

H500 SERIES INVERTER

Safety Precautions

Thank you for using this product. Please pay close attention to all safety-related information in this user manual; otherwise there may be fatal consequences. Please note the manufacturer shall bear no liabilities to damages of any sorts resulting from false operations which is not following this user manual.

Warning ⚠ ---- potential risks. Fatality may be caused if not avoided.

Attention ★ ---- Steps taken to ensure correct operation.

⚠ WARNING

- Risk of electric shock!
- Wait at least 10 minutes after power off to remove the cover.
- Read the user manual and follow the safety instructions before use.

★ Attentions – please follow these instructions when using the inverter.

- Do not do wiring operations at power on.
- Only qualified electrical engineers can install & maintain the inverter.
- Power on the inverter only after the covers have been put back on. Do not remove the cover during power on.
- Please wait at least 10 minutes after power off to remove the cover; so as to let DC bus capacitors to fully discharge.
- Please make sure the rated input voltage is compatible with the power supply voltage. Otherwise, there may be risks of fire.
- Please do not operate the inverter with wet hands. The inverter has many semiconductor components inside.
- The inverter is not designed for voltage-withstanding tests.
- Do not alter the inverter.
- Do not install or use any inverter which is already broken or with faulty parts.

★ Attentions – when scrapping the inverter.

- Electrolytic capacitors on the PCBs of the inverters may explode if incinerated.
- Poisonous gas may emit if incinerated.
- Please dispose scrapped inverters as industrial waste.

★ Attention: please follow inverter installation location requirements strictly.

Environmental requirements for installation of inverters:

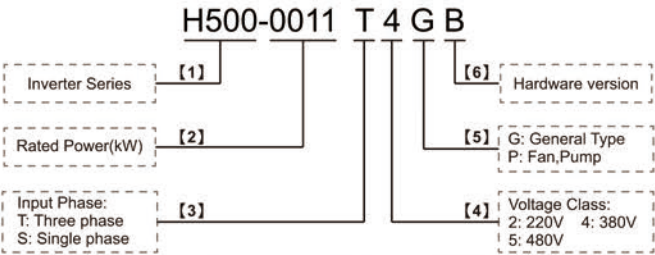
Temperature	-10°C to +40°C (derate 1% for every °C if the ambient temperature is between 40°C and 50°C)
Altitude	Less than 1000m (derate 10% for every 1000m if the altitude is above 1000m)
Other requirements	<ul style="list-style-type: none">• Please install the inverter in a place which is not inclining to fierce shocks or vibrations. Maximum vibration is 5.8m/s² (0.6g);• Please install the inverter in a place which is far from electromagnetic radiations;• Please install the inverter in a place where metal dust, normal dust, oil, or water is hard to enter inside the inverter;• Please do not install the inverter in a place which is exposed to direct sunlight, with combustible gas, oil smoke, vapor, drip or salt;• Humidity should be Less than 90%RH, without condensing.

Nameplate Description

1.1 Nameplate

Model	MODEL:	H500-0011T4GB
Power	POWER:	11kW
Input Power	NPUT:	AC3PH 380V 50Hz/60Hz 27.6A
Output	OUTPUT:	AC3PH 0~380V 0~300Hz 25A
Barcode	S/N:	

1.2 Product Model

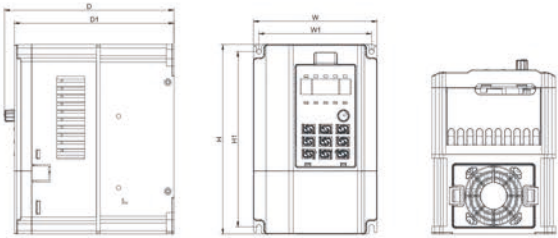


Technical Standards

Item	Specifications	
Basic functions	Control system	Current Vector General Purpose Inverter.
	Compatible motor	Induction motors.
	Maximum frequency	Vector control: 0~500Hz; V/F control: 0~3200Hz.
	Carrier frequency	0.8kHz~12kHz; Depending on load, can automatically adjust.
	Input resolution	Digital: 0.01Hz; Analog: maximum frequency×0.1%.
	Control modes	Open vector control (SVC); Closed loop vector control (FVC); V/F (scalar) control.
	Starting torque	G type: 0.5Hz/150% (SVC); 0Hz/180% (FVC). P type: 0.5Hz/100%.
	Speed range	1: 100 (SVC) 1: 1000 (FVC)
	Speed accuracy	±0.5% (SVC) ±0.02% (FVC)
	Torque accuracy	±5% (FVC)
	Overload capacity	G type: 150% rated current 60s; 180% rated current 3s; P type: 120% rated current 60s; 150% rated current 3s.
	Torque boost	Automatic Manual 0.1%~30.0%
	V/F curve	• Straight-line V/F curve • Multi-point V/F curve • N-power V/F curve (2-power, 1.4-power, 1.6-power, 1.8-power, 2-power square)
	V/F separation	Two types: complete separation; half separation. AVR output.
	Ramp mode	• Straight-line ramp • S-curve ramp Four groups of acceleration/deceleration time: 0.0~6500.0s
	DC braking	DC braking frequency: 0.00 Hz to maximum frequency Braking time: 0.0~36.0s Braking action current value: 0.0%~100.0%
	JOG control	JOG frequency range: 0.00~50.00 Hz JOG acceleration/deceleration time: 0.0~6500.0s
	Simple PLC	Up to 16 speeds via the simple PLC function or DI terminals
	Onboard PID	Process-controlled closed loop control system
Personalization features	Auto voltage regulation (AVR)	Keep constant output voltage automatically when grid voltage fluctuates.
	Overvoltage/ Overcurrent stall control	The current and voltage are limited automatically during the running process so as to avoid frequent tripping due to overvoltage/overcurrent.
	Fast current limit function	Protect inverter from overcurrent malfunctions.
	Torque limit and control	It can limit the torque automatically and prevent frequent over current tripping during the running process. Torque control can be implemented in the FVC mode.
	Stop for a second	When the instantaneous outage occurs, the voltage is compensated by the load feedback energy to keep the converter running for a short time.
	Fast flow restriction	Avoiding Frequent Overcurrent Faults in Inverters.
Operations	Timing control	Time range: 0.0~6500.0 minutes
	Two-motor switchover	Two motors can be switched over via two groups of motor parameters.
	Fieldbuses	RS485, Profibus-DP, CANlink, CANopen(extension cards needed)
	Powerful background software	Supports frequency converter parameter operation and virtual oscilloscope function. Graphic monitoring of internal state of frequency converter can be realized by virtual oscilloscope.
	Command source	• Keyboard • Control terminals • Serial communication port You can perform switchover between these sources in various ways.
	Frequency source	11 frequency sources, such as digital setting, analog voltage setting, analog current setting, pulse setting and serial communication port setting. You can perform switchover between these sources in various ways.
Display and panel	Auxiliary frequency source	11 auxiliary frequency sources. It can implement fine tuning of auxiliary frequency and frequency synthesis.
	Input terminal	6 digital input(DI)terminals(DI5 supports up to 100 kHz high-speed pulse input) 3 analog input(AI)terminals which support 0~10 V voltage input or 0~20 mA current input.
	Output terminal	2 digital output(DO)terminals(FM supports 0~10 kHz square wave signal output) 1 relay output terminal 2 analog output(AO)terminals which support 0~20 mA current output or 0~10 V voltage.
	LED display	Displays parameters.
	Key lock	It can lock the keys partially or completely and define the function range of some keys so as to prevent misconducts.
	Protection functions	Motor short-circuit detection at power-on, input/output phase loss protection, overcurrent protection, overvoltage protection, under voltage protection, overheat protection and overload protection
Environment	Optional parts	PG card, brake unit, RS485 card, CAN card, Profibus-DP card.
	Location	Indoor, free from direct sunlight, dust, corrosive gas, combustible gas, oil smoke, vapor, drip or salt.
	Altitude	Less than 1000m.
	Ambient temperature	-10°C to +40°C (de-rated if the ambient temperature is between 40°C and 50°C)
	Humidity	Less than 95%RH, without condensing
	Vibration	Less than 5.9m/s ² (0.6g).
	Storage temperature	-20°C~+60°C.

Product profile and Dimension table

1.1 Product profile (unit: mm)

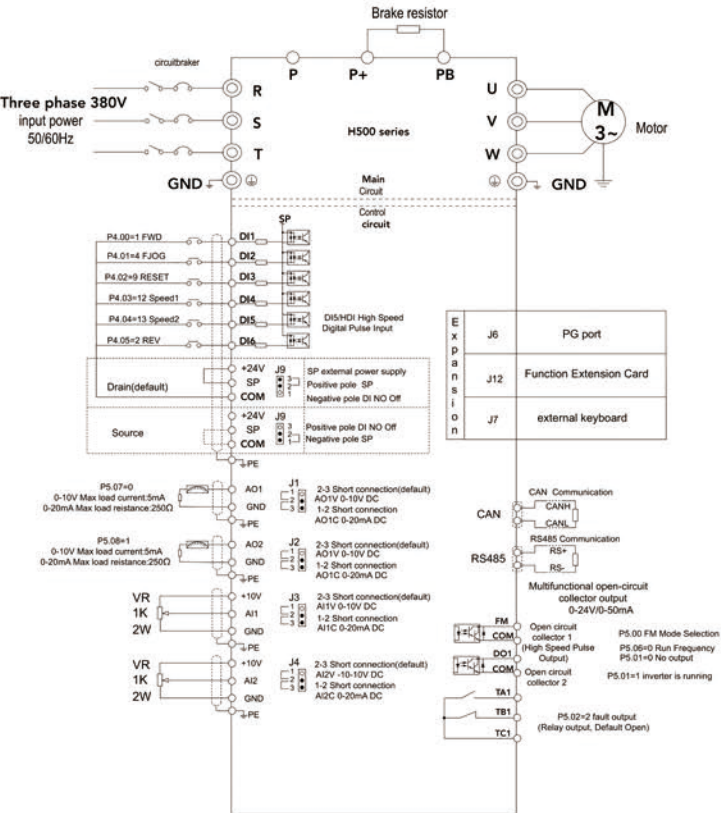


1.2 Production dimension table

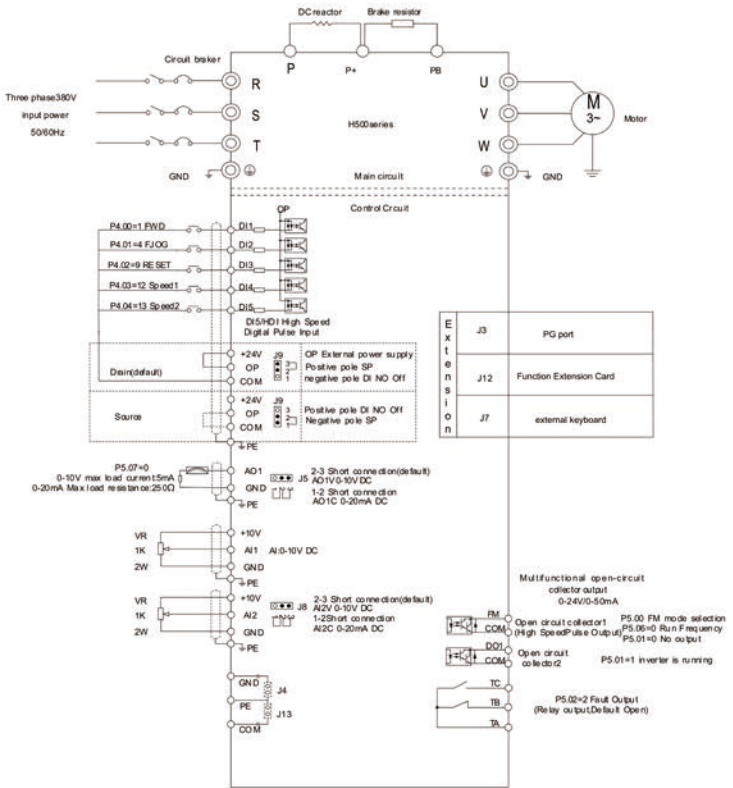
Model	Dimensions(mm)						Holes (mm)	Net (kg)
	W1	H1	H	W	D	D1		
H500-02D2T4GB	115	175	186	126	167	157	Φ4	2
H500-03D7T4GB								
H500-05D5T4GB								
H500-07D5T4GB	131	243	256	146	182	172	Φ5	3.3
H500-0011T4GB								
H500-0015T4GB								
H500-18D5T4GB	151	303	320	170	208	198	Φ5	5.2
H500-0022T4GB								
H500-0030T4G								
H500-0037T4G	150	410	430	231	250	232	Φ6	13
H500-0045T4G								15
H500-0055T4G								25
H500-0075T4G	235	565	590	322	270	252	Φ8	28
H500-0090T4G								40
H500-0110T4G								42
H500-0132T4G	240	635	655	380	273	255	Φ8	58.7
H500-0160T4G								

Standard Wiring Diagrams

2.2-22KW



30-160KW

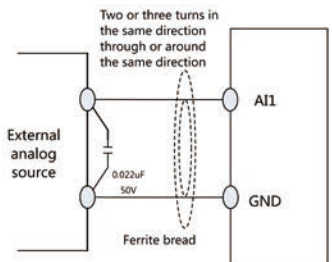
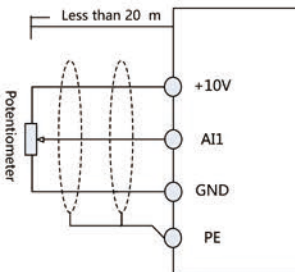


Control Circuit Wirings

1.1 Control circuit wiring notes

• Analog input wirings

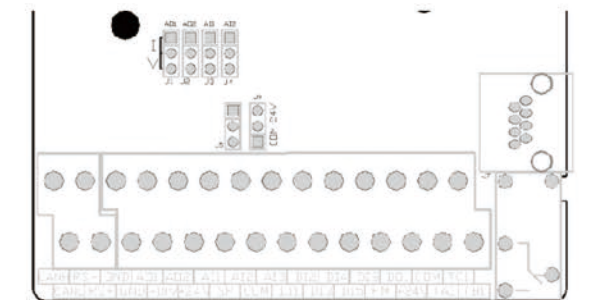
As analog signals can be easily affected by external interference, shielded cables shall be used. Cables shall be as short as possible and not exceeding 20 meters. As shown in graphs below, in some severe circumstances, filter capacitor or ferrite bread shall be used in analog signal side.



1.2 Control circuit jumpers

• Control circuit jumpers

2.2~22KW:



SP Jumper(J9)



1.AO1 Jumper(J1)



2.AO2 Jumper(J2)



4.AI1 Jumper(J3)



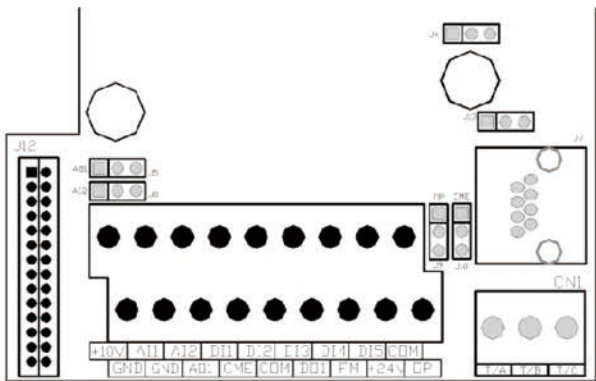
5.AI2 Jumper(J4)



6.AI2 Jumper(J5)



30~160KW:



1.OP Jumper(J9)



2.AO1 Jumper(J5)



3.AI2 Jumper(J8)



4.CME Jumper(J10)



Fault and Solutions

You may come across the following faults during the use of the inverter. Refer to the following table for simple fault analysis.

SN	Fault	Possible Causes	Solutions
1	There is no display at power-on.	1: There is no power supply to the Inverter or the power input to the Inverter is too low. 2: The power supply of the switch on the drive board of the Inverter is faulty. 3: The rectifier bridge is damaged. 4: The control board or the keyboard is faulty. 5: The cable connecting the control board and the drive board and the keyboard breaks.	1: Check the power supply. 2: Check the bus voltage. 3: Re-connect the 8-core and 28-core cables. 4: Contact the official distributor directly for technical support.
2	"H500" is displayed at power-on and then stop immediately.	1: The cable between the drive board and the control board is in poor contact. 2: Related components on the control board are damaged. 3: The motor or the motor cable is short circuited to the ground. 4: The HALL device is faulty. 5: The power input to the Inverter is too low.	1: Re-connect the 8-core and 28-core cables. 2: Contact the official distributor directly for technical support.
3	23=E.SHot is displayed at power-on.	1: The motor or the motor output cable is short-circuited to the ground. 2: The Inverter is damaged.	1: Measure the insulation of the motor and the output cable with a megger. 2: Contact the official distributor directly for technical support.
4	The Inverter display is normal upon power-on. But "H500" is displayed after running and stops immediately.	1: The cooling fan is damaged or locked-rotor occurs. 2: The external control terminal cable is short circuited.	1: Replace the damaged fan. 2: Eliminate external fault.
5	14=E.oH1 (module overheat) fault is reported frequently.	1: The setting of carrier frequency is too high. 2: The cooling fan is damaged, or the air filter is blocked. 3: Components inside the Inverter are damaged (thermal coupler or others).	1: Reduce the carrier frequency (P0.15). 2: Replace the fan and clean the air filter. 3: Contact the official distributor directly for technical support.
6	The motor does not rotate after the Inverter runs.	1: Check the motor and the motor cables. 2: The Inverter parameters are set improperly (motor parameters). 3: The cable between the drive board and the control board is in poor contact. 4: The drive board is faulty.	1: Ensure the cable between the Inverter and the motor is normal. 2: Replace the motor or clear mechanical faults. 3: Check and re-set motor parameters.
7	The DI terminals are disabled.	1: The parameters are set incorrectly. 2: The external signal is incorrect. 3: The jumper bar across SP and +24 V becomes loose. 4: The control board is faulty.	1: Check and reset the parameters in group P4. 2: Re-connect the external signal cables. 3: Re-confirm the jumper bar across OP and +24 V. 4: Contact the official distributor directly for technical support.
8	The motor speed is always low in FVC mode.	1: The encoder is faulty. 2: The encoder cable is connected incorrectly or in poor contact. 3: The PG card is faulty. 4: The drive board is faulty.	1: Replace the encoder and ensure the cabling is proper. 2: Replace the PG card. 3: Contact the official distributor directly for technical support.
9	The Inverter reports overcurrent and overvoltage frequently.	1: The motor parameters are set improperly. 2: The acceleration/deceleration time is improper. 3: The load fluctuates.	1: Re-set motor parameters or re-perform the motor auto-tuning. 2: Set proper acceleration/ deceleration time. 3: Contact the official distributor directly for technical support.

Warning:

- ✗ Do not touch any component inside the device within 5 minutes after the (! CHARGE) light is off after power off, otherwise user is in danger of electric shock.
- ✗ Do not touch the PCB or IGBT without electrostatic protections, otherwise the internal components can be damaged.

List of parameter setting

Code	Description	Def	Res	Reference Page
d0	Monitoring parameters: d0.00-d0.65			22
d0.00	Running frequency (Hz)	0.01Hz		22
d0.01	Set frequency (Hz)	0.01Hz		22
d0.02	DC Bus voltage (V)	0.1V		22
d0.03	Output voltage (V)	1V		22
d0.04	Output current (A)	0.01A		22
d0.05	Output power (kW)	0.1kW		22
d0.06	Output torque (%)	0.1%		22
d0.07	DI input status	1		22
d0.08	DO output status	1		23
d0.09	AI1 voltage /current after correction	V/mA		23
d0.10	AI2 voltage /current after correction	V/mA		23
d0.11	AI3 voltage /current after correction	V/mA		23
d0.14	Load speed display	1		23
d0.15	PID setting value	1		23
d0.16	PID feedback	1		23
d0.18	HDI (DI5) pulse frequency	0.01kHz		23
d0.19	Feedback speed	0.1Hz		24
d0.20	Remaining running time	0.1Min		24
d0.21	AI1 voltage/current before correction.	0.001V		24
d0.22	AI2 voltage before correction.	0.001V		24
d0.23	AI3 voltage before correction.	0.001V		24
d0.24	Linear speed	1 meter/min		24
d0.27	HDI (DI5) pulse frequency	1Hz		24
d0.28	Communication setting value	0.01%		24
d0.29	Encoder feedback speed	0.01Hz		24
d0.30	Main frequency X display	0.01Hz		24
d0.31	Auxiliary frequency Y display	0.01Hz		24
d0.34	Motor temperature value	1℃		24
d0.35	Target torque	0.1%		24
d0.36	Resolver position	1		24
d0.37	Power factor angle	-		24
d0.38	ABZ (UVW)position	0		24
d0.39	V/F separation target voltage	1V		25
d0.40	V/F separation output voltage	1V		25
d0.41	DI terminal status display			25
d0.42	DO terminal status display			25
d0.43	DI function display 1			25
d0.44	DI function display 2			25
d0.58	Z signal counter			25
d0.59	Setting frequency percentage			25
d0.60	Running frequency percentage			25
d0.61	Inverter running status			25
d0.62	Current fault code			25
d0.63	Point-to-point communication value sent			25

d0.64	Number of slaves			25
d0.65	Torque upper limit			25
P0	Basic functions group: P0.00-P0.28			26
P0.00	Load type	-	●	26
P0.01	Speed control mode	2	★	26
P0.02	Command source channel selection	0	☆	26
P0.03	Main frequency source X selection	0	★	27
P0.04	Auxiliary frequency source Y selection	0	★	28
P0.05	Y reference in X and Y combination	0	☆	28
P0.06	Y range in X and Y combination	100%	☆	28
P0.07	Frequency source combination mode	00	☆	29
P0.08	Preset frequency setting	50.00Hz	☆	29
P0.09	Operation direction selection	0	☆	29
P0.10	Maximum frequency	50.00Hz	★	29
P0.11	Frequency source upper limit	0	★	30
P0.12	Frequency upper limit	50.00Hz	☆	30
P0.13	Frequency upper limit offset	0.00Hz	☆	30
P0.14	Frequency lower limit	0.00Hz	☆	30
P0.15	Carrier frequency	-	☆	30
P0.16	Carrier frequency adjustment based on temperature	0	☆	30
P0.17	Acceleration time 1	-	☆	31
P0.18	Deceleration time 1	-	☆	31
P0.19	Acceleration/deceleration time unit	1	★	31
P0.21	Y offset	0.00Hz	☆	31
P0.22	Frequency reference resolution	2	★	31
P0.23	Retentiveness of digital setting at stop	0	☆	32
P0.25	Acceleration/Deceleration time base frequency	0	★	32
P0.26	UP/DOWN base frequency at running	0	★	32
P0.27	Binding frequency source to command source channels	000	☆	32
P0.28	Communication card type	0	☆	33
P1	First motor parameters: P1.00-P1.37			33
P1.00	Motor type selection	0	★	33
P1.01	Motor rated power	-	★	33
P1.02	Motor rated voltage	-	★	33
P1.03	Motor rated current	-	★	33
P1.04	Motor rated frequency	-	★	33
P1.05	Motor rated speed	-	★	33
P1.06	Asynchronous motor stator resistance	-	★	33
P1.07	Asynchronous motor rotor resistance	-	★	34
P1.08	Asynchronous motor leakage inductive reactance	-	★	34
P1.09	Asynchronous motor mutual inductive reactance	-	★	34
P1.10	Asynchronous motor no load current	-	★	34
P1.27	Encoder pulse per revolution	2500	★	34
P1.28	Encoder type	0	★	34
P1.30	A/B phase sequence of ABZ incremental encoder	0	★	34
P1.31	Encoder installation angle	0.0°	★	34
P1.34	Resolver pole pairs	1	★	34
P1.35	UVW pole pairs	4	★	34
P1.36	Encoder wire-break detection time	0.0s	★	34
P1.37	Auto-tuning selection	0	★	34
P2	Vector control parameters: P2.00-P2.16			36

P2.00	Speed loop proportional gain G1	30	☆	36
P2.01	Speed loop integral time T1	0.50s	☆	36
P2.02	Switchover frequency 1	5.00Hz	☆	36
P2.03	Speed loop proportional gain G2	20	☆	36
P2.04	Speed loop integral time T2	1.00s	☆	36
P2.05	Switchover frequency 2	10.00Hz	☆	36
P2.06	Vector control slip gain	150%	☆	37
P2.07	SVC torque filter time constant	0.000s	☆	37
P2.09	Torque upper limit source in speed control	0	☆	37
P2.10	Torque upper limit in speed control	150.0%	☆	37
P2.13	Excitation adjustment proportional gain	2000	☆	37
P2.14	Excitation adjustment integral gain	1300	☆	37
P2.15	Torque adjustment proportional gain	2000	☆	37
P2.16	Torque adjustment integral gain	1300	☆	37
P3	V/F control parameters: P3.00-P3.27			38
P3.00	V/F curve setting	0	☆	38
P3.01	Torque boost	-	★	38
P3.02	Torque boost cut-off frequency	50.00Hz	★	39
P3.03	Multi-point V/F frequency 1 (F1)	0.00Hz	★	39
P3.04	Multi-point V/F voltage 1 (V1)	0.0%	★	39
P3.05	Multi-point V/F frequency 2 (F2)	0.00Hz	★	39
P3.06	Multi-point V/F voltage 2 (V2)	0.0%	★	39
P3.07	Multi-point V/F frequency 3 (F3)	0.00Hz	★	39
P3.08	Multi-point V/F voltage 3 (V3)	0.0%	★	39
P3.09	V/F slip compensation gain	0.0%	☆	40
P3.10	V/F over-excitation gain	64	☆	40
P3.11	V/F oscillation suppression gain	-	☆	40
P3.13	Voltage source for V/F separation	0	☆	41
P3.14	V/F separation voltage digital setting	0V	☆	41
P3.15	Voltage rise time of V/F separation	0.0s	☆	42
P3.16	Voltage decline time of V/F separation	0.0s	☆	42
P3.17	V/F separation stop mode selection	0S	☆	42
P3.18	Overcurrent stall action current	150%	☆	42
P3.19	Overcurrent stall suppression enable	1	☆	42
P3.20	Overcurrent stall suppression gain	20	☆	43
P3.21	Multiple overcurrent stall action compensation coefficient	50%	☆	43
P3.22	Overvoltage stall action voltage	760V	☆	43
P3.23	Overvoltage stall enable	1	☆	43
P3.24	Overvoltage stall frequency gain	30	☆	43
P3.25	Overvoltage stall voltage gain	30	☆	43
P3.26	Overvoltage stall maximum frequency rise limit	5Hz	☆	43
P3.27	Slip compensation time constant	0.5s	☆	43
P4	Input terminals: P4.00-P4.39			44
P4.00	DI1 function selection	1	★	44
P4.01	DI2 function selection	4	★	44
P4.02	DI3 function selection	9	★	44
P4.03	DI4 function selection	12	★	44
P4.04	DI5 function selection	13	★	44
P4.05	DI6 function selection	0	★	44
P4.06	DI7 function selection	0	★	44
P4.07	DI8 function selection	0	★	44

P4.08	DI9 function selection	0	★	44
P4.09	DI10 function selection	0	★	44
P4.10	DI filter time	0.010s	☆	47
P4.11	Terminal command mode	0	☆	48
P4.12	Terminal UP/DOWN rate	1.00Hz/s	☆	50
P4.13	AI curve 1 minimum input	0.00V	☆	50
P4.14	AI curve 1 minimum input percentage	0.00%	☆	50
P4.15	AI curve 1 maximum input	10.00V	☆	50
P4.16	AI curve 1 maximum input percentage	100.00%	☆	50
P4.17	AI1 filter time	0.10s	☆	50
P4.18	AI curve 2 minimum input	0.00V	☆	51
P4.19	AI curve 2 minimum input percentage	0.00%	☆	51
P4.20	AI curve 2 maximum input	10.00V	☆	51
P4.21	AI curve 2 maximum input percentage	100.00%	☆	51
P4.22	AI2 filter time	0.10s	☆	51
P4.23	AI curve 3 minimum input	0.10V	☆	51
P4.24	AI curve 3 minimum input percentage	0.0%	☆	51
P4.25	AI curve 3 maximum input	4.00V	☆	51
P4.26	AI curve 3 maximum input percentage	100.00%	☆	51
P4.27	AI3 filter time	0.10s	☆	51
P4.28	Pulse minimum input	0.00kHz	☆	51
P4.29	Pulse minimum input percentage	0.0%	☆	51
P4.30	Pulse maximum input	50.00	☆	51
P4.31	Pulse maximum input percentage	100.00%	☆	51
P4.32	Pulse filter time	0.10s	☆	51
P4.33	AI curve selection	321	☆	51
P4.34	Setting for AI less than minimum input	000	☆	52
P4.35	DI1 delay time	0.0s	★	52
P4.36	DI2 delay time	0.0s	★	52
P4.37	DI3 delay time	0.0s	★	52
P4.38	DI level selection 1	00000	★	52
P4.39	DI level selection 2	00000	★	52
P5	Output terminals: P5.00-P5.22			54
P5.00	FM output mode	0	☆	54
P5.01	FMR function (open-collector output terminal)	0	☆	54
P5.02	Relay 1 function (TA1-TB1-TC1)	2	☆	54
P5.03	Relay 2 function (PA1-PB1-PC1, extension card)	0	☆	54
P5.04	DO1 function selection (open-collector output)	1	☆	54
P5.05	DO2 function selection (open-collector output)	4	☆	54
P5.06	FMP output selection	0	☆	56
P5.07	AO1 output selection	0	☆	56
P5.08	AO2 output selection	1	☆	56
P5.09	FMP maximum output frequency	50.00kHz	☆	57
P5.10	AO1 zero offset coefficient	0.0%	☆	57
P5.11	AO1 gain	1.00	☆	57
P5.12	AO2 zero offset coefficient	0.0%	☆	57
P5.13	AO2 gain	1.00	☆	57
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