions
CE communication error	• Check connection • Check host computer / software.
CE	
FB PID feedback loss	• Check feedback wiring • Replace feedback sensor.
Fb	
STO Safety switch	• Check F1 and F2 connection. (For standard H & C type) • Check SF1 / SF2 and SG connection (For enhanced E & G type) • Check if 08-30 =0 and 03-00~03-07=58
STO2 Safety switch	
StO2	
SS1 Digital input Stop command	• Check if 08-30 =0 and 03-00~03-07=58
SS1	
EF0 External fault 0	• Reset Modbus communication 0x2501 bit 2= "1"
EF0	
EF1 External fault (S1)	• Multi-function input function set incorrectly. • Check wiring
EF1	
EF2 External fault (S2)	
EF2	
EF3 External fault (S3)	
EF3	
EF4 External fault (S4)	
EF4	
EF5 External fault (S5)	

LED display	Possible solutions
EF5	
EF6 External fault (S6)	
EF6	
EF7 External fault (S7)	
EF7	
EF8 External fault (S8)	
EF8	• Perform rotational or stationary auto-tune • Increase minimum output frequency (01-08)
CF07 Motor control fault	
CF07	• Increase the value of 22-10 and 22-23 properly. • Re auto-tune (22-21) • Check if the load is too heavy to raise torque output limit.
CF08 Motor control fault	
CF08	• Check IGBTs • Check for short circuit at inverter output. • Replace inverter.
FU fuse open	
Fu	• Disconnect the operator and then reconnect. • Replace the control board
CF00 Operator Communication Error	
CF00	• Disconnect the operator and then reconnect. • Replace the control board
CF01 Operator Communication Error 2	
CF01	• Check current transformer signal and the voltage on the control board.
CTER CT Failure	
CTEr	• Check only use one kind of communication type.
CF20 Communication Failure	

LED display	Possible solutions
CF20	
Protection Failure	Remove digital input communication run command
PF	
External Overload	- Check external overload. - Reset external overload of digital input.
LOL	

4.3 Warning / Self-diagnosis Detection Function

When the inverter detects a warning, the keypad displays a warning code (flash).

Note: The fault contact output does not energize on a warning and the inverter continues operation. When the warning is no longer active the keypad will return to its original state.

When the inverter detected a programming error (for example two parameters contradict each other or are set to an invalid setting), the keypad displays a self-diagnostics code.

Note: The fault contact output does not energize on a self-diagnostics error. While a self-diagnostics code is active the inverter does not accept a run command until the programming error is corrected.

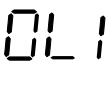
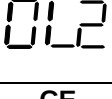
Note: When a warning or self-diagnostic error is active the warning or error code will flash on the keypad. When the RESET key is pressed, the warning message (flash) disappears and returns after 5 sec. If the warning or self-diagnostic error still exists.

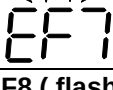
Refer to Table 4.2 for and overview, cause and corrective action for inverter warnings and self-diagnostic errors.

Table 4.2 warning / self-diagnosis and corrective actions

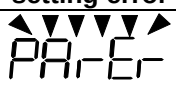
LED display	Corrective action
OV (flash) Over voltage	- Increase deceleration time - Reduce input voltage to comply with the input voltage requirements or install an AC line reactor to lower the input voltage. - Remove the power factor correction capacitor. - Use dynamic braking unit. - Replace braking transistor or resistor. - Adjust speed search parameters.
	
UV (flash) under voltage	- Check the input voltage. - Check input wiring. - Increase acceleration time. - Check power source - Replace pre-charge contactor - Replace control board or complete inverter.
	
OH1 Heatsink overheat	- Install fan or AC to cool surroundings. - Replace cooling fan. - Reduce carrier frequency. - Reduce load / Measure output current
	
OH2 (flash) Inverter over heating warning	- Multi-function input function set incorrectly. - Check wiring
	
OT (flash) over torque detection	- Check over torque detection parameters (08-15 / 08-16). - Check and reduce motor load, check and operation duty cycle.
	
UT (flash) under torque detection	- Check under torque detection parameters (08-19 / 08-20). - Check load / application.
	

LED display	Corrective action
bb1 (flash) External baseblock	- Multi-function input function set incorrectly. - Check wiring
	
bb2 (flash) External baseblock	
	
bb3 (flash) External baseblock	
	- Multi-function input function set incorrectly. - Check wiring
bb4 (flash) External baseblock	
	
bb5 (flash) External baseblock	
	
bb6 (flash) External baseblock	
	
bb7 (flash) External baseblock	
	
bb8 (flash) External baseblock	
	

LED display	Corrective action
OS (flash) Motor over speed	- Check ASR parameters group 21. - Check PG parameters - Check overspeed parameters 20-20/20-12.
	
PGO (flash) PG open circuit	- Check PG wiring. - Check PG power-supply. - Make sure brake is released.
	
DEV (flash) Speed deviation	- Check load - Make sure brake is released. - Check PG wiring. - Check PG parameters 20-23/20-24. - Increase Acceleration / deceleration time.
	
OL1 Motor overload	- Check V/f curve. - Check motor rated current - Check and reduce motor load, check and operation duty cycle.
	
OL2 Inverter overload	- Check V/f curve. - Replace inverter with larger rating. - Check and reduce motor load, check and operation duty cycle.
	
CE (flash) communication error	- Check connection - Check host computer / software.
	
CLA over current protection level A	Check load and duty cycle operation.
	
CLB over current protection level B	Check load and duty cycle operation.
	

LED display	Corrective action
Retry (flash) retry 	Warning disappears after automatic reset.
ES (flash) External emergency stop 	
EF1 (flash) External fault (S1) 	- Turn off run command, and remove external emergency stop command. - Multi-function input function set incorrectly. - Check wiring - Multi-function input function set incorrectly. - Check wiring
EF2 (flash) External fault (S2) 	
EF3 (flash) External fault (S3) 	
EF4 (flash) External fault (S4) 	
EF5 (flash) External fault (S5) 	
EF6 (flash) External fault (S6) 	
EF7 (flash) External fault (S7) 	
EF8 (flash)	

LED display	Corrective action
External fault (S8) 	Check run command wiring
EF9 (flash) error of forward/reversal rotation 	
SE01 Rang setting error 	Check parameter setting.
SE02 Digital input terminal error 	
SE03 V/f curve error 	Check V/F parameters
SE05 PID selection error 	
HPErr Model selection error 	- Check 10-00 and 10-01 - Check 10-29 and 10-25 - Check 10-29 and 10-03 - Check inverter capacity setting 13-00.
SE07 PG card error 	
SE08 PM Motor mode error 	- Install PG feedback card. - Check control mode. - Set right type for PM Encoder Type (22-08) and power on again. - Check control mode.
SE09 PI setting error 	

LED display	Corrective action
FB (flash) PID feedback breaking	• Check feedback wiring • Replace feedback sensor.
	
USP (flash) Unattended Start Protection	• Remove run command or reset inverter via multi-function digital input (03-00 to 03-07 = 17) or use the RESET key on the keypad to reset inverter. • Activate USP input and re-apply the power.
	
STP0 Zero Speed Stop Error	• Adjust frequency command
	
STP2 External Terminal Stop Error	• Remove the run command from external terminal
	
EnC Encoder Error	• Check encoder wiring • 17-07 PG pulse number setting is not corresponding to the encoder. • Replace the encoder.
	
RunEr Wrong running direction Error	• Revise the command among 11-00, jog and DI control to see if any difference
	
PArEr Parameter setting error	• Please refer to our instruction manual for correct setting
	
STP1 Direct start warning	• Remove the run command from the terminal first, and enabled later.
	
FirE Fire mode enabled	• Check the environment and confirm the fire

LED display	Corrective action
	status. If no fire, turn off the power and power on again.
AdCEr Voltage on C/B error	• Check the voltage on the control board.
	
EPErr EEPROM Save error	• Restore factory setting, then cut off the power and power on again. • If warning again, replace control board.
	
bdErr Control board error	• Replace the control board.
	
Parameter Lock	• Lifting the parameter lock key code, to enter the correct parameter for 13-07
	
Set password failed	• Enter the correct parameter for 13-07 to enable the parameter lock key
	
CYErr Capacitor error	• Replace the capacitor and ask the original dealer reset the counter in inverter
	
FILFE Fan life error	• Replace the fan and ask the original dealer reset the counter in inverter
	
ILIFE IGBT life error	• Replace the IGBT and ask the original dealer reset the counter in inverter
	

4.4 Auto-tuning Error

When a fault occurs during auto-tuning of a standard AC motor, the display will show the

“AtErr” fault and the motor stops. The fault information is displayed in parameter 17-11.

Note: The fault contact output does not energize with an auto-tuning fault. Refer to Table 4.3, for fault information during tuning, cause and corrective action.

Table 4.3 Auto-tuning fault and corrective actions

Error	Corrective action
01 Motor data input error.	• Check the motor tuning data (17-00 to 17-09). • Check inverter capacity
02 Motor lead to lead resistance R1 tuning error.	• Check the motor tuning data (17-00 to 17-09). • Check motor connection. • Disconnect motor load. • Check inverter current detection circuit and DCCTs. • Check motor installation.
03 Motor leakage inductance tuning error.	
04 Motor rotor resistance R2 tuning error.	
05 Motor mutual inductance Lm tuning error.	
07 Deadtime compensation detection error	
06 Motor encoder error	• Check motor rated current. • Check PG card grounding.
08 Motor acceleration error (Rotational type auto-tuning only).	• Increase acceleration time (00-14). • Disconnect motor load.
09 Other	• Check the motor tuning data (17-00 to 17-09). • Check motor connection.

Table 4.4 Auto-tuning fault and corrective actions for PM motor

Error	Corrective action
01 Magnetic pole alignment tuning failure (static).	• Check the motor tuning data (22-02). • Check inverter capacity
02 PG option missing.	• Install PG feedback card.
03 Magnetic pole alignment auto-tuning abort during rotational auto-tune	• Check for active protection functions preventing auto-tuning.
04 Timeout during magnetic pole alignment during rotational auto-tune.	• Check motor. • Check motor wiring. • Check brake released.
05 Circuit tuning time out.	• Check for active protection functions preventing auto-tuning.
06 Encoder error	• Check motor rated current. • Check PG card grounding.
07 Warning	• Check the motor tuning data (22-02). • Check motor connection.
08 Motor current out of range during magnetic pole alignment (rotational auto-tune).	• Check PG card wiring • Check motor connection.
09 Current out of range during circuit tuning.	• Check the motor tuning data (22-02). • Check inverter capacity
10 Magnetic pole alignment and circuit tuning failed.	• Retry magnetic pole alignment and circuit tuning.

4.5 PM motor Auto-tuning Error

When a fault occurs during auto-tuning of a PM motor, the display will show the “IPErr” fault and the motor stops. The fault information is displayed in parameter 22-18.

Note: The fault contact output does not energize with an auto-tuning fault. Refer to Table 4.4, for fault information during tuning, cause and corrective action.

Appendix Instructions for UL

◆ Safety Precautions



DANGER

Electrical Shock Hazard

Do not connect or disconnect wiring while the power is on.

Failure to comply will result in death or serious injury.



WARNING

Electrical Shock Hazard

Do not operate equipment with covers removed.

Failure to comply could result in death or serious injury.

The diagrams in this section may show drives without covers or safety shields to show details. Be sure to reinstall covers or shields before operating the drives and run the drives according to the instructions described in this manual.

Always ground the motor-side grounding terminal.

Improper equipment grounding could result in death or serious injury by contacting the motor case.

Do not touch any terminals before the capacitors have fully discharged.

Failure to comply could result in death or serious injury.

Before wiring terminals, disconnect all power to the equipment. The internal capacitor remains charged even after the power supply is turned off. After shutting off the power, wait for at least the amount of time specified on the drive before touching any components.

Do not allow unqualified personnel to perform work on the drive.

Failure to comply could result in death or serious injury.

Installation, maintenance, inspection, and servicing must be performed only by authorized personnel familiar with installation, adjustment, and maintenance of AC drives.

Do not perform work on the drive while wearing loose clothing, jewelry, or lack of eye protection.

Failure to comply could result in death or serious injury.

Remove all metal objects such as watches and rings, secure loose clothing, and wear eye protection before beginning work on the drive.

Do not remove covers or touch circuit boards while the power is on.

Failure to comply could result in death or serious injury.

Fire Hazard

Tighten all terminal screws to the specified tightening torque.

Loose electrical connections could result in death or serious injury by fire due to overheating of electrical connections.

Do not use an improper voltage source.

Failure to comply could result in death or serious injury by fire.

Verify that the rated voltage of the drive matches the voltage of the incoming power supply before applying power.

Do not use improper combustible materials.

Failure to comply could result in death or serious injury by fire.

Attach the drive to metal or other noncombustible material.

NOTICE

Observe proper electrostatic discharge procedures (ESD) when handling the drive and circuit boards.

Failure to comply may result in ESD damage to the drive circuitry.

Never connect or disconnect the motor from the drive while the drive is outputting voltage.

Improper equipment sequencing could result in damage to the drive.

Do not use unshielded cable for control wiring.

Failure to comply may cause electrical interference resulting in poor system performance. Use shielded twisted-pair wires and ground the shield to the ground terminal of the drive.

NOTICE

Do not modify the drive circuitry.

Failure to comply could result in damage to the drive and will void warranty.

Teco is not responsible for any modification of the product made by the user. This product must not be modified.

Check all the wiring to ensure that all connections are correct after installing the drive and connecting any other devices.

Failure to comply could result in damage to the drive.

◆ UL Standards

The UL/cUL mark applies to products in the United States and Canada and it means that UL has performed product testing and evaluation and determined that their stringent standards for product safety have been met. For a product to receive UL certification, all components inside that product must also receive UL certification.



◆ UL Standards Compliance

This drive is tested in accordance with UL standard UL61800-5-1 and complies with UL requirements. To ensure continued compliance when using this drive in combination with other equipment, meet the following conditions:

■ Installation Area

Installation Environment Driver are intended for use in a pollution degree 2 environment.

■ Main Circuit Terminal Wiring

UL approval requires crimp terminals when wiring the drive's main circuit terminals. Use crimping tools as specified by the crimp terminal manufacturer. Teco recommends crimp terminals made by NICHIFU for the insulation cap.

The table below matches drives models with crimp terminals and insulation caps. Orders can be placed with a Teco representative or directly with the Teco sales department.

Closed-Loop Crimp Terminal Size

Drive Model E710	Wire Gauge mm ² , (AWG / MCM)		Terminal	Crimp Terminal	Tool	Insulation Cap
	R/L1 • S/L2 • T/L3	U/T1 • V/T2 • W/T3	Screws	Model No.	Machine No.	Model No.
2P5	2 (14) / 3.5 (12)		M4	R2-4 / R3.5-4	Nichifu NH 1 / 9	TIC 2 / 3.5
201	2 (14) / 3.5 (12)		M4	R2-4 / R3.5-4	Nichifu NH 1 / 9	TIC 2 / 3.5
202	3.5 (12) / 5.3 (10)		M4	R3.5-4 / R5.5-4	Nichifu NH 1 / 9	TIC 3.5 / 5.5
203	5.3 (10)		M4	R5.5-4	Nichifu NH 1 / 9	TIC 5.5
205	8.4 (8)		M4	R8-4	Nichifu NOP 60 ; NH 1 / 9	TIC 8
208	8.4 (8)		M4	R8-4	Nichifu NOP 60 ; NH 1 / 9	TIC 8
401	2 (14) / 3.5 (12)		M4	R2-4 / R3.5-4	Nichifu NH 1 / 9	TIC 2 / 3.5
402	2 (14) / 3.5 (12)		M4	R2-4 / R3.5-4	Nichifu NH 1 / 9	TIC 2 / 3.5
403	2 (14) / 3.5 (12) / 5.3 (10)		M4	R2-4 / R3.5-4 / R5.5-4	Nichifu NH 1 / 9	TIC 2 / 3.5 / 5.5
405	3.5 (12) / 5.3 (10)		M4	R3.5-4 / R5.5-4	Nichifu NH 1 / 9	TIC 3.5 / 5.5
408	5.3 (10)		M4	R5.5-4	Nichifu NH 1 / 9	TIC 5.5
410	8.4 (8)		M4	R8-4	Nichifu NH 1 / 9	TIC 8

◆ Type 1

During installation, all conduit hole plugs shall be removed, and all conduit holes shall be used.

■Field Wiring Terminals

All input and output field wiring terminals not located within the motor circuit shall be marked to indicate the proper connections that are to be made to each terminal and indicate that copper conductors, 75 ° C cooper wire are to be used.

■ Drive Short-Circuit Rating

This drive has undergone the UL short-circuit test, which certifies that during a short circuit in the power supply the current flow will not rise above value. Please see electrical ratings for maximum voltage and table below for current.

• Branch circuit protection was provided by semiconductor fuse (JFHR2/8) refer to below table for details, the drive controller and overcurrent protection device must be integrated within the same overall assembly.

Recommended Input Fuse Selection

Drive Model E710	Fuse ype	
	Manufacturer: Bussmann	
	Model	Fuse Ampere Rating (A)
200 V Class Single/Three-Phase Drives		
2P5	Bussmann FWC-16A10F	600V 16A
201	Bussmann FWC-20A10F	600V 20A
202	Bussmann FWC-32A10F	600V 32A
203	Bussmann 50FE	700V 50A
205	Bussmann 50FE	700V 50A
208	Bussmann 63FE	700V 63A

Drive Model E710	Fuse Type	
	Manufacturer: Bussmann	
	Model	Fuse Ampere Rating (A)
400 V Class Three-Phase Drives		
401	BussmannFWC-10A10F	600V 10A
402	BussmannFWC-16A10F	600V 16A
403	BussmannFWC-16A10F	600V 16A
405	BussmannFWC-25A10F	600V 25A
408	Bussmann 40FE	700V 40A
410	Bussmann 50FE	700V 50A

• Suitable for use on a circuit capable of delivering not more than (A) RMS symmetrical amperes for (Hp) Hp in 240 / 480 V class drives motor .

Horse Power (Hp)	Current (A)	Voltage (V)
0 - 50	5,000	240 / 480

◆ Drive Motor Overload Protection

Set parameter 02-01 (motor rated current) to the appropriate value to enable motor overload protection. The internal motor overload protection is UL listed and in accordance with the NEC and CEC.

■ 02-01 Motor Rated Current

Setting Range: Model Dependent
Factory Default: Model Dependent

Set 02-01 to the full load amps (FLA) stamped on the nameplate of the motor.

■ 08-05 Motor Overload Protection Selection

The drive has an electronic overload protection function (OL1) based on time, output current, and output frequency, which protects the motor from overheating. The electronic thermal overload function is UL-recognized, so it does not require an external thermal overload relay for single motor operation.

This parameter selects the motor overload curve used according to the type of motor applied.

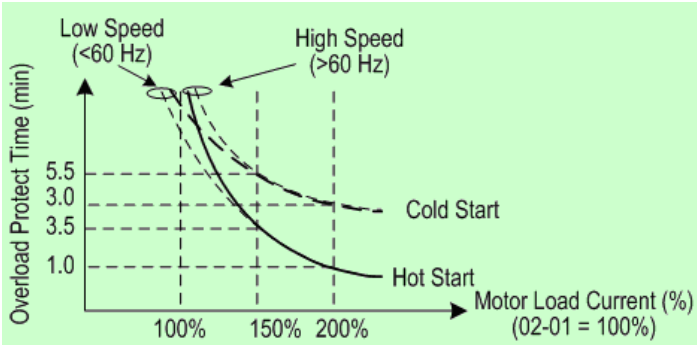
Overload Protection Settings

Setting	Description
XXXX0	Disabled
XXXX1	Enabled

Sets the motor overload protection function in 08-05 according to the applicable motor.

Setting 08-05 = XXXX0. Disables the motor overload protection function when two or more motors are connected to a single inverter. Use an alternative method to provide separate overload protection for each motor such as connecting a thermal overload relay to the power line of each motor.

- Motor overload protection action level is 116% of the rated current of the motor.



Motor Overload Protection Time

■ 08-06 Motor Overload Operation Selection

Setting	Description
0	Free Run to Stop (default setting)
1	Alarm Only

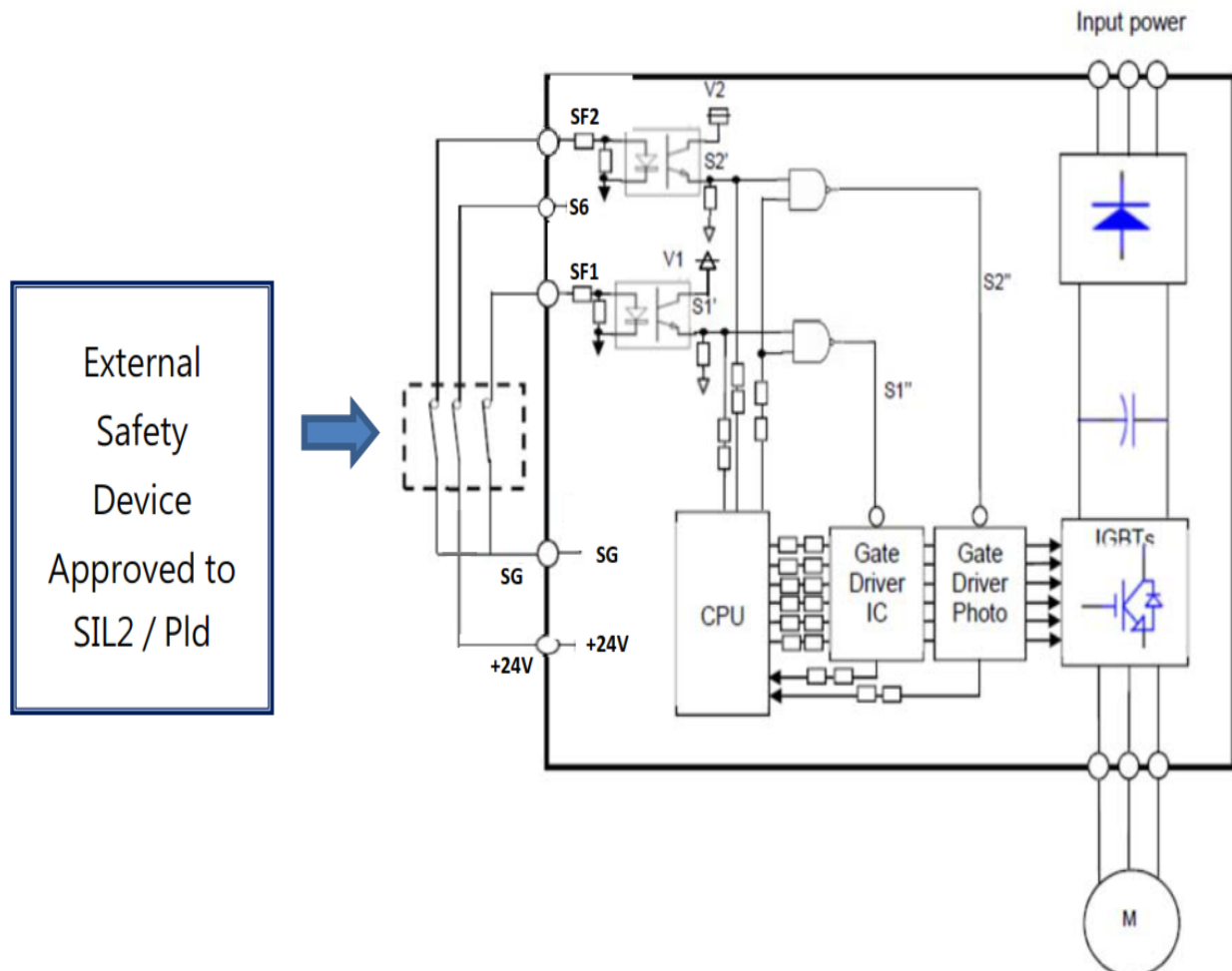
Motor over-temperature protection function is not provided.

◆ STO Reset through wiring configuration

Connect two parallel wires from SG through two safety relays/safety switch NC contacts connecting SF1 and SF2 terminal of the inverter as per diagram mentioned below. Another NC contact is required for connecting S6 to +24V linked to the same safety switch/relay. Please make sure to set parameter 03-05=17 (making S6 digital input to reset functionality).

■ Procedure for Automatic Reset

After wiring the NC contacts with inverter terminal the inverter works fine when NC contacts are closed under normal conditions. On activating any one NC contact from NC to NO makes the inverter to raise STO alarm. On releasing the NO contacts alarm will be reset automatically.



Automatic STO Reset Wiring

Préface

- ◆ Le produit est un lecteur conçu pour commander un moteur à induction triphasé. lire attentivement ce manuel pour garantir le bon fonctionnement, la sécurité et pour se familiariser avec les fonctions d'entraînement.
- ◆ Le lecteur est un appareil électrique / électronique et doit être installé et géré par un personnel qualifié
- ◆ Une mauvaise manipulation peut entraîner un fonctionnement incorrect, cycle de vie plus court, ou l'échec de ce produit ainsi que le moteur.
- ◆ Tous les documents sont sujets à changement sans préavis. Soyez sûr d'obtenir les dernières éditions de l'utilisation ou visitez notre site Web
- ◆ Lire le manuel d'instructions avant de procéder à l'installation, les connexions (câblage), le fonctionnement ou l'entretien et l'inspection.
- ◆ Vérifiez que vous avez une bonne connaissance de l'entraînement et de vous familiariser avec les consignes de sécurité et les précautions avant de procéder à fonctionner le lecteur.
- ◆ prêter attention aux consignes de sécurité indiquées par l'avertissement  et symbole Attention .

Avertissement

ignorer les informations indiquées par le symbole d'avertissement peut entraîner la mort ou des blessures graves.

Attention

ignorer les informations indiquées par le symbole de mise en garde peut entraîner des blessures mineures ou modérées et / ou des dommages matériels importants.

Chapitre 1 Consignes de sécurité

1.1 avant d'alimenter le disque dur

Avertissement

- Le circuit principal doit être correctement câblée. Pour les terminaux monophasés d'approvisionnement de l'utilisation des intrants (R/L1, T/L3) et de trois bornes d'entrée de l'utilisation de l'offre de phase (R/L1, S/L2, T/L3). U/T1, V/T2, W/T3 ne doivent être utilisés pour connecter le moteur. Raccordement de l'alimentation d'entrée à l'un des U/T1, V/T2 W/T3 ou bornes risque d'endommager le lecteur.

Attention

- Pour éviter que le couvercle ne se désengage ou de tout autre dommage physique, ne portez pas le lecteur par son couverture. Soutenir le groupe par son dissipateur de chaleur lors du transport. Une mauvaise manipulation peut endommager le lecteur ou blesser le personnel, et doit être évitée.
- Pour éviter que les risques d'incendie, ne pas installer le lecteur sur ou à proximité d'objets inflammables. Installer sur des objets ininflammables comme les surfaces métalliques.
- Si plusieurs disques sont placés dans le même panneau de contrôle, fournir une ventilation adéquate pour maintenir la température en dessous de 40 ° C/104 ° F (50 ° C/122 ° F sans housse de protection) pour éviter la surchauffe ou incendie.
Lors d'un retrait ou d'installation de l'opérateur numérique, éteignez-le d'abord, puis de suivre les instructions de ce manuel pour éviter les erreurs de l'opérateur ou de la perte de l'affichage causé par des connexions défectueuses.

Avertissement

- Lors d'un retrait ou d'installation de l'opérateur numérique, éteignez-le d'abord, puis de suivre les instructions de ce manuel pour éviter les erreurs de l'opérateur ou de la perte de l'affichage causé par des connexions défectueuses....

1.2 Câblage

Avertissement

- Coupez toujours l'alimentation électrique avant de procéder à l'installation d'entraînement et le câblage des terminaux utilisateurs.
- Le câblage doit être effectué par un personnel qualifié / électricien certifié.
- Assurez-vous que le lecteur est correctement mis à la terre. (220V Classe: impédance de mise à la terre doit être inférieure à 100Ω Classe 440V: Impédance de mise à la terre doit être inférieure à 10Ω.)
- vérifier et tester mes circuits d'arrêt d'urgence après le câblage. (L'Installateur est responsable du câblage.)
- Ne touchez jamais de l'entrée ou de lignes électriques de sortie permettant directement ou toute entrée ou de lignes de puissance de sortie à venir en contact avec le boîtier d'entraînement.
- Ne pas effectuer un test de tenue en tension diélectrique (mégohmmètre) sur le disque dur ou cela va entraîner des dommages de lecture pour les composants semi-conducteurs.



Attention

- La tension d'alimentation appliquée doit se conformer à la tension d'entrée spécifiée par le lecteur. (Voir la section signalétique du produit)
- Raccorder la résistance de freinage et de l'unité de freinage sur les bornes assignées.
- Ne pas brancher une résistance de freinage directement sur les bornes CC P (+) et N (-), sinon risque d'incendie.
- Utilisez des recommandations de la jauge de fil et les spécifications de couple. (Voir Wire Gauge et la section de spécification de couple) °
- Ne jamais brancher l'alimentation d'entrée aux bornes onduleur de sortie U/T1, V/T2, W/T3.
- Ne pas brancher un contacteur ou interrupteur en série avec le variateur et le moteur.
- Ne branchez pas un facteur condensateur de correction de puissance ou supprimeur de tension à la sortie du variateur °
- S'assurer que l'interférence générée par l'entraînement et le moteur n'a pas d'incidence sur les périphériques.

1.3 Avant l'opération



Avertissement

- Assurez-vous que la capacité du disque correspond aux paramètres de notation avant d'alimenter.
- Réduire le paramètre de la fréquence porteuse si le câble du variateur au moteur est supérieure à 80 pi (25 m). Un courant de haute fréquence peut être générée par la capacité parasite entre les câbles et entraîner un déclenchement de surintensité du variateur, une augmentation du courant ou d'une lecture actuelle inexactes.
- Veillez à installer tous les couvercles avant de l'allumer. Ne retirez pas les capots pendant que l'alimentation du lecteur est allumé, un choc électrique peut se produire autrement.
- Ne pas actionner d'interrupteurs avec les mains mouillées, un choc électrique pourrait survenir autrement.
- Ne touchez pas les bornes d'entraînement lorsqu'il est alimenté, même si le lecteur est arrêté, un choc électrique pourrait survenir autrement.

1.4 Configuration Paramètre



Attention

- Ne branchez pas une charge pour le moteur tout en effectuant un auto-tune.
- Assurez-vous que le moteur peut fonctionner librement et il y a suffisamment d'espace autour du moteur lors de l'exécution d'un auto-tune rotation.

1.5 Opération



Avertissement

- Veillez à installer tous les couvercles avant de l'allumer. Ne retirez pas les capots pendant que l'alimentation du lecteur est allumé, un choc électrique peut se produire autrement.
- Ne pas brancher ou débrancher le moteur pendant le fonctionnement. Le variateur

- pourrai se déclencher et ainsi endommager le lecteur.
- Les opérations peuvent commencer soudainement si une alarme ou un défaut est réarmé avec un ordre de marche active. Assurez-vous qu'un ordre de marche est actif lors de la réinitialisation de l'alarme ou de défaut, autrement des accidents peuvent se produire.
 - Ne pas actionner d'interrupteurs avec les mains mouillées, un choc électrique pourrait survenir .
 - Un interrupteur d'urgence externe indépendant est fourni, qui s'arrête en urgence vers le bas la sortie de l'onduleur en cas de danger.
 - Si le redémarrage automatique après une récupération d'énergie est activée, le variateur démarrera automatiquement après le rétablissement du courant.
 - Assurez-vous qu'il est sûr de faire fonctionner le variateur et le moteur avant d'effectuer un auto-tune rotation.
 - Ne touchez pas les bornes d'entraînement lorsqu'il est alimenté même si l'onduleur s'est arrêté, un choc électrique pourrait survenir .
 - Ne pas contrôler les signaux sur les circuits pendant que le lecteur est en marche.
 - Après la mise hors tension, le ventilateur de refroidissement peut continuer à fonctionner pendant un certain temps.



Attention

- Ne touchez pas les composants générant de la chaleur tels que radiateurs et des résistances de freinage. 
- Vérifiez soigneusement la performance du moteur ou de la machine avant d'utiliser à grande vitesse, sous peine de blessure.
- Notez les réglages des paramètres liés à l'unité de freinage lorsque applicable.
- Ne pas utiliser la fonction de freinage d'entraînement pour un maintien mécanique, sous peine de blessure.
- Ne pas contrôler les signaux sur les circuits pendant que le lecteur est en marche.

1.6 Entretien, Inspection et remplacement



Avertissement

- Attendre un minimum de 5 minutes après que l'alimentation a été débranchée avant de commencer une inspection. Vérifiez également que le voyant de charge est éteint et que la tension du bus cc a chuté au-dessous de 25Vdc.
- Ne jamais toucher les bornes à haute tension dans le lecteur.
- Assurez-vous que l'alimentation du lecteur est débranché avant de démonter le lecteur.
- Seul le personnel autorisé peuvent faire l'entretien, l'inspection et les opérations de remplacement. (Enlevez les bijoux en métal tels que les montres et les bagues et utiliser des outils isolés.)



Attention

- Le variateur peut être utilisé dans un environnement avec une gamme de température allant de 14 ° -104 ° F (10-40 ° C) et l'humidité relative de 95% sans condensation.
- Le variateur doit être utilisé dans un environnement sans poussière, gaz, vapeur et humidité.

1.7 Mise au rebut du variateur



Attention

- jeter cet appareil avec soin comme un déchet industriel et selon les réglementations locales nécessaires.
- Les condensateurs du circuit principal d'entraînement et circuits imprimés sont considérés comme des déchets dangereux et ne doivent pas être brûlés.
- The Plastic enclosure and parts of the drive such as the top cover board will release harmful gases if burned.



Les équipements contenant des composants électriques ne doivent pas être éliminés avec les ordures ménagères. Il doit être collecté séparément avec les déchets électriques et électroniques conformément à la législation locale en vigueur.



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Please link to our website, to download the instruction manual of this product for proper use.

請連結至本公司官網，下載使用說明書，以能正確的使用本產品。

This manual may be modified when necessary because of improvement of the product, modification, or changes in specifications, This manual is subject to change without notice.

為持續改善產品，本公司保留變更設計規格之權利。

