

 Instruction Manual
CY-S200 Series
**Advanced Current Vector
Control Inverter**



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CHANG-YIH (JANG YIH) Electrical Industry Co., Ltd.

Receiving and Inspection

The CY-S200 Inverter has gone through quality control tests at the factory before shipment.

After receiving the Inverter, please check for the following:

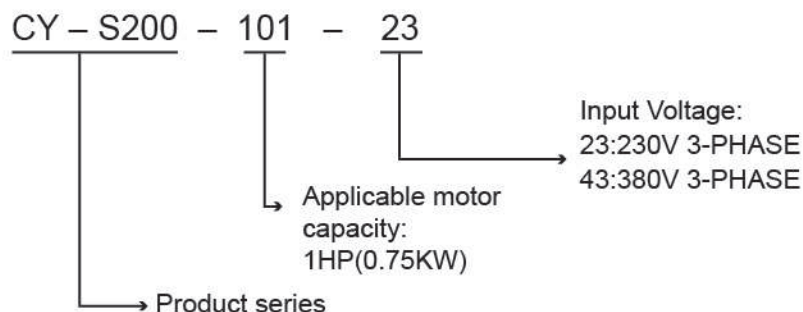
1. Inspect the inverter to assure it was not damaged during shipment.
2. Make sure that the serial number indicated on the nameplate corresponds with the serial number of your order.

Nameplate Information

For example 220V 1HP :

MODEL No. —————>	MODEL: CY-S200-101-23
Horse power —————>	POWER: 0.75KW
Input power —————>	INPUT: AC3PH 220V+-10% 50/60 Hz
Output power —————>	OUTPUT: AC3PH 0~220V 0~400 Hz 3A
Serial No. —————>	SERIAL NUMBER:
	MADE IN TAIWAN

Model number details



STANDARD SPECIFICATIONS

230V Series:

Model Number CY-S200- ### -23	100	101	103	104	105	106
Motor Output(KW)	0.4	0.75	1.5	2.2	3.5	5.5
Motor Output (HP)	0.5	1	2	3	5	7.5
Rated Frequency(Hz)	0.01~ 400 Hz					
Rated Output Current (A)	3.1	4.0	7.1	10	17.5	22
Rated Voltage	3 Phase 220VAC $\pm 10\%$					
Motor Current(A)	2.2	3.4	6.1	8.7	13.5	20.1
Motor Frequency(Hz)	60.00					
Slipping Frequency (Hz)	3.00					
Carrier Frequency (Hz)	1~15K					
Cooling Method	Forced Fan					

230V Series:

Model Number CY-S200- ### -23	107	108	109	110		
Motor Output(KW)	7.5	11	15	18.5		
Motor Output (HP)	10	15	20	25		
Rated Frequency(Hz)	0.01~ 400 Hz					
Rated Output Current (A)	32	45	62	71		
Rated Voltage	3 Phase 220VAC $\pm 10\%$					
Motor Current(A)	25.1	36.7	50.3	62.9		
Motor Frequency(Hz)	60.00					
Slipping Frequency (Hz)	3.00					
Carrier Frequency (Hz)	1~15K					
Cooling Method	Forced Fan					

STANDARD SPECIFICATIONS

440/ 380V Series:

Model Number CY-S200- ### -43	200	201	202	203	204	206
Motor Output(KW)	0.4	0.75	1.5	2.2	3.7	5.5
Motor Output (HP)	0.5	1	2	3	5	7.5
Rated Frequency(Hz)	0.01~ 400 Hz					
Rated Output Current (A)	2	2.9	3.8	5.7	8.1	11
Rated Voltage	3 Phase 380/440VAC $\pm 10\%$					
Motor Current(A)	0.9	1.6	2.8	4.1	6.8	9.9
Motor Frequency(Hz)	60.00					
Slipping Frequency (Hz)	3.00					
Carrier Frequency (Hz)	1~15K					
Cooling Method	Forced Fan					

440/ 380V Series:

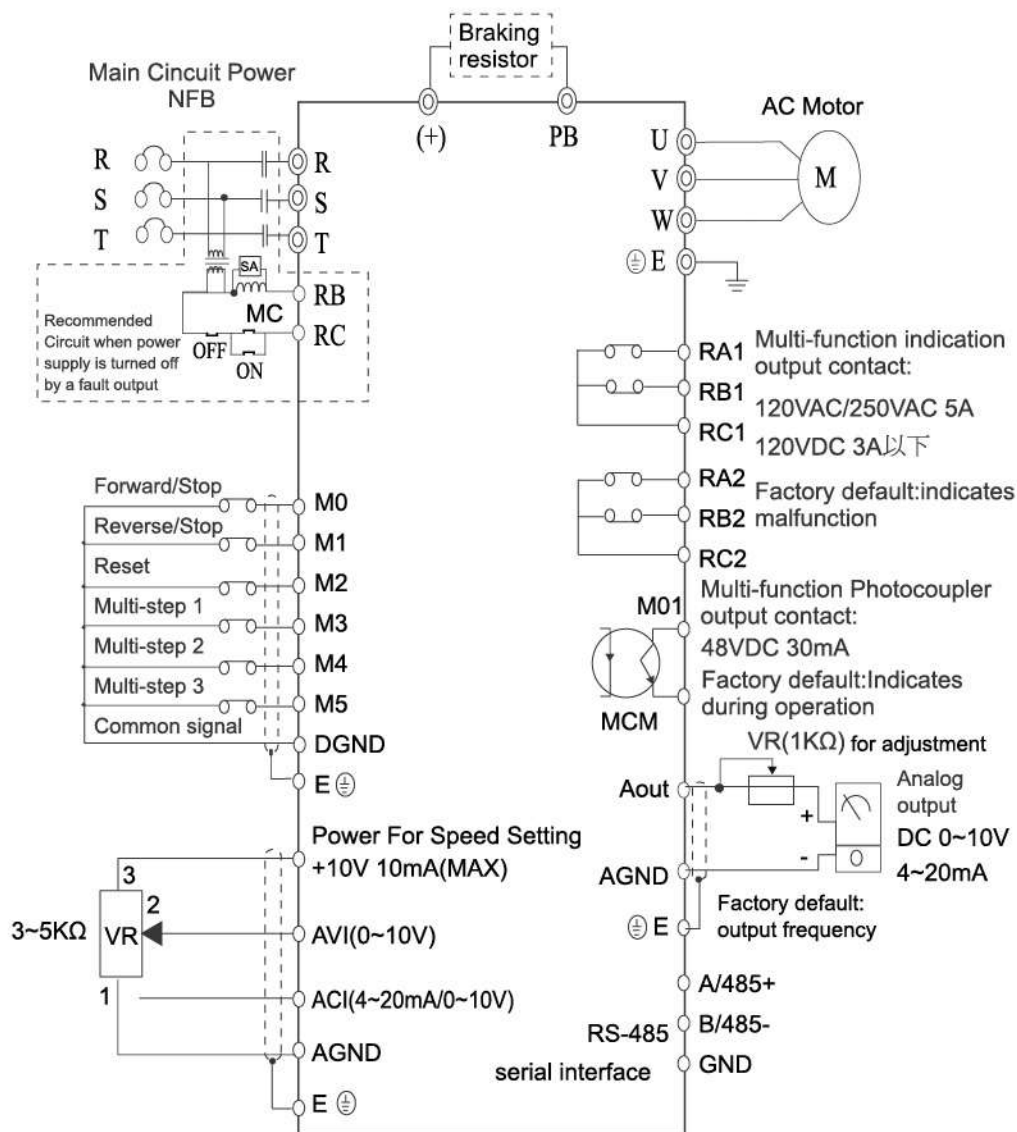
Model Number CY-S200- ### -43	207	208	209	210	211	212
Motor Output(KW)	7.5	11	15	18.5	22	30
Motor Output (HP)	10	15	20	25	30	40
Rated Frequency(Hz)	0.01~ 400 Hz					
Rated Output Current (A)	15.5	22.5	32	40	45	60
Rated Voltage	3 Phase 380/440VAC $\pm 10\%$					
Motor Current(A)	12.7	18.9	24.7	31	37.6	48.1
Motor Frequency(Hz)	60.00					
Slipping Frequency (Hz)	3.00					
Carrier Frequency (Hz)	1~15K					
Cooling Method	Forced Fan					

General Specifications

Control Characteristics	Control Method	SPWM Control(V/F , Sensorless Vector Control, V/F+PG, PMSV, PMSLV)
	Torque Characteristics	the auto-torque, auto-slip compensation; starting torque can be 150% at 5.0Hz
	Overload ability	150% of rated current for 1 minute
	Accel/Decel Time	0.01 ~ 600 seconds
	V / F Curve	Adjustable V / F Curve set up
	stall Prevention	20 to 200%, Setting of Rated Current

Frequency Setting	Keypad	Setting by Keypad button (up/down)
	External Signal	Potentiometer-5K Ω /0.5W, 0 to +10VDC, 4 to 20mA, RS485 interface; Multi-Function Inputs 0 to 5 (7 steps, Jog, up/down)
Operation Setting	Keypad	Set by RUN, STOP
	External Signal	M0 to M5 can be combined to offer various modes of operation, RS-485 serial interface (MODBUS).
Multi-Function Input Signal		Multi-step selection 1 to 7, Jog, accel/decel inhibit, first to forth accel/decel switches, counter, PLC operation, external Base Block (NC, NO), UP/DOWN key settings, selections, driver reset
Multi-Function Output Indication		Inverter operating, frequency reach, non-zero, base block, fault indication, local/remote indication, PLC operation indication, auxiliary motor output, overheat alarm, emergency stop
Analog Output Signal		Analog frequency/current signal output
Operation Functions		AVR, S-Curve, over-voltage, over-current stall prevention, fault records, adjustable carrier frequency, DC braking, momentary power loss restart, auto tuning, frequency limits, parameter Lock/Reset, vector control, PID Control, counter, PLC, MODBUS communication, reverse inhibition, abnormal reset, abnormal restart, digital frequency output, sleep/revival function, frequency source selections
Protection Functions		over voltage , over current, under voltage, overload, overheating, electronic thermal, ground fault
Cooling Method		Forced Fan

Basic Wiring Diagram



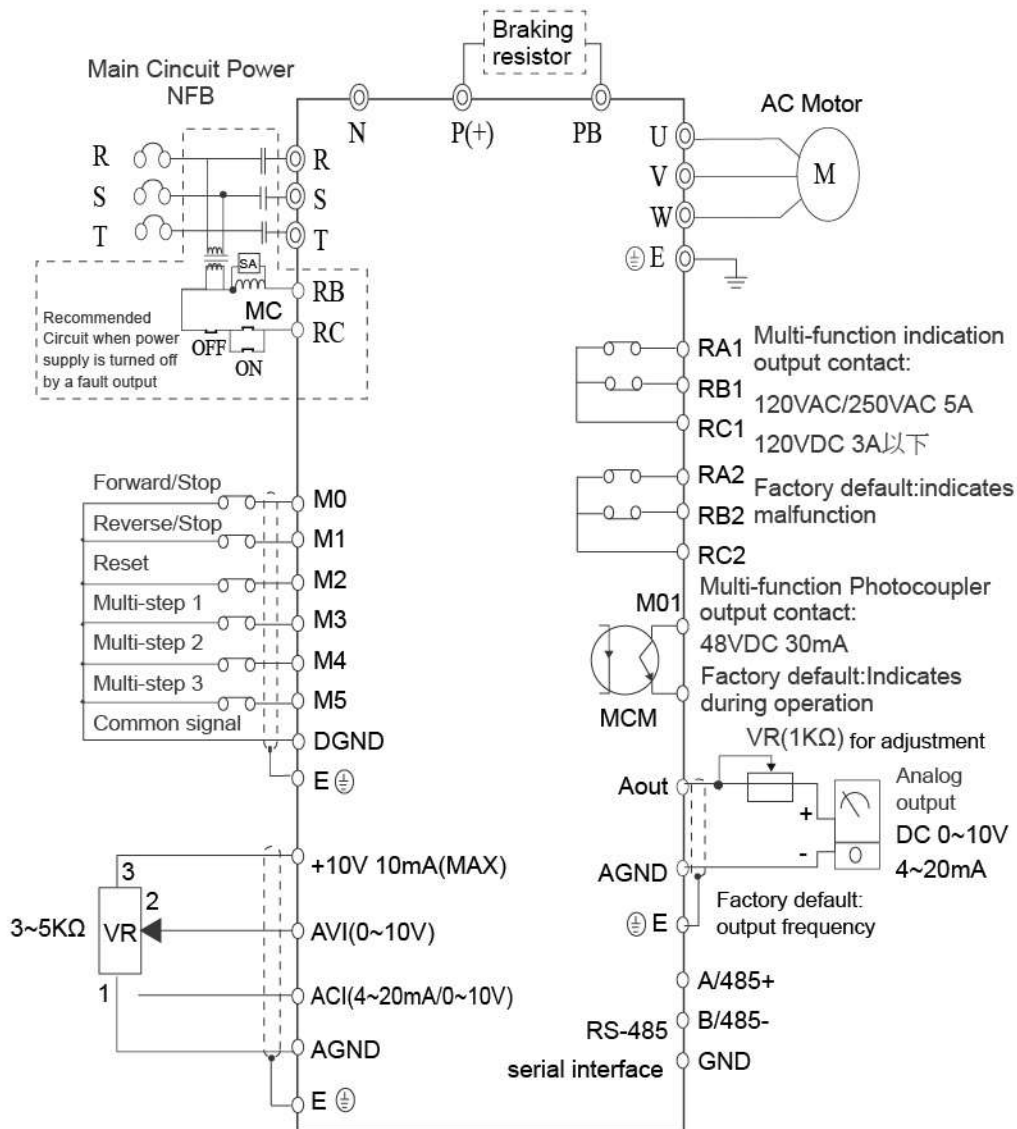
- ① Main circuit(power) terminals
- Control circuit terminals

1-3HP 220V/440V Wiring diagram

Note: Multi-function is NPN output

Note: If it is single phase model, please select any two input power terminals in main circuit power.

Basic Wiring Diagram

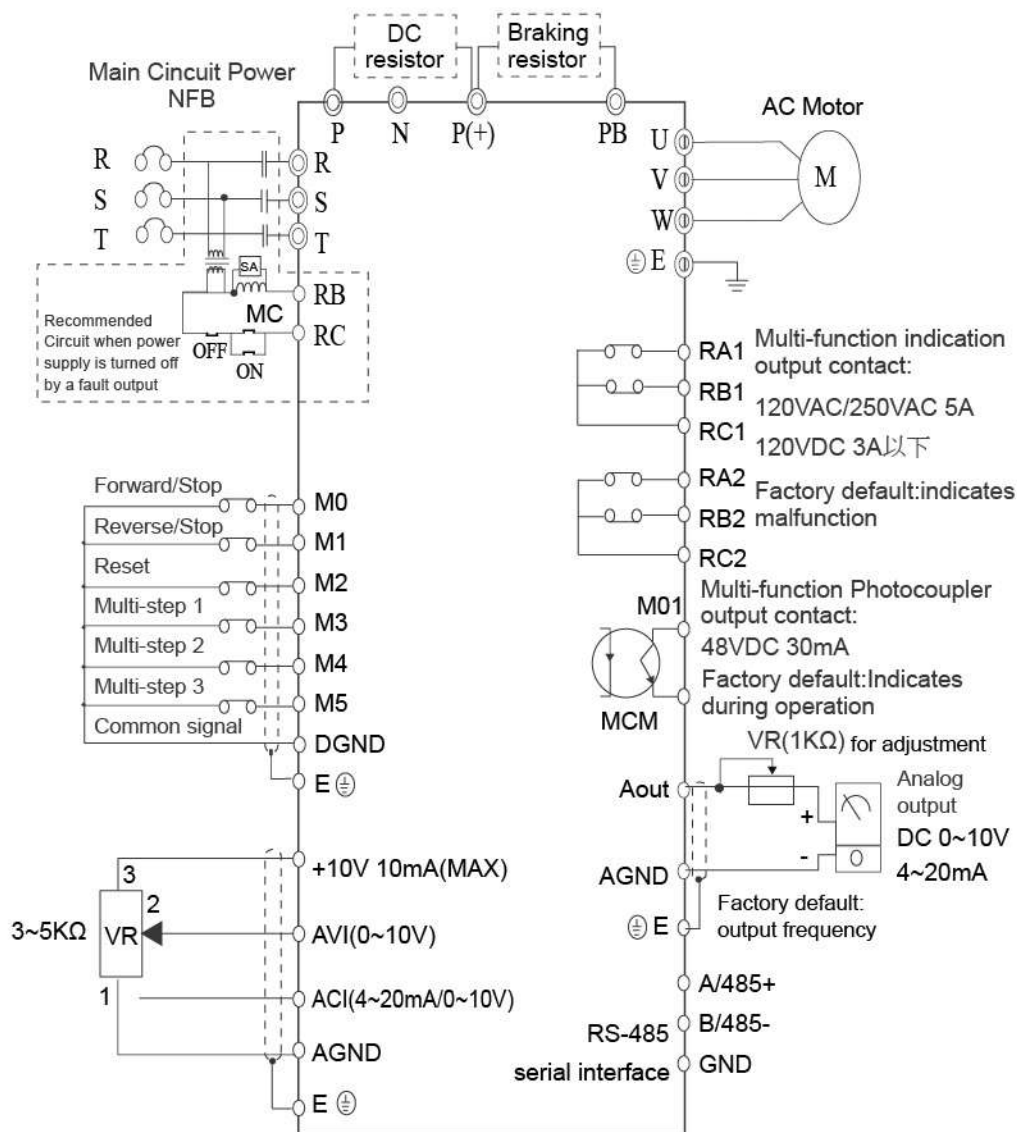


① Main circuit(power) terminals

○ Control circuit terminals

5-10HP 220V/5-15HP 440V Wiring diagram

Basic Wiring Diagram



① Main circuit(power) terminals

○ Control circuit terminals

15-25HP
220V/20-40HP 440V Wiring diagram

Power Terminals

1-3HP/220V,440V

(+)	PB	R	S	T	U	V	W	⊕
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5-10HP 220V/ 5-15HP 440V

P+	N	R	S	T	U	V	W	PB	E ⊕
POWER				MOTOR					

15-25HP 220V/ 20-40HP 440V

P	P(+)	N	E ⊕	PB	R	S	T	U	V	W
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Terminal Name	Explanation of terminal
R、S、T	AC line input terminals(three phase)
P(+)、PB	Braking Resistor connections
P(+)、P	DC reactor
U、V、W	Motor connections
E ⊕	Earth Ground

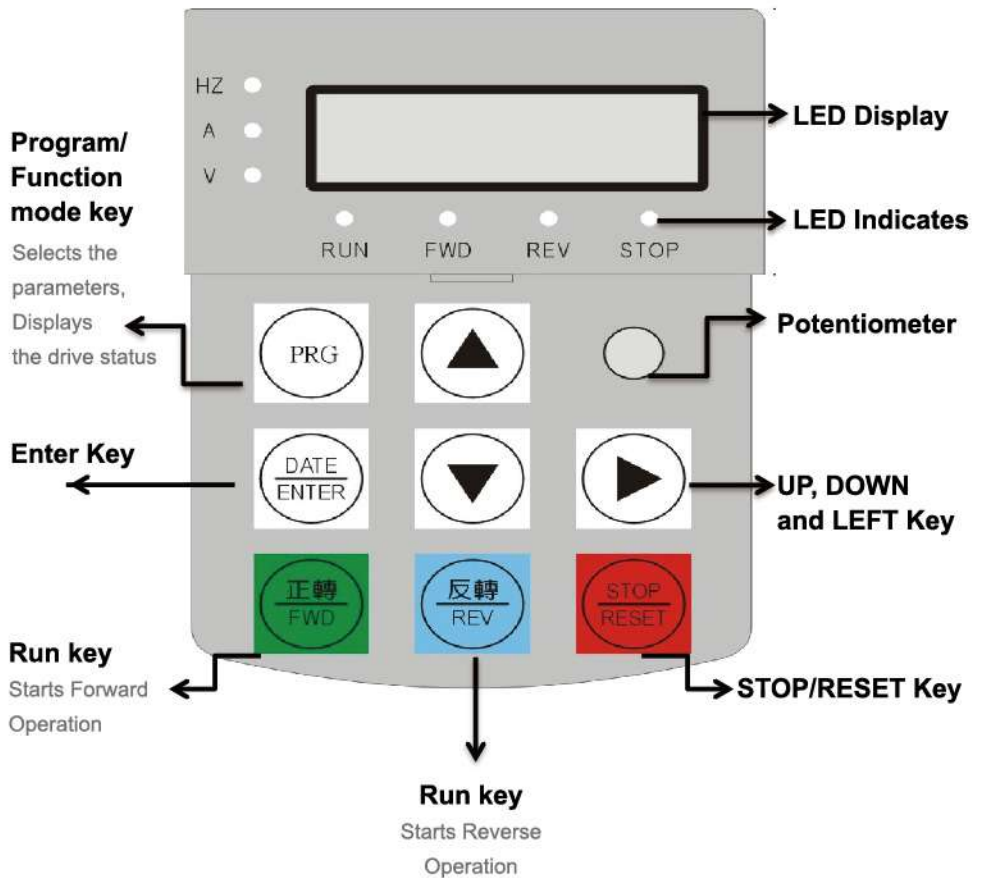
Control Terminal Wiring

M0	M2	M4	DGND	AVI	Aout	AGND	MCM		RB1	RC1	RA1
M1	M3	M5	DGND	ACI	+10V	AGND	MO1		RB2	RC2	RA2

Explanations of Control Terminal

Terminal	Expiations of terminal function	Remarks
RA1 , RB1, RC1	Multi-Function Indication Output Contact	Refer to P6.00,P6.01 Relay output contact
RA2 , RB2, RC2	Multi-Function Indication Output Contact	
M0 – DGND	Multi-Function auxiliary input	Refer to P5.00 ~ 5.10
M1 – DGND	Multi-Function input 1	Refer to P5.00 ~ 5.10
M2 – DGND	Multi-Function input 2	Refer to P5.00 ~ 5.10
M3 – DGND	Multi-Function input 3	Refer to P5.00 ~ 5.10
M4 – DGND	Multi-Function input 4	Refer to P5.00 ~ 5.10
M5 – DGND	Multi-Function input 5	Refer to P5.00 ~ 5.10
MO1 – MCM	Multi-Function PHC output	Refer to P6.02
+10V– AGND	Power for speed setting	Power Supply(+10V)
AVI– AGND	Analog Voltage Input	0 ~ +10V / Max. Output Frequency
ACI– AGND	Analog Current Input	4~20mA/ Max. Output Frequency
AOUT– AGND	Analog Output Meter	0 ~ +10V/ Max. Output Frequency

Description of the Digital Keypad



Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

00. Inverter parameter

NO	Explanation	Settings	Factory Setting	R	S
P00.00	User Defined Function for Display	0 : Display the setting frequency (F) 1 : Display the parameter setting (P) 2 : Display Inverter output Frequency (H) 3 : Output voltage (E) 4 : Display the motor current (A) 5 : Monitoring of variables 6 : Display the PID variables	0	✓	✓
P00.01	Monitoring of variables	00 : Display DC Bus voltage (u) 01 : input terminal (I M9M8 M7M6 M5M4 M3M2 M1M01) 02 : output terminal (o MC BK Fan DO3 DO2 DO1 RL2 RL1) 03 : Digital signal VIN (0.01%) 04 : Digital signal AIN (0.01%) 05 : Keypad potentiometer VIN0(0.01%) 06 : Digital output AO1 (0.01%) 07 : Display temperature (t) 08 : No unit Display1(Frequency) 09 : No unit Display2(RPM) 10 : Reserve 11 : Estimated rpm 12 : Display PID command/feedback monitoring value (P13.32, P13.33) 13 : PID command quantity display value (P13.34, P13.35) 14 : PID Feedback value (P13.34, P13.35) 15 : PID error value (P13.34, P13.35) 16 : PID control output value 0.01%) 17 : Motor U phase operational current (A) 18 : Motor V phase operational current (A) 19 : Display Motor V phase operational current (A) 20 : Output Watt o (0.01%) for motor 21 : Display PLC (xxxx stage .xx times) 22 : DI counter pulse input count value (c) 23~59 : Reserve 60 : Software version (108.08)	0	✓	✓
P00.02	Monitor variable LPF time	0~13	6	✓	✓
P00.03	No unit display corresponding value	0~60000	10000	✓	✓
P00.04	No unit to display the decimal point	0~4	2	✓	✓
P00.05	Source of the operation command 1	0 : Digital keypad 1 : External terminals 2 : Communication RS-485	0	×	✓
P00.06	Source of the operation command 2	0 : Digital keypad 1 : External terminals 2 : Communication RS-485	1	×	✓
P00.07	Operator STOP button selection	0 : Keyboard STOP button is invalid 1 : Keyboard STOP button is valid	1	×	✓
P00.08	Boot terminal block operation command lock	0 : Operation 1 : Not Operation	0	×	✓
P00.09	Startup mode	0 : Start by 0Hz; 1 : Tracking start;	0	×	✓

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

00. Inverter parameter

NO	Explanation	Settings	Factory Setting	R	S
P00.10	DC Braking during Start-up	0.00~120.00 sec	0.00	×	✓
P00.11	Brake current before starting	0.00~100.00 % , (Limited to 1.25 times the motor rated current value)	0.00	✓	✓
P00.12	Stop speed at start-up	0.00~400.00 Hz	0.00	×	✓
P00.13	Stand speed retention time at start-up	0.0~120.00 sec	0.00	×	✓
P00.14					
P00.15					
P00.16	Stop Method	0 : Dynamic stop 1 : Free run stop 2 : All-field DC brakes stop 3 : Free running stop with timing function	0	×	✓
P00.17	DC braking time setting during shutdown	0.00~120.00 sec	0.00	×	✓
P00.18	Braking current before stopping	0.00~100.00 % , (Limited to 1.25 times the motor rated current value)	0.00	✓	✓
P00.19	start frequency at stop brake	0.00~10.00 Hz, (※ V/F only)	0.00	×	✓
P00.20	Stop speed during shutdown	0.00~400.00 Hz	0.00	×	✓
P00.21	Stop speed retention time during shutdown	0.00~120.00 s	0.00	×	✓
P00.22	Current decay time when operation is canceled (100%)	0.00~10.00s(only for P00.16=0)	0.00	×	✓

01. Basic function parameters

NO	Explanation	Settings	Factory Setting	R	S
P01.00	Source of Frequency Command 1	0 : digital keypad (P01.07) 1 : potentiometer on digital keypad (VIN0) 2 : Analog input	0	×	✓
P01.01	Source of Frequency Command 2	0 : digital keypad (P01.07) 1 : potentiometer on digital keypad (VIN0) 2 : Analog input	0	×	✓
P01.02	Analog input frequency command	0 : VIN: analog signal 0V ~ 10V input 1 : VIN+AIN 2 : VIN-AIN 3 : AIN: analog signal 4~20mA/0~10V input	1	×	✓
P01.03	Control of motor direction	0 : Enable forward / reverse 1 : Enable forward 2 : Enable reverse 3 : negative bias can reverse	0	×	✓
P01.04	Output frequency lower limit setting	0.00~110.00 % * (fe4 P9.02)	0.00	×	✓
P01.05	Output frequency upper limit setting	0.00~110.00 % * (fe4 P9.02)	100.00	×	✓
P01.06	Starting speed	0.00~400.00 Hz	0.00	×	✓
P01.07	Frequency command 0	0.00~400.00 Hz	60.00	✓	✓
P01.08	Frequency command 1	0.00~400.00 Hz	0.00	✓	✓
P01.09	Frequency command 2	0.00~400.00 Hz	0.00	✓	✓
P01.10	Frequency command 3	0.00~400.00 Hz	0.00	✓	✓
P01.11	Frequency command 4	0.00~400.00 Hz	0.00	✓	✓
P01.12	Frequency command 5	0.00~400.00 Hz	0.00	✓	✓
P01.13	Frequency command 6	0.00~400.00 Hz	0.00	✓	✓
P01.14	Frequency command 7	0.00~400.00 Hz	0.00	✓	✓

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

01. Basic function parameters

NO	Explanation	Settings	Factory Setting	R	S
P01.15	Frequency command 8	0.00~400.00 Hz	0.00	✓	✓
P01.16	Frequency command 9	0.00~400.00 Hz	0.00	✓	✓
P01.17	Frequency command 10	0.00~400.00 Hz	0.00	✓	✓
P01.18	Frequency command 11	0.00~400.00 Hz	0.00	✓	✓
P01.19	Frequency command 12	0.00~400.00 Hz	0.00	✓	✓
P01.20	Frequency command 13	0.00~400.00 Hz	0.00	✓	✓
P01.21	Frequency command 14	0.00~400.00 Hz	0.00	✓	✓
P01.22	Frequency command 15	0.00~400.00 Hz	0.00	✓	✓
P01.23	Jog frequency command	0.00~400.00 Hz	6.00	✓	✓
P01.24	Jump frequency 1	0.00~400.00 Hz	0.00	×	✓
P01.25	Jump frequency 2	0.00~400.00 Hz	0.00	×	✓
P01.26	Jump frequency 3	0.00~400.00 Hz	0.00	×	✓
P01.27	Jump frequency width	0.00~10.00 Hz	0.00	×	✓
P01.28	Perturbation jump frequency	0.00~400.00 Hz	0.00	×	✓
P01.29	Disturbance frequency width	0.00~10.00 Hz	0.00	×	✓

02. Reserve

03. Acceleration / Deceleration time

NO	Explanation	Settings	Factory Setting	R	S
P03.00	Acceleration / Deceleration time unit	0: 0.01 sec 1: 0.1 sec	0	×	✓
P03.01	Acceleration time 1	0.00~600.00 (0.0~6000.0) sec	10.00	✓	✓
P03.02	Deceleration time 1	0.00~600.00 (0.0~6000.0) sec	10.00	✓	✓
P03.03	Acceleration time 2	0.00~600.00 (0.0~6000.0) sec	10.00	✓	✓
P03.04	Deceleration time 2	0.00~600.00 (0.0~6000.0) sec	10.00	✓	✓
P03.05	Acceleration time 3	0.00~600.00 (0.0~6000.0) sec	10.00	✓	✓
P03.06	Deceleration time 3	0.00~600.00 (0.0~6000.0) sec	10.00	✓	✓
P03.07	Acceleration time 4 (Parameter detection)	0.00~600.00 (0.0~6000.0) sec	10.00	✓	✓
P03.08	Deceleration 4 (Parameter detection)	0.00~600.00 (0.0~6000.0) sec	10.00	✓	✓
P03.09	Jog acceleration and deceleration time	0.00~600.00 (0.0~6000.0) sec	10.00	✓	✓
P03.10	Emergency stop time	0.00~600.00 (0.0~6000.0) sec when P5.02-5.08 set 20,21	2.00	✓	✓
P03.11	Multi-speed acceleration / deceleration configuration	0: All internal configurations; 1: Half internal configuration (0 ~ 7), half external terminal (8 ~ 15); 2: All external terminals;	0	×	✓
P03.12	S curve time at the start of acceleration	0.00~10.00 sec	0.00	×	✓
P03.13	S curve time when acceleration is completed	0.00~10.00 sec	0.00	×	✓
P03.14	S curve time at the start of deceleration	0.00~10.00 sec	0.00	×	✓
P03.15	S curve time when deceleration is completed	0.00~10.00 sec	0.00	×	✓
P03.16					
P03.17					
P03.18					

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

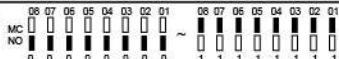
04. Analog input / output parameters

NO	Explanation	Settings	Factory Setting	R	S
P04.00	Keypad AV : 0V Input%	-300.00~300.00 %	0.00	×	✓
P04.01	Keypad AV : 5V Input%	-300.00~300.00 %	100.00	×	✓
P04.02	AVI 0V Input%	-300.00~300.00 %	0.00	×	✓
P04.03	AVI +10V Input%	-300.00~300.00 %	100.00	×	✓
P04.04	AVI input without induction zone	0.00~85.00 %	0.00	×	✓
P04.05	AVI output zero point	0.00~50.00 %	0.00	×	✓
P04.06	AVI output maximum	0.00~100.00 %	100.00	×	✓
P04.07	AVI filter time	0.00~10.00 sec	0.20	×	✓
P04.08	ACI input mode	0:4~20 mA; 1:0~10V	1	×	✓
P04.09	ACI 0V/4mA Input%	-300.00~300.00 %	0.00	×	✓
P04.10	ACI 10V/20mA Input%	-300.00~300.00 %	100.00	×	✓
P04.11	ACI input without induction zone	0.00~85.00 %	0.00	×	✓
P04.12	ACI output zero point	0.00~50.00 %	0.00	×	✓
P04.13	ACI output maximum	0.00~100.00 %	100.00	×	✓
P04.14	ACI filter time	0.00~10.00 sec	0.20	×	✓
P04.15	ACI disconnect detection	0: No detection; 1: Natural shutdown 2: Slow down 3: Keep the frequency running before disconnection;	0	×	✓
P04.16	AVI function selection	00 : No function 01 : Maximum Output frequency 02 : Output voltage bias (VF only) 03 : Acceleration / deceleration time reduction factor (0.10~1.00) 04 : DC brake current (0.0~100.0%) 05 : Over-torque detection level (30.0~200.0%) 06 : Stall prevention level during operation (30.0~200.0%) 07 : Frequency command lower limit 08 : Motor over temperature protection input (OH3) 09 : Reserve	0	×	✓
P04.26	Analog output form (Aout)	0: 0~10V(Absolute value); 1: 0~10V(Negative 0V); 2: 4~20 mA(Absolute value); 3: 4~20 mA(Negative 4mA);	0	×	✓
P04.27	Analog output signal function selection (Aout)	00 : Frequency command (frequency upper limit) 01 : Output frequency (frequency upper limit) 02 : Output current (2 times inverter rated current) 03 : Output voltage (highest output voltage) 04 : DC voltage (1000 V) 05 : Output power (100% of rated motor power) 06 : VIN 07 : AIN 08 : AV0 09 : PID feedback (0.01%) 10 : PID error (0.01%) 11 : PID control output (0.01%)	1	×	✓
P04.28	Analog output zero point	-5.000~5.000 V	0.00	✓	✓
P04.29	Analog output positive gain	0.00~300.00 %	100.00	✓	✓
P04.30					

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

05. Digital input / output parameters

NO	Explanation	Settings	Factory Setting	R	S
P05.00	Digital input status confirmation time	1 ~1000 ms	1	×	✓
P05.01	Digital input M9 ~ M0 logic setting	0~1023 	0	×	✓
P05.02	M0, M1 setting	0 : M0: forward / stop; M1: reverse / stop 1 : M0: run / stop; M1: reverse / forward 2 : Three-wire type: M0 (run), M1 (stop), M2 (reverse / forward) 3 : Three-wire type: M0 (forward door closing), M1 (stop), M2 (reverse door opening); 4 : M0: forward / stop; M1: general function 5 : M0 : general function : M1 : general function	0	×	✓
P05.03	M0 general function setting	00 : No function	0	×	✓
P05.04	M1 general function setting	01 : Operation permit	0	×	✓
P05.05	M2 setting	02 : Reset	19	×	✓
P05.06	M3 setting	03 : Multi-stage speed command 1	2	×	✓
P05.07	M4 setting	04 : Multi-stage speed command 2	0	×	✓
P05.08	M5 setting	05 : Multi-stage speed command 3	0	×	✓
P05.09	Reserve	06 : Multi-stage speed command 4	0	×	✓
P05.10	Reserve	07 : Jog+Forward (only for P00.05=1 or P00.06=1)	0	×	✓
P05.11	Virtual input M8 setting (Short-circuited to virtual output DO2)	08 : Jog+ Reverse (only for P00.05=1 or P00.06=1) 09 : Free stop 10 : Emergency stop	0	×	✓
P05.12	Virtual input M9 setting (Internally shorted to virtual output DO3)	11 : External interruption BB(Base Block) 12 : Turn on the second frequency setting source (P01.01 is Frequency command)	0	×	✓
		13 : Acceleration / deceleration time selection 1 14 : Acceleration / deceleration time selection 2 15 : Acceleration / deceleration speed inhibit 16 : External fault (detected at any time, decelerated and stopped) 17 : External fault (detected during operation, decelerating and stopping) 18 : External fault (detected at any time, free stop) 19 : External fault (detected during operation, free stop) 20 : External fault (detected at any time, emergency shutdown) 21 : External fault (detected during operation, emergency stop) 22 : External fault (detected at any time, warning) 23 : External fault (detected during operation, warning) 24 : Output frequency <P09.10/P10.10> Perform DC braking (P00.16) (V/F only) 25 : Track start 26 : Inverter overheating notice (OH1) 27 : Digital up command 0 (P01.07) 28 : Digital down command 0 (P01.07) 29 : Force Keypad r for operation control 30 : Force P00.06 to operation control * P01.01 is frequency command(priority >29) 31 : Zero servo (zero speed is executed before the operation command comes in)			

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

05. Digital input / output parameters

NO	Explanation	Settings	Factory Setting	R	S
P05.12	Virtual input M9 setting (Internally shorted to virtual output DO3)	32 : Parameter lock 33 : Intelligent second group PID parameters 34 : PID integral value reset 35 : Timing function input 36 : Automatic operation (keyboard STOP key is effective) (priority> 37) 37 : Click auto run (start / stop, keyboard STOP key is effective) 38 : Pause automatic operation 39 : Reserve 40 : Switch from vector mode to VF mode (priority> P09.54, P10.54) 41 : Intelligent efficiency control 42 : Clear counter 43 : Battery operation (limit motor running frequency according to P05.11, no LV detection) 44~52 : No function 53 : Forward limit (Fbb) 54 : Reversal limit (rbb) 55 : Frequency command 0 (P 01.07) is Zero 56 : Frequency increase offset 1(P5.16) command 57 : Frequency reduction offset 2(P5.17) command 58 : Emergency button (returnable) switch 59 : Downward (forward) low speed switch 60 : Down (forward) stop switch 61 : Up (reverse) low speed switch 62 : Up (reverse) stop switch 63 : Counter pulse input (0 ~ 2KHz)	0	×	✓
P05.13	Battery voltage	0.0 : The Function is invalid 0.1~400.0V	0.0	×	✓
P05.14	Timing function ON delay time	0.0 ~6000.0 s	0	×	✓
P05.15	Timer function OFF delay time	0.0 ~6000.0 s	0	×	✓
P05.16	Frequency increase offset 1	0.00~100.00 Hz	0.00	×	✓
P05.17	Frequency reduction offset 2	0.00~100.00 Hz	0.00	×	✓

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

06. Multi-functional output

NO	Explanation	Settings	Factory Setting	R	S
P06.00	Multi-function output RL1	00 : Operation speed attained	0	×	✓
P06.01	Multi-function output RL2	01 : Zero speed	0	×	✓
P06.02	Multi-function output MO1	02 : Set frequency reached	0	×	✓
P06.03	Virtual output MO2 (Shorted internally with virtual input M8)	03 : Set frequency reached ((If_e -P06.06) ≤ P06.08)	0	×	✓
P06.04	Virtual output MO3 (Shorted internally with virtual input M9)	04 : Output frequency detection 1 05 : Output frequency detection 2 06 : Preparation for operation completed (MC ON start resistance short circuit) 07 : Low voltage warning (Lu): Vdc < P07.01 08 : External interruption (BB) N.O. 09 : External interruption (BB) N.C. 10 : Warning output 11 : Over torque (OL2) N.O. 12 : Over torque (OL2) N.C. 13 : Source of operation command is Keypad 14 : Frequency command source is Keypad 15 : Reverse command 16 : Loss of frequency command 17 : Pulse export (P06.10, P06.12); 18 : Timing output function 19 : Low voltage warning (Vdc < (P07.01 + 10V)) 20 : Abnormal restart 21 : Electronic thermal relay action (OL1) 22 : Overheat warning (oHx) 23 : Overload (oL) : Current > 150%, time > 60 sec 24 : RS-485 transmission abnormal 25 : The target value of the PID is equal to the detected value (<3.0 %) 26 : Non-zero speed 27 : The mechanical brake is engaged; 28 : The mechanical brake is disengaging; 29 : Frequency pulse (P06.13) 30 : Switch to motor 1 31 : Reserve	0	×	✓
P06.05	Frequency uniform width	0.00 ~ 10.00 Hz	1.00	×	✓
P06.06	Detection level at any frequency during acceleration	0.00 ~ 400.00 Hz	60.00	×	✓
P06.07	Detection level of any frequency during deceleration	0.00 ~ 400.00 Hz	60.00	×	✓
P06.08	Frequency reach hysteresis width	0.00 ~ 10.00 Hz	1.00	×	✓
P06.09	Mechanical brake release delay time	0.00 ~ 600.00 s	0.00	×	✓
P06.10	Mechanical brake engagement delay time	0.00 ~ 600.00 s	0.00	×	✓
P06.11	Pulse input count value period	1 ~ 60000 Pulse	1000	×	✓
P06.12	Pulse input compare count value	1 ~ 60000 Pulse	500	×	✓
P06.13	Frequency Pulse Multiplier	1 ~ 16	1	×	✓
P06.14					
P06.15	Reserve				

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

07. Protection parameter

NO	Explanation	Settings	Factory Setting	R	S
P07.00	Auto voltage regulation AVR	0 : Enable AVR 1 : Disable AVR 2 : Disable AVR during stop 3 : Disable AVR during deceleration	0	×	✓
P07.01	Low voltage detection level	220V : 150.0 ~210.0 V 440V : 300.0~420.0 Vdc	190.0 380.0	×	✓
P07.02	Braking voltage level	220V : 350.0~410.0 Vdc 440V : 700.0~820.0 Vdc	380.0 760.0	×	✓
P07.03	Overcurrent detection level during acceleration	0 : No function 20.0~200.0 %	170.0	×	✓
P07.04	Overcurrent detection during acceleration	0: Same speed; 1: decelerate	0	×	✓
P07.05	Stall prevention voltage level during deceleration	0 : Disabled 220V : 330.0~410.0 Vdc 440V : 660.0~820.0 Vdc	380.0 760.0	×	✓
P07.06	Overcurrent detection level in constant speed	0 : Disabled 20.0 ~200.0 %	160.0	×	✓
P07.07	Electronic thermal relay selection (OL1)	0 : Disabled 1 : No forced air-cooled motor, cold start (P07.08 , 1.00*P07.10) 2 : No forced air-cooled motor, hot engine start (P07.08 , 0.64*P07.10) 3 : Forced air-cooled motor, cold start (P07.08 , 1.00*P07.10) 4 : Forced air-cooled motor, hot engine start (P07.08 , 0.64*P07.10)	1	×	✓
P07.08	Electronic thermal relay current level	120.0 ~250.0 % for Motor	150.0	×	✓
P07.09	Thermal current relay starts integration current level	80.0 ~120.0 % for Motor	100.0	×	✓
P07.10	Electronic thermal relay relay action time	10.0 ~120.0 s	60.0	×	✓
P07.11	Low torque detection function selection (LL)	0 : Low torque is not detected 1 : Low torque detection during constant speed operation. Continue operation after low torque detection. 2 : Low torque detection during constant speed operation, stop operation after low torque detection 3 : Low torque detection during operation, continue operation after low torque detection 4 : Low torque detection during operation, stop operation after low torque detection	0	×	✓
P07.12	Low torque detection level	0.0 ~100.0 %	20.0	×	✓
P07.13	Low torque detection time	0.01 ~10.00 s	0.10	×	✓
P07.14	Over-torque detection (OL2) function selection	0 : Over-torque is not detected 1 : Over-torque detection during constant speed operation, continue operation after over-torque detection 2 : Over-torque detection during constant speed operation, stop operation after over-torque detection 3 : Over-torque detection during operation, continuous operation after over-torque detection 4 : Over-torque detection during operation, stop after over-torque detection	0	×	✓

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

07. Protection parameter

NO	Explanation	Settings	Factory Setting	R	S
P07.15	Over-torque detection level	30.0 ~250.0 %	160.0	x	✓
P07.16	Over torque detection time	0.01 ~10.00 s	0.10	x	✓
P07.17	Restart after momentary power loss	0 : Stop after momentary power failure 1 : Speed tracking by minimum output frequency	0	x	✓
P07.18	Allowed power loss duration	0.30 ~5.00 s	2.00	x	✓
P07.19	Base block time	0.50 ~25.00 s	0.50	x	✓
P07.20	Speed tracking mode	0: Search method 1: Maximum current method	0	x	✓
P07.21	Speed tracking maximum current setting	30.0~200.0 % , [Limited to 2.5 times the rated motor current]	150.0	x	✓
P07.22	Current imbalance detection level	0 : Disabled 20.0 ~100.0 %	0	x	✓
P07.23	Output current limit	1.0 ~250.0 %	180.0	x	✓
P07.24	Current limit controller gain	50.0 ~400.0%	200.0	x	✓
P07.25	Inverter over temperature protection setting	60.0 ~95.0 °C	88.0	x	✓
Only detected during running: if the temperature is higher than (P07.25-5.0 °C), "oH0" is displayed and the motor continues to run; If the temperature is higher than P07.25, "oH2" will be displayed, and the motor will stop freely.					
P07.26	Motor over temperature protection point (AVI)	0.00 ~100.00% (°H3)	75.00	x	✓
Detection only during running: When P04.16 = 8, AVI is greater than P07.26 and "oH3" is displayed, and the motor will stop freely					

08. Auto run function

NO	Explanation	Settings	Factory Setting	R	S
P08.00	PLC operation mode selection	0: Automatic operation mode is invalid 1: Stop automatically after one cycle 2: automatic operation cycle operation 3: Stop automatically after one cycle (STOP interval) 4: Automatic operation cycle operation (STOP interval)	0	x	✓
P08.01	Program running direction setting H byte	0 ~255 15 14 13 12 11 10 09 08 REV FWD 15 14 13 12 11 10 09 08 1 1 1 1 1 1 1 1	0	x	✓
P08.02	Program running direction setting L byte	0 ~255 07 06 05 04 03 02 01 00 REV FWD 07 06 05 04 03 02 01 00 1 1 1 1 1 1 1 1	0	x	✓
P08.03	Run time unit	0: 0.1 sec 1: 1.0 sec	0	x	✓
P08.04	0st stage speed frequency	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.05	Time Duration of 1st Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.06	Time Duration of 2nd Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.07	Time Duration of 3rd Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.08	Time Duration of 4th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.09	Time Duration of 5th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.10	Time Duration of 6th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.11	Time Duration of 7th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.12	Time Duration of 8th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.13	Time Duration of 9th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.14	Time Duration of 10th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.15	Time Duration of 11th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.16	Time Duration of 12th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.17	Time Duration of 13th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.18	Time Duration of 14th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓
P08.19	Time Duration of 15th Step Speed	0.0 ~6000.0 s (0~60000 s)	0	x	✓

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

09. Induction motor 1 parameters

NO	Explanation	Settings	Factory Setting	R	S
P09.00	IM1 control mode setting	0: No PG V / f control 1: Vector control without PG 2: Reserved 3: Reserved	0	×	✓
P09.01	IM1V / F curve selection	0 ~ 14: 15 kinds of fixed V / F curve 15: Number of V / F curves that can be set freely	15	×	✓
P09.02	IM1 maximum output frequency fe4 selection	0.00~400.00Hz	60.00	×	✓
P09.03	IM1 maximum output voltage V4 selection	230V : 0.0~250.0V 460V : 0.0~500.0V	220.0 440.0	×	✓
P09.04	IM1 intermediate output frequency fe3 selection	0.00~400.00Hz	60.00	×	✓
P09.05	IM1 intermediate output frequency fe3 selection	230V : 0.0~250.0V 460V : 0.0~500.0V	220.0 440.0	×	✓
P09.06	IM1 basic frequency fe2 selection	0.00~400.00Hz	60.00	×	✓
P09.07	IM1 basic voltage V2 selection	230V : 0.0~250.0V 460V : 0.0~500.0V	220.0 440.0	×	✓
P09.08	IM1 intermediate output frequency fe1 selection	0.00~400.00Hz	3.00	×	✓
P09.09	IM1 intermediate output frequency voltage V1 selection	230V : 0.0~250.0V 460V : 0.0~500.0V	16.5 33.0	×	✓
P09.10	IM1 minimum frequency fe0 selection	0.00~400.00Hz	1.50	×	✓
P09.11	IM1 minimum voltage V0 selection	230V : 0.0~250.0V 460V : 0.0~500.0V	9.9 19.8	×	✓
P09.12	Curvature between fe1 and fe2 of IM1 free curve (fe1, V1 is invalid)	0.0: This function is invalid 1.0 ~ 3.0: This function is valid 1.0 → first degree curve (straight line) 2.0 → Conic 3.0 → cubic curve	0.0	×	✓
P09.13	IM1 output voltage limit	0: Output voltage is limited 1: Unlimited output voltage (VF only)	1	×	✓
P09.14	IM1 rated line voltage	150.0~250.0 V 300.0~500.0 V	220.0 440.0	×	✓
P09.15	IM1 rated line current	20.0~135.0 % P11.14 (Show as Amps)	100.0		
P09.16	IM1 rated frequency	10.00~150.00 Hz	60.00	×	✓
P09.17	IM1 rated speed	0.00~9000 rpm	1710	×	✓
P09.18	IM1 rated capacity	0.1~1000.0 Hp	1.00	×	✓
P09.19	IM1 Poles	2~48	4	×	✓
P09.20	IM1 stator resistance	500~60000(Q17)	10000	×	✓
P09.21	IM1 rotor resistance	500~60000(Q17)	8000	×	✓
P09.22	IM1 stator leakage inductance	0~5000 (Q12)	250	×	✓
P09.23	IM1 mutual inductance 1 (1.00 pu)	3250~60000 (Q12)	9000	×	✓
P09.24	IM1 mutual inductance 2 (0.85 pu)	3250~60000 (Q12)	9250	×	✓
P09.25	IM1 mutual inductance 3 (0.70 pu)	3250~60000 (Q12)	9500	×	✓
P09.26	IM1 no load current	0.0~99.0 % *P09.15 (Show as Amps)	30.0	×	✓
P09.27	IM1 low-speed magnetic field amplification factor	100.00~200.00 %	140.00	×	✓
P09.28	IM1 low-speed frequency point setting	0.000~0.100 pu	0.020	×	✓
P09.29	IM1 (no PG vector) low speed torque current	0.000~1.000 pu	0.150	✓	✓

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

09. Induction motor 1 parameters

NO	Explanation	Settings	Factory Setting	R	S
P09.30	IM1 Flux Estimator Bandwidth	0.000 : Current-type flux estimator (valid only for closed loop vectors); 0.010 ~0.600 pu hybrid magnetic flux estimator	0.050	x	✓
P09.31	IM1 Speed Estimator Bandwidth	0.010 ~0.600 pu	0.200	x	✓
P09.32	IM1 (V / F) slip correction gain	0.00~200.00 %	0.00		
P09.33	IM1 (no PG vector) slip correction gain	0.00~200.00 %	100.00		
P09.34	IM1 vector control automatically switches to V / f control frequency setting	0.00: invalid; 5.00 ~ 400.00 Hz: effective	0.00	x	✓
P09.35	Reserve				
P09.37	M1 mechanical constant	0~30000	800	x	✓
P09.38	M1 closed loop vector control zero speed positioning	0: do not start; 1: zero speed positioning;	0	x	✓
P09.39	Reserve				
P09.40	Reserve				
P09.41	Reserve				
P09.42	M1 ASR proportional gain at high speed	0.00~300.00%	10.00		
P09.43	M1 ASR Integral Gain at High Speed	0.00~100.00%	20.00		
P09.44	M1 ASR proportional gain at low speed	0.00~300.00%	12.00		
P09.45	M1 ASR Integral gain at low speed	0.00~100.00%	20.00		
P09.46	M1 ASR α Parameter setting	0.400~1.000	1.000		
P09.47	Selection of integral action during M1 acceleration and deceleration	0: Invalid (integral function does not work during acceleration and deceleration; action at constant speed) 1: valid (integral function always works)	1	x	✓
P09.48	M1 Automatically switch high-speed point gain setting	0.00~400.00 Hz	0.00	x	✓
P09.49	M1 torque current limit during forward rotation	0.00~200.00% , ‡ Limited to 2.5 times the rated motor current.‡	160.00	✓	✓
P09.50	M1 Torque current limit during reverse motoring	0.00~200.00% , ‡ Limited to 2.5 times the rated motor current.‡	160.00	✓	✓
P09.51	M1 torque current limit during forward rotation regeneration	0.00~200.00% , ‡ Limited to 2.5 times the rated motor current.‡	160.00	✓	✓
P09.52	M1 Torque current limit during reverse regeneration	0.00~200.00% , ‡ Limited to 2.5 times the rated motor current.‡	160.00	✓	✓
P09.53	M1 ASR output delay time	0.000~0.500 s	0.000	x	✓
P09.54	M1 Torque control mode	0: Torque current limit; 1: reserved	0	x	✓
P09.55	M1 torque current command	0.00~200.00% , ‡ Limited to 2.5 times the rated motor current.‡	0.00	✓	✓
P09.56	M1 Torque current analog limit	0: invalid; 1: AV0 (digital operator twisting); 2: AV1 (0 ~ 10V input); 3: AC1 (4 ~ 20mA input); 4: PID	0	x	✓
P09.57	M1 Torque control overspeed trip frequency	0.00~400.00 Hz	60.00	x	✓
P09.58					
P09.59					
P09.60					

10. Reserve

11. Motor parameters

NO	Explanation	Settings	Factory Setting	R	S
P11.00	Motor 1 selection	0: IM1; (AC motor) 1: reserved 2: reserved	0	×	✓
P11.01	Motor parameter measurement(Autotune)	0: No measurement function 1: No running electrical parameter detection 2: With running electrical parameter detection 3: reserved	0	×	✓
P11.02	Reserved				
P11.03	IM magnetic field circuit bandwidth	10.0 ~200.0 rad/s	50.0	×	✓
P11.04	IM magnetic field control start frequency	0.000: invalid ; 0.001 ~1.000 pu	0.300	×	✓
P11.05	IM deceleration magnetic field braking energy	0.0~60.0 %	0.0	×	✓
P11.06	IM enable efficiency control mode	0: invalid; 1: valid; 2: Enable by external terminal	0	×	✓
P11.07	IM efficiency control allowable level	40.0~100.0%	100.0	×	✓
P11.08	IM VF oscillation suppression factor	0.0 ~100.0%	15.0	✓	✓
P11.09	IM VF minimum frequency f0 voltage output selection	0: no output; 1: proportional output; 2: Output at the lowest voltage V0 3: Perform DC braking (P00.18)	2	×	✓
P11.10	Reserved				
P11.11	Reserved				
P11.12	Reserved				
P11.13	Reserved				
P11.14	Inverter rated current display	2.0~2000.0 A(Read-only)	5.0	×	✓
P11.15	RST input voltage	230V : 0.0~250.0V 460V : 0.0~500.0V	220.0 440.0	×	✓
P11.16	Selection of cooling fan startup method	0: Inverter RUN fan runs, shuts down after 1 minute of shutdown 1: RUN fan of inverter runs, STOP fan of inverter stops 2: Always running 3: start temperature operation			
P11.17	Fan startup temperature setting	40.0 ~60.0 °C	45.0	×	✓
P11.18	Carrier frequency Upper limit	1000 ~15000 Hz	5000	×	✓
P11.19	Carrier frequency Upper limit Turning point	P225 ~400.00 Hz	60.00	×	✓
P11.20	Carrier frequency lower limit	1000 ~15000 Hz	5000	×	✓
P11.21	Carrier frequency lower limit Turning point	0.00 ~400.00 Hz	0.00	×	✓
P11.22	Over-voltage modulation	100.0 ~105.0 %	100	×	✓
P11.23	Modulation method	0: three-phase modulation; 1: two-phase modulation (6); 2: Two-phase modulation (12); 3: Two-phase modulation (6) +minimum switching loss;	0	×	✓
P11.24	Current loop bandwidth	0.0 ~1200.0 rad/s	1000.0	×	✓
P11.25	Current prediction compensation	0: invalid; 1: valid;	1	×	✓
P11.26	Reserved				
P11.27	Reserved				
P11.28	Reserved				
P11.29	Reserved				
P11.30	Reserved				
P11.31	Reserved				

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

12. Fault Record

NO	Explanation	Settings	Factory Setting	R	S
P12.00	Fault restart times	0~10	0	×	✓
P12.01	Waiting time for Fault restart	0.00~60.00 sec	1.00	×	✓
P12.02	Fault restart way	0: Start by 0Hz; 1: Start by trace;	0	×	✓
P12.03	Latest Fault records	00 : No fault record		×	✓
P12.04	Fault record 1	01 : Over-voltage (ou) : Vdc > (410V/820V)		×	✓
P12.05	Fault record 2	02 : Low-voltage (Lu) : Vdc < P07.01		×	✓
P12.06	Fault record 3	03 : Over-current (Double the rated current) during acceleration (ocA)		×	✓
P12.07	Fault record 4	04 : Over-current (Double the rated current) during deceleration (ocd)		×	✓
P12.08	Fault record 5	05 : Over-current (Double the rated current) during constant speed (ocn)		×	✓
P12.09	Fault record 6	06 : Drive over-load (oL) : CT(Current> 150%, time> 60 sec) VT(Current> 120%, time> 60 sec)		×	✓
P12.10	Fault record 7	07 : Overload 1 (oL1) : Electronics thermal relay protection 08 : Overload 2 (oL2) : Current> P07.15 and time> P07.16 09 : Hardware protection circuit is abnormal (ErPt_c) 10 : Hardware protection circuit is abnormal (ErPt_u) 11 : Hardware protection circuit is abnormal (ErPt_F) 12 : External fault input (EF) 13 : External Base Block (bb) 14 : Three-phase output current unbalance> P07.22, time> 32 / fe, (ocbE) 15 : Automatic parameter detection failed (AutF) 16 : U-phase current sensor abnormal (ct1E) 17 : V-phase current sensor abnormal (ct2E) 18 : W-phase current sensor abnormal (ct3E) 19 : Parameter read error (ErP0) 20 : Parameter setting error 1 (ErP1): P05.03 ~ P05.08 (DI repeated setting) 21 : Parameter setting error 2(ErP2) : P09.02, P09.04, P09.06, P09.08, P09.10 22 : Parameter setting error 3(ErP3) : P10.02, P10.04, P10.06, P10.08, P10.10 23 : RS-485 transmission Fault(conF) 24 : ACI (4 ~ 20 mA) disconnected (Acio) 25 : MC Relay Err(rL) 26 : PG setting error (PGE) 27 : PG disconnection detection (PGo) 28 : Over speed (oS) 29 : Excessive speed deviation (oES) 30 : Overheating forecast (oH0): Internal temperature feedback is greater than (P07.33-5.0oC) 31 : Overheating forecast (oH1): DI input terminal inverter overheating notice 32 : Overheating (oH2): Internal temperature feedback is greater than P07.33 33 : Overheating (oH3): AVI input terminal 34 : PID feedback signal lost (FbF) 35 : PID feedback overvalue detection (Fbu) 36 : PID deviation overvalue detection (FbEF) 37 : Torque controlled overspeed (oS1)		×	✓

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

12. Fault Record

NO	Explanation	Settings	Factory Setting	R	S
P12.10	Fault record 7	38: Low torque detection (LL) 39: Blown fuse (PUF) 40: Input power error (PF) 41: EEPROM read error (EPEr0) 42: EEPROM write error (EPEr1) 43~60: Reserved		×	✓
P12.11	Speed command when fault occurs	0.00 ~400.00 Hz	0.0	×	✓
P12.12	Output frequency when a fault occurs	0.00 ~400.00 Hz	0.0	×	✓
P12.13	Motor Speed when a fault occurs	-30000 ~30000 rpm	0	×	✓
P12.14	Output voltage when a fault occurs	0.0 ~1000.0 V	0.0	×	✓
P12.15	Output current when a fault occurs	0.0 ~3000.0 A	0.0	×	✓
P12.16	DC Bus Voltage when a fault occurs	0.0 ~1000.0 V	0.0	×	✓
P12.17	Q axis current command when a fault occurs	-500.0~500.0%	0.0	×	✓
P12.18	Q-axis current when a fault occurs	-500.0~500.0%	0.0	×	✓
P12.19	D-axis current command when a fault occurs	-500.0~500.0%	0.0	×	✓
P12.20	D-axis current when a fault occurs	-500.0~500.0%	0.0	×	✓
P12.21	Input terminal status when a fault occurs	0~1023 M9 M8 M7 M6 M5 M4 M3 M2 M1 M0	0	×	✓
P12.22	Output terminal status when a fault occurs	0 ~255 MC BK Fan DO3 DO2 DO1 RL2 RL1	0	×	✓
P12.23	Inverter temperature at the time of the fault	-50.0~150.0 °C	0	×	✓
P12.24	Cumulative running hours when a fault occurs	0 ~65535 hr	0	×	✓
P12.25	Cumulative running hours during the previous failure	0 ~65535 hr	0	×	✓
P12.26	Cumulative running hours during the previous 2 failures	0 ~65535 hr	0	×	✓
P12.27	Cumulative running hours during the previous 3 failures	0 ~65535 hr	0	×	✓
P12.28	Cumulative running hours during the previous 4 failures	0 ~65535 hr	0	×	✓
P12.29	Cumulative running hours during the previous 5 failures	0 ~65535 hr	0	×	✓
P12.30	Cumulative running hours during the previous 6 failures	0 ~65535 hr	0	×	✓
P12.31	Cumulative running hours during the previous 7 failures	0 ~65535 hr	0	×	✓
P12.32					
P12.33					
P12.34					
P12.35					

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

13. High-function PID parameters

NO	Explanation	Settings	Factory Setting	R	S
P13.00	PID mode	0: Disable PID; 1: PID output 1 (error value when D input); 2: PID output 2 (feedback value when D input); 3: frequency command + PID output 1; 4: Frequency command + PID output 2;	0	×	✓
P13.01	PID command point selection	0: P13.04; 1: AV0 (digital operator twisting); 2: AVI (-10 ~ 10V input); 3: ACI (4 ~ 20mA input); 4: RAMP output; 5: output current (2.00 pu); 6: Torque current (2.00 pu); 7: encoder 1 feedback value;	0	×	✓
P13.02	PID feedback point selection	0: P13.04; 1: AV0 (digital operator twisting); 2: AVI (0 ~ 10V input); 3: ACI (4 ~ 20mA input); 4: RAMP output; 5: output current; 6: Torque current; 7: encoder 1 feedback value; 8: analog water pump;	2	×	✓
P13.03	Differential feedback point selection	0: None 1: AVI (-10 ~ 10V input); 2: ACI (4 ~ 20mA input);	0	×	✓
P13.04	PID setting value	0 ~ P13.34	0	×	✓
P13.05	PID command acceleration and deceleration time	0.00 ~600.00 s	0.00	×	✓
P13.06	Feedback input filter time setting	0.00 ~10.00 s	0.05	×	✓
P13.07	Group 1 proportional gain	0.0 ~500.0 %	100.0	×	✓
P13.08	Group 1 integration time (H)	0.00 ~100.00 s	1.00	×	✓
P13.09	Group 1 integration time (L)	0.00 ~100.00 s	1.00	×	✓
P13.10	Differential time of group 1	0.00 ~10.00 s	0.00	×	✓
P13.11	Group 2 proportional gain	0.0 ~500.0 %	100.0	×	✓
P13.12	Group 2 integration time (H)	0.00 ~100.00 s	1.00	×	✓
P13.13	Group 2 integration time (L)	0.00 ~100.00 s	1.00	×	✓
P13.14	Differential time of group 2	0.00 ~10.00 s	0.00	×	✓
P13.15	PID error limit	0.0 ~600.00%	600.00	×	✓
P13.16	PID input feature selection	0: Positive characteristic (error value = command value-feedback value) 1: Negative characteristic (error value =-command value + feedback value)	0	×	✓
P13.17	PID output upper limit	0.00 ~100.00%	100.00	×	✓
P13.18	PID output lower limit	-100.00~100.00%	0	×	✓
P13.19	PID output feature selection	0: output is not invert 1: output is inverted	0	×	✓
P13.20	PID output bias	-100.00~100.00%	0.00	×	✓
P13.21	PID output inversion selection	0: Reverse is invalid 1: Reverse is valid	0	×	✓
P13.22	PID output acceleration / deceleration time	0.00 ~600.00 s	0.00	×	✓
P13.23	PID feedback signal loss detection level	0.00 ~100.00%	0.00	×	✓
P13.24	PID feedback signal loss detection time	0.00 ~30.00 s	1.00	×	✓

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

13. High-function PID parameters

NO	Explanation	Settings	Factory Setting	R	S
P13.25	PID feedback signal loss processing method	0: No fault detection 1: fault detection (continue operation when minor fault) 2: Fault detection (contact output when fault occurs, cut off inverter output)	0	×	✓
P13.26	PID feedback value detection value	0.00 ~100.00%	100.00	×	✓
P13.27	PID feedback value detection time	0.00 ~30.00 s	1.00	×	✓
P13.28	PID feedback value detection processing method	0: No fault detection 1: fault detection (continue operation when minor fault) 2: Fault detection (contact output when fault occurs, cut off inverter output)	0	×	✓
P13.29	PID deviation overvalue detection value	0.00 ~100.00%	20.00	×	✓
P13.30	PID deviation value detection time	0.00 ~30.00 s	5.00	×	✓
P13.31	PID deviation value detection processing method	0: No fault detection 1: fault detection (continue operation when minor fault) 2: Fault detection (contact output when fault occurs, cut off inverter output)	0	×	✓
P13.32	PID 100% monitoring value	1 ~999(for P00.01=12)	100	×	✓
P13.33	Decimal point position of PID monitoring value	0 ~2	1	×	✓
P13.34	PID 100% display value	0 ~60000(for P00.01=13,14,15)	10000	×	✓
P13.35	Decimal point position of PID display value	0 ~4	2	×	✓
P13.36					
P13.37					
P13.38					
P13.39					

14. Water Pump parameters

NO	Explanation	Settings	Factory Setting	R	S
P14.00	Water pump function	0: do not start; 1: start;	0	×	✓
P14.01	Sleep detection interval	5 ~30000 sec	30	×	✓
P14.02	Sleep level	0.00~100.00 %	50.00	×	✓
P14.03	Wake up error	0.00~100.00 % (P13.01)	8.00	×	✓
P14.04	Sleep standby time	0 ~30000 sec	900	×	✓
P14.05	Sleep standby running time	0 ~30000 sec	60	×	✓
P14.06	Sleep standby running frequency	0.00~400.00 Hz	0.00	×	✓
P14.07	Low water pressure detection level	0.00~100.00 % (P13.01)	8.00	×	✓
P14.08	Low water pressure detection time(Water flow switch abnormality detection time)	0 ~12000 sec	60	×	✓
P14.09	Low water pressure detection standby time	0 ~30000 sec	1200	×	✓
P14.10	Low water pressure detection recovery times	0 ~1000 times	10	×	✓
P14.11	Sleep detection direction	0: Buck test 1: boost test	0	×	✓
P14.12	Pressure test allowable time	0 ~60 sec	10	×	✓
P14.13					
P14.14					
P14.15					
P14.16					
P14.17					
P14.18					
P14.19					

Summary of Parameter Settings

R(✓) : The parameter can be set during operation. S(✓) : The parameter can be set during stop.

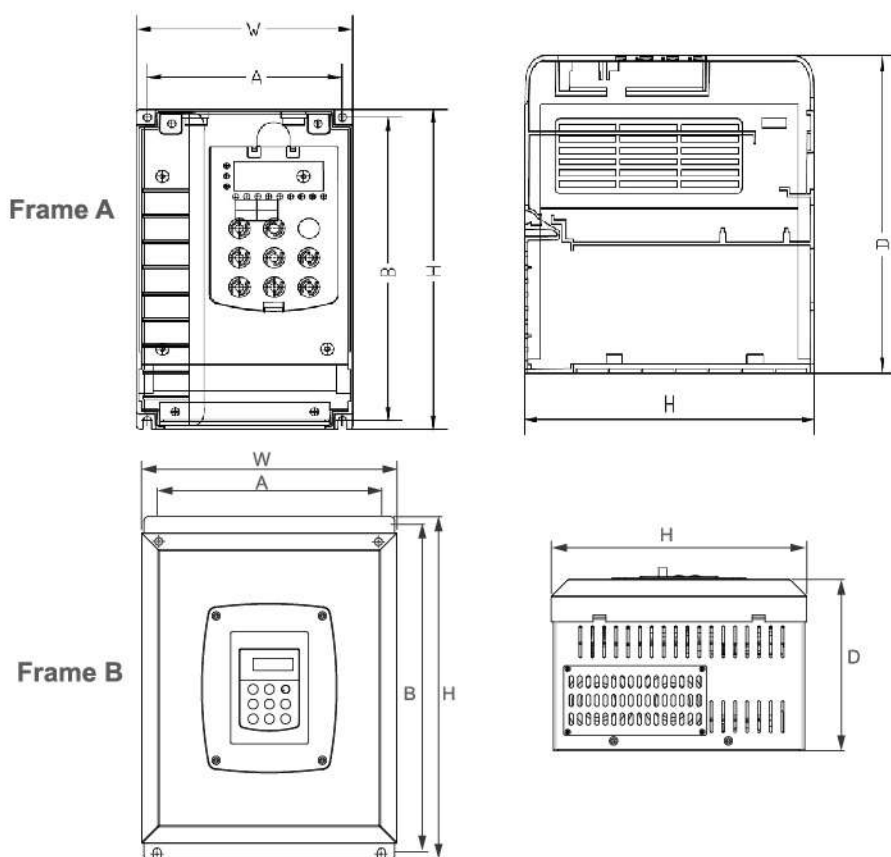
15. Communication Parameters

NO	Explanation	Settings	Factory Setting	R	S
P15.00	Inverter communication address	1 ~254	1	×	✓
P15.01	PC transmission rate	1.0 ~115.2 K	9.6	×	✓
P15.02	Communication data format	0: Modbus ASCII mode, data format <7.N, 2> 1: Modbus ASCII mode, data format <7.E, 1> 2: Modbus ASCII mode, data format <7.O, 1> 3: Modbus RTU mode, data format <8.N, 2> 4: Modbus RTU mode, data format <8.N, 1> 5: Modbus RTU mode, data format <8.E, 1> 6: Modbus RTU mode, data format <8.O, 1>			
P15.03	Minimum response time of the inverter	3 ~50 ms	5	×	✓
P15.04	Detect during transmission overflow	0.0 : Detected when there is no transmission overflow 0.1~120.0 s	0.0	×	✓
P15.05	Detect processing when transmission overflows	0: Free stop; 1: Decelerate to stop; 2: very stop; 3: continue to run (only conF is displayed)	3	×	✓
P15.06	Receive failed response	0: None 1: Incorrect address code 2: Function code error 3: CRC / LRC code error 4: ASCII end code error 5: Parameter address error 6: Incorrect parameter value 7: Write non-modifiable parameters	0	×	✓
P15.07					
P15.08					

16. Reserved

NO	Explanation	Settings	Factory Setting	R	S
P17.00	Reserved				
P17.01	Reserved				
P17.02	Reserved				
P17.03	Cumulative startup time (hours)	0 ~65535	0	×	✓
P17.04	Cumulative startup time (seconds)	0 ~3599	0	×	✓
P17.05	Cumulative running time (hours)	0 ~65535	0	×	✓
P17.06	Cumulative running time (seconds)	0 ~3599	0	×	✓
P17.07	Save setting frequency selection	0: Do not remember the frequency before power off 1: remember the frequency before power off	1	×	✓
P17.08	Parameter lock / reset	00: All parameter values are set to read / write mode 01: All parameters are set to read-only mode 02: All parameter values are reset to 2-wire 220 / 440V 03: All parameter values are reset to 3-wire 220 / 440V 04: All parameter values are reset to 2-wire 200 / 415V 05: All parameter values are reset to 3-wire 200 / 415V 06: All parameter values are reset to 2-wire 200 / 380V 07: All parameter values are reset to 3-wire 200 / 380V 08: Abnormal history clear	0	×	✓

Inverter dimensions mm



Applicable motor power	Mounting Dimensions		External Dimensions			Install Aperture (mm)	Frame
(KW)	A(mm)	B(mm)	H(mm)	W(mm)	D(mm)		
1~3 HP (220V/440V)	106.6	175	185	118	154	4	A
5~10HP(220V) 5-15HP(440V)	148	235	247	160	175	5	A
15~25HP(220V) 20-40HP(440V)	265	385	403.5	300	201.6	10	B

Fault Code Information and Maintenance

Fault Code	Fault Descriptions	Corrective Actions
OU	The inverter detects an overvoltage on the DC Bus.	Check whether the input voltage is within the rated input voltage range of the inverter and monitor whether there is a surge voltage. The voltage of the DC Bus of the inverter is too high because the motor has feedback voltage. Increase the deceleration time or install a braking resistor.
LU	Inverter detects that DC Bus voltage has fallen below its minimum value.	Check input power is normal. Check if there is overload suddenly. Bad electromagnetic contactor in power cause lack phase in input power.
ocA	Over-current during acceleration	Check for possible poor insulation at the output line. Increase the acceleration time. Replace with the Inverter with one that has a higher output capacity.
ocd	Over-current during deceleration	Increase the deceleration time. Check for possible poor insulation at the output line. Replace with the Inverter with one that has a higher output capacity.
ocn	Over-current during steady state operation	Check for possible poor insulation at the output line. Check for possible motor stall. Replace with the Inverter with one that has a higher output capacity.
oL	The Inverter detects excessive drive output current (150%).	Check whether the motor is overloaded. Reduce the torque boost value Increase inverter output capacity
oLI	Internal electronic thermal relay protection: excessive motor load	Check if the motor is overloaded. Check if P9.15 motor rated current is proper. Check electronic thermal relay function setting. Increase motor capacity.
oL2	Motor overload	Check if the motor is overloaded. Check the set value of over-torque detection level (P7.14 ~ 7.16).

Fault Code Information and Maintenance

Fault Code	Fault Descriptions	Corrective Actions
oH0	The internal temperature of the inverter is too high (P07.25 set value - 5 ° C)	Check if the ambient temperature is too high. Check whether the air inlet and outlet are blocked. Inspect the heat sink for objects. Check whether the ventilation space of the inverter is sufficient.
oH1	DI input terminal inverter overheating notice	
oH2	The internal temperature of the inverter is too high than the set value of P07.25	
oH3	Detection only during running: When P04.16 = 8, AVI is greater than P07.26 and "oH3" is displayed, and the motor will stop free.	Check if the motor is abnormal
Prtc Prtu Prtf	Inverter detects abnormal hardware circuit	Detect the hardware circuit abnormality. If pressing the RESET button is invalid, it will be sent to the factory for repair.
EF	When external multi-function input terminals (D1 ~ D6) are set to external abnormal(EF), the inverter stops output	After clearing the fault source, press the "RESET" key.
bb	The multi-function input terminal is set to external interruption, and the inverter stops outputting	When clear signal sources 'bb', it will disappear.
ocbE	Three-phase output current difference is greater than 15% of motor rated current > P07.22 and time> 32 / fe	Check for phase loss on the motor side. The current detection circuit is abnormal.
AutF	Automatic parameter detection failed	Check whether the capacity of the motor and inverter is correct.Increase the deceleration time. Determine whether the motor parameters P9.14 ~ P9.26 are set correctly. Check if the motor connection cable is correct.

Fault Code Information and Maintenance

Fault Code	Fault Descriptions	Corrective Actions
cU1F	U-phase current sensor abnormal	The U-phase current sensor is abnormal. Please send it to the factory for repair.
cU2F	V-phase current sensor abnormal	The U-phase current sensor is abnormal. Please send it to the factory for repair.
cU3F	W-phase current sensor abnormal	W-phase current sensor is abnormal. Please send it to the factory for repair.
ErP0	Internal memory IC data read error	Press the RESET key to reset. Reset the parameters to factory settings. If the method is invalid, send it to the factory for repair.
ErP1	Parameter setting error 1	Parameter P5.03 ~ P5.08 (DI repeated setting)
ErP2	Parameter setting error 2	Parameter setting error: P09.02,P09.04,P09.06,P09.08,P09.10
ErP3	Parameter setting error 3	Parameter setting error: P10.02,P10.04,P10.06,P10.08,P10.10
FbF	PID feedback signal lost	Check the PID feedback signal wiring.
FbU	PID feedback value detection	Adjust parameters P13.26 ~ 13.28
FbEF	PID deviation over-value detection	Adjust parameters P13.29~13.31
ocnF	RS-485 communication error	Check the RS-485 communication parameter settings. Check the RS-485 wiring.
Ac10	ACI (4-20mA) disconnected	Check if the ACI wiring is broken or the ACI signal is less than 4mA

Fault Code Information and Maintenance

Fault Code	Fault Descriptions	Corrective Actions
RL	Relay output error	Parameter setting error: P06.00-06.01 If the method is invalid, send it to the factory for repair
PGE	PG setting error	Parameter setting error: P11.27-11.31
PGO	PG disconnection detection	Check parameter setting: P07.27 - P07.28 Check PG wiring
OS	Over speed, motor speed is greater than PG over speed level	Adjustment parameter setting: P07.29 ~ P07.30
oES	Excessive speed deviation	Adjustment parameter setting: P07.32 ~ P07.34
oSI	Torque controlled overspeed trip	Adjustment parameter setting: P09.57
LL	Low torque detection	Adjustment parameter setting: P07.11 ~ 7.13
PuF	Blown fuse	Check motor and cable for short circuit or damaged insulation Check if U, V, W terminals are shorted
PF	Input power error	Check if the input power voltage is wrong
EPED EPEI	Internal memory IC data read and write error	Press RESET to reset, reset parameters to factory settings If the method is invalid, send it to the factory for repair

Inverter vector control parameter setting

Setting instructions:

1. Connect the inverter to the RST power cable and UVW motor cable
2. Control mode P9.00 Select parameter 1: Vector control without PG
3. Motor parameter measurement P11.01 selection
 - 1 : No running electrical parameter detection
 - 2 : With running electrical parameter detection

P11.01 is the setting method for automatic parameter detection of the motor. After the detection is completed, the detection parameters will be automatically written into the motor parameters P9.14 ~ 9.26 When parameter is set to 1, the motor will not rotate during measurement, only the stator resistance, rotor resistance and leakage inductance are detected.

When parameter 2 is set, in addition to the detection of 01, the no-load current and mutual inductance will be measured at the same time as the rotation test. It is best to completely disconnect the motor from the load.

Notes:

1. Vector mode control is only applicable for motors with the same capacity as the inverter, one level or one level
2. When one inverter has multiple motors or the motor nameplate is unknown, please choose P11.01=1
3. When Auto-tuning fails due to the comparison of motor specifications, the screen will display **ALUF**
4. Vector control is suitable for low speed, the motor can output rated torque
5. When parameter P9.56 is set to 1, 2, 3, the inverter has a winding function, and the torque can be controlled by VR.

Brake resistance selection table:

Voltage	Motor		Brake Resistor Specifications	Unit	Equivalent Minimum Resistance
	HP(4 _{pole})	kW			
230V Series	1	0.75	80W 200Ω	1	80Ω
	2	1.5	300W 100Ω	1	55Ω
	3	2.2	300W 70Ω	1	35Ω
	5	3.7	400W 40Ω	1	25Ω
	7.5	5.5	500W 30Ω	1	16Ω
	10	7.5	1000W 20Ω	1	14.6Ω
	15	11	1500W 13Ω	1	13.6Ω
	20	15	2000W 8.6Ω	1	8.3Ω
	25	18	2000W 8.6Ω	1	8.3Ω
440V Series	1	0.75	80W 750Ω	1	260Ω
	2	1.5	300W 400Ω	1	190Ω
	3	2.2	300W 250Ω	1	145Ω
	5	3.7	400W 150Ω	1	95Ω
	7.5	5.5	500W 100Ω	1	60Ω
	10	7.5	1000W 75Ω	1	45Ω
	15	11	1500W 43Ω	1	42.2Ω
	20	15	2000W 32Ω	1	26.2Ω
	25	18	2000W 32Ω	1	23Ω
	30	22	3000W 26Ω	1	23Ω
	40	30	4000W 16Ω	1	14.1Ω

Notes:

1. The installation of the braking resistor must consider the safety and flammability of the surrounding environment, and it must be at least 10cm away from the inverter body.
2. When using more than two braking units, pay attention to the equivalent resistance value of the braking unit, which cannot be lower than the equivalent minimum resistance value of each driver. Please select the specified resistance value in watts and frequency (ED%).
3. In applications where a braking resistor or braking unit is installed, the P07.05 motor stall prevention setting must be disabled, and it is recommended to turn off the P07.00 automatic voltage stabilization function.
4. For safety considerations, in the application of the braking resistor, please install a thermal relay (OL) between the inverter and the braking resistor or between the braking unit and the braking resistor; and the electromagnetic contactor (MC) at the front of the inverter.

The built-in thermoelectric relay is installed to protect the brake resistor, which is burnt due to frequent overheating of the brake, or the brake unit is continuously turned on to burn the brake resistor due to the input power voltage being too high.

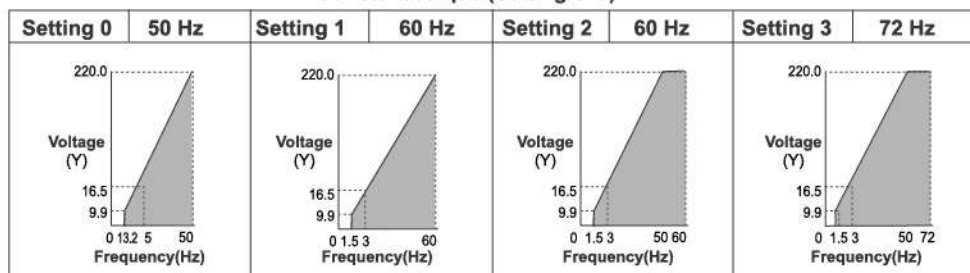
V / F curve selection: (P9.01)

Setting	Specification	Characteristic	Application
0	50Hz specifications	Constant torque	Suitable for general curves. Like a linear moving carrier. It is used when the load torque is constant regardless of the speed.
1	60Hz specifications		
2	60Hz specification, voltage saturation at 50Hz		
3	72Hz specification, voltage saturation at 60Hz		
4	50Hz specifications, decreasing cubic	Decreased torque	Torque when using fan or water pump Load proportional to the second or third power of the speed.
5	50Hz specifications, decreasing quadratic		
6	60Hz specifications, decreasing cube		
7	60Hz specifications, quadratic decreasing		
8	50Hz specification, starting torque	High starting torque	The following conditions need to choose a high starting torque: Long wiring distance between inverter and motor (more than 150m) Higher torque is required during starting (loads such as elevators) AC reactor is connected to the output of the inverter
9	50Hz specification, high starting torque		
10	60Hz specification, starting torque		
11	60Hz specification, high starting torque		
12	90Hz specification, full voltage at 60Hz	Constant output	When operating at frequencies above 60Hz, a certain voltage must be applied
13	120Hz specification, full voltage at 60Hz		
14	180Hz specification, full voltage at 60Hz		

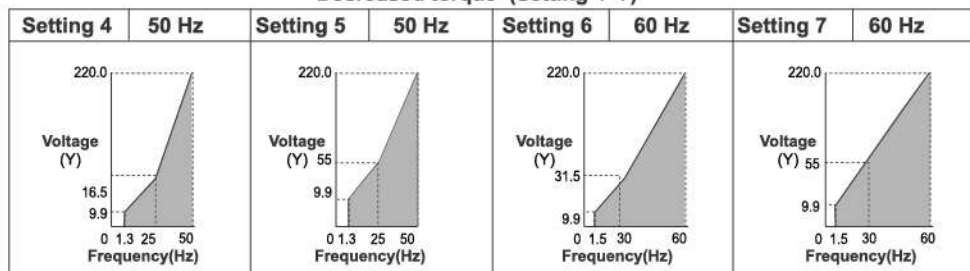
0.5 ~ 5.0HP:

The figure shows a 200V curve, and the voltage value of the 400V inverter is twice

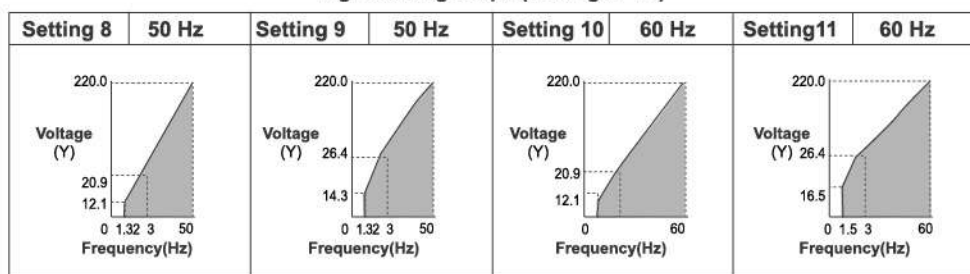
Constant torque (Setting 0~3)



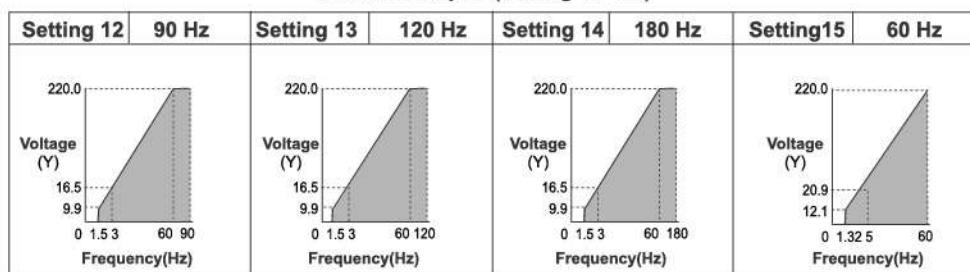
Decreased torque (Setting 4~7)



High starting torque (Setting 8~11)



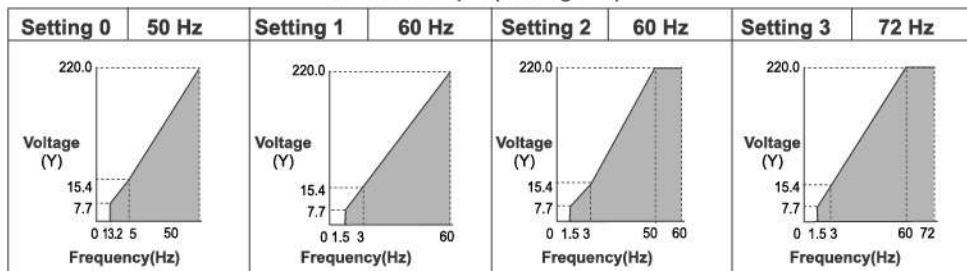
Constant output (Setting 12~15)



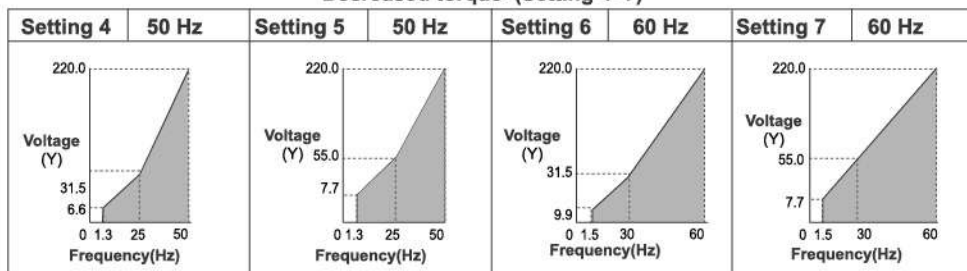
7.5 ~60.0HP:

The figure shows a 200V curve, and the voltage value of the 400V inverter is twice

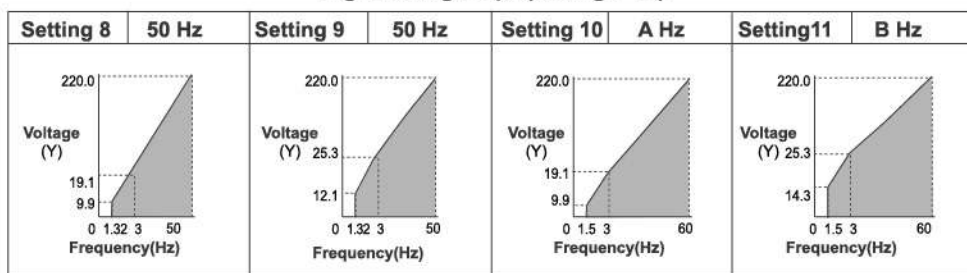
Constant torque (Setting 0~3)



Decreased torque (Setting 4~7)



High starting torque (Setting 8~11)



Constant output (Setting 12~15)

