MOTOVARIO®
HEART OF MOTION
a TECO Group company

www.motovario.com

QUICK START MANUAL | EN

AM16

QL0317/ REV.1

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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 b its cover. Support the unit by its heat sink when transporting. Improper handling can damage th 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 this 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 of 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)° (-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.

2. MODEL DESCRIPTION

2.1 Nameplate Data

It is essential to verify the AM16 inverter nameplate and make sure that the AM16 inverter has the correct rating so it can be used in your application with the proper sized AC motor.

Unpack the AM16 inverter and check the following:

(1) The AM16 inverter and start-up and installation manual are contained in the package.

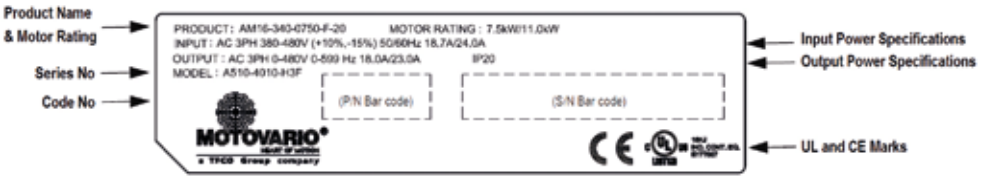
(2) The AM16 inverter has not been damaged during transportation there should be no dents or parts missing.

(3) The AM16 inverter is the type you ordered. You can check the type and specifications on the main nameplate.

(4) Check that the input voltage range meets the input power requirements.

(5) Ensure that the motor kW matches the motor rating of the inverter.

HD: Heavy Duty (Constant Torque); ND: Normal Duty (Variable Torque) (1HP = 0.746 kW).



MODEL IDENTIFICATION

AM16	340	0075	F	20

Series	Power Supply	Motor Power	EMI Filter	IP degree
AM16	340	0075	(blanck)	20
		0150		
		0220		
		0400		
		0550		
		0750		
		1100		
		1500		
		1850		
		2200		
		3000		
		3700		
		4500		
		5500		
		7500		
		9000		

340 = 3ph 400V

20 = IP20 enclosure

(blank) = No EMI filter inside (only from Motor-power = 5500)

F = integrated EMI filter A-class, C2- category (only up to Motor power = 4500)

0075 = 0.75 kW
0150 = 1.5 kW
0220 = 2.2 kW
0400 = 4 kW
0550 = 5.5 kW
0750 = 7.5 kW
1100 = 11 kW
1500 = 15 kW
1850 = 18.5 kW
2200 = 22 kW
3000 = 30 kW
3700 = 37 kW
4500 = 45 kW
5500 = 55 kW
7500 = 75 kW
9000 = 90 kW

2.2 Inverter Models – Motor Power Rating

HD – HEAVY DUTY: 150% OVERLOAD

Voltage	AM16 Model	Applied Motor (Kw)	Internal Filter	
			with	without
3ph, 380~480V +10%/-15% 50/60Hz	**AM16-4001-SH3F**	0.75	•	
	AM16-4002-SH3F	1.5	•	
	AM16-4003-SH3F	2.2	•	
	AM16-4005-SH3F	3.7	•	
	AM16-4008-SH3F	5.5	•	
	AM16-4010-SH3F	7.5	•	
	AM16-4015-SH3F	11	•	
	AM16-4020-SH3F	15	•	
	AM16-4025-SH3F	18.5	•	
	AM16-4030-SH3F	22	•	
	AM16-4040-SH3F	30	•	
	AM16-4050-SH3F	37	•	
	AM16-4060-SH3F	45	•	
	AM16-4075-SH3	55		•
	AM16-4100-SH3	75		•
	AM16-4125-SH3	94		•

Short Circuit Rating: 400V Class: 5kA
Note: The spec. please refer to Chapter 3.7, the rated current is 330/370A.

3. ENVIRONMENT AND INSTALLATION

3.1 Wire Gauges and Tightening Torque

To comply with UL standards, use UL approved copper wires (rated 75° C) and round crimp terminals (UL Listed products) as shown in table below when connecting to the main circuit terminals. MOTOVARIO recommends using crimp terminals manufactured by NICHIFU Terminal Industry Co., Ltd and the terminal crimping tool recommended by the manufacturer for crimping terminals and the insulating sleeve.

Wire size mm^2 (AWG)	Terminal screw size	Model of the round crimp terminal	Fastening torque kgf.cm (in.lbs)	Model of insulating sleeve	Model of crimp tool
0.75 (18)	M3.5	R1.25-3.5	8.2 to 10 (7.1 to 8.7)	TIC 1.25	NH 1
	M4	R1.25-4	12.2 to 14 (10.4 to 12.1)	TIC 1.25	NH 1
1.25 (16)	M3.5	R1.25-3.5	8.2 to 10 (7.1 to 8.7)	TIC 1.25	NH 1
	M4	R1.25-4	12.2 to 14 (10.4 to 12.1)	TIC 1.25	NH 1
2 (14)	M3.5	R2-3.5	8.2 to 10 (7.1 to 8.7)	TIC 2	NH 1 / 9
	M4	R2-4	12.2 to 14 (10.4 to 12.1)	TIC 2	NH 1 / 9
	M5	R2-5	22.1 to 24 (17.7 to 20.8)	TIC 2	NH 1 / 9
	M6	R2-6	25.5 to 30.0 (22.1 to 26.0)	TIC 2	NH 1 / 9
3.5 / 5.5 (12/10)	M4	R5.5-4	12.2 to 14 (10.4 to 12.1)	TIC 5.5	NH 1 / 9
	M5	R5.5-5	20.4 to 24 (17.7 to 20.8)	TIC 5.5	NH 1 / 9
	M6	R5.5-6	25.5 to 30.0 (22.1 to 26.0)	TIC 5.5	NH 1 / 9
	M8	R5.5-8	61.2 to 66.0 (53.0 to 57.2)	TIC 5.5	NH 1 / 9
8 (8)	M4	R8-4	12.2 to 14 (10.4 to 12.1)	TIC 8	NOP 60
	M5	R8-5	20.4 to 24 (17.7 to 20.8)	TIC 8	NOP 60
	M6	R8-6	25.5 to 30.0 (22.1 to 26.0)	TIC 8	NOP 60
	M8	R8-8	61.2 to 66.0 (53.0 to 57.2)	TIC 8	NOP 60
14 (6)	M4	R14-4	12.2 to 14 (10.4 to 12.1)	TIC 14	NH 1 / 9
	M5	R14-5	20.4 to 24 (17.7 to 20.8)	TIC 14	NH 1 / 9
	M6	R14-6	25.5 to 30.0 (22.1 to 26.0)	TIC 14	NH 1 / 9
	M8	R14-8	61.2 to 66.0 (53.0 to 57.2)	TIC 14	NH 1 / 9
22 (4)	M6	R22-6	25.5 to 30.0 (22.1 to 26.0)	TIC 22	NOP 60/ 150H
	M8	R22-8	61.2 to 66.0 (53.0 to 57.2)	TIC 22	NOP 60/ 150H
30 / 38 (3 /2)	M6	R38-6	25.5 to 30.0 (22.1 to 26.0)	TIC 38	NOP 60/ 150H
	M8	R38-8	61.2 to 66.0 (53.0 to 57.2)	TIC 38	NOP 60/ 150H
50 / 60 (1/1/0)	M8	R60-8	61.2 to 66.0 (53.0 to 57.2)	TIC 60	NOP 60/ 150H
	M10	R60-10	102 to 120 (88.5 to 104)	TIC 60	NOP 150H
70 (2/0)	M8	R70-8	61.2 to 66.0 (53.0 to 57.2)	TIC 60	NOP 150H
	M10	R70-10	102 to 120 (88.5 to 104)	TIC 60	NOP 150H
80 (3/0)	M10	R80-10	102 to 120 (88.5 to 104)	TIC 80	NOP 150H
	M16	R80-16	255 to 280 (221 to 243)	TIC 80	NOP 150H
100 (4/0)	M10	R100-10	102 to 120 (88.5 to 104)	TIC 100	NOP 150H
	M12	R100-12	143 to 157 (124 to 136)	TIC 100	NOP 150H
	M16	R80-16	255 to 280 (221 to 243)	TIC 80	NOP 150H

3.2 Wiring Peripheral Power Devices

⚠ CAUTION!

• After power is shut off to the inverter the capacitors will slowly discharge. Do NOT touch the inverter circuit or replace any components until the "CHARGE" indicator is off.

• Do NOT wire or connect/disconnect internal connectors of the inverter when the inverter is powered up or after power off but the "CHARGE" indicator is on.

• Do NOT connect inverter output U, V and W to the AC power source. This will result in damage to the inverter.

• The inverter must be properly grounded. Use terminal E to connect earth ground and comply with local standards.

• It is required to disconnect the ground wire in the control board if the inverter is not grounded.

• Do NOT perform a dielectric voltage withstand test (Megger) on the inverter this will result in inverter damage to the semiconductor components.

• Do NOT touch any of the components on the inverter control board to prevent damage to the inverter by static electricity.

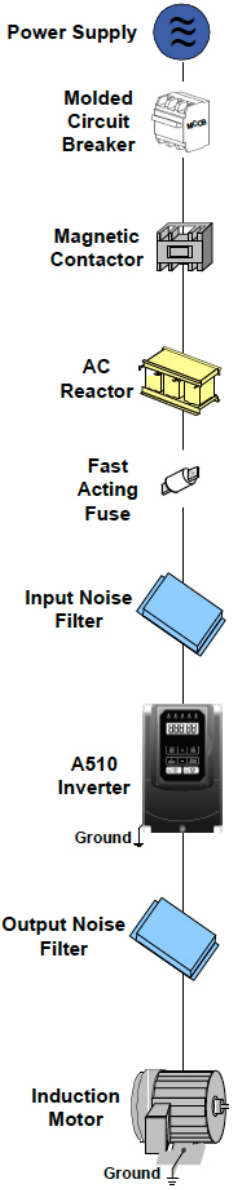
⚠ CAUTION!

• Refer to the recommended wire size table for the appropriate wire to use. The voltage between the power supply and the input terminals of the inverter may not exceed 2%.

Phase-to-phase voltage drop (V) = 3 ×resistance of wire (Ω/km) × length of line m) × current×10-3. (km=3280 x feet) / (m=3.28 x feet)

• Reduce the carrier frequency (parameter 11-01) If the cable from the inverter to the motor is over 25m (82ft). 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.

• To protect peripheral equipment, install fast acting fuses on the input side of the inverter. Refer to section 11.4 for additional information.



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 section 11.4 for peripheral devices.

Input Noise filter:

• A filter must be installed when there are inductive loads affecting the inverter. The inverter meets EN55011 Class A, category C3 when the MOTOVARIO special filter is used. See section 11.3 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: Rg <100Ω; 400V class: Rg <10Ω.)

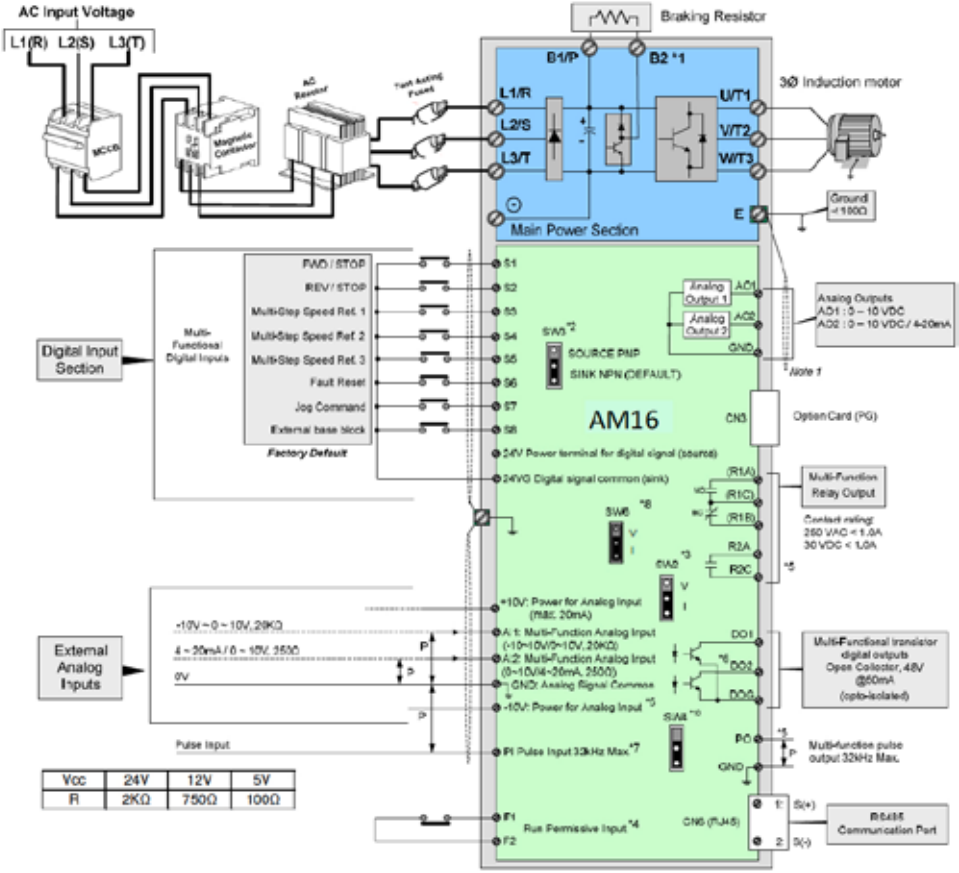
Output Noise filter:

• 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.

3.3 General Wiring Diagram



Notes:

*1: Models in the range 0.75 ~ 30 kW have a built-in braking transistor. To use this braking transistor braking resistor can be connected between B1 and B2.

*2: Use SW3 to select between Sink (NPN, with 24VG common) or Source (PNP, with +24V common) for multi-function digital input terminals S1~S8.

*3: Use SW2 to switch between voltage (0~10V) and current (4~20mA) input for Multi-function analog input 2 (AI2). *Besides please also check parameter 04-00 for proper setting.*

*4: Run Permissive input F1 and F2 is a normally closed input. This input should be closed to enable the inverter output. To activate this input remove the jumper wire between F1 and F2.

*5: Models from 4 kW include terminals -10V, S(+), S(-),R2A-R2C and PO-GND.

*6: Models up to 2.2 kW include terminal DO2.

*7: When using the open collector for pulse input, it doesn't need resistance because of built-in pull-up resistance.

*8: AO2 default setting is 0~+10V.

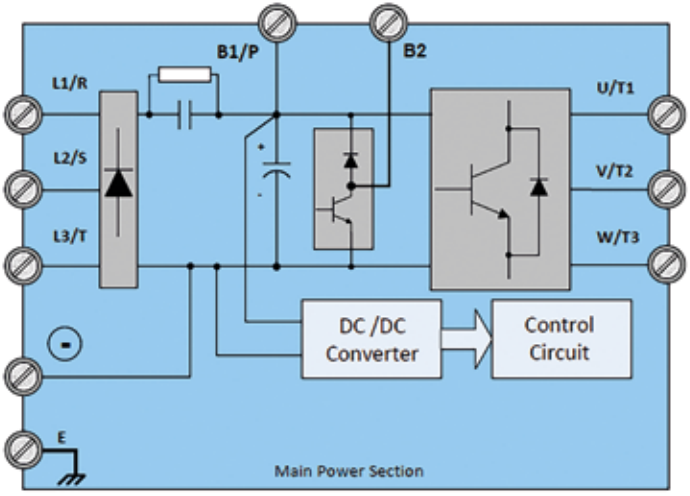
*9: Models 75 kW and 90 kW have built-in DC reactors.

*10: It need turn on the switch for the terminal resistor RS485 in the last inverter when many inverters in parallel connection. Please refer to Appendix A

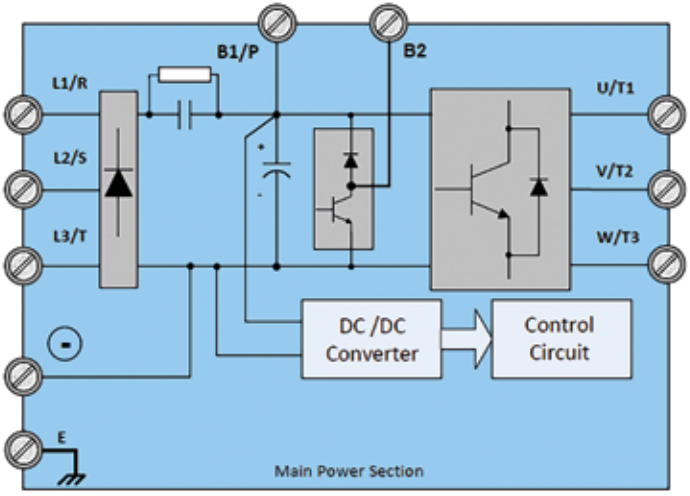
3.4 Input / Output Power Section Block Diagram

The following diagrams 1 - 8 show the basic configuration of the power sections for the range of horsepower and input voltages. This is shown for reference only and is not a detailed depiction.

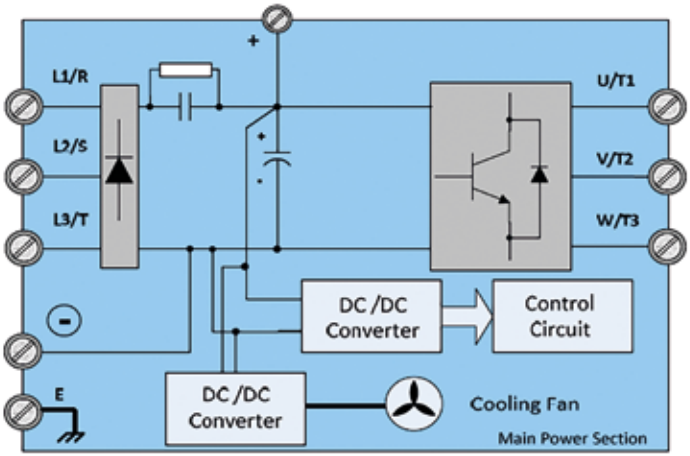
1: 400V: 0.75 ~ 1.5 kW



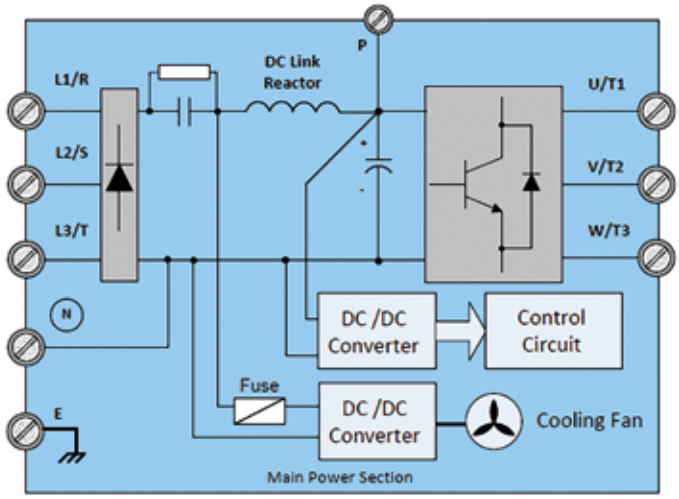
2: 400V: 2.2 ~ 30 kW



3: 400V: 37 ~ 55 kW



4: 400V: 75 ~ 90 kW



3.5 User Terminals (Control Circuit Terminals)

Models 400V: 0.75 ~ 2.2 kW

Models 400V: 4 ~ 90 kW

Description of User Terminals

Type	Terminal	Terminal Function	Signal Level/Information
Digital input signal	S1	2-wire forward/ stop (default) * 1	Signal Level 24 VDC (photo isolated) Maximum current: 8mA Maximum voltage: 30 Vdc Input impedance: 4.22kΩ
	S2	2-wire reversal/ stop (default) * 1	
	S3	Multi-speed/ position setting command 1 (default) * 1	
	S4	Multi-speed/ position setting command 2 (default) * 1	
	S5	Multi-speed/ position setting command 3 (default) * 1	
	S6	Fault reset (default) * 1	
	S7	JOG frequency command (default) * 1	
	S8	External B.B. (Base Block) stop (coast to stop) (default) * 1	
24V Power supply	24V	Digital signal SOURCE point (SW3 switched to SOURCE)	±15%, Max. output current: 250mA (The sum of all loads connected)
	24VG	Common terminal of Digital signals Common point of digital signal SINK (SW3 switched to SINK)	
Analog input signal	+10V	Power for external speed potentiometer	+10V (Max. current , 20mA)
	-10V	Only above 200V 3HP/ 400V 5HP (include) support this terminal function	-10V (Max. current , 20mA)
	AI1	Multi-function analog input for speed reference (0-10V input)/(-10V~10V input)	From 0 to +10V, From -10V to +10V Input impedance : 20KΩ Resolution: 11bit + 1
	AI2	Multi-function analog input terminals *2, can use SW2 to switch voltage or current input (0~10V)/(4-20mA)	From 0 to +10V, From -10V to +10V Input impedance: 200KΩ From 4 to 20 mA Input impedance: 250KΩ Resolution: 11bit + 1
	GND	Analog signal ground terminal	-----
	E	Shielding wire's connecting terminal (Ground)	-----

Type	Terminal	Terminal Function	Signal Level/Information
Analog output signal	AO1	Multi-function analog output terminals *2 (0~10V output)	From 0 to 10V, From 4 to 20mA (Load < 500Ω) PWM Frequency: 10KHz
	AO2	Multi-function analog output terminals *2. can use SW6 to switch voltage or current input (0~10V / 4-20mA output)	
	GND	Analog signals ground terminal	
Pulse output signal	PO	Pulse output, Band width 32KHz, only above 200V 3HP/ 400V 5HP (include) support this terminal function.	Max. Frequency: 32KHz Open Collector output
	GND	Analog signals ground terminal	------
Pulse input signal	PI	Pulse command input, Bandwidth: 32KHz	L: from 0.0 to 0.5V H: from 4.0 to 13.2V Max. Frequency: 0 - 32KHz Built-in pull-up resistance. When open collector input is used, it is not required to connect resistance.
	GND	Analog signals ground terminal	------
Digital output	DO1	Multi-function (open collector transistor) output *1	48Vdc, 2mA ~50mA Open-collector output
	DO2 200V:1-2HP 400V:1-3HP		
	DOG	Open collector transistor digital ground	
Relay output	R1A	Relay A contact (multi-function output terminal)	Rating: 250Vac, 10 mA ~ 1A 30Vdc, 10 mA ~ 1A
	R1B	Relay B contact (multi-function output terminal)	
	R1C	Relay contact common terminal, With the same functions as DO1/DO2	
	R2A-R2C 200V:over 3HP 400V:over 5HP	With the same functions as DO1/DO2	Rating: 250Vac, 10 mA ~ 1A 30Vdc, 10 mA ~ 1A
Run Permissive Input	F1	On: normal operation. Off: stop (Jumper wired between F1 and F2 has to be removed by using external contact to stop)	24Vdc, 8mA, pull-up
	F2		24V Ground
RS-485 port	S (+)	RS485/ Modbus communication protocol	Differential input and output
	S (-)		
Grounding	E (G)	Grounding to earth Shield the connecting terminal	------

Notes:

*1: Multi-function digital input/ output can be referred to in this manual.
- Group 03: External Terminals Digital Input / Output Function Group.

*2: Multi-function analog input/ output can be referred to in this manual..
- Group 04 - External Terminal Analog Signal Input (Output) Function Group.

⚠ CAUTION!

• Maximum output current capacity for terminal 10V is 20mA.

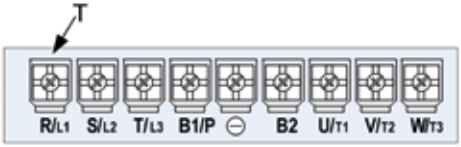
• Multi-function analog output AO1 and AO2 are used for an analog output meter. Do not use these outputs for feedback control.

• 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.

3.6 Power Terminals

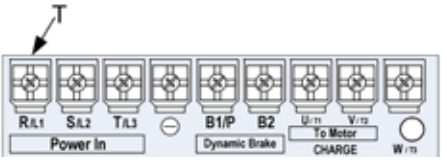
Terminal	400V: 0.75 ~ 30 kW	400V: 40 ~ 90 kW
R/L1	Input Power Supply (For single phase use terminals R/L1 and S/L2)	
S/L2		
T/L3		
B1/P	• B1/P - ⊖: DC power supply • B1/P - B2: external braking resistor	-
B2		
⊖		• ⊕ ⊖:DC power supply or connect braking module
⊕	-	
U/T1	Inverter output	
V/T2		
W/T3		
E	Ground terminal	

• Models 400V: 0.75 ~ 2.2 kW



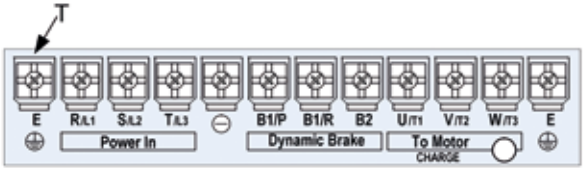
Terminal screw size	
T	⏚
M4	M4

• Models 400V: 4 ~ 5.5 kW



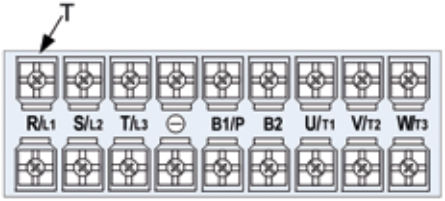
Terminal screw size	
T	⏚
M4	M4

• Models 400V: 7.5 ~ 11 kW



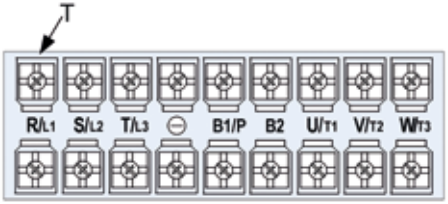
Terminal screw size	
T	⏚
M6	M6

• Model 400V: 15 kW (Frame 3)



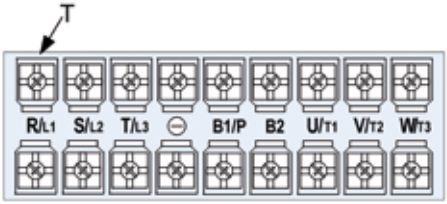
Terminal screw size	
T	⏚
M6	M5

• Models 400V: 15 ~ 22 kW



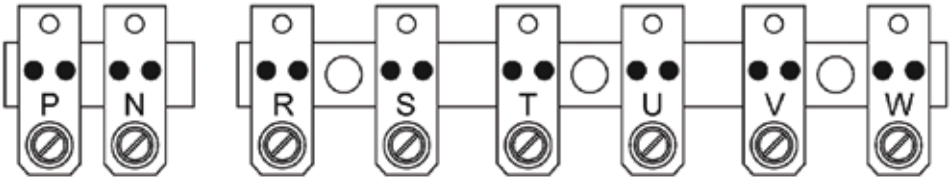
Terminal screw size	
T	⏚
M6	M6

• Model 400V: 30 kW

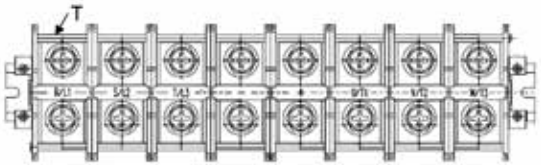


Terminal screw size	
T	⏚
M6	M8

• Models 400V: 37 ~ 55 kW

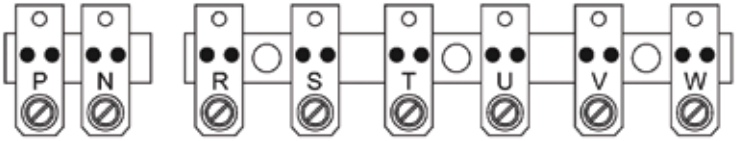


• Model 400V: 75 kW



Terminal screw size		
Power supply	T	⏚
400V 75HP	M8	M10
200V 50-60HP/ 400V 100HP	M10	M10

• Model 400V : 90 kW



Terminal screw size	
T	⏚
M10	M10

Notes: For wire gauges and screw torques, please refer to the table in section 3.1.

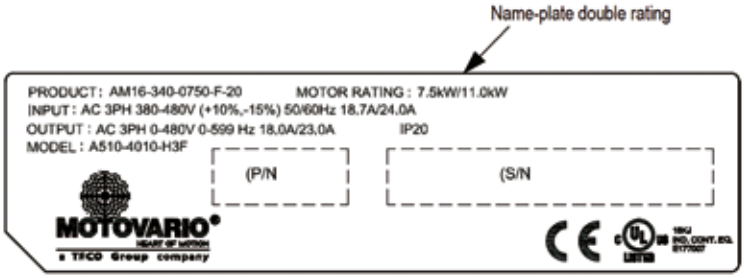
3.7 Inverter Specifications

BASIC SPECIFICATIONS 400V CLASS

Inverter capacity (kW)			0,75	1,5	2,2	4	5,5	7,5	11	15	18,5	22
Output rated	Heavy Duty type H.D. (150%/1min)	Rated output Capacity (KVA)	2,6	3,2	4,2	7	11,3	13,7	18,3	23,6	29,7	34,3
		Rated output current (A)	3,4	4,2	5,5	9,2	14,8	18	24	31	39	45
		Maximum applicable motor*1 (KW)	**0,75**	**1,5**	**2,2**	**4**	**5,5**	**7,5**	**11**	**15**	**18,5**	**22**
		Motor rated current (A)*1	1,7	3,1	4,2	7	10,1	12,6	18,6	24,8	31,1	36,3
	Normal Duty type N.D. (120%/1min)	Rated output Capacity (KVA)	3,1	4,1	5,3	9,2	13,3	17,5	23,6	29,0	33,5	44,2
		Rated output current (A)	4,1	5,4	6,9	12,1	17,5	23	31	38	44	58
		Maximum applicable motor*1 (KW)	**1,5**	**2,2**	**4**	**5,5**	**7,5**	**11**	**15**	**18,5**	**22**	**30**
		Motor rated current (A)*1	3,1	4,2	7	10,1	12,6	18,6	24,8	31,1	36,3	48,7
	The maximum output voltage (V)		3-phase 380V~ 480V									
	The maximum output frequency (Hz)		Based on parameter setting 0.1~599.0 Hz									
Power	Rated voltage, frequency		3-phase 380V ~ 480V, 50/60Hz									
	Allowable voltage fluctuation		-15% ~ +10%									
	Allowable frequency fluctuation		±5%									

Inverter capacity (kW)			30	37	45	55	75	90
Output rated	Heavy Duty type H.D. (150%/1min)	Rated output Capacity (KVA)	45,7	57,2	69,3	89,9	114	137
		Rated output current (A)	60	75	91	118	150	180
		Maximum applicable motor*1 (KW)	**30**	**37**	**45**	**55**	**75**	**90**
		Motor rated current (A)*1	48,7	59	70,5	88	114	145
	Normal Duty type N.D. (120%/1min)	Rated output Capacity (KVA)	55,6	67,1	78,5	111	128	159
		Rated output current (A)	73	88	103	145	68	208
		Maximum applicable motor*1 (KW)	**37**	**45**	**55**	**75**	**90**	**110**
		Motor rated current (A)*1	59	70,5	88	114	145	175
	The maximum output voltage (V)		3-phase 380V~ 480V					
	The maximum output frequency (Hz)		Based on parameter setting 0.1~599.0 Hz					
Power	Rated voltage, frequency		3-phase 380V ~ 480V, 50/60Hz					
	Allowable voltage fluctuation		-15% ~ +10%					
	Allowable frequency fluctuation		±5%					

Double motor rating corresponding to H.D. and N.D. is reported within inverter nameplate.



*1: Take AM16 standard 4-pole induction motor as the base.
*2: AM16 model is designed to use in heavy duty (H.D.) conditions, the factory setting is the HD (Heavy Duty type) mode.
*3: The overload capacity of AM16 model HD (Heavy Duty) is 150% / 1min, 200% / 2sec. See the table below for the carrier frequency default setting and range.
*4: The overload capacity of AM16 model ND (Normal Duty) is 120%/1min, carrier range: 2 KHz ~ 16 KHz, the default setting is 2 KHz.
*5: If it is greater than default carrier frequency, you need to adjust the load current based on the de-rating curve.

Inverter Voltage and Capacity 400V class	HD mode carrier frequency range	HD mode carrier frequency factory setting
0.75~22 kW	2~16KHz	8KHz
-	2~12KHz	6KHz
30~37 kW	2~12KHz (*6)	5KHz
45~90 kW	2~10KHz (*6)	5KHz

*6: If control mode (00-00) is set to 2 (SLV mode) and maximum frequency (01-02) is larger than 80Hz, the carrier frequency range is 2~8 KHz.

The following table shows maximum output frequency for each control mode.

Duty Cycle	Control mode	Other settings	Maximum output frequency
HD mode (00-27=0)	V/F V/F + PG SLV2	maximum frequency set to 599Hz	599Hz
	SLV	400V 0.75~11 kW	150Hz
		400V 15 kW	110Hz
		400V 15~22 kW	100Hz
		400V 30~90 kW, carrier (11-01) is set as 8K or below 8K	100Hz
	SV	unlimited	599Hz
	PMSV	unlimited	Twice of Base frequency
	PMSLV	unlimited	Base frequency
Normal Duty (00-27=1)	V/F V/F + PG	maximum frequency set to 120Hz	120Hz
	SLV /SV PMSV/ PMSLV SLV2	No normal duty mode	-

General Specifications

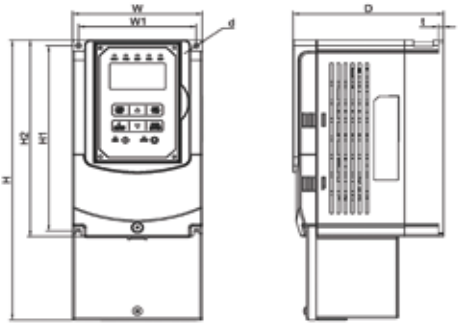
Control characteristics	Operation mode	LCD keypad with parameter copy function (Optional Seven-segment display * 5 + LED keypad)
	Control mode	V/F, V/F+PG, SLV, SV, PMSV, PMSLV, SLV2* with space vector PWM mode
	Frequency control range	0.1Hz~599.0Hz
	Output frequency accuracy (Temperature change)	Digital references: ±0.01~(-10 to +40°C) Analog references: ±0.1% (25°C ±10°C)
	Speed control accuracy	±0.1% (vector control(SV))~±0.5% (vector control / open-loop)
	Frequency setting resolution	Digital references: 0.01Hz, Analog references: 0.03Hz/60Hz (If the maximum output frequency of motor is over 300HZ, the frequency resolution is changed to 0.1Hz)
	Output frequency resolution	0.01Hz (If the maximum output frequency of motor is over 300HZ, the frequency resolution is changed to 0.1Hz)
	Inverter overload	Rated output current 150%/1 min, 200%/2sec (HD mode),120%/1 min (ND mode) Factory 150%/1 min, 200%/2sec
	Frequency setting signal	0 to +10VDC / 4 to 20mA or -10V to +10VDC and pulse input command frequency
	Acceleration / deceleration time	0.0 - 6000.0 second (separately set acceleration and deceleration time)
	Voltage, frequency characteristics	Custom V/f curve based on parameters
	Braking torque	+/- 20%
	Main control functions	Auto-tuning, Zero Servo, torque control, position control, Droop, Soft-PWM, overvoltage protection, dynamic braking, speed search, frequency traversing, instantaneous power fault restart, PID control, automatic torque compensation, automatic speed regulation, RS-485 communication standard, speed feedback control, simple PLC function, 2 sets of analog outputs, safety switch
	Other functions	Accumulated power-on / run time, 30 sets of fault history records and latest fault record state, energy-saving function setting, single phase protection, smart braking, DC braking, Dwell, S curve acceleration and deceleration, Up / Down operation, MODBUS protocol, pulse output, engineering units, SINK / SOURCE digital inputs
Protection functions	Stall protection	Stall prevention level can be set independently in acceleration, deceleration and constant speed
	Instantaneous over current (OC) and output short-circuit (SC) protection	Inverter stops when the output current exceeds 200% of the inverter rated current
	Inverter overload Protection (OL2)	HD mode: If inverter rated current 150%/1 min., or 200%/2sec is exceeded inverter stops, factory default carrier frequency setting is 8~2KHz. ND mode: If inverter rated current 120%/1 min is exceeded inverter stops , factory default carrier frequency is 2KHz
	Motor overload (OL1) protection	Electrical overload protection curve I^2T
	Over voltage (OV) protection	If the main circuit DC voltage rises over 820V (400V class), the motor stops running
	Under voltage (UV)	If the main circuit DC voltage falls below 380V (400V class), the motor stops running
	Automatic restart after instantaneous power fault	Power fault exceeds 15ms. Automatic restart function available after instantaneous power fault in 2sec
	Overheat protection (OH)	Uses temperature sensor for protection
	Ground Fault protection (GF)	Use current sensor for protection
	DC bus charge indicator	When main circuit DC voltage ≧50V, the CHARGE LED turns on
	Output Phase Loss Protection (OPL)	If the OPL is detected the motor stops automatically

Environment Specification	Location		Indoor (protected from corrosive gases and dust)
	Ambient temperature		-10~+40°C (14°F~104°F) (IP20, -10~+50°C (14°F~122°F) (IP00)) without derating; with de-rating, its maximum operation temperature is 60°C (140°F)
	Storage temperature		-20~+70°C (-4°F~+158°F)
	Humidity		95 RH or less (no condensation)
	Altitude and vibration		Altitude of 1000m (3181ft) or below ; 1.0G, IEC60068-2-6
	Pollution Degree		Meet IEC 60721-3-3 Class 3C2
Communication function			RS-485 standard (MODBUS RTU / ASCII protocol) (RJ45)
PLC function			Built-in
EMI protection			The built-in noise filter complies with EN61800-3 available for inverters 400V 40kW or below
EMS protection			EN61800-3
Certification		CE	EN61800-3 (CE & RE) EN61800-5-1 (LVD)
		UL	UL UL508C
Option			JN5-PG-O/ JN5-PG-L/ JN5-PG-PM/ JN5-PG-PMR/ JN5-PG-PMS/ JN5-PG-PMC Encoder Card

3.8 Inverter Dimensions

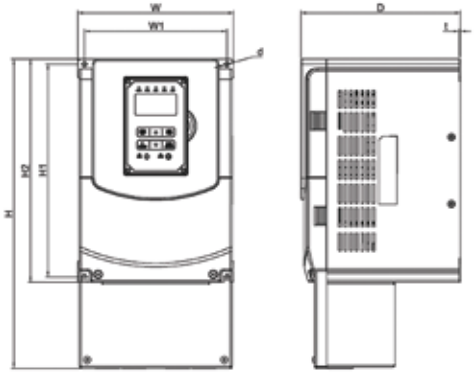
☐ **MODELS WITH BUILT-IN FILTER**

(a) 400V: 0.75 – 5.5 kW (IP20)



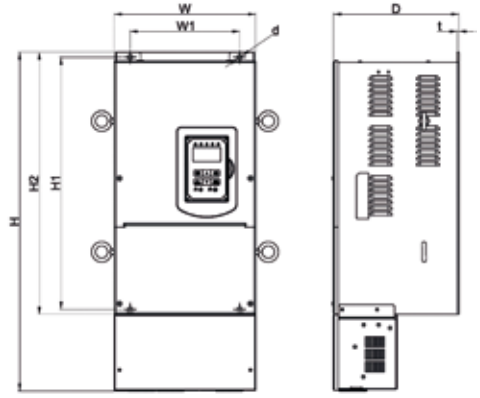
Inverter Model	Dimensions (mm)								
	W	H	D	W1	H1	H2	t	d	Net Weight (kg)
AM16-340-0075-F-20	130	306	150	118	203	215	5	M5	3.5
AM16-340-0150-F-20	130	306	150	118	203	215	5	M5	3.5
AM16-340-0220-F-20	130	306	150	118	203	215	5	M5	3.5
AM16-340-0400-F-20	140	400	177	122	267	279	7	M6	5.5
AM16-340-0550-F-20	140	400	177	122	267	279	7	M6	5.5

(b) 400V: 7.5 – 22 kW (IP20)



Inverter Model	Dimensions (mm)								
	W	H	D	W1	H1	H2	t	d	Net Weight (kg)
AM16-340-0750-F-20	210	416,5	215	192	286	300	1,6	M6	8,0
AM16-340-1100-F-20	265	416,5	215	192	286	300	1,6	M6	8,0
AM16-340-1500-F-20	265	500	225	245	340	360	1,6	M8	12,5
AM16-340-1850-F-20	265	500	225	245	340	360	1,6	M8	12,5
AM16-340-2200-F-20	265	500	225	245	340	360	1,6	M8	12,5

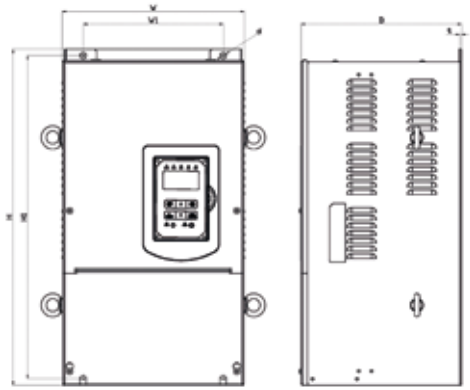
(c) 400V: 30 – 45 kW (IP20)



Inverter Model	Dimensions (mm)								
	W	H	D	W1	H1	H2	t	d	Net Weight (kg)
AM16-340-3000-F-20	286.5	679	252	220	505	525	3.3	M8	32.5
AM16-340-3700-F-20	286.5	679	252	220	505	525	3.3	M8	32.5
AM16-340-4500-F-20	286.5	679	252	220	505	525	3.3	M8	32.5

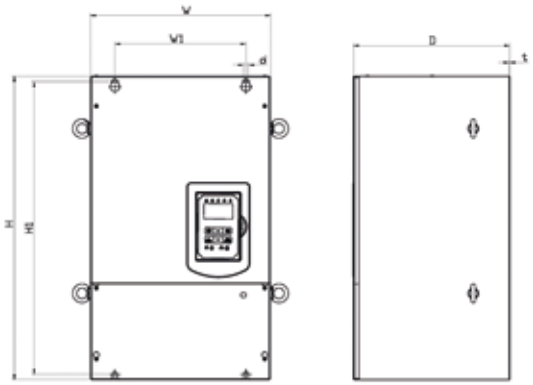
☐ **MODELS WITHOUT INTERNAL FILTER**

(a) 400V: 55 kW (IP20)



Inverter Model	Dimensions (mm)							
	W	H	D	W1	H1	t	d	Net Weight (kg)
AM16-340-5500-20	286.5	525	252	220	505	3.3	M8	35

(b) 400V: 75 – 90 kW (IP00)

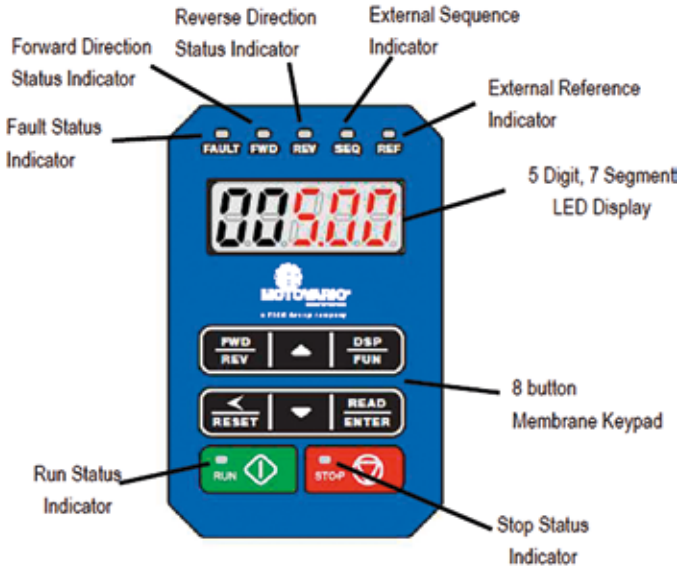


Inverter Model	Dimensions (mm)							
	W	H	D	W1	H1	t	d	Net Weight (kg)
AM16-340-7500-00	344	580	300	250	560	1,6	M8	46,7
AM16-340-9000-00	344	580	300	250	560	1,6	M8	46,7

4. Keypad and Programming Functions

4.1 LED Keypad

4.1.1 Keypad Display and Keys



DISPLAY	Description
5 Digit LED Display	Monitor inverter signals, view / edit parameters, fault / alarm display
LED INDICATORS	
FAULT	LED **ON** when a fault or alarm is active
FWD	LED **ON** when inverter is running in forward direction, flashing when stopping
REV	On when inverter is running in reverse direction, flashing when stopping
SEQ	LED **ON** when RUN command is from the external control terminals or from serial communication
REF	LED **ON** when Frequency Reference command is from the external control terminals or from serial communication

KEYS (8)	Description
RUN	RUN Inverter in Local Mode
STOP	STOP Inverter
▲	Parameter navigation Up, Increase parameter or reference value
▼	Parameter navigation down, decrease parameter or reference value
FWD/REV	Used to switch between Forward and Reverse direction
DSP/FUN	Used to scroll to next screen Frequency screen Function selectionMonitor parameter
◀ / **RESET**	Selects active seven segment digit for editing with the ◀▶ keys Used to reset fault condition
READ / ENTER	Used to read and save the value of the active parameter

Auto-Repeat Keys

Holding the ▲ UP or ▼ DOWN key for a longer period of time will initiate the auto-repeat function resulting in the value of the selected digit to automatically increase or decrease.

4.2 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

Group 00: Basic Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
00-00	Control Mode Selection	0: V/F 1: V/F+PG 2: SLV 3: SV 4: PMSV 5: PMSLV 6: SLV2	0	-	O	O	O	O	O	O	O	*3
00-01	Motor's Rotation Direction	0: Forward 1: Reverse	0	-	O	O	O	O	O	O	O	*1
00-02	Main Run Command Source Selection	0: Keypad 1: External Terminal (Control Circuit) 2: Communication Control (RS-485) 3: PLC	1	-	O	O	O	O	O	O	O	
00-03	Alternative Run Command Selection	0: Keypad 1: External Terminal (Control Circuit) 2: Communication Control (RS-485) 3: PLC	2	-	O	O	O	O	O	O	O	

Group 00: Basic Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
00-04	Language	0: English 1: Simplified Chinese 2: Traditional Chinese 3: Turkish	0	-	O	O	O	O	O	O	O	*7
00-05	Main Frequency Command Source Selection	0: Keypad 1: External Terminal (Analog 1) 2: Terminal Command UP/DOWN 3: Communication Control (RS-485) 4: Pulse Input 5: Reserved 6: Reserved 7: AI2 Auxiliary Frequency	1	-	O	O	O	O	O	O	O	
00-06	Alternative Frequency Source Selection	0: Keypad 1: External Terminal (Analog 1) 2: Terminal Command UP/DOWN 3: Communication Control (RS-485) 4: Pulse Input 5: Reserved 6: Reserved 7: AI2 Auxiliary Frequency	3	-	O	O	O	O	O	O	O	
00-07	Main and Alternative Frequency Command Modes	0: Main Frequency 1: Main frequency + Alternative Frequency	0	-	O	O	O	O	O	O	O	

Group 00: Basic Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
00-08	Communication Frequency Command Range	0.00~599.00	0.00	Hz	O	O	O	O	O	O	O	
00-09	Communication Frequency Command Memory Selection	0: Don't save when power supply is off. (00-08) 1: Save when power is off. (00-08)	0	-	O	O	O	O	O	-		
00-10	Minimum frequency detection	0: Show warning if lower than minimum frequency 1: Run as minimum frequency if lower than minimum frequency	0	-	O	O	O	O	O	O	O	Note1
00-11	PID Lower Limit of Frequency Selection	0: PID Sleep Limit is Lower Limit of Frequency 1: PID Sleep Limit is 0Hz	0	-	O	O	O	O	O	O	O	
00-12	Upper Frequency limit	0.1~109.0	100.0	%	O	O	O	O	O	O	O	
00-13	Lower Frequency limit	0.0~109.0	0.0	%	O	O	O	O	O	O	O	
00-14	Acceleration Time 1	0.1~6000.0	*	s	O	O	O	O	O	O	O	*1
00-15	Deceleration Time 1	0.1~6000.0	*	s	O	O	O	O	O	O	O	*1
00-16	Acceleration Time 2	0.1~6000.0	*	s	O	O	O	O	O	O	O	*1
00-17	Deceleration Time 2	0.1~6000.0	*	s	O	O	O	O	O	O	O	*1
00-18	*Jog Frequency	0.00~599.00	6.00	Hz	O	O	O	O	O	O	O	*1

Group 00: Basic Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
00-19	Jog Acceleration Time	0.1~0600.0	-	s	O	O	O	O	O	O	O	*1
00-20	Jog Deceleration Time	0.1~0600.0	-	s	O	O	O	O	O	O	O	*1
00-21	Acceleration time 3	0.1~6000.0	*	s	O	O	O	O	O	O	O	*1
00-22	Deceleration time 3	0.1~6000.0	*	s	O	O	O	O	O	O	O	*1
00-23	Acceleration time 4	0.1~6000.0	*	s	O	O	O	O	O	O	O	*1
00-24	Deceleration time 4	0.1~6000.0	*	s	O	O	O	O	O	O	O	*1
00-25	Switch-Over Frequency of Acc/Dec Time 1 and Time 4	0.00~599.00	0.0	Hz	O	O	O	O	O	O	O	
00-26	Emergency Stop Time	0.1~6000.0	5.0	s	O	O	O	O	O	O	O	
00-27	HD/ND Mode Selection ***	0: HD (Heavy Duty Mode) 1: ND (Normal Duty Mode)	0	-	O	O	X	X	X	X	X	*3
00-28	Command Characteristic selection of master frequency	0: Positive Characteristic (0~10V/4~-20mA is corresponding to 0~100%) 1: Negative Characteristic (0~10V/4~-20mA is corresponding to 100~0%)	0	-	O	O	O	O	O	O	O	

Group 00: Basic Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
00-29	Zero-Speed Operation Selection	0: Operation Based on Frequency Command 1: Stop 2: Operation Based on the Lowest Frequency 3: Zero-Speed Operation	0	-	X	X	X	O	O	X	X	
00-30	Reserved											
00-31	Reserved											
00-32	Application Selection Presets**	0: General 1: Reserved 2: Conveyor 3: Exhaust Fan 4: Reserved 5: Compressor 6: Hoist** 7: Crane**	0	-	O	O	O	O	O	O	O	
00-33	Modified Parameters (only for LCD keypad)	0:Disable 1:Enable	0	-	O	O	O	O	O	O	O	*7
00-34 ~ 00-40	Reserved											
00-41	User parameter 0	Set 13-06 = 1, start user parameter. The setting range is 01-00 ~24-06 (only for LCD keypad)	00-41	-	O	O	O	O	O	O	O	*7
00-42	User parameter 1		00-42	-	O	O	O	O	O	O	O	*7
00-43	User parameter 2		00-43	-	O	O	O	O	O	O	O	*7
00-44	User parameter 3		00-44	-	O	O	O	O	O	O	O	*7
00-45	User parameter 4		00-45	-	O	O	O	O	O	O	O	*7
00-46	User parameter 5		00-46	-	O	O	O	O	O	O	O	*7
00-47	User parameter 6		00-47	-	O	O	O	O	O	O	O	*7
00-48	User parameter 7		00-48	-	O	O	O	O	O	O	O	*7

Group 00: Basic Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
00-49	User parameter 8	Set 13-06 = 1, start user parameter. The setting range is 01-00 ~24-06. (only for LCD keypad)	00-49	-	O	O	O	O	O	O	O	*7
00-50	User parameter 9		00-50	-	O	O	O	O	O	O	O	*7
00-51	User parameter 10		00-51	-	O	O	O	O	O	O	O	*7
00-52	User parameter 11		00-52	-	O	O	O	O	O	O	O	*7
00-53	User parameter 12		00-53	-	O	O	O	O	O	O	O	*7
00-54	User parameter 13		00-54	-	O	O	O	O	O	O	O	*7
00-55	User parameter 14		00-55	-	O	O	O	O	O	O	O	*7
00-56	User parameter 15		00-56	-	O	O	O	O	O	O	O	*7
00-57	SV High Speed Mode	0: SV High Speed Mode1 1: SV High Speed Mode2	0	-	X	X	X	O	X	X	X	

* Refer to the following attachment 1.

** 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.

Note1: New added parameter in software V1.02

Group 01: V/F Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
01-00	V/F Curve Selection	0~FF	F	-	O	O	X	X	X	X	O	*3
01-01	Reserved											
01-02	Maximum Output Frequency of Motor 1	4.8~599.0	50.0/ 60.0	Hz	O	O	O	O	O	O	O	*8
01-03	Maximum Output Voltage of Motor 1	200V: 0.1~255.0	230.0	V	O	O	X	X	X	X	O	*8
		400V: 0.2~510.0	400.0									
		575V: 0.1~670.0	575.0									
		690V: 0.1~804.0	690.0									
01-04	Middle Output Frequency 2 of Motor 1	0.0~599.0	0.0	Hz	O	O	X	X	X	X	O	
01-05	Middle Output Voltage 2 of Motor 1	200V: 0.0~255.0	0.0	V	O	O	X	X	X	X	O	*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	Hz	O	O	X	X	X	X	O	
01-07	Middle Output Voltage 1 of Motor 1	200V: 0.0~255.0	*	V	O	O	X	X	X	X	O	*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:1.5	Hz	O	O	O	O	O	O	O	
			VF+PG:1.5									
			SLV: 0.6									
			SV:0.1									
			PMSV:0.1									
			PMSLV:9.0									
			SLV2: 1.0									

Group 01: V/F Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
01-09	Minimum Output Voltage of Motor 1	200V: 0.0~255.0	7.5	V	O	O	X	X	X	X	O	*8
		400V: 0.0~510.0	15.0									
		575V: 0.0~670.0										
		690V: 0.0~804.0										
01-10	Torque Compensation Gain	0.0~2.0	0.5	-	O	O	X	X	X	X	O	*1
01-11	Selection of Torque Compensation Mode	0: Torque Compensation Mode 0	0	-	O	O	X	X	X	X	X	
		1: Torque Compensation Mode 1										
01-12	Base Frequency of Motor 1	4.8~599.0	50.0/ 60.0	Hz	O	O	O	O	O	O	O	*8
01-13	Base Output Voltage of Motor 1	200V: 0.0~255.0	230.0	V	O	O	X	X	X	X	O	*8
		400V: 0.0~510.0	400.0									
		575V: 0.0~670.0	575.0									
		690V: 0.0~804.0	690.0									
01-14	Input Voltage Setting	200V: 155.0~255.0	230.0	V	O	O	O	O	O	O	O	*8
		400V: 310.0~510.0	400.0									
		575V: 540.0~670.0	575.0									
		690V: 648.0~804.0	690.0									
01-15	Torque Compensation Time	0~10000	200	ms	O	O	X	X	X	X	O	
01-16	Maximum Output Frequency of Motor 2	4.8~599.0	50.0/ 60.0	Hz	O	X	X	X	X	X	X	*8

Group 01: V/F Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
01-17	Maximum Output Voltage of Motor 2	200V: 0.1~255.0	230.0	V	O	X	X	X	X	X	X	*8
		400V: 0.2~510.0	400.0									
		575V: 0.1~670.0	575.0									
		690V: 0.1~804.0	690.0									
01-18	Middle Output Frequency 2 of Motor 2	0.0~599.0	0.0	Hz	O	X	X	X	X	X	X	
01-19	Middle Output Voltage 2 of Motor 2	200V: 0.0~255.0	0.0	V	O	X	X	X	X	X	X	
		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	3.0	Hz	O	X	X	X	X	X	X	
01-21	Middle Output Voltage 1 of Motor 2	200V: 0.0~255.0	KVA	V	O	X	X	X	X	X	X	
		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	1.5	Hz	O	X	X	X	X	X	X	
01-23	Minimum Output Voltage of Motor 2	200V: 0.0~255.0	KVA	V	O	X	X	X	X	X	X	
		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	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
01-24	Base Frequency of Motor 2	4.8~599.0	50.0/ 60.0	Hz	O	X	X	X	X	X	X	*8
01-25	Base Output Voltage of Motor 2	200V: 0.0~255.0	230.0	V	O	X	X	X	X	X	X	*8
		400V: 0.0~510.0	400.0									
		575V: 0.0~670.0	575.0									
		690V: 0.0~804.0	690.0									
01-26	V/F Curve Selection of Motor 2	0~FF	F	-	O	X	X	X	X	X	X	*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	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
02-00	No-Load Current of Motor1	0.01~600.00	-	A	O	X	X	X	X	X	O	
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.	-	A	O	O	O	O	X	X	O	
02-02	Reserved											
02-03	Rated Rotation Speed of Motor1	0~60000	-	Rpm	O	O	O	O	X	X	O	
02-04	Rated Voltage of Motor1	200V: 50.0~240.0	230.0	V	O	O	O	O	X	X	O	*8
		400V: 100.0~480.0	400.0									
		575V: 150.0~670.0	575.0									
		690V: 200.0~804.0	690.0									

Group 02: IM Motor Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
02-05	Rated Power of Motor1	0.01~600.00	-	kW	O	O	O	O	X	X	O	
02-06	Rated Frequency of Motor1	4.8~599.0	50.0/ 60.0	Hz	O	O	O	O	X	X	O	*8
02-07	Poles of Motor 1	2~16 (Even)	4	-	O	O	O	O	X	X	O	
02-08	Reserved											
02-09	Excitation Current of Motor 1	15%~70% of Motor Rated Current	-	%	X	X	O	O	X	X	X	
02-10	Core Saturation Coefficient 1 of Motor 1	1~100	-	%	X	X	O	O	X	X	X	
02-11	Core Saturation Coefficient 2 of Motor 1	1~100	-	%	X	X	O	O	X	X	X	
02-12	Core Saturation Coefficient 3 of Motor 1	80~300	-	%	X	X	O	O	X	X	X	
02-13	Core loss of Motor 1	0.0~15.0	-	%	O	O	X	X	X	X	O	
02-14	Reserved											
02-15	Resistance between Wires of Motor 1	0.001~60.000	-	Ω	O	O	O	O	X	X	O	
02-16	Reserved											
02-17												
02-18												
02-19	No-Load Voltage of Motor 1	200V: 50~240	-	V	X	X	O	O	X	X	X	
		400V: 100~480	-									
		575V: 420~600	-									
		690V: 504~720	-									

Group 02: IM Motor Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
02-20	No-Load Current of Motor 2	0.01~600.00	-	A	O	X	X	X	X	X	X	
02-21	Rated Current of Motor 2	10%~200% of inverter's rated current	-	A	O	X	X	X	X	X	X	
02-22	Rated Rotation Speed of Motor 2	0~60000	-	Rpm	O	X	X	X	X	X	X	
02-23	Rated Voltage of Motor 2	200V: 50.0~240.0	230.0	V	O	X	X	X	X	X	X	*8
		400V: 100.0~480.0	400.0									
		575V: 150.0~670.0	575.0									
		690V: 200.0~804.0	690.0									
02-24	Rated Power of Motor 2	0.01~600.00	-	kW	O	X	X	X	X	X	X	
02-25	Rated Frequency of Motor 2	4.8~599.0	50.0/ 60.0	Hz	O	X	X	X	X	X	X	*8
02-26	Poles of Motor 2	2~16 (Even)	4	-	O	X	X	X	X	X	X	
02-27 ~ 02-31	Reserved											
02-32	Resistance between Wires of Motor 2	0.001~60.000	-	Ω	O	X	X	X	X	X	X	
02-33	Proportion of Motor Leakage Inductance	0.1~15.0	3.4	%	X	X	O	O	X	X	X	
02-34	Motor Slip Frequency	0.10~20.00	1.00	Hz	X	X	O	O	X	X	X	
02-35 ~ 02-36	Reserved											
02-37	Motor Mechanical Loss	0.0~10.0	4.0	%	X	X	X	O	O	X	X	

Group 03: External Digital Input and Output Parameters													
Code	Parameter Name	Setting Range	Default	Unit	Control mode								
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
03-00	Multi-Function Terminal Function Setting-S1	0: 2-Wire Sequence (ON: Forward Run Command)	0	-	O	O	O	O	O	O	O	
		1: 2-Wire Sequence (ON: Reverse Run Command)			O	O	O	O	O	O	O	
		2: Multi-Speed/ Position Setting Command 1			O	O	O	O	O	O	O	
		3: Multi-Speed/ Position Setting Command 2			O	O	O	O	O	O	O	
		4: Multi-Speed/ Position Setting Command 3			O	O	O	O	O	O	O	
		5: Multi-Speed/ Position Setting Command 4			O	O	O	O	O	O	O	
		6: Forward Jog Run Command			O	O	O	O	O	O	O	
03-01	Multi-Function Terminal Function Setting-S2	7: Reverse Jog Run Command	1	-	O	O	O	O	O	O	O	
		8: UP Frequency Increasing Command			O	O	O	O	O	O	O	
		9: DOWN Frequency Decreasing Command			O	O	O	O	O	O	O	
		10: Acceleration/ Deceleration Time Selection 1			O	O	O	O	O	O	O	
		11: Inhibit Acceleration/ Deceleration Command			O	O	O	O	O	O	O	
		12: Main/ Alternative Run Switch Function			O	O	O	O	O	O	O	
		13: Main/ Alternative Frequency Switch Function			O	O	O	O	O	O	O	

Group 03: External Digital Input and Output Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
03-02	Multi-Function Terminal Function Setting-S3	14: Emergency Stop (decelerate to zero and stop)	2	-	O	O	O	O	O	O	O	
		15: External Baseblock Command (rotation freely to stop)			O	O	O	O	O	O	O	
		16: PID Control Disable			O	O	O	O	O	O	O	
		17: Fault Reset (RESET)			O	O	O	O	O	O	O	
		18: Reserved			-	-	-	-	-	-	-	
		19: Speed Search 1 (from the maximum frequency)			O	O	O	O	O	X	O	
		20: Manual Energy Saving Function			O	O	X	X	X	X	X	
03-03	Multi-Function Terminal Function Setting-S4	21: PID Integral Reset	3	-	O	O	O	O	O	O	O	
		22~23: Reserved			-	-	-	-	-	-	-	
		24: PLC Input			O	O	O	O	O	O	O	
		25: External Fault			O	O	O	O	O	O	O	
		26: 3-Wire Sequence (Forward/ Reverse command)			O	O	O	O	O	O	O	
		27: Local/ Remote Selection			O	O	O	O	O	O	O	

Group 03: External Digital Input and Output Parameters													
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
03-04	Multi-Function Terminal Function Setting-S5	28: Remote Mode Selection	4	-	O	O	O	O	O	O	O	
		29: Jog Frequency Selection			O	O	O	O	O	O	O	
		30: Acceleration/ Deceleration Time Selection 2			O	O	O	O	O	O	O	
		31: Inverter Overheating Warning			O	O	O	O	O	O	O	
		32: Sync Command			O	O	O	O	O	O	O	
		33: DC Braking			O	O	O	O	X	X	O	
		34: Speed Search 2 (from the frequency command)			O	O	O	O	O	X	O	
		35: Timing Function Input			O	O	O	O	O	O	O	
		36: PID Soft Start Disable			O	O	O	O	O	O	O	
03-05	Multi-Function Terminal Function Setting-S6	37: Traversing Operation	17	-	O	O	X	X	X	X	O	
		38: Upper Deviation of Traverse Operation			O	O	X	X	X	X	O	
		39: Lower Deviation of Traverse Operation			O	O	X	X	X	X	O	
		40: Switching between Motor 1/Motor 2			O	O	X	X	X	X	X	
		41: PID Sleep			-	-	-	-	-	-	-	
		42: PG Disable			X	O	X	X	X	X	X	
		43: PG Integral Reset			X	O	X	O	O	X	X	

Group 03: External Digital Input and Output Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
03-06	Multi-Function Terminal Function Setting-S7	44: Mode Switching between Speed and Torque	29*	-	X	X	X	O	O	X	X	
		45: Negative Torque Command			X	X	X	O	O	X	X	
		46: Zero-Servo Command			X	X	X	O	O	X	X	
		47: Fire mode (Forced Operation mode)			O	O	O	O	O	O	O	
		48: KEB Acceleration			O	O	X	X	X	X	O	
		49: Parameters Writing Allowable			O	O	O	O	O	O	O	
		50: Unattended Start Protection (USP)			O	O	O	O	O	O	O	
03-07	Multi-Function Terminal Function Setting-S8	51: Mode Switching between Speed and Position	15	-	X	X	X	O	O	X	X	
		52: Multi Position Reference Enable			X	X	X	O	O	X	X	
		53: 2-Wire Self Holding Mode (Stop Command)			O	O	O	O	O	O	O	
		54: Reserved			-	-	-	-	-	-	-	
		55: Reserved			-	-	-	-	-	-	-	
		56: Reserved			-	-	-	-	-	-	-	
		57: Reserved			-	-	-	-	-	-	-	
		58: Safety Function			O	O	O	O	O	O	O	
		59: Reserved			-	-	-	-	-	-	-	
		60: Reserved			-	-	-	-	-	-	-	
		61: Reserved			-	-	-	-	-	-	-	
		62: EPS Function			O	O	O	O	O	O	O	
		63: Reserved			-	-	-	-	-	-	-	
		64: Reserved			-	-	-	-	-	-	-	
		65: Short-circuit braking			X	X	X	X	X	O	X	Note1
03-08	(S1~S8) DI Scan Time	0: Scan Time 4ms 1: Scan Time 8ms	1	-	O	O	O	O	O	O	O	

Group 03: External Digital Input and Output Parameters													
Code	Parameter Name	Setting Range	Default	Unit	Control mode								
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
03-09	Multi-Function Terminal S1-S4 Type Selection	xxx0b: S1 A Contact xxx1b: S1 B Contact xx0xb: S2 A Contact xx1xb: S2 B Contact x0xxb: S3 A Contact x1xxb: S3 B Contact 0xxxb: S4 A Contact 1xxxb: S4 B Contact	0000b	-	O	O	O	O	O	O	O	
03-10	Multi-Function Terminal S5-S8 Type Selection	xxx0b: S5 A Contact 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	0000b	-	O	O	O	O	O	O	O	
03-11	Relay (R1A-R1C) Output	0: During Running	0	-	O	O	O	O	O	O	O	
		1: Fault Contact Output			O	O	O	O	O	O	O	
		2: Frequency Agree			O	O	O	O	O	O	O	
		3: Setting Frequency Agree			O	O	O	O	O	O	O	
		4: Frequency Detection 1 (≥03-13+03-14)			O	O	O	O	O	O	O	
		5: Frequency Detection 2 (≤ 03-13+03-14)			O	O	O	O	O	O	O	
		6: Automatic Restart			O	O	O	O	O	O	O	
		7: Reserved			-	-	-	-	-	-	-	
		8: Reserved			-	-	-	-	-	-	-	
		9: Baseblock			O	O	O	O	O	O	O	
		10: Reserved			-	-	-	-	-	-	-	
		11: Reserved			-	-	-	-	-	-	-	
		12: Over-Torque Detection			O	O	O	O	O	O	O	
		13: Current Agree			O	O	O	O	O	O	O	
		14: Mechanical Braking Control (03-17~18)			O	O	O	O	O	O	O	
		15: Reserved			-	-	-	-	-	-	-	
		16: Reserved			-	-	-	-	-	-	-	
		17: Reserved			-	-	-	-	-	-	-	
		18: PLC status			O	O	O	O	O	O	O	
		19: PLC Control Contact			O	O	O	O	O	O	O	

Group 03: External Digital Input and Output Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
03-12 (Note)	Relay (R2A-R2C) Output	20: Zero Speed	1	-	O	O	O	O	O	O	O	
		21: Inverter Ready			O	O	O	O	O	O	O	
		22: Under Voltage Detection			O	O	O	O	O	O	O	
		23: Source of Operation Command			O	O	O	O	O	O	O	
		24: Source of Frequency Command			O	O	O	O	O	O	O	
		25: Low Torque Detection			O	O	O	O	O	O	O	
		26: Frequency Reference Missing			O	O	O	O	O	O	O	
		27: Timing Function Output			O	O	O	O	O	O	O	
		28: Traverse Operation UP Status			O	O	X	X	X	X	O	
		29 : During Traverse Operation Status			O	O	X	X	X	X	O	
		30 : Motor 2 Selection			O	O	O	O	O	O	O	
		31 : Zero Speed Servo Status (Position Mode)			X	X	X	O	O	X	X	
		32: Communi-cation Control Contacts			O	O	O	O	O	O	O	
		33: Reserved			-	-	-	-	-	-	-	
		34: Reserved			-	-	-	-	-	-	-	
		35: Reserved			-	-	-	-	-	-	-	
		36: Reserved			-	-	-	-	-	-	-	
		37: PID Feedback Loss Detection Output			O	O	O	O	O	O	O	
		38: Brake Release			X	X	O	O	O	X	X	
		39: Frequency Detection 1 (dedicated for Crane)			O	O	O	X	X	X	X	
		40: Frequency Output			O	O	O	O	O	X	X	
		41: Position Agree (Position Mode)			O	O	O	O	O	X	X	
		42: Reserved			-	-	-	-	-	-	-	
		43: Reserved			-	-	-	-	-	-	-	
		44: Reserved			-	-	-	-	-	-	-	
		45: PID sleep			O	O	O	O	O	O	O	
		46: Reserved			-	-	-	-	-	-	-	
		47: Reserved			-	-	-	-	-	-	-	
		48: Reserved			-	-	-	-	-	-	-	
		49: Reserved			-	-	-	-	-	-	-	
		50: Frequency Detection 3 (≥ 03-44+03-45)			O	O	O	O	O	O	O	
		51: Frequency Detection 4 (≤ 03-44+03-45)			O	O	O	O	O	O	O	
		52: Frequency Detection 5 (≥ 03-46+03-47)			O	O	O	O	O	O	O	
		53: Frequency Detection 6 (≤ 03-46+03-47)			O	O	O	O	O	O	O	
		54: Turn on short-circuit braking			X	X	X	X	X	O	X	Note1
		57: Low Current Detection			O	O	O	O	O	O	O	Note2

Group 03: External Digital Input and Output Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
03-13	Frequency Detection Level	0.0~599.0	0.0	Hz	O	O	O	O	O	O	O	
03-14	Frequency Detection Width	0.1~25.5	2.0	Hz	O	O	O	O	O	O	O	
03-15	Current Agree Level	0.1~999.9	0.1	A	O	O	O	O	O	O	O	
03-16	Delay Time of Current Agree Detection	0.1~10.0	0.1	s	O	O	O	O	O	O	O	
03-17	**Mechanical Braking Release Level	0.00~599.00	0.00	Hz	O	O	O	O	O	O	O	
03-18	**Mechanical Braking Level Set	0.00~599.00	0.00	Hz	O	O	O	O	O	O	O	
03-19	Relay (R1A-R2A) Type	xxx0b: R1 A Contact xxx1b: R1 B Contact xx0xb: R2 A Contact (DO2 for F1) xx1xb: R2 C Contact	0000b	-	O	O	O	O	O	O	O	
03-20	Reserved											
03-21	Reserved											
03-22	Reserved											
03-23	Reserved											
03-24	Reserved											
03-25	Reserved											
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 2: Allow speed changes from last set frequency when stopped 3: Refresh frequency at acceleration.	0	-	O	O	O	O	O	O	O	

Group 03: External Digital Input and Output Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
03-28	Photo-coupler Output	Range and definition are the same as those of 03-11, 03-12	0	-	O	O	O	O	O	O	O	
03-29	Photo-coupler Output Selection	xxx0b: Photo-coupler A Contact xxx1b: Photo-coupler B Contact	0000b	-	O	O	O	O	O	O	O	
03-30	Selection of Pulse Input	0: General Pulse Input 1: PWM	0	-	O	O	O	O	O	O	O	
03-31	Scale of Pulse Input	Depending on the setting of 03-30 03-30 = 0: 50~32000Hz 03-30 = 1:10~1000Hz	1000	Hz	O	O	O	O	O	O	O	*1
03-32	Pulse Input Gain	0.0~1000.0	100	%	O	O	O	O	O	O	O	*1
03-33	Pulse Input Bias	-100.0~100.0	0.0	%	O	O	O	O	O	O	O	*1
03-34	Filter Time of Pulse Input	0.00~2.00	0.1	Sec	O	O	O	O	O	O	O	*1
03-35	Function Setting of Pulse Output	1: Frequency Command 2: Output Frequency 3: Output Frequency after Soft-Start 4: Motor Speed 5: PID Feedback 6: PID Input 7: PG Output (with PG card)	2	-	O	O	O	O	O	O	O	*1

Group 03: External Digital Input and Output Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
03-36	Scale of Pulse Output	1~32000	1000	Hz	O	O	O	O	O	O	O	*1
03-37	Timer ON Delay (DIO)	0.0~6000.0	0.0	s	O	O	O	O	O	O	O	
03-38	Timer OFF Delay (DIO)	0.0~6000.0	0.0	s	O	O	O	O	O	O	O	
03-39	Reserved											
03-40	Up/Down Frequency Width Setting	0.00~5.00	0.00	Hz	O	O	O	O	O	O	O	
03-41	Torque Detection Level	0~150	10	%	X		O	O	O	X	X	
03-42	Brake Release Delay Time	0.00~65.00	0.00	s	X	X	O	O	O	X	X	
03-43	UP/DOWN Acceleration/ Deceleration Selection	0: Acceleration/ Deceleration Time 1 1: Acceleration/ Deceleration Time 2	0	-	O	O	O	O	O	O	O	
03-44	Frequency Detection Level 2	0.0~599.0	0.0	Hz	O	O	O	O	O	O	O	
03-45	Frequency Detection Width 2	0.1~25.5	2.0	Hz	O	O	O	O	O	O	O	
03-46	Frequency Detection Level 3	0.0~599.0	0.0	Hz	O	O	O	O	O	O	O	
03-47	Frequency Detection Width 3	0.1~25.5	2.0	Hz	O	O	O	O	O	O	O	
03-48	Low Current Detection Level	0.0~999.9	0.1	A	O	O	O	O	O	O	O	Note2
03-49	Low Current Detection Delay Time	0.00~655.35	0.01	Sec	O	O	O	O	O	O	O	Note2

* 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 frame 1, the DO2 function is setting by 03-12.

Note1: New added parameter in software V1.02

Note2: New added parameter in software V1.10

Group 04: External Analog Input and Output Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
04-00	AI Input Signal Type	0: AI1:0~10V AI2: 0~10V / 0~20mA 1: AI1:0~10V AI2: 4~20mA/ 2~10V 2: AI1: -10~10V AI2: 0~10V/ 0~20mA 3: AI1: -10~10V AI2: 4~20mA/ 2~10V	1	-	O	O	O	O	O	O	O	
04-01	AI1 Signal Scanning and Filtering Time	0.00~2.00	0.03	s	O	O	O	O	O	O	O	
04-02	AI1 Gain	0.0~1000.0	100.0	%	O	O	O	O	O	O	O	*1
04-03	AI1 Bias	-100.0~100.0	0	%	O	O	O	O	O	O	O	*1
04-04	Reserved											
04-05	AI2 Function Setting	0: Auxiliary Frequency	0	-	O	O	O	O	O	O	O	
		1: Frequency Reference Gain			O	O	O	O	O	O	O	
		2: Frequency Reference Bias			O	O	O	O	O	O	O	
		3: Output Voltage Bias			O	O	X	X	O	O	O	
		4: Coefficient of Acceleration and Deceleration Reduction			O	O	O	O	O	O	O	
		5: DC Braking Current			O	O	O	O	X	X	O	
		6: Over-Torque Detection Level			O	O	O	O	O	O	O	
		7: Stall Prevention Level During Running			O	O	X	X	X	X	O	
		8: Frequency Lower Limit			O	O	O	O	O	O	O	
		9: Jump Frequency 4			O	O	O	O	O	O	O	
		10: Added to AI1			O	O	O	O	O	O	O	
		11: Positive torque limit			X	X	O	O	O	O	X	
		12: Negative torque limit			X	X	O	O	O	O	X	
		13: Regenerative Torque Limit			X	X	O	O	O	O	X	
		14: Positive / Negative Torque Limit			X	X	O	O	O	O	X	
		15: Torque Reference/ Torque Limit (in Speed Control)			X	X	X	O	O	X	X	
		16: Torque Compensation			X	X	O	O	O	X	X	
		17: PTC Overheat Protection			O	O	O	O	O	O	O	
04-06	AI2 Signal Scanning and Filtering Time	0.00~2.00	0.03	S	O	O	O	O	O	O	O	

Group 04: External Analog Input and Output Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
04-07	AI2 Gain	0.0~1000.0	100.0	%	O	O	O	O	O	O	O	*1
04-08	AI2 Bias	-100.0~100.0	0	%	O	O	O	O	O	O	O	*1
04-09 ~ 04-10	Reserved											
04-11	AO1 Function Setting	0: Output Frequency	0	-	O	O	O	O	O	O	O	
		1: Frequency Command			O	O	O	O	O	O	O	
		2: Output Voltage			O	O	O	O	O	O	O	
		3: DC Voltage			O	O	O	O	O	O	O	
		4: Output Current			O	O	O	O	O	O	O	
		5: Output Power			O	O	O	O	O	O	O	
		6: Motor Speed			O	O	O	O	O	O	O	
		7: Output Power Factor			O	O	O	O	O	O	O	
		8: AI1 Input			O	O	O	O	O	O	O	
		9: AI2 Input			O	O	O	O	O	O	O	
		10: Torque Command			X	X	O	O	O	O	X	
		11: q-axis Current			X	X	O	O	O	O	X	
		12: d-axis Current			X	X	O	O	O	O	X	
		13: Speed Deviation			X	X	X	O	O	X	X	
		14: Reserved			-	-	-	-	-	-	-	
		15: ASR Output			X	O	X	O	O	X	X	
		16: Reserved			-	-	-	-	-	-	-	
		17: q-axis Voltage			X	X	O	O	O	O	X	
		18: d-axis Voltage			X	X	O	O	O	O	X	
		19: Reserved			-	-	-	-	-	-	-	
		20: Reserved			-	-	-	-	-	-	-	
		21: PID Input			O	O	O	O	O	O	O	
		22: PID Output			O	O	O	O	O	O	O	
		23: PID Target Value			O	O	O	O	O	O	O	
		24: PID Feedback Value			O	O	O	O	O	O	O	
		25: Output Frequency of the Soft Starter			O	O	O	O	O	O	O	
		26: PG Feedback			X	O	X	O	O	X	X	
		27: Reserved			-	-	-	-	-	-	-	
		28: Communication control			O	O	O	O	O	O	O	
04-12	AO1 Gain	0.0~1000.0	100.0	%	O	O	O	O	O	O	O	*1

Group 04: External Analog Input and Output Parameters													
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
04-13	AO1 Bias	-100.0~100.0	0	%	O	O	O	O	O	O	O	*1
04-14	Reserved											
04-15	Reserved											
04-16	AO2 Function Setting	Range and definition are the same as those of 04-11	3	-	O	O	O	O	O	O	O	
04-17	AO2 Gain	0.0~1000.0	100.0	%	O	O	O	O	O	O	O	*1
04-18	AO2 Bias	-100.0~100.0	0	%	O	O	O	O	O	-		*1
04-19	AO2 Output Signal Type	0: AO2 0~10V 1: AO2 4~20mA	0	-	O	O	O	O	O	O	O	
04-20	Filter Time of AO Signal Scan	0.00~0.50	0.00	s	O	O	O	O	O	O	O	*1

Group 05: Multi-Speed Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
05-00	Acceleration and Deceleration Selection of Multi-Speed	0: Acceleration and deceleration time are set by 00-14 ~ 00-24 1: Acceleration and Deceleration Time are set by 05-17 ~ 05-48	0	-	O	O	O	O	O	O	O	
05-01	*Frequency Setting of Speed-Stage 0	0.00~599.00	5.00	Hz	O	O	O	O	O	O	O	*1
05-02	*Frequency Setting of Speed-Stage 1	0.00~599.00	5.00	Hz	O	O	O	O	O	O	O	*1
05-03	*Frequency Setting of Speed-Stage 2	0.00~599.00	10.00	Hz	O	O	O	O	O	O	O	*1
05-04	*Frequency Setting of Speed-Stage 3	0.00~599.00	20.00	Hz	O	O	O	O	O	O	O	*1

Group 05: Multi-Speed Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
05-05	*Frequency Setting of Speed-Stage 4	0.00~599.00	30.00	Hz	O	O	O	O	O	O	O	*1
05-06	*Frequency Setting of Speed-Stage 5	0.00~599.00	40.00	Hz	O	O	O	O	O	O	O	*1
05-07	*Frequency Setting of Speed-Stage 6	0.00~599.00	50.00	Hz	O	O	O	O	O	O	O	*1
05-08	*Frequency Setting of Speed-Stage 7	0.00~599.00	50.00	Hz	O	O	O	O	O	O	O	*1
05-09	*Frequency Setting of Speed-Stage 8	0.00~599.00	5.00	Hz	O	O	O	O	O	O	O	*1
05-10	*Frequency Setting of Speed-Stage 9	0.00~599.00	5.00	Hz	O	O	O	O	O	O	O	*1
05-11	*Frequency Setting of Speed-Stage 10	0.00~599.00	5.00	Hz	O	O	O	O	O	O	O	*1
05-12	*Frequency Setting of Speed-Stage 11	0.00~599.00	5.00	Hz	O	O	O	O	O	O	O	*1
05-13	*Frequency Setting of Speed-Stage 12	0.00~599.00	5.00	Hz	O	O	O	O	O	O	O	*1
05-14	*Frequency Setting of Speed-Stage 13	0.00~599.00	5.00	Hz	O	O	O	O	O	O	O	*1
05-15	*Frequency Setting of Speed-Stage 14	0.00~599.00	5.00	Hz	O	O	O	O	O	O	O	*1
05-16	*Frequency Setting of Speed-Stage 15	0.00~599.00	5.00	Hz	O	O	O	O	O	O	O	*1

Group 05: Multi-Speed Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
05-17	Acceleration Time Setting of Multi Speed 0	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-18	Deceleration Time Setting of Multi Speed 0	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-19	Acceleration Time Setting of Multi Speed 1	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-20	Deceleration Time Setting of Multi Speed 1	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-21	Acceleration Time Setting of Multi Speed 2	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-22	Deceleration Time Setting of Multi Speed 2	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-23	Acceleration Time Setting of Multi Speed 3	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-24	Deceleration Time Setting of Multi Speed 3	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-25	Acceleration Time Setting of Multi Speed 4	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-26	Deceleration Time Setting of Multi Speed 4	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-27	Acceleration Time Setting of Multi Speed 5	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-28	Deceleration Time Setting of Multi Speed 5	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-29	Acceleration Time Setting of Multi Speed 6	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	

Group 05: Multi-Speed Parameters												
Code	Parameter Name	Setting Range	Default	Control mode								
				Unit	V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
05-30	Deceleration Time Setting of Multi Speed 6	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-31	Acceleration Time Setting of Multi Speed 7	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-32	Deceleration Time Setting of Multi Speed 7	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-33	Acceleration Time Setting of Multi Speed 8	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-34	Deceleration Time Setting of Multi Speed 8	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-35	Acceleration Time Setting of Multi Speed 9	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-36	Deceleration Time Setting of Multi Speed 9	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-37	Acceleration Time Setting of Multi Speed 10	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-38	Deceleration Time Setting of Multi Speed 10	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-39	Acceleration Time Setting of Multi Speed 11	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-40	Deceleration Time Setting of Multi Speed 11	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-41	Acceleration Time Setting of Multi Speed 12	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-42	Deceleration Time Setting of Multi Speed 12	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	

Group 05: Multi-Speed Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
05-43	Acceleration Time Setting of Multi Speed 13	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-44	Deceleration Time Setting of Multi Speed 13	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-45	Acceleration Time Setting of Multi Speed 14	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-46	Deceleration Time Setting of Multi Speed 14	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-47	Acceleration Time Setting of Multi Speed 15	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	
05-48	Deceleration Time Setting of Multi Speed 15	0.1~6000.0	10.0	s	O	O	O	O	O	O	O	

* *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	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
06-00	Automatic Operation Mode Selection	0: Disable 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.	0	-	O	O	O	X	X	X	O	
06-01	*Frequency Setting of Opera-tion-Stage 1	0.00~599.00	5.00	Hz	O	O	O	X	X	X	O	*1

Group 06: Automatic Program Operation Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
06-02	*Frequency Setting of Operation Stage 2	0.00~599.00	10.00	Hz	O	O	O	X	X	X	O	*1
06-03	*Frequency Setting of Operation Stage 3	0.00~599.00	20.00	Hz	O	O	O	X	X	X	O	*1
06-04	*Frequency Setting of Operation Stage 4	0.00~599.00	30.00	Hz	O	O	O	X	X	X	O	*1
06-05	*Frequency Setting of Operation Stage 5	0.00~599.00	40.00	Hz	O	O	O	X	X	X	O	*1
06-06	*Frequency Setting of Operation Stage 6	0.00~599.00	50.00	Hz	O	O	O	X	X	X	O	*1
06-07	*Frequency Setting of Operation Stage 7	0.00~599.00	50.00	Hz	O	O	O	X	X	X	O	*1
06-08	*Frequency Setting of Operation Stage 8	0.00~599.00	5.00	Hz	O	O	O	X	X	X	O	*1
06-09	*Frequency Setting of Operation Stage 9	0.00~599.00	5.00	Hz	O	O	O	X	X	X	O	*1
06-10	*Frequency Setting of Operation Stage 10	0.00~599.00	5.00	Hz	O	O	O	X	X	X	O	*1
06-11	*Frequency Setting of Operation Stage 11	0.00~599.00	5.00	Hz	O	O	O	X	X	X	O	*1
06-12	*Frequency Setting of Operation Stage 12	0.00~599.00	5.00	Hz	O	O	O	X	X	X	O	*1
06-13	*Frequency Setting of Operation Stage 13	0.00~599.00	5.00	Hz	O	O	O	X	X	X	O	*1
06-14	*Frequency Setting of Operation Stage 14	0.00~599.00	5.00	Hz	O	O	O	X	X	X	O	*1
06-15	*Frequency Setting of Operation Stage 15	0.00~599.00	5.00	Hz	O	O	O	X	X	X	O	*1

Group 06: Automatic Program Operation Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
06-16	Operation Time Setting of Speed-Stage 0	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-17	Operation Time Setting of Speed-Stage 1	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-18	Operation Time Setting of Speed-Stage 2	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-19	Operation Time Setting of Speed-Stage 3	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-20	Operation Time Setting of Speed-Stage 4	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-21	Operation Time Setting of Speed-Stage 5	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-22	Operation Time Setting of Speed-Stage 6	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-23	Operation Time Setting of Speed-Stage 7	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-24	Operation Time Setting of Speed-Stage 8	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-25	Operation Time Setting of Speed-Stage 9	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-26	Operation Time Setting of Speed-Stage 10	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-27	Operation Time Setting of Speed-Stage 11	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-28	Operation Time Setting of Speed-Stage 12	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-29	Operation Time Setting of Speed-Stage 13	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-30	Operation Time Setting of Speed-Stage 14	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1

Group 06: Automatic Program Operation Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
06-31	Operation Time Setting of Speed-Stage 15	0.0~6000.0	0.0	s	O	O	O	X	X	X	O	*1
06-32	Operation Direction Selection of Speed-Stage 0	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-33	Operation Direction Selection of Speed-Stage 1	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-34	Operation Direction Selection of Speed-Stage 2	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-35	Operation Direction Selection of Speed-Stage 3	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-36	Operation Direction Selection of Speed-Stage 4	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-37	Operation Direction Selection of Speed-Stage 5	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-38	Operation Direction Selection of Speed-Stage 6	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-39	Operation Direction Selection of Speed-Stage 7	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-40	Operation Direction Selection of Speed-Stage 8	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-41	Operation Direction Selection of Speed-Stage 9	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-42	Operation Direction Selection of Speed-Stage 10	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-43	OperationDirection Selection of Speed-Stage 11	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-44	Operation Direction Selection of Speed-Stage 12	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-45	Operation Direction Selection of Speed-Stage 13	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	

Group 06: Automatic Program Operation Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
06-46	Operation Direction Selection of Speed-Stage 14	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	
06-47	Operation Direction Selection of Speed-Stage 15	0: Stop 1: Forward 2: Reverse	0	-	O	O	O	X	X	X	O	

* 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	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
07-00	Momentary Power Loss/ Fault Restart Selection	0: Disable 1: Enable	0	-	O	O	O	O	X	X	O	
07-01	Fault Auto-Restart Time	0~7200	0	s	O	O	O	O	O	O	O	
07-02	Number of Fault Auto-Restart Attempts	0~10	0	-	O	O	O	O	O	O	O	
07-03	Reserved											
07-04	Direct Start at Power on	0: When the external run command is enabled, direct start at power up 1: When the external run command is enabled, unable to direct start at power-up	1	-	O	O	O	O	O	O	O	
07-05	Delay of Direct Start at Power on	1.0~300.0	3.5	s	O	O	O	O	O	O	O	
07-06	DC Injection Braking Starting Frequency	0.0~10.0	0.5	Hz	O	O	O	O	O	O	O	
07-07	DC Injection Braking Current	0~100	50	%	O	O	O	X	X	X	O	
07-08	DC Injection Braking Time at Stop	0.00~100.00	0.50	s	O	O	O	O	O	X	O	

Group 07: Start /Stop Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
07-09	Stop Mode Selection	0: Deceleration to Stop 1: Coast to Stop 2: DC Braking Stop in All Fields 3: Coast to Stop with Timer	0	-	O	O	O	O	X	X	O	
07-10 ~07-12	Reserved											
07-13	Low Voltage Detection Level	200V: 150~300 400V: 250~600 575V: 500~600 690V: 500~600	190 380 546 546	V	O	O	O	O	O	O	O	
07-14	Pre-excitation Time	0.00~10.00	2.00	s	X	X	O	X	X	X	X	
07-15	Pre-excitation Level	50~200	100	%	X	X	O	X	X	X	X	
07-16	DC Injection Braking Time at Start	0.00~100.00	0.00	s	O	O	O	O	O	X	O	
07-17	Reserved											
07-18	Minimum Base block Time	0.1~5.0	-	Sec	O	O	O	O	X	O	O	
07-19	Direction-Detection Speed Search Operating Current	0~100	50	%	O	X	O	X	X	X	O	
07-20	Speed Search Operating Current	0~100	20	%	O	X	O	X	X	X	O	
07-21	Integral Time of Speed Searching	0.1~10.0	2.0	Sec	O	X	O	X	X	X	O	

Group 07: Start /Stop Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
07-22	Delay Time of Speed Searching	0.0~20.0	0.2	Sec	O	O	O	O	O	X	O	
07-23	Voltage Recovery Time	0.1~5.0	2.0	Sec	O	O	O	X	X	X	O	
07-24	Direction-Detection Speed Search Selection	0: Disable 1: Enable	1	-	O	O	O	X	X	X	O	
07-25	Low Voltage Detection Time	0.00~1.00	0.02	Sec	O	O	O	O	O	O	O	
07-26	Start-up Mode Selection of SLV Coast to Stop	0: Start with speed search 1: Normal start	0	-	X	X	O	X	X	X	X	
07-27	Start Selection after Fault during SLV Mode	0: Start with speed search 1: Normal start	0	-	X	X	O	X	X	X	X	
07-28	Start after External Base Block	0: Start with speed search 1: Normal start	0	-	O	X	O	X	X	X	O	
07-29	Run Command Selection at the Action of DC Braking	0: Not Allowable to Run 1: Allowable to Run	0	-	O	O	X	X	X	X	X	

Group 07: Start /Stop Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
07-30	Low Voltage Level Selection	0: Disable 1: Enable	0	-	O	O	O	O	O	O	O	
07-31	**Low Voltage Run Frequency	0.00~599.00	10.00	Hz	X	X	X	O	O	X	X	
07-32	Speed Search Mode Selection	0: Disable 1: Execute a Speed Search at Power On	0	-	O	O	O	O	X	X	X	
07-33	Start Frequency of Speed Search Selection	0: Maximum Output Frequency of Motor 1: Frequency Command	0	-	O	O	O	O	X	X	X	
07-34	Start short-circuit braking time	0.00~100.00	0.00	Sec	X	X	X	X	X	O	X	Note1
07-35	Stop Short-circuit braking time	0.00~100.00	0.50	Sec	X	X	X	X	X	O	X	Note1
07-36	Short-circuit braking current limited	0.0~200.0	100.0	%	X	X	X	X	X	O	X	Note1
07-37 ~07-41	Reserved											
07-42	Voltage Limit Gain	0.0~50.0	0	%	X	X	O	O	X	X	X	Note2

*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
Note1: New added parameter in software V1.02

Note2: New added parameter in software V1.10

Group 08: Protection Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
08-00	Stall Prevention Function	xxx0b: Stall prevention is enabled in acceleration xxx1b: Stall prevention is 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.	0000b	-	O	O	O	O	O	O	O	
08-01	Stall Prevention Level in Acceleration	20~200	HD:150 ND:120	%	O	O	O	X	X	O	O	

Group 08: Protection Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
08-02	Stall Prevention Level in Deceleration	200V: 330V~410V	385V	V	O	O	O	O	X	O	O	
		400V: 660V~820V	770V									
		575V: 900~1000	950V									
		690V: 1080~1200	1140V									
08-03	Stall Prevention Level in Operation	30~200	HD:160	%	O	O	X	X	X	X	O	
			ND:120									
08-04	Reserved											
08-05	Selection for Motor Overload Protection (OL1)	xxx0b: Overload Protection is disabled	0001b	-	O	O	O	O	O	O	O	
		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										

Group 08: Protection Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
08-06	Start-up Mode of Overload Protection Operation (OL1)	0: Stop Output after Overload Protection 1: Continuous Operation after Overload Protection.	0	-	O	O	O	O	O	O	O	
08-07	Motor Overload (OL1) Protection Level	0: Motor Overload (OL1) Protection 0 1: Motor Overload (OL1) Protection 1 2: Motor Overload (OL1) Protection 2	0	-	O	O	O	O	O	O	O	Note2
08-08	Automatic Voltage Regulation (AVR)	0: Enable 1: Disable	0	-	O	O	O	O	O	O	O	
08-09	Selection of Input Phase Loss Protection	0: Disable 1: Enable	0	-	O	O	O	O	O	O	O	
08-10	Selection of Output Phase Loss Protection	0: Disable 1: Enable	0	-	O	O	O	O	O	O	O	
08-11 08-12	Reserved											
08-13	Selection of Over-Torque Detection	0: Over-Torque Detection is Disabled. 1: Start to Detect when Reaching the Set Frequency. 2: Start to Detect when the Operation is Begun.	0	-	O	O	O	O	O	O	O	

Group 08: Protection Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
08-14	Selection of Over-Torque Operation	0: Deceleration to Stop when Over Torque is Detected. 1: Display Warning when Over Torque is Detected. Go on Operation 2: Coast to Stop when Over Torque is Detected	0	-	O	O	O	O	O	O	O	
08-15	Level of Over-Torque Detection	0~300	150	%	O	O	O	O	O	O	O	
08-16	Time of Over-Torque Detection	0.0~10.0	0.1	Sec	O	O	O	O	O	O	O	
08-17	Selection of Low-Torque Detection	0: Low-Torque Detection is Disabled 1: Start to Detect when Reaching the Set Frequency 2: Start to Detect when the Operation is Begun	0	-	O	O	O	O	O	O	O	
08-18	Selection of Low-Torque Operation	0: Deceleration to Stop when Low Torque is Detected. 1: Display Warning when Low Torque is Detected. Go on Operation. 2: Coast to Stop when Low Torque is Detected	0	-	O	O	O	O	O	O	O	
08-19	Level of Low-Torque Detection	0~300	30	%	O	O	O	O	O	O	O	
08-20	Time of Low-Torque Detection	0.0~10.0	0.1	Sec	O	O	O	O	O	O	O	

Group 08: Protection Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control Mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
08-21	Limit of Stall Prevention in Acc over Base Speed	1~100	50	%	O	O	O	X	X	O	O	
08-22	Stall Prevention Detection Time in Operation	2~100	100	ms	O	O	O	X	X	O	O	
08-23	Ground Fault (GF) Selection	0: Disable 1: Enable	0	-	O	O	O	O	O	O	O	
08-24	External Fault Operation Selection	0: Deceleration to Stop 1: Coast to Stop 2: Continuous Operation	0	-	O	O	O	O	O	O	O	
08-25	Detection Selection of External Fault	0: Immediately Detect when the Power is Supplied. 1: Start to Detect when the Operation is Started.	0	-	O	O	O	O	O	O	O	
08-26 ~08-29	Reserved											
08-30	Run Permissive Function Selection	0: Deceleration to Stop 1: Coast to Stop	0	-	O	O	O	O	O	O	O	
08-31 ~08-34	Reserved											
08-35	Motor Over-heating Fault Selection	0: Disable 1: Deceleration to Stop 2: Free Run to top 3: Continue Running	0	-	O	O	O	O	O	O	O	

Group 08: Protection Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control Mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
08-36	PTC Input Filter Time Constant	0.00 ~ 5.00	2.00	Sec	O	O	O	O	O	O	O	
08-37	Fan Control Function	0: Start in operation 1: Permanent Start 2: Start in high temperature (Note)	0		O	O	O	O	O	O	O	
08-38	Delay Time of Fan Off	0~600	60	s	O	O	O	O	O	O	O	
08-39	Delay Time of Motor Overheat Protection	1~300	60	sec	O	O	O	O	O	O	O	
08-40	Motor2 Acceleration Stall Prevention Level	20~200	HD:150 ND:120	%	O	O	O	X	X	O	O	
08-41	Motor2 Acceleration Stall Prevention Limit	1~100	50	%	O	O	O	X	X	O	O	
08-42	PTC Protection Level	0.1~10.0V	0.7	V	O	O	O	O	O	O	O	
08-43	PTC Restart Level	0.1~10.0V	0.3	V	O	O	O	O	O	O	O	
08-44	PTC Warning Level	0.1~10.0V	0.5	V	O	O	O	O	O	O	O	

Note: Models of 200V 50HP and 400V 100HP and above don't have this function.
Note2: New added parameter in software V1.10.

Group 09: Communication Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
09-00	INV Communication Station Address	1~31	1	-	O	O	O	O	O	O	O	*3
09-01	Communication Mode Selection	0: MODBUS 1: Reserved 2: Reserved 3: Reserved 4: PROFIBUS*	0		O	O	O	O	O	O	O	*3 *5
09-02	Baud Rate Setting (bps)	0: 1200 1: 2400 2: 4800 3: 9600 4: 19200 5: 38400	4	-	O	O	O	O	O	O	O	*3
09-03	Stop Bit Selection	0: 1 Stop Bit 1: 2 Stop Bit	0	-	O	O	O	O	O	O	O	*3
09-04	Parity Selection	0: No Parity 1: Even Bit 2: Odd Bit	0	-	O	O	O	O	O	O	O	*3
09-05	Communication Data Bit Selection	0: 8 Bit Data 1: 7 Bit Data	0	-	O	O	O	O	O	O	O	*3
09-06	Communication Error Detection Time	0.0~25.5	0.0	S	O	O	O	O	O	O	O	*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	-	O	O	O	O	O	O	O	*3

Group 09: Communication Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
09-08	Comm. Fault Tolerance Count	1~20	1	-	O	O	O	O	O	O	O	*3
09-09	Waiting Time	5~65	5	ms	O	O	O	O	O	O	O	*3
09-10	Reserved											

* Selection of item 4 in parameter 09-01 is required to be coupled with the Profibus card.
* Parameter 09 does not be influenced by 13-08 (Restore Factory Setting)

Group 10: PID Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
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	-	O	O	O	O	O	O	O	
10-01	PID Feedback Value Source Setting	1: AI1 given 2: AI2 given 3: PI given	2	-	O	O	O	O	O	O	O	
10-02	PID Target Value	0.00~100.00	0.00	%	O	O	O	O	O	O	O	*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	-	O	O	O	O	O	O	O	

Group 10: PID Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
10-04	Feedback Gain	0.01~10.00	1.00	-	O	O	O	O	O	O	O	*1
10-05	Proportional Gain (P)	0.00~10.00	1.00	-	O	O	O	O	O	O	O	*1
10-06	Integral Time (I)	0.00~100.00	1.00	s	O	O	O	O	O	O	O	*1
10-07	Differential Time (D)	0.00~10.00	0.00	s	O	O	O	O	O	O	O	*1
10-08	AI1 Frequency Limit	0.00~599.00	0	Hz	O	O	O	O	O	O	O	Note2
10-09	PID Bias	-100.0~100.0	0	%	O	O	O	O	O	O	O	*1
10-10	PID Output Delay Time	0.00~10.00	0.00	s	O	O	O	O	O	O	O	*1
10-11	PID Feedback Loss Detection Selection	0: Disable 1: Warning 2: Fault	0	-	O	O	O	O	O	O	O	
10-12	PID Feedback Loss Det. Lev.	0~100	0	%	O	O	O	O	O	O	O	
10-13	PID Feedback Loss Det. Time	0.0~10.0	1.0	s	O	O	O	O	O	O	O	
10-14	PID Integral Limit	0.0~100.0	100.0	%	O	O	O	O	O	O	O	*1
10-15	PID Trim Mode	0~2	0	-	O	O	O	O	O	O	O	Note2
10-16	PID Trim Scale	0~100	0	%	O	O	O	O	O	O	O	Note2
10-17	*Start Frequency of PID Sleep	0.00~599.00	0.00	Hz	O	O	O	O	O	O	O	
10-18	Delay Time of PID Sleep	0.0~255.5	0.0	s	O	O	O	O	O	O	O	
10-19	*Frequency of PID Waking up	0.00~599.00	0.00	Hz	O	O	O	O	O	O	O	
10-20	Delay Time of PID Waking up	0.0~255.5	0.0	s	O	O	O	O	O	O	O	
10-21 ~10-22	Reserved											

Group 10: PID Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
10-23	PID Output Limit	0.00~100.0	100.0	%	O	O	O	O	O	O	O	*1
10-24	PID Output Gain	0.0~25.0	1.0	-	O	O	O	O	O	O	O	
10-25	PID Reversal Output Selection	0: No Allowing Reversal Output 1: Allow Reversal Output	0	-	O	O	O	O	O	O	O	
10-26	PID Target Acceleration/ Deceleration Time	0.0~25.5	0.0	s	O	O	O	O	O	O	O	
10-27	PID Feedback Display Bias	0~9999	0	-	O	O	O	O	O	O	O	
10-28	Reserved											
10-29	PID Sleep Selection	0: Disable 1: Enable 2: set by DI	1	-	O	O	O	O	O	O	O	
10-30	Upper Limit of PID Target	0.0 ~ 100.0	100.0	%	O	O	O	O	O	O	O	
10-31	Lower Limit of PID Target	0.0 ~ 100.0	0.0	%	O	O	O	O	O	O	O	
10-32	Reserved											
10-33	Maximum Value of PID Feedback	1 ~ 10000	999	-	O	O	O	O	O	O	O	
10-34	PID Decimal Width	0 ~ 4	1		O	O	O	O	O	O	O	

Group 10: PID Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
10-35	PID Unit	0: %	0		O	O	O	O	O	O	O	*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: ℃										
		21: RPM										
		22: Bar										
		23: Pa										
10-36	Proportional Gain 2 (P)	0.00~10.00	3.00	-	O	O	O	O	O	O	O	Note2
10-37	Integral Time 2 (I)	0.00~100.00	0.50	Sec	O	O	O	O	O	O	O	Note2
10-38	Differential Time 2 (D)	0.00~10.00	0.00	Sec	O	O	O	O	O	O	O	Note2
10-39	*Output Frequency Setting of PID Disconnection	00.00~599.00	30.00	Hz	O	O	O	O	O	O	O	
10-40	Selection of PID Sleep Compensation Frequency	0: Disable	0		O	O	O	O	O	O	O	
		1: Enable										
10-41	PID Mode Switch	0: General PID	0	-	O	O	O	O	O	O	O	Note2
		1: D Type PID										

* If the maximum output frequency of motor is over 300HZ, the frequency resolution is changed to 0.1Hz
Note2: New added parameter in software V1.10.

Group 11: Auxiliary Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
11-00	Direction Lock Selection	0: Allow Forward and Reverse Rotation 1: Only Allow Forward Rotation 2: Only Allow Reverse Rotation	0	-	O	O	O	O	O	O	O	
11-01	Carrier frequency	0: Carrier Output Frequency Tuning 1~16: 1~16KHz	*	-	O	O	O	O	O	O	O	*1
11-02	Soft PWM Function Selection	0: Disable 1: Soft PWM 1 2: Soft PWM 2	0	-	O	O	O	O	O	O	O	
11-03	Automatic carrier lowering selection	0: Disable 1: Enable	0	-	O	O	X	X	X	X	O	
11-04	S-curve Time Setting at the Start of Acceleration	0.00~2.50	0.20	s	O	O	O	O	O	O	O	
11-05	S-curve Time Setting at the Stop of Acceleration	0.00~2.50	0.20	s	O	O	O	O	O	O	O	
11-06	S-curve Time Setting at the Start of Deceleration	0.00~2.50	0.20	s	O	O	O	O	O	O	O	
11-07	S-curve Time Setting at the Stop of Deceleration	0.00~2.50	0.20	s	O	O	O	O	O	O	O	
11-08	Jump Frequency 1	0.0~599.0	0.0	Hz	O	O	O	O	O	O	O	
11-09	Jump Frequency 2	0.0~599.0	0.0	Hz	O	O	O	O	O	O	O	
11-10	Jump Frequency 3	0.0~599.0	0.0	Hz	O	O	O	O	O	O	O	

Group 11: Auxiliary Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
11-11	Jump Frequency Width	0.0~25.5	1.0	Hz	O	O	O	O	O	O	O	
11-12	Manual Energy Saving Gain	0~100	80	%	O	O	X	X	X	X	X	
11-13	Automatic Return Time	0~120	60	Sec	O	O	O	O	O	O	O	*1
11-14 ~11-17	Reserved											
11-18	Manual Energy Saving Frequency	0.0~599.0	0.00	Hz	O	O	X	X	X	X	X	
11-19	Automatic Energy Saving Function	0: Automatic energy saving is disabled 1: Automatic energy saving is enabled	0	-	O	X	X	X	X	X	X	
11-20	Filter Time of Automatic Energy Saving	0~200	140	ms	O	X	X	X	X	X	X	
11-21	Voltage Upper Limit of Energy Saving Tuning	0~100	100	%	O	X	X	X	X	X	X	
11-22	Adjustment Time of Automatic Energy Saving	0~5000	20	ms	O	X	X	X	X	X	X	*1
11-23	Detection Level of Automatic Energy Saving	0~100	10	%	O	X	X	X	X	X	X	
11-24	Coefficient of Automatic Energy Saving	0.00~655.35	-	-	O	X	X	X	X	X	X	
11-25 ~11-27	Reserved											
11-28	Frequency Gain of Over Voltage Prevention 2	1~200	100	%	O	O	X	X	X	X	X	

Group 11: Auxiliary Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
11-29	Auto De-rating Selection	0: Disable 1: Enable	0	-	O	X	X	X	X	X	O	
11-30	Variable Carrier Frequency Max. Limit	2~16	-	KHz	O	O	X	X	X	X	O	
11-31	Variable Carrier Frequency Min. Limit	1~16	-	KHz	O	O	X	X	X	X	O	
11-32	Variable Carrier Frequency Proportional Gain	00~99	00	-	O	O	X	X	X	X	O	
11-33	DC Voltage Filter Rise Amount	0.1~10.0	0.1	Vdc	O	O	X	X	X	X	X	*1
11-34	DC Voltage Filter Fall Amount	0.1~10.0	5.0	Vdc	O	O	X	X	X	X	X	*1
11-35	DC Voltage Filter Dead band Level	0.0~99.0	10.0	Vdc	O	O	X	X	X	X	X	*1
11-36	Frequency Gain of OV Prevention	0.000~1.000	0.050	-	O	O	X	X	X	X	X	*1
11-37	**Frequency Limit of OV Prevention	0.00~599.00	5.00	Hz	O	O	X	X	X	X	X	
11-38	Deceleration Start Voltage of OV Prevention	200V: 200~400V	300	V	O	O	X	X	X	X	X	
		400V: 400~800V	700									
		575V: 500~1000V	900									
		690V: 600~1200V	1080									

Group 11: Auxiliary Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
11-39	Deceleration Stop Voltage of OV Prevention	200V: 300~400V	350	V	O	O	X	X	X	X	X	
		400V: 600~800V	750									
		575V: 500~1000V	950									
		690V: 600~1200V	1140									
11-40	OV Prevention Selection	0: Disable	0	-	O	O	X	X	X	X	X	
		1: OV Prevention Mode 1										
		2: OV Prevention Mode 2										
		3: OV Prevention Mode 3										
11-41	Selection of Reference Frequency Disappearance Detection	0: Decelerate to Stop when Reference Frequency Disappears	0	-	O	O	O	O	O	O	O	
		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	%	O	O	O	O	O	O	O	
11-43	Hold Frequency at Start	0.0~599.0	0.0	Hz	O	O	O	O	O	O	O	
11-44	Frequency Hold Time at Start	0.0~10.0	0.0	s	O	O	O	O	O	O	O	

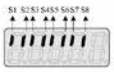
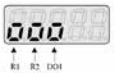
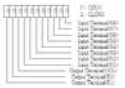
Group 11: Auxiliary Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
11-45	Hold Frequency at Stop	0.0~599.0	0.0	Hz	O	O	O	O	O	O	O	
11-46	Frequency Hold Time at Stop	0.0~10.0	0.0	s	O	O	O	O	O	O	O	
11-47	KEB Deceleration Time	0.0~25.5	0.0	s	O	O	X	X	X	X	O	*1
11-48	KEB Detection Level	200V: 190~210	200	V	O	O	X	X	X	X	O	
		400V: 380~420	400									
		575V: 540~570	555									
		690V: 540~684	555									
11-49	Zero-servo Gain	0.01~5.00	1.00	-	X	X	X	O	O	X	X	
11-50	Zero-servo Count	0~4096	12	-	X	X	X	O	O	X	X	
11-51	Braking Selection of Zero Speed	0: Disable	0	-	O	X	X	X	X	X	O	
		1: Enable										
11-52	Droop Control Level	0.0~100.0%	0.0	%	X	X	X	O	O	X	X	*1
11-53	Droop Control Delay	0.01~2.00	0.2	s	X	X	X	O	O	X	X	*1
11-54	Initialization of Cumulative Energy	0: Do not Clear Cumulative Energy	0	-	O	O	O	O	O	O	O	*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	-	O	O	O	O	O	O	O	
		1: Stop Key is Enabled when the Operation Command is not Provided by Operator.										

Group 11: Auxiliary Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
11-56	UP/DOWN Selection	0: When ùOperator's UP/DOWN is Disabled, it will be Enabled if Press ENTER after Frequency Modification 1: When Operator's UP/DOWN is Enabled, it will be Enabled after Frequency Modification	0	-	O	O	O	O	O	O	O	
11-57	Reserved											
11-58	Record Reference Frequency	0: Disable 1: Enable	0	-	O	O	O	O	O	O	O	*1
11-59	Gain of Preventing Oscillation	0.00~2.50	*		O	O	X	X	X	X	O	
11-60	Upper Limit of Preventing Oscillation	0~100	*	%	O	O	X	X	X	X	O	
11-61	Time Parameter of Preventing Oscillation	0~100	0		O	O	X	X	X	X	O	
11-62	Selection of Preventing Oscillation	0: Mode1 1: Mode2 2: Mode3	1		O	O	X	X	X	X	O	
11-63	Strong Magnetic Selection	0: Disable 1: Enable	1		X	X	O	O	X	X	X	
11-64	Acceleration Speed Gain Adjustment	0.1~10.0	1.0	-	O	X	X	X	X	X	O	

Group 11: Auxiliary Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
11-65	Target Main Circuit Voltage	200V: 200V~400V	370	-	O	X	X	X	X	X	O	
		400V: 400V~800V	740									
		575V: 520V~1040V	962									
		690V: 624V~1248V	1154									
11-66	2_3 Phase PWM Switch Frequency	6.00~60.00	20	Hz	X	X	O	O	X	X	O	Note2
11-67	Soft PWM 2 Frequency Range	0~12000	0	Hz	X	X	O	O	O	O	X	Note2
11-68	Soft PWM 2 Switch Frequency	6.00~60.00	20	Hz	X	X	O	O	O	O	X	Note2
11-69	Gain of Preventing Oscillation 3	0.00~200.00	5.00	%	O	O	X	X	X	X	X	Note1
11-70	Upper Limit of Preventing Oscillation 3	0.01~100.00	5.00	%	O	O	X	X	X	X	X	Note1
11-71	Time Parameter of Preventing Oscillation 3	0~30000	100	ms	O	O	X	X	X	X	X	Note1
11-72	Gain of Preventing Oscillation for switch frequency 1	0.01~300.00	30.00	Hz	O	O	X	X	X	X	X	Note1
11-73	Gain of Preventing Oscillation for switch frequency 2	0.01~300.00	50.00	Hz	O	O	X	X	X	X	X	Note1

*: Refer to the attachment 1.
** If the maximum output frequency of motor is over 300HZ, the frequency resolution is changed to 0.1Hz
Note1: New added parameter in software V1.02
Note2: New added parameter in software V1.10
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	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
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	00000	-	O	O	O	O	O	O	O	*1 *6
12-01	PID Feedback Display Mode (LED)	0: Display the Feedback Value by Integer (xxx)	0		O	O	O	O	O	O	O	*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		O	O	O	O	O	O	O	*6
		1: xxxPb (pressure)										
		2: xxxFL (flow)										
12-03	Line Speed Display (LED)	0~60000	1500/ 1800	RPM	O	O	O	O	O	O	O	*1 *6

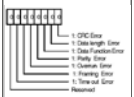
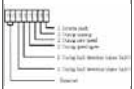
Group 12: Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
12-04	Modes of Line Speed Display (LED)	0: Display Inverter Output Frequency 1: Display Line Speed with integer (xxxxx) 2: Display Line Speed 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)	0	-	O	O	O	O	O	O	O	*1 *6
12-05	Status Display of Digital Input & Output Terminal (LED / LCD)	LED display is shown as below no input  correspondences to input and output   LCD display is shown as below 	-		O	O	O	O	O	O	O	
12-06 ~12-10	Reserved											
12-11	Output Current of Current Fault	Display the output current of current fault	-	A	O	O	O	O	O	O	O	

Group 12: Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
12-12	Output Voltage of Current Fault	Display the output voltage of current fault	-	V	O	O	O	O	O	O	O	
12-13	Output Frequency of Current Fault	Display the output frequency of current fault	-	Hz	O	O	O	O	O	O	O	
12-14	DC Voltage of Current Fault	Display the DC voltage of current fault	-	V	O	O	O	O	O	O	O	
12-15	Frequency Command of Current Fault	Display the frequency command of current fault	-	Hz	O	O	O	O	O	O	O	
12-16	Frequency Command	If LED enters this parameter, it only allows monitoring frequency command	-	Hz	O	O	O	O	O	O	O	
12-17	Output Frequency	Display the current output frequency	-	Hz	O	O	O	O	O	O	O	
12-18	Output Current	Display the current output current	-	A	O	O	O	O	O	O	O	
12-19	Output Voltage	Display the current output voltage	-	V	O	O	O	O	O	O	O	
12-20	DC Voltage (Vdc)	Display the current DC voltage	-	V	O	O	O	O	O	O	O	
12-21	Output Power (kw)	Display the current output power	-	kW	O	O	O	O	O	O	O	

Group 12: Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
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	-	rpm	O	O	O	O	O	O	O	
12-23	Output Power Factor (Pfo)	Display the current output power factor	-	-	O	O	O	O	O	O	O	
12-24	Control Mode	Display control mode 0: VF 1: PG 2: SLV 3: SV 4: PSV 5: PMSLV 6: SLV2	-	-	O	O	O	O	O	O	O	
12-25	AI1 Input	Display the current AI1 input (-10V corresponds to -100%, 10V corresponds to 100%)	-	%	O	O	O	O	O	O	O	
12-26	AI2 Input	Display the current AI2 input (0V or 4mA corresponds to 0%, 10V or 20mA corresponds to 100%)	-	%	O	O	O	O	O	O	O	

Group 12: Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
12-27	Motor Torque	Display the current torque command (100% corresponds to motor torque)	-	%	X	X	O	O	O	O	X	
12-28	Motor Torque Current (Iq)	Display the current q-axis current	-	%	X	X	O	O	O	O	X	
12-29	Motor Excitation Current (Id)	Display the current d-axis current	-	%	X	X	O	O	O	O	X	
12-30	ASR Deviation	Display deviation of speed controller (speed command - speed feedback) (100% corresponds to the maximum frequency set by 01-02)	-	%	X	O	X	O	O	X	X	
12-31	Reserved											
12-32	ASR Output	Display output value of speed controller (100% corresponds to the maximum frequency set by 01-02)	-	%	X	O	X	O	O	X	X	
12-33	PG Feedback	Display feedback's speed value of speed controller (100% corresponds to the maximum frequency set by 01-02)	-	%	X	O	X	O	O	X	X	
12-34	Reserved											

Group 12: Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
12-35	Zero-servo Pulse	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)	-	Pulse	X	X	X	O	O	X	X	
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)	-	%	O	O	O	O	O	O	O	
12-37	PID Output	Display output of the PID controller (100% corresponds to the maximum frequency set by 01-02 or 01-16)	-	%	O	O	O	O	O	O	O	
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)	-	%	O	O	O	O	O	O	O	

Group 12: Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
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)	-	%	O	O	O	O	O	O	O	
12-40	Reserved											
12-41	Heatsink Temperature*	Display the heatsink temperature of IGBT temperature**	*	°C	O	O	O	O	O	O	O	
12-42	RS-485 Error Code		-	-	O	O	O	O	O	O	O	
12-43	Inverter Status		-	-	O	O	O	O	O	O	O	
12-44	Pulse Input Frequency	Display the frequency value of pulse input	-	Hz	O	O	O	O	O	O	O	
12-45	Recent Fault Message	Display current fault message	-	-	O	O	O	O	O	O	O	
12-46	Previous Fault Message	Display previous fault message	-	-	O	O	O	O	O	O	O	

Group 12: Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
12-47	Previous Two Fault Messages	Display previous two fault messages	-	-	O	O	O	O	O	O	O	
12-48	Previous Three Fault Messages	Display previous three fault messages	-	-	O	O	O	O	O	O	O	
12-49	Previous Four Fault Messages	Display previous four fault messages	-	-	O	O	O	O	O	O	O	
12-50	DIO Status of Current Fault	Display the DI/DO status of current fault Description is similar to 12-05	-	-	O	O	O	O	O	O	O	
12-51	Inverter Status of Current Fault	Display the inverter status of current fault Description is similar to 12-43	-	-	O	O	O	O	O	O	O	
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	-	Hr	O	O	O	O	O	O	O	
12-53	Trip Time 2 of Current Fault		-	day	O	O	O	O	O	O	O	
12-54	Frequency Command of Previous Fault	Display frequency command of previous fault	-	Hz	O	O	O	O	O	O	O	
12-55	Output Frequency of Previous Fault	Display output frequency of previous fault	-	Hz	O	O	O	O	O	O	O	
12-56	Output Current of Previous Fault	Display output current of previous fault	-	A	O	O	O	O	O	O	O	

Group 12: Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
12-57	Output Voltage of Previous Fault	Display output voltage of previous fault	-	V	O	O	O	O	O	O	O	
12-58	DC Voltage of Previous Fault	Display DC voltage of previous fault	-	V	O	O	O	O	O	O	O	
12-59	DIO Status of Previous Fault	Display DI/DO status of previous fault Description is similar to 12-05	-	-	O	O	O	O	O	O	O	
12-60	Inverter Status of Previous Fault	Display inverter status of previous fault Description is similar to 12-43	-	-	O	O	O	O	O	O	O	
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	-	Hr	O	O	O	O	O	O	O	
12-62	Trip Time 2 of Last Fault		-	day	O	O	O	O	O	O	O	
12-63	Recent Warning Messages	Display the recent warning messages	-	-	O	O	O	O	O	O	O	
12-64	Previous Warning Message	Display the previous warning message	-	-	O	O	O	O	O	O	O	
12-65	Motor Start Angle	0~360	-	-	X	X	X	X	O	X	X	
12-66	Encoder Angle	0~360	-	-	X	O	X	O	O	X	X	

Group 12: Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	Attribute
12-67	Cumulative Energy (KWHr)	0.0 ~ 999.9		kWHr	O	O	O	O	O	O	O	
12-68	Cumulative Energy (MWHr)	0 ~ 60000		MWHr	O	O	O	O	O	O	O	
12-69 ~12-75	Reserved											
12-76	No-Load Voltage Output	0.0~600.0	-	V	X	X	O	X	X	X	X	
12-77	Reserved											
12-78	Z-Phase Bias Value	-9999~9999	-	Pulse	X	X	X	O	O	X	X	
12-79	Pulse Input Percentage	0.0~100.0	-	%	O	O	O	O	O	O	O	
12-80	AI1 Frequency Command	0.0~599.0	0	Hz	O	O	O	O	O	O	O	Note2

*: Refer to the following attachment 1
** AM16 200V 50HP (and the above) and 400V 100HP (and the above) don't support heatsink temperature display function.
Note2: New added parameter in software V1.10

Group 13: Maintenance Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
13-00	Inverter Capacity Selection	----	-	-	O	O	O	O	O	O	O	*4
13-01	Software Version	0.00-9.99	-	-	O	O	O	O	O	O	O	*4
13-02	Clear Cumulative Operation Hours	0: Disable to Clear Cumulative Operation Hours 1: Clear Cumulative Operation Hours	0	-	O	O	O	O	O	O	O	*1
13-03	Cumulative Operation Hours 1	0~23	-	hr	O	O	O	O	O	O	O	*4
13-04	Cumulative Operation Hours 2	0~65535	-	day	O	O	O	O	O	O	O	*4
13-05	Selection of Cumulative Operation Time	0: Cumulative time in power on 1: Cumulative time in operation	0	-	O	O	O	O	O	O	O	*1
13-06	Parameters Locked	0: Parameters are read-only except 13-06 and main frequency 1 : User defined parameters 2: All Parameters are Writable	2	-	O	O	O	O	O	O	O	*1
13-07	Parameter Password Function	00000~65535	00000	-	O	O	O	O	O	O	O	Note2

Group 13: Maintenance Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
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 (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) Others: Reserved	-	-	O	O	O	O	O	O	O	

Group 13: Maintenance Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
13-09	Fault History Clearance Function	0: No Clearing Fault History 1: Clear Fault History	0	-	O	O	O	O	O	O	O	*1
13-10	State Function	0 ~ 9999	0		O	O	O	O	O	O	O	
13-11	C/B CPLD Ver.	0.00~9.99	-		O	O	O	O	O	O	O	
13-12	PG Card Id	0~255	0		O	O	O	O	O	O	O	*5
13-13	PG Card Ver.	0.00~9.99	-		O	O	O	O	O	O	O	*5
13-14	Fault Storage Selections	0: Fault Messages of Auto Restart are not saved 1: Fault Messages of Auto Restart are saved	0		O	O	O	O	O	O	O	
13-15	Reserved											
13-21	Last time Fault History	Exhibit Last time Fault History	-	-	O	O	O	O	O	O	O	Note1
13-22	Previous two Fault History	Exhibit Previous two Fault History	-	-	O	O	O	O	O	O	O	Note1
13-23	Previous three Fault History	Exhibit Previous three Fault History	-	-	O	O	O	O	O	O	O	Note1
13-24	Previous four Fault History	Exhibit Previous four Fault History	-	-	O	O	O	O	O	O	O	Note1
13-25	Previous five Fault History	Exhibit Previous five Fault History	-	-	O	O	O	O	O	O	O	Note1
13-26	Previous six Fault History	Exhibit Previous six Fault History	-	-	O	O	O	O	O	O	O	Note1
13-27	Previous seven Fault History	Exhibit Previous seven Fault History	-	-	O	O	O	O	O	O	O	Note1

Group 13: Maintenance Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
13-28	Previous eight Fault History	Exhibit Previous eight Fault History	-	-	O	O	O	O	O	O	O	Note1
13-29	Previous night Fault History	Exhibit Previous night Fault History	-	-	O	O	O	O	O	O	O	Note1
13-30	Previous ten Fault History	Exhibit Previous ten Fault History	-	-	O	O	O	O	O	O	O	Note1
13-31	Previous eleven Fault History	Exhibit Previous eleven Fault History	-	-	O	O	O	O	O	O	O	Note1
13-32	Previous twelve Fault History	Exhibit Previous twelve Fault History	-	-	O	O	O	O	O	O	O	Note1
13-33	Previous thirteen Fault History	Exhibit Previous thirteen Fault History	-	-	O	O	O	O	O	O	O	Note1
13-34	Previous four-teen Fault History	Exhibit Previous fourteen Fault History	-	-	O	O	O	O	O	O	O	Note1
13-35	Previous fifteen Fault History	Exhibit Previous fifteen Fault History	-	-	O	O	O	O	O	O	O	Note1
13-36	Previous sixteen Fault History	Exhibit Previous sixteen Fault History	-	-	O	O	O	O	O	O	O	Note1
13-37	Previous sev-enteen Fault History	Exhibit Previous seventeen Fault History	-	-	O	O	O	O	O	O	O	Note1
13-38	Previous eighteen Fault History	Exhibit Previous eighteen Fault History	-	-	O	O	O	O	O	O	O	Note1
13-39	Previous nineteen Fault History	Exhibit Previous nineteen Fault History	-	-	O	O	O	O	O	O	O	Note1
13-40	Previous twenty Fault History	Exhibit Previous twenty Fault History	-	-	O	O	O	O	O	O	O	Note1

Group 13: Maintenance Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
13-41	Previous twenty one Fault History	Exhibit Previous twenty one Fault History	-	-	O	O	O	O	O	O	O	Note1
13-42	Previous twenty two Fault History	Exhibit Previous twenty two Fault History	-	-	O	O	O	O	O	O	O	Note1
13-43	Previous twenty three Fault History	Exhibit Previous twenty three Fault History	-	-	O	O	O	O	O	O	O	Note1
13-44	Previous twenty four Fault History	Exhibit Previous twenty four Fault History	-	-	O	O	O	O	O	O	O	Note1
13-45	Previous twenty five Fault History	Exhibit Previous twenty five Fault History	-	-	O	O	O	O	O	O	O	Note1
13-46	Previous twenty six Fault History	Exhibit Previous twenty six Fault History	-	-	O	O	O	O	O	O	O	Note1
13-47	Previous twenty seven Fault History	Exhibit Previous twenty seven Fault History	-	-	O	O	O	O	O	O	O	Note1
13-48	Previous twenty eight Fault History	Exhibit Previous twenty eight Fault History	-	-	O	O	O	O	O	O	O	Note1
13-49	Previous twenty nine Fault History	Exhibit Previous twenty nine Fault History	-	-	O	O	O	O	O	O	O	Note1
13-50	Previous thirty Fault History	Exhibit Previous thirty Fault History	-	-	O	O	O	O	O	O	O	Note1

Note: Main frequency setting is 12-16 in LCD. It's equal to Frequency Setting of Speed-Stage 0 (05-01)
Note1: New added parameter in software V1.02
Note2: New added parameter in software V1.10

Group 14: PLC Setting Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
14-00	T1 Set Value 1	0~9999	0	-	O	O	O	O	O	O	O	
14-01	T1 Set Value 2 (Mode 7)	0~9999	0	-	O	O	O	O	O	O	O	
14-02	T2 Set Value 1	0~9999	0	-	O	O	O	O	O	O	O	
14-03	T2 Set Value 2 (Mode 7)	0~9999	0	-	O	O	O	O	O	O	O	
14-04	T3 Set Value 1	0~9999	0	-	O	O	O	O	O	O	O	
14-05	T3 Set Value 2 (Mode 7)	0~9999	0	-	O	O	O	O	O	O	O	
14-06	T4 Set Value 1	0~9999	0	-	O	O	O	O	O	O	O	
14-07	T4 Set Value 2 (Mode 7)	0~9999	0	-	O	O	O	O	O	O	O	
14-08	T5 Set Value 1	0~9999	0	-	O	O	O	O	O	O	O	
14-09	T5 Set Value 2 (Mode 7)	0~9999	0	-	O	O	O	O	O	O	O	
14-10	T6 Set Value 1	0~9999	0	-	O	O	O	O	O	O	O	
14-11	T6 Set Value 2 (Mode 7)	0~9999	0	-	O	O	O	O	O	O	O	
14-12	T7 Set Value 1	0~9999	0	-	O	O	O	O	O	O	O	
14-13	T7 Set Value 2 (Mode 7)	0~9999	0	-	O	O	O	O	O	O	O	
14-14	T8 Set Value 1	0~9999	0	-	O	O	O	O	O	O	O	
14-15	T8 Set Value 2 (Mode 7)	0~9999	0	-	O	O	O	O	O	O	O	
14-16	C1 Set Value	0~65535	0	-	O	O	O	O	O	O	O	
14-17	C2 Set Value	0~65535	0	-	O	O	O	O	O	O	O	
14-18	C3 Set Value	0~65535	0	-	O	O	O	O	O	O	O	

Group 14: PLC Setting Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
14-19	C4 Set Value	0~65535	0	-	O	O	O	O	O	O	O	
14-20	C5 Set Value	0~65535	0	-	O	O	O	O	O	O	O	
14-21	C6 Set Value	0~65535	0	-	O	O	O	O	O	O	O	
14-22	C7 Set Value	0~65535	0	-	O	O	O	O	O	O	O	
14-23	C8 Set Value	0~65535	0	-	O	O	O	O	O	O	O	
14-24	AS1 Set Value 1	0~65535	0	-	O	O	O	O	O	O	O	
14-25	AS1 Set Value 2	0~65535	0	-	O	O	O	O	O	O	O	
14-26	AS1 Set Value 3	0~65535	0	-	O	O	O	O	O	O	O	
14-27	AS2 Set Value 1	0~65535	0	-	O	O	O	O	O	O	O	
14-28	AS2 Set Value 2	0~65535	0	-	O	O	O	O	O	O	O	
14-29	AS2 Set Value 3	0~65535	0	-	O	O	O	O	O	O	O	
14-30	AS3 Set Value 1	0~65535	0	-	O	O	O	O	O	O	O	
14-31	AS3 Set Value 2	0~65535	0	-	O	O	O	O	O	O	O	
14-32	AS3 Set Value 3	0~65535	0	-	O	O	O	O	O	O	O	
14-33	AS4 Set Value 1	0~65535	0	-	O	O	O	O	O	O	O	
14-34	AS4 Set Value 2	0~65535	0	-	O	O	O	O	O	O	O	
14-35	AS4 Set Value 3	0~65535	0	-	O	O	O	O	O	O	O	
14-36	MD1 Set Value 1	0~65535	1	-	O	O	O	O	O	O	O	
14-37	MD1 Set Value 2	0~65535	1	-	O	O	O	O	O	O	O	

Group 14: PLC Setting Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
14-38	MD1 Set Value 3	0~65535	1	-	O	O	O	O	O	O	O	
14-39	MD2 Set Value 1	0~65535	1	-	O	O	O	O	O	O	O	
14-40	MD2 Set Value 2	0~65535	1	-	O	O	O	O	O	O	O	
14-41	MD2 Set Value 3	0~65535	1	-	O	O	O	O	O	O	O	
14-42	MD3 Set Value 1	0~65535	1	-	O	O	O	O	O	O	O	
14-43	MD3 Set Value 2	0~65535	1	-	O	O	O	O	O	O	O	
14-44	MD3 Set Value 3	0~65535	1	-	O	O	O	O	O	O	O	
14-45	MD4 Set Value 1	0~65535	1	-	O	O	O	O	O	O	O	
14-46	MD4 Set Value 2	0~65535	1	-	O	O	O	O	O	O	O	
14-47	MD4 Set Value 3	0~65535	1	-	O	O	O	O	O	O	O	

Group 15: PLC Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
15-00	T1 Current Value1	0~9999	0	-	O	O	O	O	O	O	O	
15-01	T1 Current Value 2 (Mode7)	0~9999	0	-	O	O	O	O	O	O	O	
15-02	T2 Current Value 1	0~9999	0	-	O	O	O	O	O	O	O	
15-03	T2 Current Value 2 (Mode7)	0~9999	0	-	O	O	O	O	O	O	O	
15-04	T3 Current Value 1	0~9999	0	-	O	O	O	O	O	O	O	
15-05	T3 Current Value 2 (Mode7)	0~9999	0	-	O	O	O	O	O	O	O	

Group 15: PLC Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
15-06	T4 Current Value 1	0~9999	0	-	O	O	O	O	O	O	O	
15-07	T4 Current Value 2 (Mode7)	0~9999	0	-	O	O	O	O	O	O	O	
15-08	T5 Current Value 1	0~9999	0	-	O	O	O	O	O	O	O	
15-09	T5 Current Value 2 (Mode7)	0~9999	0	-	O	O	O	O	O	O	O	
15-10	T6 Current Value 1	0~9999	0	-	O	O	O	O	O	O	O	
15-11	T6 Current Value 2 (Mode7)	0~9999	0	-	O	O	O	O	O	O	O	
15-12	T7 Current Value 1	0~9999	0	-	O	O	O	O	O	O	O	
15-13	T7 Current Value 2 (Mode7)	0~9999	0	-	O	O	O	O	O	O	O	
15-14	T8 Current Value 1	0~9999	0	-	O	O	O	O	O	O	O	
15-15	T8 Current Value 2 (Mode7)	0~9999	0	-	O	O	O	O	O	O	O	
15-16	C1 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-17	C2 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-18	C3 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-19	C4 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-20	C5 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-21	C6 Current Value	0~65535	0	-	O	O	O	O	O	O	O	

Group 15: PLC Monitoring Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
15-22	C7 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-23	C8 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-24	AS1 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-25	AS2 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-26	AS3 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-27	AS4 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-28	MD1 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-29	MD2 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-30	MD3 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-31	MD4 Current Value	0~65535	0	-	O	O	O	O	O	O	O	
15-32	TD Current Value	0~65535	0	-	O	O	O	O	O	O	O	

Group 16: LCD Function Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/ F+PG	SLV	SV	PMSV	PMSLV	SLV2	
16-00	Main Screen Monitoring	5~79 when using LCD to operate, the monitored item displays in the first line. (default is frequency command)	16	-	O	O	O	O	O	O	O	*1
16-01	Sub-Screen Monitoring 1	5~79 when using LCD to operate, the monitored item displays in the second line. (default is output frequency)	17	-	O	O	O	O	O	O	O	*1

Group 16: LCD Function Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F+PG	SLV	SV	PMSV	PMSLV	SLV2	
16-02	Sub-Screen Monitoring 2	5~79 when using LCD to operate, the monitored item displays in the third line. (default is output current)	18	-	O	O	O	O	O	O	O	*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 represents the display of XX.XX at 100%. 30001~39999: Users specify the format, Input 3XXXX represents the display of X.XXX at 100%.	0	-	O	O	O	O	O	O	O	

Group 16: LCD Function Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
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: ℃ 21: RPM 22: Bar 23: Pa	0	-	O	O	O	O	O	O	O	
16-05	LCD Backlight	0~7	5	-	O	O	O	O	O	O	O	*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 inverter and operator.	0	-	O	O	O	O	O	O	O	

Group 16: LCD Function Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
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	-	O	O	O	O	O	O	O	
16-09	Selection of Operator Removed (LCD)	0: Keep operating when LCD operator is removed. 1: Display fault when LCD operator is removed	0	-	O	O	O	O	O	O	O	*1

Group 17: Automatic Tuning Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/ F+PG	SLV	SV	PMSV	PMSLV	SLV2	
17-00	Mode Selection of Automatic Tuning*	0: Rotation Auto-tuning 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)	VF:2 VF+PG:2 SLV:6 SV:6 SLV2:6	-	O	O	O	O	X	X	O	

Group 17: Automatic Tuning Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F+PG	SLV	SV	PMSV	PMSLV	SLV2	
17-01	Motor Rated Output Power	0.00~600.00	KVA	KW	O	O	O	O	X	X	O	
17-02	Motor Rated Current	0.1~1200.0	KVA	A	O	O	O	O	X	X	O	
17-03	Motor Rated Voltage	200V: 50.0~240.0	220	V	O	O	O	O	X	X	O	
		400V: 100.0~480.0	440									
		575V: 150.0~670.0	575									
		690V: 180.0~804.0	690									
17-04	Motor Rated Frequency	4.8~599.0	60.0	Hz	O	O	O	O	X	X	O	
17-05	Motor Rated Speed	0~24000	KVA	rpm	O	O	O	O	X	X	O	
17-06	Pole Number of Motor	2~16 (Even)	4	Pole	O	O	O	O	X	X	O	
17-07	PG Pulse Number	0~60000	1024	ppr	O	O	O	O	X	X	O	
17-08	Motor no-load Voltage	200V: 50~240	-	V	O	O	O	O	X	X	O	
		400V100~480										
		575V: 420~600										
		690V:504~720										
17-09	Motor Excitation Current	0.01~600.00	-	A	X	X	O	O	X	X	X	
17-10	Automatic Tuning Start	0: Disable	0	-	O	O	O	O	X	X	O	
		1: Enable										

Group 17: Automatic Tuning Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/ F+PG	SLV	SV	PMSV	PMSLV	SLV2	
17-11	Error History of Automatic Tuning	0: No error 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	0	-	O	O	O	O	X	X	O	
17-12	Proportion of Motor Leakage Inductance	0.1~15.0	3.4	%	X	X	O	O	X	X	X	
17-13	Motor Slip Frequency	0.10~20.00	1.00	Hz	X	X	O	O	X	X	X	
17-14	Selection of Rotation Auto-tuning	0: VF Rotation Auto-tuning 1: Vector Rotation Auto-tuning	0	-	O	O	O	O	X	X	O	

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)

Group 18: Slip Compensation Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F+PG	SLV	SV	PM SV	PM SLV	SLV2	
18-00	Slip Compensation Gain at Low Speed	0.00~2.50	VF:0.00 SLV*	-	O	X	O	O	X	X	O	*1
18-01	Slip Compensation Gain at High Speed	-1.00~1.00	0.0	-	O	X	O	X	X	X	X	*1
18-02	Slip Compensation Limit	0~250	200	%	O	X	X	X	X	X	X	
18-03	Slip Compensation Filter Time	0.0~10.0	1.0	Sec	O	X	X	X	X	X	X	
18-04	Regenerative Slip Compensation Selection	0: Disable 1: Enable	0	-	O	X	X	X	X	X	X	
18-05	FOC Delay Time	1~1000	100	ms	X	X	O	X	X	X	X	
18-06	FOC Gain	0.00~2.00	0.1	-	X	X	O	X	X	X	X	

*: Refer to the following attachment 1

Group 19: Wobble Frequency Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
19-00	Center Frequency of Wobble Frequency	5.00~100.00	20.00	%	O	O	X	X	X	X	O	*1
19-01	Amplitude of Wobble Frequency	0.1~20.0	10.0	%	O	O	X	X	X	X	O	*1
19-02	Jump Frequency of Wobble Frequency	0.0~50.0	0.0	%	O	O	X	X	X	X	O	*1
19-03	Jump Time of Wobble Frequency	0~50	0	ms	O	O	X	X	X	X	O	*1
19-04	Wobble Frequency Cycle	0.0~1000.0	10.0	Sec	O	O	X	X	X	X	O	*1
19-05	Wobble Frequency Ratio	0.1~10.0	1.0		O	O	X	X	X	X	O	*1
19-06	Upper Offset Amplitude of Wobble Frequency	0.0~20.0	0.0	%	O	O	X	X	X	X	O	*1
19-07	Lower Offset Amplitude of Wobble Frequency	0.0~20.0	0.0	%	O	O	X	X	X	X	O	*1

Group 20: Speed Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
20-00	ASR Gain 1	0.00~250.00	-	-	X	O	O	O	O	O	X	*1
20-01	ASR Integral Time 1	0.001~10.000	-	Sec	X	O	O	O	O	O	X	*1
20-02	ASR Gain 2	0.00~250.00	-	-	X	O	O	O	O	O	X	*1
20-03	ASR Integral Time 2	0.001~10.000	-	Sec	X	O	O	O	O	O	X	*1
20-04	ASR Integral Time Limit	0~300	200	%	X	X	O	O	O	O	X	
20-05	ASR Positive Limit	0.1 ~ 10.0	5.0	%	X	O	X	X	X	X	X	
20-06	ASR Negative Limit	0.1 ~ 10.0	1.0	%	X	O	X	X	X	X	X	
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	-	X	O	O	O	O	X	X	
20-08	ASR Delay Time	0.000~0.500	0.004	Sec	X	X	O	O	O	X	X	
20-09	Speed Observer Proportional (P) Gain1	0.00~2.55	0.61	-	X	X	O	X	X	X	X	*1
20-10	Speed Observer Integral (I) Time 1	0.01~10.00	0.05	Sec	X	X	O	X	X	X	X	*1

Group 20: Speed Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
20-11	Speed Observer Proportional (P) Gain2	0.00~2.55	0.61	-	X	X	O	X	X	X	X	*1
20-12	Speed Observer Integral (I) Time 2	0.01~10.00	0.06	Sec	X	X	O	X	X	X	X	*1
20-13	Low-pass Filter Time Constant of Speed Feedback 1	1~1000	4	ms	X	X	O	X	X	X	X	
20-14	Low-pass Filter Time Constant of Speed Feedback 2	1~1000	30	ms	X	X	O	X	X	X	X	
20-15	ASR Gain Change Frequency 1	0.0~599.0	4.0	Hz	X	O	O	O	O	X	O	
20-16	ASR Gain Change Frequency 2	0.0~599.0	8.0	Hz	X	X	O	O	O	X	O	
20-17	Torque Compensation Gain at Low Speed	0.00~2.50	1.00	-	X	X	O	X	X	X	X	*1
20-18	Torque Compensation Gain at High Speed	-10~10	0	%	X	X	O	X	X	X	X	*1
20-19	Over Speed (OS) Selection	0: Deceleration to stop 1: Coast to stop 2: Continue to operate	1		X	O	X	O	O	X	X	
20-20	Over Speed (OS) Detection Level	0~120	115	%	X	O	X	O	O	X	X	

Group 20: Speed Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
20-21	Over Speed (OS) Detection Time	0.0~2.0	0.5	Sec	X	O	X	O	O	X	X	
20-22	Speed Deviation (DEV) Selection	0: Deceleration to Stop 1: Coast to Stop 2: Continue to Operate	2		X	O	X	O	O	X	X	
20-23	Speed Deviation (DEV) Detection Level	0~50	10	%	X	O	X	O	O	X	X	
20-24	Speed Deviation (DEV) Detection Time	0.0~10.0	0.5	Sec	X	O	X	O	O	X	X	
20-25	Selection of PG Open	0: Deceleration to Stop 1: Coast to Stop 2: Continue to Operate	1	-	X	O	X	O	O	X	X	
20-26	Detection Time of PG Open	0.0~10.0	2.0	Sec	X	O	X	O	O	X	X	
20-27	PG Pulse Number	0~9999	1024	ppr	X	O	X	O	O	X	X	
20-28	Selection of PG Rotation Direction	0: Forward as Counter - Clockwise Rotation 1: Forward as Clockwise Rotation	0	-	X	O	X	O	O	X	X	
20-29	PG Pulse Dividing Ratio	001~132	1	-	X	O	X	O	O	X	X	
20-30	PG Gear Ratio 1	1~1000	1	-	X	O	X	O	X	X	X	
20-31	PG Gear Ratio 2	1~1000	1	-	X	O	X	O	X	X	X	

Group 20: Speed Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
20-32	Selection of Specific Encoder	0: None 1: Resolver	0		X	X	X	O	O	X	X	
20-33	Detection Level at Constant Speed	0.1~5.0	1.0		X	O	O	O	O	O	X	*1
20-34	Compensation Gain of Derating	0~25600	0		X	X	O	O	O	X	X	*1
20-35	Compensation Time of Derating	0~30000	100	ms	X	X	O	O	O	X	X	*1

Group 21: Torque And Position Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
21-00	Torque Control Selection	0: Speed Control 1: Torque Control	0	-	X	X	X	O	O	X	X	
21-01	Filter Time of Torque Reference	0~1000	0	ms	X	X	X	O	O	X	X	
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	-	X	X	X	O	O	X	X	
21-03	Speed Limit Value	-120~120	0	%	X	X	X	O	O	X	X	*1
21-04	Speed Limit Bias	0~120	10	%	X	X	X	O	O	X	X	*1
21-05	Positive Torque Limit	0~300	*	%	X	X	O	O	O	O	X	

Group 21: Torque And Position Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
21-06	Negative Torque Limit	0~300	*	%	X	X	O	O	O	O	X	
21-07	Forward Regenerative Torque Limit	0~300	*	%	X	X	O	O	O	O	X	
21-08	Reversal Regenerative Torque Limit	0~300	*	%	X	X	O	O	O	O	X	
21-09	Maximum Frequency of Position Control	0.1~100.0	20.0	Hz	X	X	X	O	O	X	X	
21-10	The Command of Rotation Cycle Number of Section 0	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-11	The Command of the Pulse Number of Section 0	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-12	The Command of Rotation Cycle Number of Section 1	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-13	The Command of the Pulse Number of Section 1	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-14	The Command of Rotation Cycle Number of Section 2	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-15	The Command of the Pulse Number of Section 2	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	

Group 21: Torque And Position Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
21-16	The Command of Rotation Cycle Number of Section 3	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-17	The Command of the Pulse Number of Section 3	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-18	The Command of Rotation Cycle Number of Section 4	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-19	The Command of the Pulse Number of Section 4	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-20	The Command of Rotation Cycle Number of Section 5	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-21	The Command of the Pulse Number of Section 5	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-22	The Command of Rotation Cycle Number of Section 6	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-23	The Command of the Pulse Number of Section 6	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-24	The Command of Rotation Cycle Number of Section 7	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	

Group 21: Torque And Position Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
21-25	The Command of the Pulse Number of Section 7	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-26	The Command of the Pulse Number of Section 8	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-27	The Command of Rotation Cycle Number of Section 8	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-28	The Command of the Pulse Number of Section 9	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-29	The Command of Rotation Cycle Number of Section 9	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-30	The Command of Rotation Cycle Number of Section 10	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-31	The Command of the Pulse Number of Section 10	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-32	The Command of Rotation Cycle Number of Section 11	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-33	The Command of the Pulse Number of Section 11	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	

Group 21: Torque And Position Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
21-34	The Command of Rotation Cycle Number of Section 12	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-35	The Command of the Pulse Number of Section 12	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-36	The Command of Rotation Cycle Number of Section 13	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-37	The Command of the Pulse Number of Section 13	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-38	The Command of Rotation Cycle Number of Section 14	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-39	The Command of the Pulse Number of Section 14	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-40	The Command of Rotation Cycle Number of Section 15	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	
21-41	The Command of the Pulse Number of Section 15	-9999 ~ 9999	0	-	X	X	X	O	O	X	X	

Group 21: Torque And Position Control Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
21-42	Pos. Mode Sel	0: Switch to position mode when output frequency < 01-08 1: Z Phase Locked Function	0		X	X	X	O	O	X	X	
21-43	Offset Angle	0 ~9999	0	Pulse	X	X	X	O	O	X	X	

* Refer to the following attachment 1.

Group 22: PM Motor Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
22-00	PM Motor Rated Power	0.00~600.00	KVA	kW	X	X	X	X	O	O	X	
22-01	Reserved											
22-02	PM Motor Rated Current	25%~200% inverter's rated current	KVA	A	X	X	X	X	O	O	X	
22-03	PM Motor's Pole Number	2~96	6	poles	X	X	X	X	O	O	X	
22-04	PM Motor's Rotation Speed	6~65535	1500	rpm	X	X	X	X	O	O	X	
22-05	PM Motor's Maximum Rotation Speed	6~65535	1500	rpm	X	X	X	X	O	O	X	
22-06	PM Motor Rated Frequency	4.8~599.0	75.0	Hz	X	X	X	X	O	O	X	
22-07	Reserved											

Group 22: PM Motor Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
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		X	X	X	X	O	X	X	
22-09	Reserved											
22-10	PM SLV Start Current	20% ~ 120% Motor Rated Current	50	%	X	X	X	X	X	O	X	
22-11	I/F Mode Start Frequency Switching Point	1.0 ~ 20	10	%	X	X	X	X	X	O	X	
22-12	KP Value of Speed Estimation	1~10000	3000	-	X	X	X	X	X	O	X	
22-13	KI Value of Speed Estimation	1~1024	40	-	X	X	X	X	X	O	X	
22-14	Armature Resistance of PM Motor	0.001 ~ 30.000	1.000	Ω	X	X	X	X	O	O	X	
22-15	D-axis Inductance of PM Motor	0.01 ~ 300.00	10.00	mH	X	X	X	X	O	O	X	

Group 22: PM Motor Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
22-16	Q-axis Inductance of PM Motor	0.01 ~ 300.00	10.00	mH	X	X	X	X	O	O	X	
22-17	Reserved											
22-18	Flux-Weakening Limit	0~100	0	%	X	X	X	X	O	O	X	
22-19	Reserved											
22-20	Offset Angle of the Magnetic Pole and PG Origin	0~360	0	deg	X	X	X	X	O	X	X	*4
22-21	PM Motor Tuning	0: PM Motor Tuning is not Active 1: Parameter Auto-tune (for PMSLV Tuning) 2: Magnetic Pole Alignment and Loop Adjustment (for PMSV Tuning) 3: Magnetic Pole Alignment	0	-	X	X	X	X	O	O	X	

Group 22: PM Motor Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
22-22	Fault History of PM Motor Tuning	0. No Error 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	0	-	X	X	X	X	O	O	X	*4

Group 22: PM Motor Parameters												
Code	Parameter Name	Setting Range	Default	Unit	Control mode							Attribute
					V/F	V/F +PG	SLV	SV	PM SV	PM SLV	SLV2	
22-23	PMSLV acceleration time	0.1~10.0	1.0	Sec	X	X	X	X	X	O	X	Note1

Note1: New added parameter in software V1.02

Attachment 1: Parameters' default value and upper limit value are adjusted by different capacities of inverter.

Models	Frame	Max. frequency (Hz) in SLV when carrier frequency <= 8K 11-01	Max. frequency (Hz) in SLV when carrier frequency > 8K 11-01	Display parameter 12-41 (Inverter temperature)	The initial value of parameter 18-00 in SLV/ SV (Slip compensation at low speed)
2001	1	150	150	Yes	1.00
2002					
2003	2	150	150	Yes	1.00
2005					
2008					
2010	3	150	150	Yes	1.00
2015	4	110	110	Yes	1.00
2020					
2025					
2030	5	100	80	Yes	0.70
2040					
2050	6	100	80	No	0.70
2060					
2075	7	100	95	No	0.50
2100					
2125	8	100	80	No	0.50
2150					
4001	1	150	150	Yes	1.00
4002					
4003					
4005	2	150	150	Yes	1.00
4008					
4010	3	150	150	Yes	1.00
4015					
4020	4	110	110	Yes	1.00
4025		100	100		
4030		100	100		
4040	5	100	80	Yes	0.70
4050					
4060					
4075					

Models	Frame	Max. frequency (Hz) in SLV when carrier frequency <= 8K 11-01	Max. frequency (Hz) in SLV when carrier frequency > 8K 11-01	Display parameter 12-41 (Inverter temperature)	The initial value of parameter 18-00 in SLV/ SV (Slip compensation at low speed)
4100	6	100	80	No	0.70
4125					
4150	7	100	80	No	0.50
4175					
4215					
4215H (note)	8	100	80	No	0.50
4270					
4300					
4375					
4425					

Models	The initial value of parameters 21-05 ~21-08 (Torque Limit)	The initial value (s) of parameter 20-08 (ASR Filter Time)	The initial value (V) of parameter 08-02(Stall Level in Deceleration	The initial value (s) of Accel. & Decel 00-14~00-17 & 00-23~00-27	Default carrier in HD kHz 11-01	Max. carrier in HD kHz (SLV, Max. > 80Hz) 11-01	Max. carrier in HD kHz (others) 11-01
2001	200%	0.001	385	10.0	8	8	16
2002					8	8	16
2003	200%	0.001	385	10.0	8	8	16
2005					8	8	16
2008	200%	0.001	385	10.0	8	8	16
2010					8	8	16
2015	200%	0.002	385	15.0	8	8	16
2020					8	8	16
2025					6	8	12
2030	160%	0.002	385	20.0	5	8	12
2040					5	8	12
2050	160%	0.004	385	20.0	5	8	10
2060					5	8	10
2075	160%	0.004	385	20.0	5	8	10
2100					5	8	10
2125	160%	0.004	385	20.0	5	8	5
2150					5	8	5
4001	200%	0.001	770	10.0	8	8	16
4002					8	8	16
4003					8	8	16

Models	The initial value of parameters 21-05 ~21-08 (Torque Limit)	The initial value (s) of parameter 20-08 (ASR Filter Time)	The initial value (V) of parameter 08-02(Stall Level in Deceleration	The initial value (s) of Accel. & Decel 00-14~00-17 & 00-23~00-27	Default carrier in HD kHz 11-01	Max. carrier in HD kHz (SLV, Max. > 80Hz) 11-01	Max. carrier in HD kHz (others) 11-01
4005	200%	0.001	770	10.0	8	8	16
4008					8	8	16
4010	200%	0.001	770	10.0	8	8	16
4015					8	8	16
4020	200%	0.002	770	15.0	8	8	16
4025					8	8	16
4030					8	8	16
4040	160%	0.002	770	20.0	5	8	12
4050					5	8	12
4060					5	8	10
4075	160%	0.004	770	20.0	5	8	10
4100					5	8	10
4125	160%	0.004	770	20.0	4	8	10
4150					5	8	10
4175					5	8	10
4215					3	8	8
4215H (note)	160%	0.004	770	20.0	4	5	5
4270							
4300							
4375							
4425					2		

Note: The spec. please refer to Chapter 3.7, the rated current is 330/370A.

575/690V Models

Model	Frame	Max. frequency (Hz) in SLV when carrier frequency <= 8K	Max. frequency (Hz) in SLV when carrier frequency > 8K	Display parameter 12-41 (Inverter temperature)	The initial value of parameter 18-00 in SLV/ SV (Slip compensation at low speed)
5001	2	150	150	Yes	1.00
5002					
5003					
5005	3	150	150	Yes	1.00
5008					
5010					
6015	4	110	110	Yes	1.00
6020					
6025					
6030					
6040					
6050	5	100	80	Yes	0.7
6060					
6075					
6100	6	100	80	NO	0.7
6125					
6150					
6175	7	100	80	NO	0.5
6215					
6250					
6270					

Models	The initial value of parameters 21-05 ~21-08 (Torque Limit)	The initial value (s) of parameter 20-08 (ASR Filter Time)	The initial value (s) of Accel. & Decel	Default carrier in HD kHz	Max. carrier in HD kHz (others)
5001	200%	0.002	10	8	16
5002				8	16
5003				8	16
5005	200%	0.002	20	8	16
5008				8	16
5010				8	16
6015	160%	0.004	25	4	8
6020				4	8
6025				4	8
6030				4	8
6040				4	8
6050	160%	0.004	30	4	8
6060				4	8
6075				4	8
6100	160%	0.004	30	3	6
6125				3	6
6150				3	6
6175	160%	0.004	30	2	4
6215				2	4
6250				2	4
6270				2	4

5. TROUBLESHOOTING AND FAULT DIAGNOSTICS

5.1 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.

5.2 Fault Detection Function

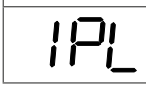
When a fault occurs, please refer to Table 5.1 for possible causes and take appropriate measures.

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.

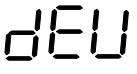
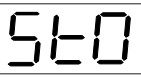
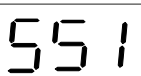
When a fault occurs, the fault message is stored in the fault history (see group 12 parameters).

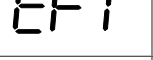
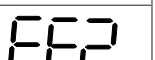
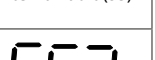
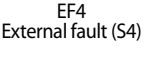
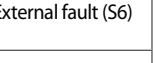
Table 5.1 Fault information and possible solutions

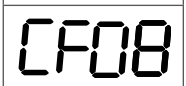
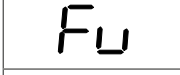
LED display	Description	Cause	Possible solutions
OC over current 	The inverter output current exceeds the overcurrent level (200% of the inverter rated current)	• Acceleration / Deceleration time is too short • Contactor at the inverter output side • A special motor or applicable capacity is greater than the inverter rated value • Short circuit or ground fault	• Extend acceleration / deceleration time • Check the motor wiring • Disconnect motor and try running inverter
OCA over current 	The inverter output current exceeds the overcurrent level in acceleration time	• Acceleration time is too short • Capacity of motor is bigger than inverter • Short circuit between winding and shell of motor • Short circuit between wire and ground of motor • IGBT broken module	• Set the longer acceleration time • Change to bigger capacity of inverter • Examine motor • Check the wire • Replace IGBT module
OCC over current 	The inverter output current exceeds the overcurrent level in constant speed	• Instantaneous change of load • Instantaneous change of current	• Change to bigger capacity of inverter • Add reactor to power source

LED display	Description	Cause	Possible solutions
OCd over current 	The inverter output current exceeds the overcurrent level in deceleration time	• Deceleration time is too short	• Set the longer acceleration time
SC short circuit 	Inverter output short circuit or ground fault	• Short circuit or ground fault (08-23 = 1) • Motor damaged (insulation) • Wire damage or deterioration	• Check the motor wiring • Disconnect motor and try running inverter
GF Ground fault 	The current to ground exceeds 50% of the inverter rated output current (08-23 = 1, GF function is enabled)	• Motor damaged (insulation) • Wire damage or deterioration • Inverter DCCT sensors defect	• Replace motor • Check the motor wiring • Disconnect motor and try running inverter • Check resistance between cables and ground • Reduce carrier frequency
OV Over voltage 	DC bus voltage exceeds the OV detection level: 200V class: 410Vdc 400V class: 820Vdc 575V class: 1050Vdc 690V class: 1230Vdc (For 400V class, if input voltage 01-14 is set lower than 400V, the OV detection value will is decreased to 700Vdc)	• Deceleration time set too short, resulting in regenerative energy flowing back from motor to the inverter • The inverter input voltage is too high • Use of power factor correction capacitors • Excessive braking load • Braking transistor or resistor defective • Speed search parameters set incorrectly	• 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 	DC bus voltage is lower than the UV detection level or the pre-charge contactor is not active while the inverter is running 200V class: 190Vdc 400V class: 380Vdc 575/690V class: 546Vdc (The detection value can be adjusted by 07-13)	• The input voltage is too low • Input phase loss • Acceleration time set too short • Input voltage fluctuation • Pre-charge contactor damaged • DC bus voltage feedback signal value not incorrect	• 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 	Phase loss at the input side of the inverter or input voltage imbalance, active when 08-09 = 1 (enabled)	• Wiring loose in inverter input terminal • Momentary power loss • Input voltage imbalance	• Check input wiring / faster screws • Check power supply

LED display	Description	Cause	Possible solutions
OPL output phase loss 	Phase loss at the output side of the inverter, active when 08-10 = 1 (enabled)	• Wiring loose in inverter output terminal • Motor rated current is less than 10% of the inverter rated current	• Check output wiring / faster screws • Check motor & inverter rating
OH1 Heatsink overheat 	The temperature of the heat sink is too high. Note: when OH1 fault occurs three times within five minutes, it is required to wait 10 minutes before resetting the fault.	• Ambient temperature too high • Cooling fan failed • Carrier frequency set too high • Load too heavy	• Install fan or AC to cool surroundings • Replace cooling fan • Reduce carrier frequency • Reduce load / Measure output current
OL1 Motor overload 	Internal motor overload protection tripped, active when protection curve 08-05 = xxx1	• Voltage setting V/F mode too high, resulting in over-excitation of the motor • Motor rated current (02-01) set incorrectly • Load too heavy	• Check V/f curve • Check motor rated current • Check and reduce motor load, check and operation duty cycle
OL2 Inverter overload 	Inverter thermal overload protection tripped. If an inverter overload occurs 4 times in five minutes, it is required to wait 4 minutes before resetting the fault	• Voltage setting V/F mode too high, resulting in over-excitation of the motor • Inverter rating too small • Load too heavy	• Check V/f curve • Replace inverter with larger rating • Check and reduce motor load, check and operation duty cycle
OT Over torque detection 	Inverter output torque is higher than 08-15 (over torque detection level) for the time specified in 08-16. Parameter 08-14 = 0 to activate	• Load too heavy	• Check over torque detection parameters (08-15 / 08-16) • Check and reduce motor load, check and operation duty cycle
UT Under torque detection 	Inverter output torque is lower than 08-19 (under torque detection level) for the time specified in 08-20. Parameter 08-18 = 0 to activate	• Sudden drop in load • Belt break	• Check under torque detection parameters (08-19 / 08-20) • Check load / application
run Switch for Motor1/ Motor2 	Switch for Motor1/Motor2 in running time	• Execute command for switching motor2 in running time • Execute command for switching motor in running time	• Revise the sequence control and switch motor in top time
OS Over speed 	Motor speed exceeds level set in 20-20 (PG Over speed Level) for the time set in 20-21 (PG over speed time). Active when 20-19 (= 0 or 1). This fault is active V/F + PG and SV control mode (00-00 = 1 or 3 or 4). Motor speed can be monitored by 12-22	• Motor speed overshoot (ASR) • PG ppr set incorrectly • Overspeed parameters set incorrectly	• Check ASR parameters group 21 • Check PG parameters • Check overspeed parameters 20-20/20-12

LED display	Description	Cause	Possible solutions
PGO PG Open circuit 	PG pulses are not received by the inverter for the time specified in 20-26 (PG open circuit detection time). This fault is active V/F + PG and SV control mode (00-00 = 1 or 3 or 4)	• PG cable disconnected • PG has no power • Mechanical brake active preventing motor from turning	• Check PG wiring • Check PG power-supply • Make sure brake is released
DEV Speed deviation 	Motor speed rises above 20-23 level (PG speed deviation level) for the time specified in 20-24 (PG deviation time)... Active when parameter 20-22(=0 or 1). This fault is active V/F + PG and SV control mode (00-00 = 1 or 3 or 4)	• Load too heavy • Mechanical brake active preventing motor from turning • PG wiring error • PG parameters (group 20) set incorrectly • Acceleration / deceleration time set to short	• Check load • Make sure brake is released • Check PG wiring • Check PG parameters 20-23/20-24 • Increase Acceleration / deceleration time
CE communication error 	No Modbus communication received in for the time specified in 09-06 (communication error detection time). Active when 09-07(= 0 to 2).	• Connection lost or wire broken • Host stopped communicating	• Check connection • Check host computer / software
FB PID feedback loss 	PID feedback signal falls below level specified in 10-12 (PID feedback loss detection level) for the time specified in 10-13 (Feedback loss detection time). Active when parameter (10-11 = 2)	• Feedback signal wire broken • Feedback sensor broken	• Check feedback wiring • Replace feedback sensor
STO Run Permissive 	Run permissive input open	• Terminal board Input F1 and F2 are not connected	• Check F1 and F2 connection
SS1 Digital input Stop command 	Digital input Stop command enabled	• 08-30 =0 and 03-00~03-07=58	• Check if 08-30 =0 and 03-00~03-07=58
EF0 External fault 0 	External fault (Modbus)	Modbus communication 0x2501 bit 2="1"	• Reset Modbus communication 0x2501 bit 2="1"

LED display	Description	Possible causes	Corrective action
EF1 External fault (S1) 	External fault (Terminal S1) Active when 03-00= 25, and Inverter external fault selection 08-24=0 or 1	• Multifunction digital input external fault active	• Multi-function input function set incorrectly • Check wiring
EF2 External fault (S2) 	External fault (Terminal S2) Active when 03-01= 25, and Inverter external fault selection 08-24=0 or 1		
EF3 External fault (S3) 	External fault (Terminal S3) Active when 03-02= 25, and Inverter external fault selection 08-24=0 or 1		
EF4 External fault (S4) 	External fault (Terminal S4) Active when 03-03= 25, and Inverter external fault selection 08-24=0 or 1		
EF5 External fault (S5) 	External fault (Terminal S5) Active when 03-04= 25, and Inverter external fault selection 08-24=0 or 1		
EF6 External fault (S6) 	External fault (Terminal S6) Active when 03-05= 25, and Inverter external fault selection 08-24=0 or 1		
EF7 External fault (S7) 	External fault (Terminal S7) Active when 03-06= 25, and Inverter external fault selection 08-24=0 or 1		
EF8 External fault (S8) 	External fault (Terminal S8) Active when 03-07= 25, and Inverter external fault selection 08-24=0 or 1		

LED display	Description	Possible causes	Corrective action
CF07 Motor control fault 	Motor control fault	• SLV mode is unable to run motor	• Perform rotational or stationary auto-tune •Increase minimum output frequency (01-08)
CF08 Motor control fault 	Motor control fault	• Start or Run fault in PM SLV mode	• 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
FU fuse open 	DC bus fuse blown DC fuse (Models 200V 50HP and above, 400V 100HP and above) open circuit	• IGBT damaged • Short circuit output terminals	• Check IGBTs • Check for short circuit at inverter output •Replace inverter
CF00 Operator Communication Error 	Errors of data transmission occur in LCD keypad	• LCD keypad and inverter cannot transmit data after power on 5 seconds	• Disconnect the operator and then reconnect • Replace the control board
CF01 Operator Communication Error 2 	Errors of data transmission occur in LCD keypad	• LCD keypad and inverter can transmit data but transmission error occurs for more than 2 seconds	• Disconnect the operator and then reconnect •Replace the control board
CTER CT Failure 	Errors of detecting voltages from three phase's current transformer to detect output current	• Errors of detecting voltages • Noises too much •Control board failure	• Check current transformer signal and the voltage on the control board.
CF20 Communication Failure 	Use Profibus & Modbus Communication at the same time	• Maybe use two kind of communication type at the same time	• Check only use one kind of communication type

5.3 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 of are set to an invalid setting), the keypad displays a self-diagnostics code.

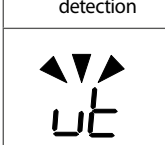
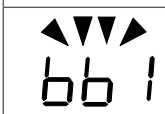
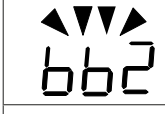
Note: The fault contact output does not energize on a self-diagnostics error. While a self-diagnostics code is active the inverter does not accept a run command until the programming error is corrected.

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 5.2 for and overview, cause and corrective action for inverter warnings and self-diagnostic errors.

Table 5.2 warning / self-diagnosis and corrective actions

LED display	Description	Possible causes	Corrective action
OV (flash) Over voltage 	DC bus voltage exceeds the OV detection level: 200V class: 410Vdc 400V class: 820Vdc 575V class:1050Vdc 690V class: 1230Vdc (for 400V class, if input voltage 01-14 is set lower than 400V, the OV detection value will is decreased to 700Vdc)	• Deceleration time set too short, resulting in regenerative energy flowing back from motor to the inverter • The inverter input voltage is too high • Use of power factor correction capacitors • Excessive braking load • Braking transistor or resistor defective • Speed search parameters set incorrectly	• 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 	DC bus voltage is lower than the UV detection level or the pre-charge contactor is not active while the inverter is running. 190Vdc: 200V class; 380Vdc: 400V class 546Vdc:575/690V class (the detection value can be adjusted by 07-13)	• The input voltage is too low • Input phase loss • Acceleration time set too short • Input voltage fluctuation • Pre-charge contactor damaged • DC bus voltage feedback signal value not incorrect	• 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 	The temperature of the heat sink is too high. Note: when OH1 fault occurs three times within five minutes, it is required to wait 10 minutes before resetting the fault.	• Ambient temperature too high • Cooling fan failed • Carrier frequency set too high • Load too heavy	• Install fan or AC to cool surroundings • Replace cooling fan • Reduce carrier frequency • Reduce load / Measure output current

LED display	Description	Possible causes	Corrective action
OH2 (flash) Inverter over heating warning 	Inverter overheat warning Multi-function digital input set to 31. (Terminal S1 ~ S8) Active when 03-00 ~ 03-07 = 31).	• Multifunction digital input overheat warning active	• Multi-function input function set incorrectly • Check wiring
OT (flash) over torque detection 	Inverter output torque is higher than 08-15 (over torque detection level) for the time specified in 08-16. Parameter 08-14 = 0 to activate.	• Load too heavy	• Check over torque detection parameters (08-15 / 08-16) • Check and reduce motor load, check and operation duty cycle
UT (flash) under torque detection 	Inverter output torque is lower than 08-19 (under torque detection level) for the time specified in 08-20. Parameter 08-18 = 0 to activate.	• Sudden drop in load • Belt break	• Check under torque detection parameters (08-19 / 08-20) • Check load / application
bb1 (flash) External baseblock 	External base block (Terminal S1)	• Multifunction digital input external baseblock active	• Multi-function input function set incorrectly • Check wiring
bb2 (flash) External baseblock 	External base block (Terminal S2)		
bb3 (flash) External baseblock 	External base block (Terminal S3)		
bb4 (flash) External baseblock 	External base block (Terminal S4)		

LED display	Description	Possible causes	Corrective action
bb5 (flash) External baseblock 	External base block (Terminal S5)	• Multifunction digital input external baseblock active	• Multi-function input function set incorrectly • Check wiring
bb6 (flash) External baseblock 	External base block (Terminal S6)		
bb7 (flash) External baseblock 	External base block (Terminal S7)		
bb8 (flash) External baseblock 	External base block (Terminal S8)		

LED display	Description	Possible causes	Corrective action
OS (flash) Motor over speed 	Motor speed exceeds level set in 20-20 (PG Over speed Level) for the time set in 20-21 (PG over speed time). Active when 20-19 (= 0 or 1). This fault is active V/F + PG and SV control mode (00-00 = 1 or 3 or 4). Motor speed can be monitored by 12-22	• Motor speed overshoot (ASR) • PG ppr set incorrectly • Overspeed parameters set incorrectly	• Check ASR parameters group 21 • Check PG parameters • Check overspeed parameters 20-20/20-12
PGO (flash) PG open circuit 	PG pulses are not received by the inverter for the time specified in 20-26 (PG open circuit detection time). This fault is active V/F + PG and SV control mode (00-00 = 1 or 3 or 4).	• PG cable disconnected • PG has no power • Mechanical brake active preventing motor from turning	• Check PG wiring • Check PG power-supply • Make sure brake is released

LED display	Description	Possible causes	Corrective action
DEV (flash) Speed deviation 	Motor speed rises above 20-23 level (PG speed deviation level) for the time specified in 20-24 (PG deviation time). Active when parameter 20-22(=0 or 1). This fault is active V/F + PG and SV control mode (00-00 = 1 or 3 or 4).	• Load too heavy • Mechanical brake active preventing motor from turning • PG wiring error • PG parameters (group 20) set incorrectly • Acceleration / deceleration time set to short	• Check load • Make sure brake is released • Check PG wiring • Check PG parameters 20-23/20-24 • Increase Acceleration / deceleration time
OL1 Motor overload 	Internal motor overload protection tripped, active when protection curve 08-05 = xxx1	• Voltage setting V/F mode too high, resulting in over-excitation of the motor • Motor rated current (02-01) set incorrectly • Load too heavy	• Check V/f curve • Check motor rated current • Check and reduce motor load, check and operation duty cycle
OL2 Inverter overload 	Inverter thermal overload protection tripped. If an inverter overload occurs 4 times in five minutes, it is required to wait 4 minutes before resetting the fault.	• Voltage setting V/F mode too high, resulting in over-excitation of the motor • Inverter rating too small • Load too heavy	• Check V/f curve • Replace inverter with larger rating • Check and reduce motor load, check and operation duty cycle

LED display	Description	Possible causes	Corrective action
CE (flash) communication error 	No Modbus communication received for 2 sec. Active when 09-07=3.	• Connection lost or wire broken • Host stopped communicating	• Check connection • Check host computer / software
CLA over current protection level A 	Inverter current reaches the current protection level A.	• Inverter current too high • Load too heavy	• Check load and duty cycle operation
CLB over current protection level B 	Inverter current reaches the current protection level B.	• Inverter current too high • Load too heavy	• Check load and duty cycle operation
Retry (flash) retry 	Automatic reset activated, warning is displayed until restart delay time set (07-01) expires.	• Parameter 07-01 set to a value greater than 0 • Parameter 07-02 set to a value greater than 0	• Warning disappears after automatic reset

LED display	Description	Possible causes	Corrective action
ES (flash) External emergency stop 	External emergency stop Enabled	• 03-00~03-08 set to 14, and the digital input enabled	• Turn off run command, and remove external emergency stop command

LED display	Description	Possible causes	Corrective action
EF1 (flash) External fault (S1) 	External fault (Terminal S1) Active when 03-00= 25, and Inverter external fault selection 08-24=2.	• Multifunction digital input external fault active and parameter 08-24 = 2 for operation to continue	• Multi-function input function set incorrectly • Check wiring • Multi-function input function set incorrectly • Check wiring
EF2 (flash) External fault (S2) 	External fault (Terminal S2) Active when 03-01= 25, and Inverter external fault selection 08-24=2.		
EF3 (flash) External fault (S3) 	External fault (Terminal S3) Active when 03-02= 25, and Inverter external fault selection 08-24=2.		
EF4 (flash) External fault (S4) 	External fault (Terminal S4) Active when 03-03= 25, and Inverter external fault selection 08-24=2.		
EF5 (flash) External fault (S5) 	External fault (Terminal S5) Active when 03-04= 25, and Inverter external fault selection 08-24=2.		
EF6 (flash) External fault (S6) 	External fault (Terminal S6) Active when 03-05= 25, and Inverter external fault selection 08-24=2.		
EF7 (flash) External fault (S7) 	External fault (Terminal S7) Active when 03-06= 25, and Inverter external fault selection 08-24=2.		
EF8 (flash) External fault (S8) 	External fault (Terminal S8) Active when 03-07= 25, and Inverter external fault selection 08-24=2.		

LED display	Description	Possible causes	Corrective action
EF9 (flash) error of forward/reversal rotation 	Forward run and reverse run are active within 0.5 sec of each other. Stop method set by parameter 07-09.	• Forward run and reverse run active (see 2-wire control)	• Check run command wiring
SE01 Rang setting error 	Parameter setting falls outside the allowed range.	• Some parameter ranges are determined by other inverter parameters which could cause an out of range warning when the dependency parameter is adjusted. Example: 1.02-00>02-01,or 20>02-21 2.00-12>00-13, 3.00-07 = 1,00-05=00-06 4.02-03 > 02-06 or 02-22 > 02-25 5.20-16 < 20-15	• Check parameter setting
SE02 Digital input terminal error 	Multi-function input setting error	• Multi-function digital input terminals (03-00 to 03-07) are set to the same function (not including ext. fault and not used) or [1]UP/DOWN commands are not set at the same time(they must be used together). [2]UP/DOWN commands (08 and 09) and ACC/DEC commands (11) are set at the same time. [3]Speed search 1 (19 - maximum frequency) and Speed search 2 (34 - from the set frequency - are set at the same time. 03-00~03-07 set two-wire and three-wire in the same time.	• Check multi-function input setting
SE03 V/f curve error 	V/f curve setting error.	• V/F curve setting error. [1] 01-02 > 01-12 > 01-06 >01-08 • (Fmax) (Fbase) (Fmid1) (Fmin) [2]01-16 > 01-24 > 01-20 > 01-22; • (Fmax2) (Fbase2) (Fmid1) (Fmin2)	• Check V/F parameters
SE05 PID selection error 	PID selection error.	• 10-00 and10-01 set to 1(AI1) or set to 2(AI2) • 10-29 = 1 or 2 and 10-25 = 1allow to reverse • 10-29 = 1 or 2 and 10-03 =1xxxb (PID output+ target value)	• Check10-00 and 10-01 • Check 10-29 and 10-25 • Check 10-29 and 10-03

LED display	Description	Possible causes	Corrective action
HPErr Model selection error 	Inverter capacity setting error: Inverter capacity setting 13-00 does not match the rated voltage	• Inverter capacity setting does not match voltage class (13-00)	• Check inverter capacity setting 13-00
SE07 PG card error 	Inverter PG card setting error	• No PG feedback card installed • Set wrong type for PM Encoder Type (22-08)	• Install PG feedback card • Check control mode • Set right type for PM Encoder Type (22-08) and power on again.
SE08 PM Motor mode error 	Inverter rating does not support the PM Motor mode.	• Inverter rating does not support PM motor control mode	• Check control mode
SE09 PI setting error 	Inverter PI setting error	• Inverter pulse input selection (03-30) selection conflicts with PID source (10-00 and 10-01)	• Check pulse input selection (03-30) and PID source (10-00 and 10-01)
FB (flash) PID feedback breaking 	PID feedback signal falls below level specified in 10-12 (PID feedback loss detection level) for the time specified in 10-13 (Feedback loss detection time). Active when parameter (10-11 = 1)	• Feedback signal wire broken • Feedback sensor broken	• Check feedback wiring • Replace feedback sensor
USP (flash) Unattended Start Protection 	Unattended Start Protection (USP) is enabled (enabled at power-up.)	• USP at power-up (activated by multi-function digital input) is enabled. The inverter will not accept a run command. • While the warning is active the inverter does not accept a run command. (See parameter 03-00 - 03-08 = 50).	• 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 	Frequency command is smaller than 01-08 without DC brake.	• Frequency command is smaller than motor minimum output frequency	• Adjust frequency command

LED display	Description	Possible causes	Corrective action
STP2 External Terminal Stop Error 	External Terminal is main run command source selection (00-02=1) and run command executes but executes stop command from keypad	• Run command executes from external terminal but executes stop command from keypad	• Remove the run command from external terminal
EnC Encoder Error 	PG card is connected but encoder signal error is detected when motor auto rotational tuning is running	• Abnormal encoder signal	• Check encoder wiring • 17-07 PG pulse number setting is not corresponding to the encoder • Replace the encoder
RunEr Wrong running direction Error 	Running direction is different from 11-00	• Check the command among 11-00, jog and DI control to see if any difference	• Revise the command among 11-00, jog and DI control to see if any difference
PArEr Parameter setting error 	Parameter setting error	• The parameter setting is wrong	• Please refer to the manual for correct setting
STP1 Direct start warning 	The inverter can't start directly, due to 07-04=1	• Run command from the terminal is enabled and 07-04=1	• Remove the run command from the terminal first, and enabled later
FirE Fire mode enabled 	Fire mode enabled	• Fire mode enabled	• Check the environment and confirm the fire status. If no fire, turn off the power and power on again
AdCEr Voltage on C/B error 	The voltage on the control board error	• Errors of detecting voltages • Noises too much • Control board failure	• Check the voltage on the control board

LED display	Description	Possible causes	Corrective action
EPErr EEPROM Save error 	The data save in EEPROM is wrong	• EEPROM circuit failure • Parameter check error after power on	• Restore factory setting, then cut off the power and power on again • If warning again, replace control board
bdErr Control board error 	Firmware can't meet Control board	• Firmware can't meet Control board	• Replace the control board
Parameter Lock 	Parameter lock key code (password) already locked	• Parameter lock key code already enable (13-07)	• Lifting the parameter lock key code, to enter the correct parameter for 13-07
Set password failed 	Parameter lock key code cannot enable	• To enable the parameter lock key code (password) function, but the password is not correct	• Enter the correct parameter for 13-07 to enable the parameter lock key

5.4 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 5.3, for fault information during tuning, cause and corrective action.

Table 5.3 Auto-tuning fault and corrective actions

Error	Description	Cause	Corrective action
01	Motor data input error	• Motor Input data error during auto-tuning • Inverter output current does not match motor rated current	• Check the motor tuning data (17-00 to 17-09) • Check inverter capacity
02	Motor lead to lead resistance R1 tuning error.	• Auto-tuning is not completed within the specified time • Auto-tuning results fall outside parameter setting range • Motor rated current exceeded • Motor was disconnected	• 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		

Error	Description	Cause	Corrective action
06	Motor encoder error	• PG feedback noise	• Check motor rated current • Check PG card grounding
08	Motor acceleration error (Rotational type auto-tuning only)	• Motor fails to accelerate in the specified time (00-14= 20sec)	• Increase acceleration time (00-14) • Disconnect motor load
09	Other	• No load current is higher than 70% of the motor rated current • Torque reference exceeds 100% • Errors other than ATE01~ATE08	• Check the motor tuning data (17-00 to 17-09) • Check motor connection

5.5 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 5.4, for fault information during tuning, cause and corrective action.

Table 5.4 Auto-tuning fault and corrective actions for PM motor

Error	Description	Cause	Corrective action
01	Magnetic pole alignment tuning failure (static)	• Inverter output current does not match motor current	• Check the motor tuning data (22-02) •Check inverter capacity
02	PG option missing	• Magnetic pole cannot be aligned without PG option card	• Install PG feedback card
03	Magnetic pole alignment auto-tuning abort during rotational auto-tune	• System abnormality during magnetic pole alignment	• Check for active protection functions preventing auto-tuning
04	Timeout during magnetic pole alignment during rotational auto-tune	• Motor cannot rotate	• Check motor • Check motor wiring • Check brake released
05	Circuit tuning time out	• System abnormality during circuit tuning	• Check for active protection functions preventing auto-tuning
06	Encoder error	• PG feedback noise	• Check motor rated current • Check PG card grounding
07	Warning	• Other motor tuning error	• Check the motor tuning data (22-02) • Check motor connection
08	Motor current out of range during magnetic pole alignment (rotational auto-tune)	• Motor cannot operate at low speeds	• Check PG card wiring • Check motor connection
09	Current out of range during circuit tuning.	• Inverter output current does not match motor current	• Check the motor tuning data (22-02) • Check inverter capacity
10	Magnetic pole alignment and circuit tuning failed	• Auto-tuning is not successful	• Retry magnetic pole alignment and circuit tuning

6. UL INSTRUCTIONS

⚠ CAUTION!
Electric Shock Hazard

Do not connect or disconnect wiring while the power is on.
Failure to comply will result in death or serious injury.

⚠ WARNING!
Electric 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 inverters without covers or safety shields to show details.
Be sure to reinstall covers or shields before operating the inverters and run the inverters 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 inverter before touching any components.

Do not allow unqualified personnel to perform work on the inverter.
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 inverters.

Do not perform work on the inverter 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 inverter.

Do not remove covers or touch circuit boards while the power is on.
Failure to comply could result in death or serious injury.

⚠ WARNING!
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 inverter 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 inverter to metal or other noncombustible material.

NOTICE!

Observe proper electrostatic discharge procedures (ESD) when handling the inverter and circuit boards.
Failure to comply may result in ESD damage to the inverter circuitry.

Never connect or disconnect the motor from the inverter while the inverter is outputting voltage.
Improper equipment sequencing could result in damage to the inverter.

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 inverter.

Do not modify the inverter circuitry.
Failure to comply could result in damage to the inverter and will void warranty. Motovario 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 inverter and connecting any other devices.
Failure to comply could result in damage to the inverter.

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/cUL Mark

UL STANDARDS COMPLIANCE

This inverter is tested in accordance with UL standard UL508C and complies with UL requirements. To ensure continued compliance when using this inverter in combination with other equipment, meet the following conditions:

• Installation Area
Do not install the inverter to an area greater than pollution severity 2 (UL standard).

• Main Circuit Terminal Wiring
UL approval requires crimp terminals when wiring the inverter's main circuit terminals. Use crimping tools as specified by the crimp terminal manufacturer. Motovario recommends crimp terminals made by NICHIFU for the insulation cap. The table below matches inverter models with crimp terminals and insulation caps. Orders can be placed with a Motovario representative or directly with the Motovario sales department.

Closed-Loop Crimp Terminal Size

Drive Model	Wire Gauge		Terminal	Crimp Terminal	Tool	Insulation Cap
	mm², (AWG)					
AM16	R/L1 S/L2 T/L3	U/T1 V/T2 W/T3	Screws	Model No.	Machine No.	Model No.
AM16-340-0075/0150/0220	2(14)		M4	R2-4	Nichifu NH 1 / 9	TIC 2
	3.5(12)			R5.5-4		TIC 3.5
	5.5(10)					TIC 5.5
AM16-340-0400/0550	3.5(12)		M4	R5.5-4	Nichifu NH 1 / 9	TIC 3.5
	5.5(10)					TIC 5.5
AM16-340-0750/1100/1500	8(8)		M4	R8-4	Nichifu NOP 60	TIC 8
AM16-340-1850/2200	14(6)		M6	R14-6	Nichifu NOP 60 / 150H	TIC 14
AM16-340-3000/3750/4500/5500	28(2)		M8	R38-8	Nichifu NOP 60 / 150H	TIC 38
AM16-340-7500/9000	80(3/0)		M10	R80-10	Nichifu NOP 150H	TIC 80

Type 1

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

Drive Model AM16	Fuse Type	
	Manufacturer: Bussmann	
	Model	Fuse Ampere Rating (A)
200 V Class Single-Phase Drives		
AM16-340-0075	Bussmann 10CT	690V 10A
AM16-340-0150	Bussmann 16CT	690V 16A
AM16-340-0150	Bussmann 16CT	690V 16A
AM16-340-0400	Bussmann 25ET	690V 25A
AM16-340-0550	Bussmann 45FE	690A 40A
AM16-340-0750	Bussmann 50FE	690V 50A
AM16-340-1100	Bussmann 63FE	690V 63A
AM16-340-1500	Bussmann 80FE	690V 80A
AM16-340-1850	Bussmann 100FE / FERRAZ A50QS100-4	690V 100A / 500V 100A
AM16-340-2200	Bussmann 120FEE	690V 120A
AM16-340-3000	FERRAZ SHAWMUT A50QS150-4	500V 120A
AM16-340-3750	FERRAZ SHAWMUT A50QS200-4	500V 150A
AM16-340-4500	FERRAZ SHAWMUT A50QS250-4	500V 200A
AM16-340-5500	FERRAZ SHAWMUT A50QS300-4	500V 250A
AM16-340-7500	FERRAZ SHAWMUT A50QS400-4	500V 300A
AM16-340-9000	FERRAZ SHAWMUT A50QS500-4	500V 400A

• Motor Over temperature Protection
Motor over temperature protection shall be provided in the end use application.

• 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, rated 75°C are to be used.

• Inverter Short-Circuit Rating
This inverter 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.

• The MCCB and breaker protection and fuse ratings (refer to the preceding table) shall be equal to or greater than the short-circuit tolerance of the power supply being used.
• Suitable for use on a circuit capable of delivering not more than (A) RMS symmetrical amperes for. DiJ2. lHp in 240 / 480 V class drives motor overload protection.

Horse Power (Hp)	Current (A)	Voltage (V)
1 -50	5,000	240 / 480
51 - 200	10,000	240 / 480
201 - 400	18,000	240 / 480
401 - 600	30,000	240 / 480

• Inverter Motor Overload Protection
Set parameter 02-0 l (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

The motor rated current parameter (02-01) protects the motor and allows for proper vector control when using open loop vector or flux vector control methods (00-00 = 2 or 3). The motor protection parameter 08-05 is set as factory default. Set 02-01 to the full load amps (FLA) stamped on the nameplate of the motor. The operator must enter the rated current of the motor (17-02) in the menu during auto-tuning. If the auto-tuning operation completes successfully (17-00 = 0), the value entered into 17-02 will automatically write into 02-01.

• 08-05 Motor Overload Protection Selection
The inverter 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.

08-05	Selection for motor overload protection (OL1)
Range	xxx0b: Motor overload is invalid xxx1b: Motor overload is valid xx0xb: Cold start of motor overload xx1xb: Hot start of motor overload x0xxb: Standard motor x1xxb: Special motor 0xxxb: Reserved 1xxxb: Reserved

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

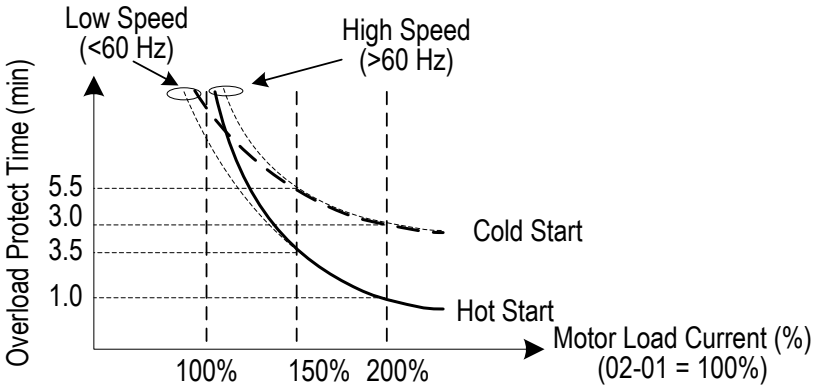
08-05 = xxx0b: Disables the motor overload protection function when two or more motors are connected to a single inverter. Use an alternative method to provide separate overload protection for each motor such as connecting a thermal overload relay to 1he power line of each motor.

08-05 = xx1xb: The motor overload protection function should be set to hot start protection characteristic curve when the power supply is turned on and off frequently, because the thermal values are reset each time when the power is turned off.

08-05 = x0xxb: For motors without a forced cooling fan (general purpose standard motor), the heat dissipation capability is lower when in low speed operation.

08-05 = x1xxb: For motors with a forced cooling fan (inverter duty or VIF motor), the heat dissipation capability is not dependent upon the rotating speed.

To protect the motor from overload by using electronic overload protection, be sure to set parameter 02-01 according to the rated current value shown on the motor nameplate.
Refer to the following "Motor Overload Protection Time" for the standard motor overload protection curve example: Setting 08-05 = x0xxb.



• 08-06 Motor Overload Operation Selection

08-06	Start-up mode of overload protection operation (OL1)
Range	0: Stop output after overload protection 1: Continuous operation after overload protection.

08-06=0: When the inverter detects a motor overload the inverter output is turned off and the OL1 fault message will flash on the keypad. Press RESET button on the keypad or activate the reset function through the multi-function inputs to reset the OL1 fault.

08-06=1: When the inverter detects a motor overload the inverter will continue running and the OL1 alarm message will flash on the keypad until the motor current falls within the normal operating range.

7. 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.

7.1 CONSIGNES DE SÉCURITÉ

7.1.1 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....

7.2 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 laterre 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 suppresseur 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.

7.3 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.

7.4 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.

7.5 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.

7.6 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.

7.7 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.

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MOTOVARIO®
HEART OF MOTION
a TECO Group company

UE Declaration of Conformity

MOTOVARIO S.p.A

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Hereby declares that **the products:**

LM16 – 123 – 0018 / 0037 / 0075 / 0150 / 0220 – F20
LM16 – 340 – 0075 / 0150 / 0220 / 0400 / 0550 / 0750 / 1100 – F20
EM16 – 123 – 0037 / 0075 / 0150 / 0220 – F20
EM16 – 340 – 0075 / 0150 / 0220 / 0400 / 0550 / 0750 / 1100 / 1500 / 1850 – F20
EM16 – 123 – 0037 / 0075 / 0150 / 0220 – F – 66 – S
EM16 – 340 – 0075 / 0150 / 0220 / 0400 / 0550 / 0750 / 1100 – F – 66 – S
AM16 – 340 – 0075 / 0150 / 0220 / 0400 / 0550 / 0750 / 1100 / 1500 / 1850 / 2200 / 3000 / 3700 / 4500 / - F20
AM16 – 340 – 5500 – 20
AM16 – 340 – 7500 / 9000 – 00

Series No all in in conformity with the following directives (including all applicable amendments)

- 2014/35/UE Low Voltage Directive
- 2014/30/UE EMC Directive
  and that the standards and/or technical specifications referenced below have been applied:

- EN 61800-5-1:2007 Adjustable speed electrical power drive systems – Part 5-1:
  Safety requirements – Electrical , thermal and energy

- EN 61800-3:2004 Adjustable speed electrical power drive system. EMC requirements and specific test methods.

The materials employed for the motors production are in conformity with RoHS Directive 2011/65UE concerning the noxious substances use in electrical and electronic equipment restriction.

Additional Information:
All the inverters are provided with "CE" marking

Formigine, 28/04/2017

Direzione Generale
Maurizio Negro

NOTES

AM16

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