

ES11 Series Embedded Mini Inverter User Manual

1 Introduction

Thank you for choosing the product of Dirise, ES11 Series Embedded Mini Inverter. ES11 Series Embedded Mini Inverter employs modular functional design concept and can provide special solutions industrial demands. Please read this manual carefully before use to ensure correct operation. This manual includes operating instructions of inverter and precautions for use. Incorrect use may cause unexpected accidents. This manual is attached to machine upon delivery and must be stored properly for troubleshooting and maintenance in the future. Though we have examined the consistency of contents with the software and hardware, still, there may be contradictions and mistakes which will be revised in future versions. We will periodically update the contents without notice. We are open to any suggestions for improvement.

Must-Know In Use:
The safe operation of product is dependent to correct installation, operation, transportation and maintenance. Please must read carefully and pay special attentions to the information about safety included in this manual.

Make sure to have sufficient understanding about inverter, safety information and all precautions before use.

This manual should be held by actual users.

This manual has defined safety level as "Danger" and "Warning"

which is indicated by following signs:

⚠ DANGER : risk of heavy casualties due to false operation.

Must install a matching breaker to the input side of frequency inverter power source; otherwise, it may cause casualties, damage of equipment or other accidents;

Must ground PE terminal of inverter reliably; otherwise, it may cause electric shock or fire;

Power source input terminal and motor output terminal must be tightened by bolts; otherwise, it may cause a fire;

Wiring must be charged by professionals;

Must make sure power source is shut down and charge lamp is off before wiring operation;

Must not carry out troubleshooting or maintenance until internal charge lamp is off or 10 minutes after power cut; otherwise, it may cause electric shock;

Maintenance of machine is for professionals only; otherwise, it may cause electric shock or casualties;

⚠ WARNING : risk of medium harm or injury, or property loss due to false operation.

Make sure not to leave any electric conductor inside machine after maintenance; otherwise, it may cause damage;

For the inverter left unused for a long time, internal capacity must be charged before use. Frequency inverter's Input voltage must be raised slowly by a voltage regulator (must not exceed rated input voltage of inverter); otherwise, there is risk of accident.

Version 1.2

Revision date: 11, 2022

2 Product Information

2.1 Check upon delivery

When opening the package of machine, please check the following items carefully:

Check if product is intact from transportation;

Read the information on nameplate to check if the model and specification of product is consistent with order requirements;

Check if accessories are complete according to packing list.

The product is developed and manufactured in strict accordance with ISO9001. If something is found abnormal, please make contact with your agent or distributor.

2.2 Model Description

DRS-ES11-2S-0R7G

Power code
e.g.: OR1: 0.1KW
OR2: 0.2KW
OR4: 0.4KW
OR7: 0.75KW

Voltage phase
e.g. S: single phase

Voltage grade
e.g. :2: 220V

Product series code
e.g. :ES11: Embedded Mini

Brand name

2.3 Nameplate description

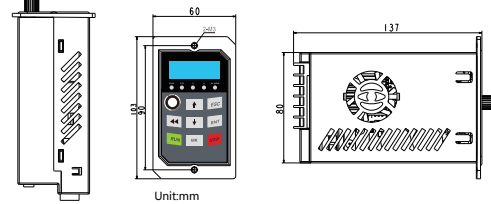
There is a nameplate indicating machine model and rated value at the bottom of right-side plate of inverter housing. Information of nameplate is shown as follows:



2.4 ES11 series inverter model

Voltage grade	Product model	Adaptive motor(KW)	Rated output current (A)
Single - phase 220V	DRS ES11 - 2S - 0R1G	0.1	0.9
	DRS ES11 - 2S - 0R2G	0.2	2.4
	DRS ES11 - 2S - 0R4G	0.4	2.8
	DRS ES11 - 2S - 0R7G	0.75	4.8

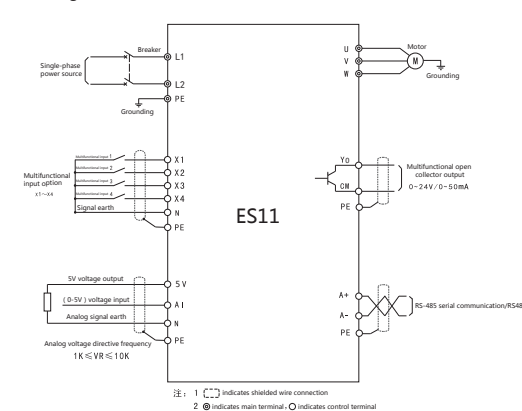
2.5 Contour dimension



2.6 Technical specification

Function Description	Specification Indicators
Power Input	Rated input voltage: Single - phase: 220V ± 20% Rated input frequency: 50 ~ 60Hz (± 5%)
Power Output	Rated output voltage: No higher than input voltage Rated output current: Rated output current of inverter Overload capacity: 150% of rated current for 1 minute; 180% of rated current for 10 seconds
Control Function	Control way: V/F control Control frequency: 300.00Hz Maximum frequency: Digital - given: 0.01 Hz Analog - given: maximum frequency 0.1% Adjustable velocity range: 1: 50 Steady velocity precision: 1% Torque boost: Fixed torque boost, random torque boost Acceleration and deceleration curve: Straight line, S curve Acceleration and deceleration time: 0.01S ~ 600.00S Auto voltage adjustment: When network voltage varies, it can automatically maintain output voltage constantly Overcurrent and voltage stall: Current and voltage is automatically limited during operation, in order to prevent tripping from overcurrent or overvoltage.
Peripheral interface	External power source: 5V/50mA Digital input: 4 digital can programme and input terminals Digital output: 1 digital can programme Y0 terminal output Analog input: AI: 0 ~ 5V LED display: 5 - digit nixie tube display
Keyboard	Keypad: 8 keys for operation
Protection	Failure protection: Overcurrent, overvoltage, undervoltage, overheated, overload protection and so on
Environment	Installation occasion: Indoor environment free from direct exposure to sunshine, dust, corrosive gases, combustible gases, oil mist, vapour, water drop or salt. Elevation: Lower than 1000m Environment temperature: -10 ~ +40
Cooling way	Ventilated place: 0.4 ~ 0.75KW for strong air cooling

2.7 Connection diagram of terminals in main circuit and control circuit is shown as follows:



When multifunctional output terminals are connected to inductive load (e.g. relay coil), make sure to connect freewheel diode to both ends of load in parallel.

The distance from inverter or control wire in cabinet to power cable should be 100mm at least. Being in the same wiring trough is forbidden; if signal wire must go through power cable, both should maintain orthogonal position (90° angle). Control wire should be shielded twisted pair and shielded layer be connected to GND of terminal. Power cable should be sheathing and shielding cable for better.

As strong electromagnetic jamming is unavoidable to inverter, it will cause bad influence on various electric devices and instruments in the same environment. To restrain the interference, output cable of inverter can be fitted into a grounded metal pipe or sheathing and shielding cable should be used and grounded. Besides, addition of magnet ring to output cable can also effectively restrain the interference.

2.8 Functions of main loop terminals

Main loop terminals of ES11 series inverter single phase (220V) are shown as follows:



Functions of main loop terminals

Terminal label	Function Description
L1, L2	AC power inputs terminals, single phase (220V) connects to L1 /L2
U, V, W	Inverter outputs terminals and connects to triple phase AC asynchronous motor.
PE	Connect to ground

Must not connect any terminal beyond L1, L2 to AC 220V power source; otherwise, there is risk of damage in inverter.

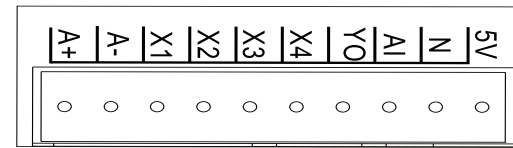
Check if rated input voltage of inverter is consistent with the voltage of AC power supply. If not, there is risk of damage.

Make sure to connect grounding terminal of inverter and motor housing to ground lead. Ground lead should be copper wire and sectional area be above 4cm², and ground resistance must be lower than 10.

Must connect a non - fuse breaker between power supply and inverter lest the accident caused by inverter failure becomes serious, damages power distribution unit or results in a fire.

2.10 Functions of control loop terminals

Control loop terminals of ES11 series inverter are shown as follows:



Type	Terminal	Functions	Electric Spec	Internal Circuit
Digital multifunctional terminals	X1, X2, X3, X4	Start, stop, forward and reverse rotation can be embodied by function code programming.	Input impedance : 27K ; Input voltage : 0~5V ; Input frequency : <1KHz ;	
Switch terminal output	Y0	The state of Frequency inverter's forward and reverse rotation can be outward outputted through functional code programming	Open collector output ; Load capacity: 50mA/5V ; Output frequency : 1KHz ;	
Analog input/output terminal	AI	AI analog voltage input	Voltage source : Input voltage : 0~5V ; Input impedance : 1M ;	
Power terminals	5V, N	5V power output terminal, 5V power ground	Loading capacity : 50mA	/

3 Function parameter list

" " : indicates a code parameter is adjustable during running status ;

" " : indicates a code parameter is non - adjustable during running status ;

" x " : indicates a code parameter is read - only and non - adjustable.

Group P00 basic parameters

Function Code	Name	Setting Range	Unit	Default	Property
P00.00	Control way	0: V/F control		0	
P00.01	Command source options	0: local keyboard 1: external terminal 2: PC communication		0	
P00.02	Main frequency source options	0: main digital frequency 1: keyboard potentiometer 2: AI		1	
P00.03	Auxiliary frequency source options	0: auxiliary digital frequency 1: keyboard potentiometer 2: AI 3: reserved 4: PLC		0	5:PID

P00.04	Output frequency source options	0: main frequency source 1: auxiliary frequency source 2: main + auxiliary 3: main - auxiliary 4: MAX (main, auxiliary) 5: MIN (main, auxiliary)		0	
P00.05	Auxiliary frequency source range in stacking	0: relative to maximum frequency 1: relative to main frequency		0	
P00.06	Auxiliary frequency source ratio in stacking	0.00 ~ 200.00	%	100.00	
P00.07	Output frequency source control	0: output frequency source 1: AI * output frequency source		0	
P00.08	Main digital frequency	0.00 ~ maximum frequency	Hz	0.00	
P00.09	Auxiliary digital frequency	0.00 ~ maximum frequency	Hz	0.00	
P00.10	Running direction setting	0: forward rotation 1: reverse rotation		0	
P00.11	Acceleration time 1	0.00 ~ 600.00	S	10.00	
P00.12	Deceleration time 1	0.00 ~ 600.00	S	10.00	
P00.13	Carrier frequency	2.000 ~ 8.000	KHz	4.000	
P00.14	Maximum frequency	20.00 ~ 300.00	Hz	50.00	
P00.15	Upper - limit frequency	Lower - limit frequency ~ maximum frequency	Hz	50.00	
P00.16	Lower - limit frequency	0.00 ~ upper - limit frequency	Hz	0.00	
P00.17	Lower - limit frequency control	0: running at lower - limit frequency 1: when lower - limit frequency running times up, running at zero rate.		0	
P00.18	Lower - limit frequency running time	0.00 ~ 600.00	S	60.00	
P00.19	Reverse rotation control	0: forward/reverse rotation is allowed. 1: reverse rotation is forbidden		0	
P00.20	Forward/reverse rotation dead time	0.00 ~ 600.00	S	0.00	
P00.21	Load velocity coefficient	0.00 ~ 300.00		30.00	
P00.22	Reset to default value	0: invalid 1: reset to default value		0	

Group P01 start/stop control

Function Code	Name	Setting Range	Unit	Default	Property
P01.00	Acceleration/deceleration mode	0: linear mode 1: S curve mode		0	
P01.01	S curve time	0.00 ~ 600.00	S	0.00	
P01.02	Enablement DC braking current	0.00 ~ 150.00	%	0.00	
P01.03	Enablement DC braking time	0.00 ~ 30.00	S	0.00	
P01.04	Stop way	0: stop in deceleration 1: free stop		0	
P01.05	Stop DC braking frequency	0.10 ~ 60.00	Hz	2.00	
P01.06	Stop DC braking current	0.00 ~ 150.00	%	0.00	
P01.07	DC braking waiting time	0.00 ~ 30.00	S	0.00	
P01.08	Stop DC braking time	0.00 ~ 30.00	S	0.00	

Group P02 motor parameters

Function Code	Name	Setting Range	Unit	Default	Property
P02.00	Rated motor power	0.4 ~ 2.2	KW	XX.XX	
P02.01	Rated motor voltage	0 ~ 380	V	XXX	
P02.02	Rated motor current	0.1 ~ 1500.0	A	XX.X	
P02.03	Rated motor frequency	20.00 ~ 300.00	Hz	XX.XX	
P02.04	Rated motor rotate velocity	1 ~ 30000	rpm	XX.XX	
P02.05	Motor connection way	0 : Y 1 :		X	
P02.06	Power factor	0.70 ~ 0.95		X.XX	
P02.07	Motor efficiency	70.00 ~ 97.00	%	XX.XX	
P02.08	No - load current	0.1 ~ 1000.0	A	X.XX	
P02.09	Stator resistance R1	0.01 ~ 300.00		X.XX	
P02.10	Stator resistance R2	0.01 ~ 300.00		X.XX	
P02.11	Interaction inductive reactance	0.1 ~ 3000.0	mH	XXX.X	
P02.12	Leakage inductance coefficient	0.001 ~ 1.000		X.XXX	
P02.13	Parameter self - recognition	0 : no recognition		0	

Group P03 V/F control parameters

Function Code	Name	Setting Range	Unit	Default	Property
P03.00	V/F curve setting	0: straight line V/F curve 1: multi - point V/F curve 2: fan curve 1 3: fan curve 2 4: fan curve 4		1	

P03.01	Reference frequency	20.00 ~ 300.00	Hz	50.00	
P03.02	V/F voltage value V0	0.00 ~ 100.00	%	1.00	
P03.03	V/F voltage value V1	0.00 ~ 100.00	%	4.00	
P03.04	V/F voltage value V2	0.00 ~ 100.00	%	10.00	
P03.05	V/F voltage value V3	0.00 ~ 100.00	%	16.00	
P03.06	V/F frequency value F0	0.00 ~ frequency value F1	%	1.00	
P03.07	V/F frequency value F1	frequency value F0 ~ F2	%	4.00	
P03.08	V/F frequency value F2	frequency value F1 ~ F3	%	10.00	
P03.09	V/F frequency value F3	Frequency value F2 ~ 100.00	%	16.00	

P04 group input terminal control

Function Code	Name	Setting Range	Unit	Default	Property
P04.00	DI terminal wave filtering	0 ~ 100		10	
P04.01	DI input logic	Bit3 Bit2 Bit1 Bit0 X4 X3 X2 X1 0 : Close valid 1 : Break valid		0000000	
P04.02	X1 delay time	0.00 ~ 300.00	S	0.00	
P04.03	X2 delay time	0.00 ~ 300.00	S	0.00	
P04.04	Multi-functional input X1	0: no function 1: run RUN 2: forward/reverse rotation F/R 3: 3-thread operation stop control 4: forward rotation jog FJOG 5: reverse rotation jog RJOG 6: terminal UP 7: terminal DOWN 8: UP / DOWN reset 9: free stop FRS 10: fault reset RST 11: external fault EXT 12: Accelerate/ Decelerate forbidden 13: multi-segment frequency terminal 1 14: multi-segment frequency terminal 2 15: multi-segment frequency terminal 3 16: Accelerate/decelerate time switching 17: Operation command switching to terminal 18: Switching to auxiliary speed 19: Stop DC braking 20: Program operation reset		1	
P04.05	Multi-functional input X2			2	
P04.06	Multi-functional input X3			13	
P04.07	Multi-functional input X4			14	
P04.08	Reservation				
P04.09	Reservation				
P04.10	Terminal command way	0 : 2-thread control 1 1 : 2-thread control 2 2 : 3-thread control 1 3 : 3-thread control 2		0	
P04.11	Keypad potentiometer wave filtering time	0.00 ~ 10.00	S	0.10	
P04.12	AI Wave filtering time	0.00 ~ 10.00	S	0.10	
P04.13	Reservation				
P04.14	Keypad potentiometer minimum input	0.0 ~ 100.0	%	1.0	
P04.15	Keypad potentiometer maximum input	0.0 ~ 100.0	%	98.0	
P04.16	AI Output bias 0	-100.0 ~ 100.0	%	0.0	
P04.17	AI Output bias 1	-100.0 ~ 100.0	%	25.0	
P04.18	AI Output bias 2	-100.0 ~ 100.0	%	75.0	
P04.19	AI Output bias 3	-100.0 ~ 100.0	%	100.0	
P04.20	AI Input bias 0	0.0 ~ AI Input bias1	%	0.0	
P04.21	AI Input bias 1	AI Input bias 0 ~ AI Input bias 2	%	25.0	
P04.22	AI Input bias 2	AI Input bias 1 ~ AI Input bias 3	%	75.0	
P04.23	AI Input bias 3	AI Input bias 2 ~ 100.0	%	100.0	
P04.24	P04.24~P04.31 Reservation				
P04.32	AI Proportional gain	0.00 ~ 300.00	%	100.00	○

P05 group Output terminal control

Function Code	Name	Setting Range	Unit	Default	Property
P05.00	Multi-functional output Y0	0 : Inverter operation 1 : Reverse run 2 : Frequency arrival (FAR) 3 : Frequency level detection (FDT) 4 : Inverter fault 5 : Upper limit frequency reach 6 : Lower limit frequency reach 7 : Ready for operation		0	
P05.01	Reservation				
P05.02	Reservation				
P05.03	Reservation				

P05.04	Reservation				
P05.05	Reservation				
P05.06	FDT upper bound	0.00 ~ Maximum frequency	Hz	30.00	
P05.07	FDT lower bound	0.00 ~ Maximum frequency	Hz	30.00	
P05.08	FAR frequency arrival	0.00 ~ 20.00	Hz	5.00	

P06 group: Auxiliary function

Function Code	Name	Setting Range	Unit	Default	Property
P06.00	Jog digital frequency	0.00 ~ Maximum frequency	Hz	5.00	
P06.01	Inching accelerate time	0.00 ~ 600.00	S	10.00	
P06.02	Inching decelerate time	0.00 ~ 600.00	S	10.00	
P06.03	Accelerate time 2	0.00 ~ 600.00	S	10.00	
P06.04	Decelerate time 2	0.00 ~ 600.00	S	10.00	
P06.05	Multi-segment speed 1	0.00 ~ Maximum frequency	Hz	0.00	
P06.06	Multi-segment speed 2	0.00 ~ Maximum frequency	Hz	5.00	
P06.07	Multi-segment speed 3	0.00 ~ Maximum frequency	Hz	10.00	
P06.08	Multi-segment speed 4	0.00 ~ Maximum frequency	Hz	15.00	
P06.09	Multi-segment speed 5	0.00 ~ Maximum frequency	Hz	20.00	
P06.10	Multi-segment speed 6	0.00 ~ Maximum frequency	Hz	25.00	
P06.11	Multi-segment speed 7	0.00 ~ Maximum frequency	Hz	30.00	
P06.12	UP/DOWN UP/DOWN velocity	0.00 ~ 100.00 0.00 (Automatic rate)		1.00	
P06.13	Power down storage	0 : Non storage the frequency before power down 1: Storage the frequency before power down		0	

P07 group: communication function

Function Code	Name	Setting Range	Unit	Default	Property
P07.00	Local address	0: Broadcasting address 1 ~ 247		1	
P07.01	Communication Baud rate	0 : 4800 1 : 9600 2 : 19200 3 : 38400	bps	1	
P07.02	Communication format	0 : no parity 1+8+1 1 : even parity check 1+8+1+1 2 : odd parity check 1+8+1+1		0	
P07.03	Communication overtime time	0.0 ~ 60.0 0: Function invalid when communication overtime	S	0.0	
P07.04	Master-slave communication way	0: Current machine is slave 1: Current machine is master		0	
P07.05	Master write slave address	0: Main digital frequency 1: Auxiliary digital frequency		0	
P07.06	Received proportion coefficient of local machine	0.00 ~ 300.00	%	100.00	
P07.07	Master communication sending data	0: Output frequency 1: Set frequency 2: Main digital frequency 3: Keypad potentiometer 4: AI		0	

P08 PID control function

Function Code	Name	Setting Range	Unit	Default	Property
P08.00	PID given source	0 : Digital given 1 : AI		0	
P08.01	PID digital given	0.0 ~ 100.0	%	50.0	
P08.02	PID feedback source	0 : AI		0	
P08.03	PID maximum scale	0 ~ 60000		1000	
P08.04	PID effect direction	0: Positive effect 1: Negative effect		0	
P08.05	PID output gain	0.00 ~ 100.00	%	100.00	
P08.06	Proportion gain Kp	0.00 ~ 100.00		0.40	
P08.07	Integral time Ti	0.00 ~ 30.00 , 0.00 : no integral	S	2.00	
P08.08	Differential time Td	0.00 ~ 300.00 , 0.00 : no differential	mS	0.00	
P08.09	Integral effect range	0.00 ~ 100.00	%	100.00	
P08.10	PID deviation limit	0.0 ~ 100.0	%	0.0	
P08.11	PID output upper limit	-100.0 ~ 100.0	%	100.0	
P08.12	PID output lower limit	-100.0 ~ 100.0	%	0.0	
P08.13	PID feedback disconnection detection value	0.0 ~ 100.0	%	0.0	
P08.14	PID feedback disconnection detection time	0.0 ~ 30.0	S	1.0	

P09 group Simple PLC function

Function Code	Name	Setting Range	Unit	Default	Property
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P09.00	PLC operation way	0 : Stop after a single run 1 : Stop after the finite cycle is completed 2 : After a single run is completed, run according to the 7th section 3 : Cycle operation		0	
P09.01	PLC operation control	0 : Run from the interrupt period 1 : Start with the first section		0	
P09.02	PLC operation direction	Bit6 Bit5 Bit4 Bit3 Bit2 Bit1 Bit0 T7 T6 T5 T4 T3 T2 T1 0: Forward rotation 1: Reverse rotation		000000	
P09.03	Section 1 operation time T1	0 ~ 60000	S	30	
P09.04	Section 2 operation time T2	0 ~ 60000	S	30	
P09.05	Section 3 operation time T3	0 ~ 60000	S	30	
P09.06	Section 4 operation time T4	0 ~ 60000	S	30	
P09.07	Section 5 operation time T5	0 ~ 60000	S	30	
P09.08	Section 6 operation time T6	0 ~ 60000	S	30	
P09.09	Section 7 operation time T7	0 ~ 60000	S	30	
P09.10	Limited cycle times	1 ~ 30000		1	

P10 group :Fault and protection

Function Code	Name	Setting Range	Unit	Default	Property
P10.00	Motor overload protection	0: Invalid 1: Valid		1	
P10.01	Motor overload protection time	30 ~ 300	S	60	
P10.02	Overcurrent stall protection	0 : Invalid 1 : valid		1	
P10.03	Current limiting level	50.00 ~ 180.00	%	120.00	
P10.04	Over-voltage stall protection	0 : Invalid 1 : pattern 1 2 : pattern 2		2	
P10.05	Stall overpressure point	370 ~ 400	V	390	
P10.06	Fault retry control	0 : Fault retry invalid 1 ~ 3 : Fault retry 1,2,3times 4 : Infinite fault retry		0	
P10.07	Fault output option during Fault retry	0: no action 1: action		0	
P10.08	Fault retry internal	0.01 ~ 30.00	S	0.50	
P10.09	No fault internal	0.01 ~ 30.00	S	10.00	
P10.10	Fault retry option	Bit4 Bit3 Bit2 Bit1 Bit0 ERR07 ERR05 ERR04 ERR03 ERR02 0 : Allow fault retry 1 : Forbid fault retry		11111	
P10.11	Fault masking	Bit7 Bit6 Bit5 Bit4 * ERR15 ERR12 ERR07 Bit3 Bit2 Bit1 Bit0 ERR10 ERR06 ERR05 ERR04 0 : Fault effectively 1 : Fault masking		0000 0110	

P11group :Control parameter

Function Code	Name	Setting Range	Unit	Default	Property
P11.00	Fan control	0: Operation in power on 1: Start operation		1	
P11.01	Carrier way	0: Fixed carrier 1: Random carrier		0	
P11.02	Carrier upper limit	2.000 ~ 8.000	KHz	6.000	
P11.03	Carrier lower limit	2.000 ~ 8.000	KHz	2.000	
P11.04	Automatic stabilvolt AVR	0: Invalid 2 : Exceeding the rated voltage is invalid		1: Valid 0	
P11.05	Energy consumption brake control	0 : During the power on is valid 1 : During the operation is valid 2 : During the deceleration is valid		0	
P11.06	Braking usage rate	5.00 ~ 100.00	%	100.00	
P11.07	Energy braking voltage	350 ~ 400	V	380	
P11.08	Output voltage	5.00 ~ 100.00	%	100.00	
P11.09	Overmodulation function	0: Invalid 1: Valid		0	
P11.10	Oscillation suppression	0 ~ 100		0	
P11.11	Slip compensation coefficient	0.00 ~ 200.00	%	0.00	
P11.12	Voltage compensation factor	0.00 ~ 200.00	%	80.00	
P11.13	Excitation control	0 ~ 2		1	
P11.14	Constant speed limiting descent time	0.00 ~ 30.00	S	5.00	

P12 group :Keypad and display

Function Code	Name	Setting Range	Unit	Default	Property
P12.00	User password	0 ~ 65535		XXXXX	
P12.01	Parameter setting control	0: Parameter setting allowed 1: Parameter locking 0 2: Parameter locking 1		0	
P12.02	Parameter modification method	0: Keypad and communication are valid at the same time 1: Keypad is valid 2: Communication is valid		0	
P12.03	Definition of multi-function key	0: Invalid 1: Inching operation 2: Switching between forward/reverse rotation		1	
P12.04	Code selected of stop monitoring	0 ~ 17 : P13.00 ~ P13.17		0	
P12.05	Monitoring code selection	0 ~ 17 : P13.00 ~ P13.17		1	
P12.06	Frequency inverter operation time	0 ~ 65535	HOUR	XXXXX	×
P12.07	Frequency inverter operation time	0 ~ 60	Min	XXXXX	×
P12.08	Operation time control	0: Invalid 1: Valid		0	
P12.09	Set operation time	0 ~ 65535	HOUR	XXXXX	
P12.10	Operation time controls password	0 ~ 65535		XXXXX	
P12.11	Frequency inverter rate power		kW	XXXX	×
P12.12	Frequency inverter rate voltage		V	XXX	×
P12.13	Frequency inverter rate current		A	XXXXX	×
P12.14	Software version			X.XX	×
P12.15	Manufacturer password	0 ~ 65535		XXXXX	

P13 group: Monitoring parameter

Function Code	Name	Setting Range	Unit	Default	Property
P13.00	Input frequency	0.00 ~ maximum frequency	Hz		×
P13.01	Output frequency (before compensation)	0.00 ~ Upper limiting frequency	Hz		×
P13.02	Output frequency (after compensation)	0.00 ~ Upper limiting frequency	Hz		×
P13.03	Output voltage	0 ~ 660	V		×
P13.04	Output current	0.0 ~ 3000.0	A		×
P13.05	Load speed	0 ~ 30000	rpm		×
P13.06	Output power	0.0 ~ 50.0	kW		×
P13.07	Busbar voltage	0 ~ 1200	V		×
P13.08	Radiator temperature	0 ~ 200			
P13.09	PID given	0 ~ Maximum scale			×
P13.10	PID feedback	0 ~ Maximum scale			×
P13.11	Program operation segment	1 ~ 7			×
P13.12	Program operation time	0 ~ 60000	S		×
P13.13	DI terminal status	**** X4 X3 X2 X1			×
P13.14	DO terminal status	***** R1 Y1			×
P13.15	Keyboard potentiometer	0.00 ~ 100.00	%		×
P13.16	AI	0.00 ~ 100.00	%		×

P14 group :Fault parameter

Function Code	Name	Setting Range	Unit	Default	Property
P14.00	Current first time fault record	ERR00: no fault ERR01: inverter unit fault ERR02: over-current fault ERR03: over-voltage fault ERR04: under-voltage fault ERR05: input phase loss fault ERR06: output phase loss fault ERR07: frequency inverter overload ERR08: motor overload ERR09: overheat fault ERR10: PTC disconnection fault ERR11: soft start fault ERR12: external fault ERR13: communication overtime fault ERR14: PID feedback disconnection fault ERR15: memory fault ERR16: Cancel motor tune ERR17: abnormal fault of stator and resistance ERR18: no-load current fault ERR19: Timed locking machine		00	×
P14.01	Current second time fault record				
P14.02	Current third time fault record				
P14.03	Currently output frequency for first time fault	0.00 ~ 300.00	Hz	0.00	×
P14.04	Currently output current for first time fault	0.0 ~ 300.0	A	0.0	×
P14.05	Currently busbar voltage for first time fault	0 ~ 1200	V	0	×