SAVCh

Multifunction、Mini-type Static Vector Inverter
Use the Motor Special Dual-Core CPU with High-Performance

S800 Series Inverter User Manual

SAVCh

CONTENT

PREFACE

Thank you very much for choosing SANCH inverter! This manual includes the operation notes and maintenance notes in the use of SANCH inverter. You are kindly requested to hand this Manual to the end user.

Read this manual carefully to maximize the function of the inverter and ensure user safety. If there are any questions that you cannot find the answers from this manual in the process of using, please contact with the franchiser in SANCH area or our sales representatives, our professionals would like to help you and welcome you to continue to use SANCH products.

1. Notes of Reading

Inverter is a kind of electric and electronic product. For your safety, in this Manual there are such symbols as "Danger*" and "Caution*" reminding the safety precautions during your transit, installation, operation and check inverter. Your cooperation will make the use of the inverter even safer.

⚡ **Danger**   Incorrect use may lead to casualties.

⚠ **Notice**   Incorrect use may lead to damage of the inverter or the mechanical system.

⚡ Danger
· It is forbidden to make wiring during power supply, and please do not check the components and signals on the circuit board during operation. · Please do not dismantle, install or change the internal wirings, or circuitry and parts of the inverter. · The grounding terminal must be correctly grounded with the third kind of grounding of 200V grade.

⚠ Notice
· Please do not make voltage resistance test on the internal components and parts of the inverter, for these semiconductor parts are easy to damage by high voltage. · It is forbidden to connect the output terminals UVW with AC power supply · The CMOS IC of inverter main circuit board is easy to influence and damage of electrostatic, so please do not touch the main circuit board. · When disuse the S800,plese treated it as industrial waste

2. Product Check

Tests have been done on each SANCH inverter before shipment. After user unpacking the inverter, please execute the following check steps:

· Please check if the inner includes a body of SANCH inverter and one User Manual.

· Whether the machine model of the inverter conforms to the model and capacity that you have ordered.

· If the inverter gets damaged because of improper transportation. If it is the damaged please don't power on.

Please inform the sales representatives in SANCH area immediately if there are above problems.

Chapter1 Hardware Note and Installation

1. Use Environment

The installation environment of the inverter has direct influence on the normal functions and the use life of the inverter; therefore, the installation environment of the inverter must conform to the following conditions:

Ambient temperature: -10°C-+40°C

Humidity: below 90%RH (without frosting)

Prevent rain dripping or humid environment

Avoid direct sunlight

Prevent erosion of oil and salt

Prevent corrosive liquid, gas

Keep free of dust, cotton wool and metal particles.

Be far away from radioactive and flammable material.

Prevent electromagnetism disturbance (fusion splicer, dynamic machine).

Prevent vibration (punching machine), if can not be avoided, please install anti-vibration pads to reduce vibration.

If several units of inverters are installed inside the control panel, please pay attention to their placement positions so as to facilitate heat dissipation and please equip additional ventilation fans and the principle is the ambient temperature of the inverter should be lower than 40°C.
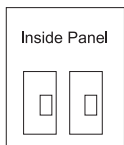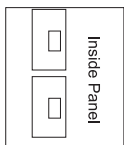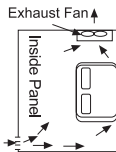
(Correct configuration manner)   (Incorrect configuration manner)   (Correct configuration manner)   (Incorrect configuration manner)
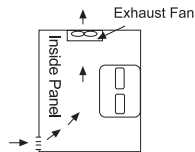
When installing the inverter, please place front side of the inverter to the front and the top to face upward so as to facilitate heat dissipation.

Installation space must conform to the following regulation.
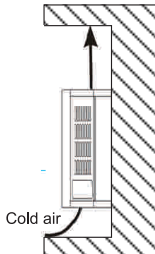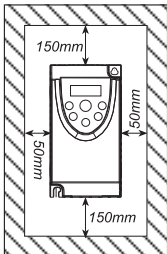
2. Model Notes

Take 1/2HP 220V as example:

Inverter Model →	**MODEL:S800-2S0.4G** CE
Input power specification →	INPUT:AC 1PH 200~240V 50/60Hz
Output power specification →	OUTPUT:3PH 0~240V 2.5A 1.0kVA
Output frequency →	FREQUENCY RANGE:1.0~400Hz
	SANG CHUAN ELECTRIC CO.,LTD

S800 - 2S 0.4 G

S800 — Name of product series

2S — 2S:220V single phase

0.4 —
0.2:0.2kW
0.4:0.4kW
0.75:0.75kW
Show with actual power

G —
G: Constant torque load (General purpose application)
P: Alterable torque load (Fan and pump application)

3. External Dimensions Diagram
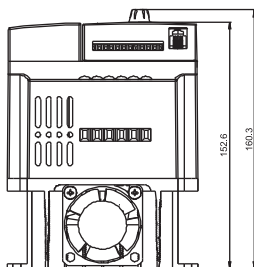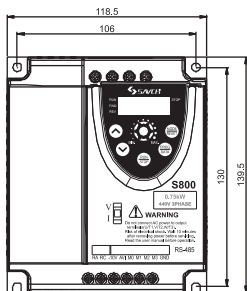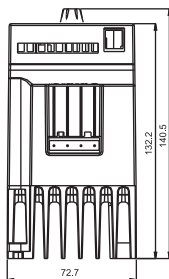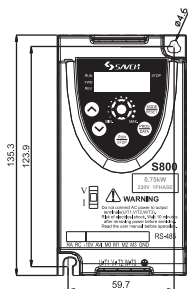
Installation dimension	W	H	D	W1	H1
S800-2S0.2G/2S0.4G/2S0.75G	72.7	135.3	140.5	59.7	123.9
S800-2S1.5G	118.5	139.5	160.3	106	130

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Chapter2 Wiring

1. Basic Wiring Diagram

The wiring part of the AC motor driver is divided into the main circuit and control circuit. The user must indubitable connection according to the following wiring circuit.

The following diagram is the standard wiring diagram of the AC motor driver at the shipment of S800. If only the digital control panel is used, there is only wiring of the main circuit terminal.

The power of main circuit

MCCB

R(L1) — R(L1)   U/T1   IM 3~
S(L2) — S(L2)   V/T2   Three-phase induction-motor
T(L3) — T(L3)   W/T3

Factory Default Settings

Multi-functional Input Terminal

Forward/Stop — M0 — +18V — 2.4K
Reverse/Stop — M1 — +18V
Reset — M2 — +18V
Multi-step 1 — M3 — +18V — 2.4K
Common Signal — GND

RA — Multi-function Indication Output Contacts 250VAC/28VDC 3A Factory Default: Fault Indication
RC

1:+EV
2:GND
3:SG-
4:SG+

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RS-485 Serial Communication

No.1 and No.2 pin are power supply of communication operational device, and should not be used while using RS-485 communication

Power Supply for setting speed +10V 10mA MAX
Master Frequency Setting
Analog Voltage Frequency command 0-10VDC
VR: 3K-5KΩ
Analog Current Frequency Command 4-20mA

VR 2
AVI
GND

◎ Main loop terminal
○ Control loop terminal
⛉ Please use shielded cable

※ The main circuit terminal of the single-phase model takes R/L1, S/L2 as the input power port
※ The main circuit terminal of the three-phase model takes R/L1, S/L2, T/L3 as the input power port

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2. Wiring of the Main Circuit

AC input terminal
Grounding terminal
Single-phase input mode
R/L1 S/L2

Wire diameter : 12-20AWG
Torque : 5kgf-cm

LED display area

UP/DOWN key

RUN/STOP key

The signal selection of AVI
input DC0~+10V, 4~20mA

Frequency setting knob

Function display key

Data confirmed key

S800

0.75kW
220V 1PHASE

⚠ WARNING

Motor capability and input power

RS-485 communication
interface terminal

Wire diameter : 12-20AWG
Torque : 5kgf-cm

Motor connection terminal U/T1,V/T2,W/T3
Grounding terminal

The wiring figure of control circuit

Wire diameter12-20AWG
Torque 5kgf-cm

| RA | RC | +10V | AVI | M0 | M1 | M2 | M3 | GND |

Relay

Multi-function indication output contact
(250VAC/28VDC 3A)

Power used for setting speed

Analog voltage、current frequency command

Multifunction assistant terminal

Multifunction input selection

Multifunction input selection

Multifunction input selection

Signal common terminal

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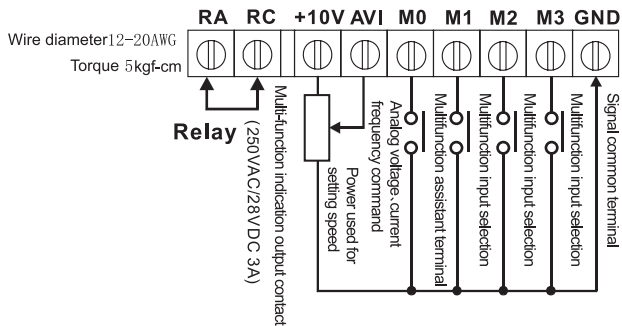
3. Notes of Wiring

※ During wiring, regarding the selection of wire diameters specification, please make wiring according to electrical regulations so as to ensure safety.

※ The connection wire between single phase AC input power and the main circuit terminal (R/L1, S/L2) must be connected with a non-fuse switch and a fuse. It is preferable to serial connect an Magnetic Contactor (MC) so as to cut off the power simultaneity when the protection function of the AC motor driver is activated (the two ends of the Magnetic Contactor must be installed with R-C surge absorber). Note: The recommended value for the rated current of the non-fuse switch is 15A.

※ The input power R/L1, S/L2, T/L3 have no differentiation of phase sequence and they can be connected and used at will; the grounding terminal ⏚ is grounded with the third grounding mode. (Grounding resistance below 100Ω)

※ The grounding wire of the AC motor driver can not have common grounding with such big current loads as welder and high-powered motor. And they must be grounded separately. The grounding wiring should be as short as possible.
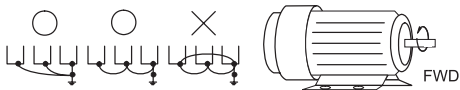
※ When several AC motor drivers have common groundings, please do not form a grounding loop. Please refer to the following figure.

FWD

※ If the U/T1, V/T2, W/T3 output terminals of the AC motor driver corresponding are connected to the U,V, W terminals of the motor, then the indicating light (FWD) on the digital control panel of the AC motor driver lights on, which indicates the AC motor driver FWD. The run direction of the motor is shown in the above right figure; if the indication light (REV) lights on, it indicates the AC motor driver REV, and the run direction of the motor is the opposite of the above figure. If it can not confirm the U/T1, V/T2, W/T3 output terminals of the AC motor driver are connected to the U,V,W terminals of the motor and whether they are correspondingly connected, when the AC motor driver is in FWD, the motor is in REV. There is only need to exchange any two of the U, V, W terminals.

※ Confirm the voltage and the maximum supply capacity of the power supply system.

※ When the "digital operator" displays, please do not connect or dismantle any wiring.

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※ Please prolong the deceleration time so as to prevent the driver from over voltage protection.

※ It is forbidden to connect the AC power to the output side terminals of U/T1, V/T2, W/T3 of AC motor driver.

※ Please concretely tighten up the screws of the main circuit terminal so as to prevent the spark due to vibration and loosened parts.

※ The wiring of main circuit and the control circuit must be separated so as to prevent mis-operation. If it is necessary to have crossings, please have 90° crossover.

※ When it is necessary to install noise filters on the output side terminals of U/T1, V/T2, W/T3 of the AC motor driver, it must use an inductive L-filter, and it is forbidden to install any phase capacitor or L-C, R-C filters.

※ Please try best to use separation wires for the control wiring and please do not expose the stripped sections at the front of the terminals.

※ Please use separation wires or tubing wire for power wiring and ground the two ends of the separation layers or tubing wire.

※ If the installation site of the AC motor driver is very sensitive to disturbance, please add the installation of an RFI filter, and the closer the installation position to the AC motor driver, the better. The lower the carrier frequency of the PWM is, the smaller the disturbance will be.

※ If the AC motor driver is installed with a leakage breaker as a protection of leakage current faults, in order to prevent the leakage breaker from having incorrect actions, please select those with a sensitive current of above 200mA and an action time of above 0.1 second.

※ It is forbidden to use electromagnetic switches between the inverter and the motor and it is forbidden to connect the output loop with an electromagnetic switch and a Magnetic Contactor, otherwise the inverter surge current will be active over current protection; in severe cases, it will even damage the internal components of the inverter.

Chapter3 List of Function and Parameter Note

0 User parameter			⩘ Setting during operation	
	Parameter	Parameter function	Setting range	Factory setting value
	0-00	Identification of model code of AC motor driver(for read only)	3: 220V/200W	Factory setting value
			4: 220V/400W	
			5: 220V/750W	
			6: 220V/1500W	
			7: 220V/2200W (Reserved)	
			8: 220V/3000W(Reserved)	
			14: 440V/400W (Reserved)	
			15: 440V/750W (Reserved)	
			16: 440V/1500W (Reserved)	
			17: 440V/2200W (Reserved)	
	0-01	Rated current display of AC motor driver (for read only)	220V/200W :1.6A	Factory setting value
			220V/400W :2.5A	
			220V/750W :4.2A	
			220V/1500W:7.0A	
			220V/2200W:11.0A (Reserved)	
			220V/3000W:17.0A (Reserved)	
			440V/400W :1.5A (Reserved)	
			440V/750W :2.5A (Reserved)	
			440V/1500W:4.2A (Reserved)	
			440V/2200W:5.5A (Reserved)	
	0-02	Setting parameter reset	10:Parameter is restored to factory setting value	0
⩘	0-03	Start-up display image selection	0: F (Display setting frequency command)	0
			1: H (Display actual run frequency)	
			2: U (Display multi-function definition content)	
			3: A (Display motor run current)	
			4: P (Main frequency display)	
			5: b (Auxiliary frequency display)	
⩘	0-04	Define multi-function display content	0: Display userdefined output physical quantity(u)	0
			1: Display counting content (C)	
			2: Display program run content (1=tt)	
			3: Display DC-BUS voltage (U)	
			4: Display output voltage (E)	
			5: Display run speed（R）	
			6: Display pulse rate (L)	

0 User parameter			✎ Setting during operation	
	Parameter	Parameter function	Setting range	Factory setting value
✎	0-05	Setting proportion constant defined by user	0.1~160	1.0
	0-06	Software version	read only	#.#
	0-07	Input parameter lock code	0-999	0
✎	0-08	Setting parameter lock code	0-999	0
	0-09	The selection of operation panel	0: Local operation panel	0
			1: Extension operation panel	
	0-10	Copy of parameters	0: No action	0
			1: Downloading of parameter	
			2: Uploading of parameter	
			3: Reservered	

1 Basic parameters			✎ Setting during operation	
	Parameter	Parameter function	Setting range	Factory setting value
	1-00	Setting of maximum operation frequency	50.0~400Hz	60.0
	1-01	Setting of maximum voltage frequency	10.0~400Hz	60.0
	1-02	Setting of maximum output voltage	220V:2.0~255V 440V:2.0~510V	220 440
	1-03	Setting of middle frequency	0.1~400Hz	1.0
	1-04	Setting of middle voltage	220V:2.0~255V 440V:2.0~510V	12.0 20.0
	1-05	Setting of lowest output frequency	0.1~60.0Hz	1.0
	1-06	Setting of lowest output voltage	220V:2.0~255V 440V:2.0~510V	12.0 20.0
	1-07	Upper limit frequency of output frequency	1~110%	100

	Parameter	Parameter function	Setting range	Factory setting value
1 Basic parameters			✔ Setting during operation	
	1-08	Lower limit frequency of output frequency	0～100%	0.0
✔	1-09	Selection of First acceleration time	0.1～600S	10.0
✔	1-10	Selection of First deceleration time	0.1～600S	10.0
✔	1-11	Selection of Second acceleration time	0.1～600S	10.0
✔	1-12	Selection of Second deceleration time	0.1～600S	10.0
✔	1-13	Selection of Inching motion acceleration time	0.1～600S	10.0
✔	1-14	Selection of Inching motion deceleration time	0.1～600S	10.0
✔	1-15	Setting Inching Jog frequency	1.0～400Hz	6.0
	1-16	Setting of automatic acceleration/deceleration mode	0:Normal acceleration/deceleration 1:Automatic acceleration; Normal deceleration 2:Normal acceleration; Automatic deceleration 3:Automatic acceleration/deceleration 4:Normal acceleration; Avoid losing speed during decelerating, when automatic deceleration 5:Automatic acceleration; Avoid losing speed during decelerating, when automatic deceleration	0
	1-17	Setting of acceleration S curve	0~7	0
	1-18	Setting of deceleration S curve	0~7	0
	1-19	Setting of V/F curve	0~6	0

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2 Operation mode parameters			↙ Setting during operation	
	Parameter	Parameter function	Setting range	Factory setting value
	2-00	Setting of main frequency command source	0: Input by keyboard	0
			1: The analog signal DC0~+10V is input by external terminal AVI	
			2: The analog signal DC4~20mA is input by external terminal ACI	
			3: Controlled by V.R on the panel	
			4: Operated by RS-485 communication interface	
			5: Operated by RS-485 communication interface (frequency memory)	
			6: Controlled by UP/DOWN	
			7: Controlled by UP/DOWN (frequency memory)	
			8: Input by pulse (M3)	
	2-01	Setting of auxiliary frequency command source	0: Input by keyboard	0
			1: The analog signal DC0~+10V is input by the external terminal AVI	
			2: The analog signal DC4~20mA is fed input by the external terminal ACI	
			3: Controlled by V.R on the panel	
			4: Operated by RS-485 communication interface	
			5: Reserved	
			6: Controlled by UP/DOWN	
			7: Reserved	
			8: Input by pulse (M3)	
	2-02	Selection of main/auxiliary frequency	0: Main frequency	0
			1: Main frequency+auxiliary frequency	
			2: Main frequency-auxiliary frequency	

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2 Operation mode parameters			Setting during operation	
	Parameter	Parameter function	Setting range	Factory setting value
	2-03	Setting of run command source	0: Operated by keyboard	0
			1: Operated by external terminal, keyboard STOP is valid	
			2: Operated by external terminal, keyboard STOP is invalid	
			3: Operated by RS-485 communication interface, keyboard STOP is valid	
			4: Operated by RS-485 communication interface, keyboard STOP is invalid	
	2-04	Setting of motor stop mode	0: Deceleration braking mode stops	0
			1: Free run mode stops	
	2-05	Reserved		
	2-06	External fault EF stop mode	0: (Reserved)	1
			1: EF free run mode stops	
	2-07	AVI zero stop mode	0: AVI zero braking stops	1
			1: AVI zero free run stops	
	2-08	Reserved		
	2-09	Setting of PWM carrier frequency	2~10kHz	6
	2-10	REV banned	0: REV allowed	0
			1: REV banned	
			2: FWD banned	
	2-11	Disposal of ACI(4~20mA) disconnection	0: Free run stops	0
			1: Braking mode stops and displays EF	
			2: Run with the last given rating	
	2-12	Lock of power start-up run	0: Run allowed	0
			1:Run not allowed	

3 Output function parameter				$\nearrow$ Setting during operation
Parameter	Parameter function	Setting range		Factory setting value
3-00	Setting of any f-requency arrival	1.0~400Hz		1.0
3-01	Setting of count value arrival	0~999		0
3-02	Setting of designated count value arrival	0~999		0
3-03	Setting of FWD indication delay	0.0~60.0S		0.0
3-04	Settingof REV indication delay	0.0~60.0S		0.0
3-05	Multi-function output (relay)	0: No function		8
		1: Indication in run		
		2: Setting arrival frequency		
		3: Indication in zero speed		
		4: Over torque detection indication		
		5: Indication in external interruption (B.B.)		
		6: Low voltage detection indication		
		7: AC motor driver operation mode		
		8: Fault indication		
		9: Indication any frequency arrival		
		10: Automatic run command		
		11: Completion of one stage operation		
		12: Completion of automatic run		
		13: Automatic run pause		
		14: Setting count arrival		
		15: Designated count arrival		
		16: Completion of driver preparation		
		17: FWD direction Indication		
		18: REV direction Indication		
		19: FWD/REV direction indication		

	Parameter	Parameter function	Setting range	Factory setting value
✎	4-00	Setting biased voltage of analog input frequency	0.0～350Hz	0.0
✎	4-01	Setting of biased voltage direction	0: Positive direction 1: Negative direction	0
✎	4-02	Setting of input frequency gain	1~200%	100
	4-03	Setting of negative biased voltage run	0: No negative biased voltage 1: REV of negative biased voltage allowed 2: REV of negative biased voltage not allowed	0
	4-04	Function selection of multi-function input terminal (M0 M1) (Setting range d0~d31)	0: No function 1: M0: FWD/STOP, M1: REV/STOP 2: M0: Run/STOP, M1: FWD/REV	1
	4-05	Function selection of multi-function input terminal (M2) (Setting range d0,d5~d31)	3: Three-line style run control (1): M0 run, M1 FWD/REV, M2 STOP (normally closed) 4: Three-line style run control (2): M0 FWD (normally open), M1 REV, (normally open), M2 STOP (normally closed)	7
	4-06	Function selection of multi-function input terminal (M3) (Setting range d0,d5~d31)	5: E.F, normally open contact input (N.O) 6: E.F, normally closed contact input (N.C) 7: RESET command 8: Multi-step speed command 1 9: Multi-step speed command 2 10: Multi-step speed command 3 11: Multi-step speed command 4 12: Reserved 13: Acceleration/deceleration ban command 14: First and second acceleration /deceleration time switching	5

4 Input function parameter	✎ Setting during operation

	Parameter	Parameter function	Setting range	Factory setting value
	4-06	Function selection of multi-function input terminal (M3) (Setting range d0,d5~d31)	15: External interruption, normally open contact (N.O) input	8 (when pulse input is selected as the main frequency source, other functions of M3 are invalid and they only correspond to pulse input)
			16: External interruption, normally closed contact (N.C) input	
			17: Up frequency command	
			18: Down frequency command	
			19: Execution of automatic programmed run	
			20: Pause of automatic programmed run	
			21: Counter triggering signal input	
			22: Counter deletion	
			23: Select ACI/ Cancel AVI	
			24: JOG FWD	
			25: JOG REV	
			26: Pulse input (M3)	
			27: Swing frequency function launch	
			28: Swing frequency status reset	
			29: output not allowed(N.O)	
			30: output not allowed (N.C)	
			31: Reserved	
	4-07	Speed tracing after external interruption (B.B) reset	0: Trace downward before B.B speed	0
			1: Trace upward with the minimum speed	
	4-08	Minimum frequency of pulse input	0.2~50kHz	0.2
	4-09	Minimum frequency matching of pulse input	(0~100%)	0
	4-10	Maximum frequency of pulse input	0.2~50kHz	50.0
	4-11	Maximum frequency matching of pulse input	(0~100%)	100
	4-12	Filtration time of pulse input	0.0~10.0 S	0.1
	4-13	Reserved		

	Parameter	Parameter function	Setting range	Factory setting value
5 Multi-step speed and automatic program running parameter ⋏ Setting during operation				
	5-00	First step speed	0.0~400Hz	0.0
	5-01	Second step speed	0.0~400Hz	0.0
	5-02	Third step speed	0.0~400Hz	0.0
	5-03	Fourth step speed	0.0~400Hz	0.0
	5-04	Fifth step speed	0.0~400Hz	0.0
	5-05	Sixth step speed	0.0~400Hz	0.0
	5-06	Seventh step speed	0.0~400Hz	0.0
	5-07	Eighth step speed	0.0~400Hz	0.0
	5-08	Ninth step speed	0.0~400Hz	0.0
	5-09	Tenth step speed	0.0~400Hz	0.0
	5-10	Eleventh step speed	0.0~400Hz	0.0
	5-11	Twelfth step speed	0.0~400Hz	0.0
	5-12	Thirteenth step speed	0.0~400Hz	0.0
	5-13	Fourteenth step speed	0.0~400Hz	0.0
	5-14	Fifteenth step speed	0.0~400Hz	0.0
	5-15	Automatic programmed run mode	0: Cancel automatic run mode 1: Stop after automatic run for one cycle 2: Cyclical run of automatic run 3: Stop after automatic run for one cycle (STOP interval) 4: Cyclical run of automatic run (STOP interval)	0
	5-16	PLC run direction 1 (0~7 step speed direction)	0~255 (0: FWD, 1: REV)	0
	5-17	PLC run direction 2 (8~15 step speed direction)	0~255 (0: FWD, 1: REV)	0
	5-18	Zero step time of PLC	0~65500 S	0
	5-19	First step time of PLC	0~65500 S	0
	5-20	Second step time of PLC	0~65500 S	0
	5-21	Third step time of PLC	0~65500 S	0
	5-22	Fourth step time of PLC	0~65500 S	0
	5-23	Fifth step time of PLC	0~65500 S	0
	5-24	Sixth step time of PLC	0~65500 S	0
	5-25	Seventh step time of PLC	0~65500 S	0
	5-26	Eighth step time of PLC	0~65500 S	0
	5-27	Ninth step time of PLC	0~65500 S	0

5 Multi-step speed and automatic program running parameter		↗ Setting during operation	
Parameter	Parameter function	Setting range	Factory setting value
5-28	Tenth step time of PLC	0~65500 S	0
5-29	Eleventh step time of PLC	0~65500 S	0
5-30	Twelfth step time of PLC	0~65500 S	0
5-31	Thirteenth step time of PLC	0~65500 S	0
5-32	Fourteenth step time of PLC	0~65500 S	0
5-33	Fifteenth step time of PLC	0~65500 S	0

6 Protection parameter		↗ Setting during operation	
Parameter	Parameter function	Setting range	Factory setting value
6-00	Setting of over voltage avoiding losing speed function	0: Invalid 220V series: 350~410 440V series: 700~820	390 780
6-01	Setting of over current avoiding losing speed level during operation	0: Invalid 20~200%	170
6-02	Selection of over torque detection function	0: No detection	0
		1: Over torque detection in constant speed run, (oL2) continues run	
		2: Over torque detection in constant speed run, (oL2) stops run	
		3: Over torque detection in acceleration, (oL2) continues run	
		4: Over torque detection in acceleration, (oL2) stops run	

6 Protection parameter   ✔ **Setting during operation**

	Parameter	Parameter function	Setting range	Factory setting value
	6-03	Setting of over torque detection level	30~200%	150
	6-04	Setting of over torque detection time	0.1~10.0s	0.1
	6-05	Selection of electronic thermoelectric station	0: No action 1: Act with standard motor 2: Act with special motor	0
	6-06	Acting time of electronic thermoelectric station	30~600 s	60
	6-07	The latest first fault record	0: Without fault record	0
	6-08	The latest second fault record	1: OC(over current)	0
	6-09	The latest third fault record	2: OV(over voltage)	0
	6-10	The latest fourth fault record	3: OH (overheating)	0
	6-11	The latest fifth fault record	4: OL(driver overload)	0
	6-12	The latest sixth fault record	5: OL1 (electronic thermoelectric station) 6: EF (External fault) 7: Reserved 8: Reserved 9: OCA (over current during acceleration) 10: OCD(over current during deceleration) 11: OCN (over current during constant speed)	0

7 Special parameter   ✔ **Setting during operation**

	Parameter	Parameter function	Setting range	Factory setting value
✔	7-00	Setting current when motor fully loaded	30~120%	85
✔	7-01	Setting current when motor empty loaded	0~90%	30
✔	7-02	Setting automatic torque compensation	1,2,3~10	1
✔	7-03	Setting automatic slip compensation	0.1~10	0.0
	7-04~7-09	Reserved		

	Parameter	Parameter function	Setting range	Factory setting value
	8-00	Setting of DC braking current standard position	0~100%	0
	8-01	Setting DC braking time when start-up	0.0~60.0s	0.0
	8-02	Setting DC braking time when stop	0.0~60.0s	0.0
	8-03	Starting frequency of DC braking when stop	0.0~400Hz	0.0
	8-04	Selection of re-run after transient power-off	0: Cease to run after transient power-off 1: Continues to run after transient power-off, the AC motor driver has downward tracing with the frequency before the power-off. 2: Continues to run after transient power-off, the AC motor driver has upward tracing with the starting frequency before the power-off.	0
	8-05	Setting the longest permissible time of power-off	0.3~5.0 s	2.0
	8-06	Setting B.B time of speed tracing	0.3~5.0 s	0.5
	8-07	Setting maximum current of speed tracing	30~200%	150
	8-08	Forbid setting the upper limit of frequency 1	0.0~400Hz	0.0
	8-09	Forbid setting the lower limit of frequency 1	0.0~400Hz	0.0
	8-10	Forbid setting the upper limit of frequency 2	0.0~400Hz	0.0
	8-11	Forbid setting the lower limit of frequency 2	0.0~400Hz	0.0
	8-12	Forbid setting the upper limit of frequency 3	0.0~400Hz	0.0
	8-13	Forbid setting the lower limit of frequency 3	0.0~400Hz	0.0
	8-14	Selection of fault restart times	0-10	0

8 High Function Parameter			✔ Setting during operation	
	Parameter	Parameter function	Setting range	Factory setting value
	8-15	Selection of AVR function	0: AVR function available 1: Without AVR function 2: When deceleration, AVR function is canceled	2
	8-16	DC-BUS braking standard position	220V series: 350~450V 440V series: 700~900V	380 760

9 Communication parameter			✔ Setting during operation	
	Parameter	Parameter function	Setting range	Factory setting value
✔	9-00	Communication address	1~ 247	1
✔	9-01	Communication transmission speed	0: Baud rate 4800 1: Baud rate 9600 2: Baud rate 14400 3: Baud rate 19200 4: Baud rate 38400	1
✔	9-02	Transmission error disposal	0: Alarm and continue run 1: Alarm and decelerate to stop 2: Alarm and stop freely 3: Continue run without alarm	0
✔	9-03	Setting time of communication Watchdog	0: Ban function	0
		Setting range	1~20: 1~20 s	
✔	9-04	Communication data Format 1:ASCII mode	0: 8, N, 1 1: 8, N, 2 2: 8, E, 1 3: 8, E, 2 4: 8, O, 1 5: 8, O, 2	0
		Communication data Format 1 RTU mode	6: 8, N, 2 7: 8, E, 1 8: 8, O, 1	

	Parameter	Parameter function	Setting range	Factory setting value
	A-00	selection of swing frequency function	0: Not use swing frequency function	0
			1: Use swing frequency function	
	A-01	selection of swing frequency launch mode	0: Conduct delay Setting according to swing frequency actions	0
			1: Control by external terminal	
	A-02	Pre-setting frequency of swing frequency	0.0~400Hz	0.0
	A-03	Waiting time of the pre-setting frequency of swing frequency	0.0~600(S)	0.0
	A-04	Swing central frequency selection	0: According to run frequency source	0
			1: Setting according to fixed frequency (A-05)	
	A-05	Setting of swing frequency fixed center frequency (highest frequency)	0.0~100%	20.0
	A-06	Setting of swing frequency amplitude reference source	0: Relative central frequency	0
			1: Relative maximum operation frequency	
	A-07	Setting of swing frequency amplitude	0.0~50.0%	0.0
	A-08	Jumping frequency of swing frequency (relative amplitude)	0.0~50.0%	0.0
	A-09	Swing frequency cycle	0.1~655 (S)	10.0
	A-10	Triangular wave upgrade time (relative cycle)	0.1~99.9%	50.0
	A-11	Selection of swing frequency stop startup mode	0: Startup according to the memories status before power-off	0
			1: Restart again	
	A-12	Power-off memory of swing frequency status	0: Swing status is memorized when power- off	0
			1: Swing status is not memorized when power- off	

A selection of swing frequency function ⋈ **Setting during operation**

Chapter4 Note of Function and Parameter

This chapter will give detailed illumination of the all functions and parameters. It is divided into 11 parameter groups according to the attribute of the parameters, it makes parameter setting easier and the user can complete the settings prior to run according to the relevant parameter settings in the parameter groups in most applications.

The 11 parameter groups are shown as follows:

   0. User Parameters
   1. Basic Parameters
   2. Operation Mode Parameters
   3. Output Function Parameters
   4. Input Function Parameters
   5. Multi-step speed and Automatic Program Running Parameters
   6. Protection Parameters
   7. Special Parameters
   8. High Function Parameters
   9. Communication Parameters
   A: Textile Swing Frequency Parameters

 ✱ *indicates at when the 440V grade, the value is two times of the setting value*
 ⤳ *indicates the parameter can be set in operation*

0 User Parameter

0-00	Identification of AC motor driver model code (for reading only)		Factory setting value	d#
	Setting range	None		

📖 This parameter can read the model code of the AC motor driver and it can look up the driver capacity by referring to the following table, which is set before shipment. At the same time, it can read whether the current value of the parameter (0-01) is the rated current of this machine type. The current display values that parameter (0-00) corresponding to the parameter (0-01) are:

220V (Model code)	d3	d4	d5	d6	d7	d8
Hp	1/4	1/2	1	2	3	4
220V	1.6A	2.5A	4.2A	7.0A	11.0A	17.0A

440V (Model code)	d14	d15	d16	d17
Hp	1/2	1	2	3
220V	1.5A	2.5A	4.2A	5.5A

0-01	Rated current display of AC motor driver (only for reading)		Factory setting value	d#.#
	Setting range	None	Unit	0.1A

📖 The rated current display of AC motor driver displayed by this parameter corresponds to the type displayed by the parameters 0-00.

0-02	Setting of reset parameter		Factory setting value	d 0
	Setting range	d 0-20	No function	
		d 10	The setting value of all the parameters are reset as the factory setting value	

📖 This parameter can facilitate the users to restore all parameters to the factory setting value.

0-03	Start-up display image selection		⚡	Factory setting value	d 0
	Setting range	d 0	Display Setting frequency (F)		
		d 1	Display actual run frequency (H)		
		d 2	Display multi-function definition content		
		d 3	Display motor run current (A)		
		d 4	Display main frequency (P)		
		d 5	Display auxiliary frequency (b)		

📖 This parameter can enable the user to self-define the info interface displayed at inverter start-up.

0-04	Define multi-function display content		⚡	Factory setting value	d 0
	Setting range	d 0	Display user-defined output physical value (u)		
		d 1	Display count value (C)		
		d 2	Display program run content (1=tt)		
		d 3	Display DC-BUS voltage (U)		
		d 4	Display output voltage (E)		
		d 5	Display run speed (R)		
		d 6	Display pulse rate (L)		

📖 When it is Setting as 0, it displays the user-defined output physical value (among it the physical value =H✕0-05)

0-05	Setting of the user defined proportion constant	〰	Factory setting value	d 1.0
	Setting range	d 0.1<- >d160	Unit	0.1

📖 The proportion constant K Setting the user-defined proportion constant of the output physical value.
The display value is calculated as the following: display value=output frequency✕K
(The following are the display values and actual values when K=1)

Display value	Actual value	Proportion constant 1
66.6	66.6	1
666	666	
666.	6660	
66.6.	66600	

0-06	Software version		〰	Factory setting value	d #.#
	Setting range	None			

📖 The software version is for reading only.

0-07	Input parameter lock code		〰	Factory setting value	d 0
	Setting range	d0<-> d 999			
	Display note	d 0	No coded lock or correct code has been input.		
		d 1	The parameter has been locked.		

📖 When this parameter displays d1, it indicates all the parameters have been locked. To guarantee the parameters are readable and writable, a correct code must be input for the parameter. When the parameter change is finished, if a non-code number is input, the parameter will be locked again.

📖 The input code lock has no memory function, and the power changes from OFF to ON, the code must be input again, and only when the code parameter is correct the parameter be revised or read.

0-08	Setting of parameter lock code		✎	Factory setting value	d 0
	Setting range	d 0<-> d 999			
	Display note	d 0	No code has been set		
		d 1	A code has been set successfully.		

📖   When the code lock is not set, the parameter is set as 0; when it is set as a non-zero value, all the parameters will be locked and cannot be revised. If a new code needs to be set, Setting new code value on this parameter and then the parameter code will be successfully set and the parameter is successfully locked.

0-09	The selection of operation panel		Factory setting value	d 0
	Display note	d 0	Local operation panel	
		d 1	Extension operation panel	

📖 The extension operation panel connect to the RS485 interface on the IO board of S800 inverter. So after the parameter set as 1 (select extension operation panel), it can not make 485 communication; The parameter set as 0 (select local operation panel), then the communication function resume normal.
Note 1: Default of the parameter can be set especially according to requirement of users before shipment, the parameter will not be reset by the resetting function of 002.

0-10	Copy of parameters		Factory setting value	d 0
	Display note	d 0	No action	
		d 1	Downloading of parameter	
		d 2	Uploading of parameter	
		d 3	Reservered	

📖 The parameter will take effect only when 0-09 set as 1 (when select extension operation panel).
For extension operation panel, it must upload parameter from inverter to extension operation panel firstly, otherwise the memory of extension operation panel is empty. When completed a operation of parameter uploading, the parameter which is set in the inverter will save in the memory of extension panel at all times. After parameter downloading complete, the parameter in the memory of extension operation panel still exist, so it can make repeated copy of multi-inverter.

Before parameter download to inverter, the inverter will check the integrality of parameter data in extension operation panel. If memory of extension operation panel is empty, it can not download parameter, at the same time suggested the wrong information "EErr" that memory is empty.

"PCPY" the four letters glitter during parameter download or upload. If parameter load successfully then display "good", If display "Err" that show loading failing, please make anew uploading or downloading for parameter.

1 Basic Parameters

1-00	Setting of maximum operation frequency	Factory setting value	d 60.0
	Setting range	d 50.0<-> d 400Hz	Unit	0.1Hz

📖 signal (0~+10V, 4~20mA) of the digital operator and all the analogue input frequency correspond to this frequency range.

1-01	Setting of maximum voltage frequency	Factory setting value	d 60.0
	Setting range	d 10.0<-> d 400Hz	Unit	0.1Hz

📖 This setting value must be set according to the rated run voltage frequency of motor on the motor nameplate.

1-02	Setting of maximum output voltage	Factory setting value	d 220 *
	Setting range	d 2.0<-> d 255V*	Unit	0.1V

📖 Setting the AC motor driver maximum output value. The setting must be Setting according to the motor rated voltage on the motor nameplate.

1-03	Setting of middle frequency	Factory setting value	d 1
	Setting range	d 0.1<-> d 400Hz	Unit	0.1Hz

📖 This parameter set the middle frequency value of random V/F curve, and using the setting value can determine the V/F ratio between the frequency (lowest frequency) to (middle frequency).

1-04	Setting of middle voltage		Factory setting value	d 12.0*
	Setting range	d 2.0<-> d 255V*	Unit	0.1V

📖 The parameter Settings the middle voltage value of random V/F curves, and using the Setting value can determine the V/F ratio between the frequency (lowest frequency) to (middle frequency).

1-05	Setting of lowest output frequency		Factory setting value	d 1.0
	Setting range	d 0.1<-> d 60.0Hz	Unit	0.1Hz

📖 The parameter set the lowest output frequency of AC motor driver.

1-06	Setting of lowest output voltage		Factory setting value	d 12.0*
	Setting range	d 2.0<-> d 255V*	Unit	0.1V

📖 The parameter set the lowest output voltage of AC motor driver.

📖 The Setting of the parameters 1-01~1-06 can not be input unless they conform to 1-02≥1-04≥1-06; 1-01≥1-03≥1-05.

1-07	Setting of the upper limit of output frequency	Factory setting value	d 100
	Setting range	d1<-> d 110%	Unit	1%

1-08	Setting of the lower limit of output frequency	Factory setting value	d 0
	Setting range	d0<-> d 100%	Unit	1%

📖 The % of the two parameters is based on parameter 1-00.

📖 The setting of the output frequency upper and lower limit is mainly aimed at preventing the incorrect operation by locale personnel and avoid the overheating phenomenon due to the over low run frequency of motor, or such catastrophes as mechanical wearing caused by over high speeds.

📖 If the upper limit of output frequency is set as 80%, and the frequency is set as (1-00) 60Hz, at this time the highest output frequency is 48Hz, and if the upper limit of output frequency is set as 10%, and the lowest run frequency (1-05) is set as 1.5Hz, if the setting frequency is lower than 6Hz, it runs at 6Hz.

1-09	First acceleration time selection	⚡	Factory setting value	d 10.0
1-10	First deceleration time selection	⚡	Factory setting value	d 10.0
1-11	Second acceleration time selection	⚡	Factory setting value	d 10.0
1-12	Second deceleration time selection	⚡	Factory setting value	d 10.0
	Setting range	d 0.1<-> d 600S	Unit	0.1 Sec

⌨ When the AC motor driver is at accelerating and decelerating motor, the needful time by the speed to accelerate from 0Hz to [highest operation frequency] (1-00) is the acceleration time, and the needful time by the speed to decelerate from [highest operation frequency] (1-00) to 0Hz is the deceleration time.

⌨ If it is necessary to use the second acceleration/deceleration time, it need to set the multi-function terminal as the switching of first and second acceleration and deceleration; when the terminal of this function is "closed", the second closing acceleration and deceleration command is executed.

As shown in the following figure: the driver uses the interval of the 0Hz maximum operation frequency (1-00) as the acceleration and deceleration calculation, which is 60.0Hz, the lowest output frequency is 1.0Hz, then the time which actually accelerate to 60Hz is 9.83s, and the time which decelerate to halt is also 9.83s.

Actual acceleration/ Deceleration time

$$= \frac{\text{Acceleration (deceleration) time (operation frequency-lowest start-up frequency)}}{\text{Maximum operation frequency}}$$
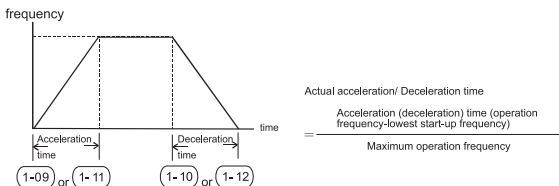
1-13	Setting of inching motion acceleration time		⚡	Factory setting value	d 10.0
	Setting range	d 0.1 <-> d 600S		Unit	0.1 Sec
1-14	Setting of inching motion deceleration time		⚡	Factory setting value	d 10.0
	Setting range	d 0.1 <-> d 600S		Unit	0.1 Sec
1-15	Setting of inching motion frequency		⚡	Factory setting value	d 6.0
	Setting range	d1.0 <-> d 400Hz		Unit	0.1Hz

⌨ When using the inching motion function, It can use JOG key on the keyboard or the multi-function terminal (M1、M2、M3 or RST, select either one) as the inching motion function (d24 or d25).At this time, when the switch that is connected to the inching motion function terminal is"closed", the AC motor driver will accelerate from the lowest run frequency (1-05) to inching motion run frequency (1-15).

When the switch is opened, the AC motor driver will decelerate from inching motion run frequency to stop. But the acceleration and deceleration time of inching motion run is determined by referring to the time Setting by the parameters (1-13/1-14); when the AC motor driver is in operation, the inching motion run command cannot be executed; based on the same theory, when the inching motion run is executed, other operational command will not be accepted, and it only accepts FWD and REV runs and the [STOP] key valid on the digital operator.
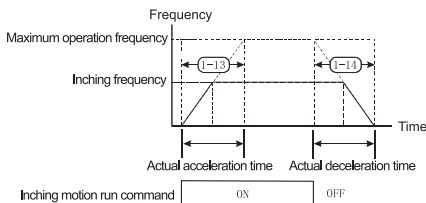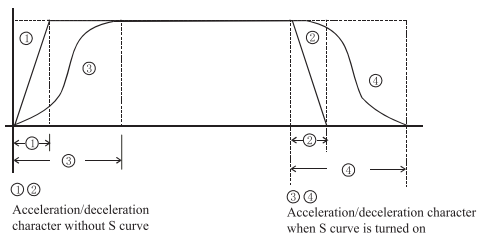

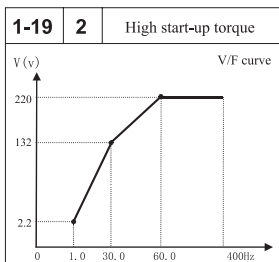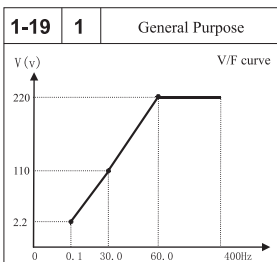| 1-16	Setting of automatic acceleration/deceleration modes		Factory setting value	d 0
		d 0	Normal acceleration/deceleration	
		d 1	Automatic acceleration, normal deceleration	
Setting range		d 2	Normal acceleration, automatic deceleration	
		d 3	Automatic acceleration/deceleration	
		d 4	Normal acceleration, automatic deceleration, avoid losing speed in deceleration	
		d 5	Automatic acceleration, automatic deceleration, avoid losing speed in deceleration	

    When setting the automatic acceleration/deceleration, the AC motor driver will automatically adjust acceleration/deceleration time with the fastest and smoothest method. While setting the normal acceleration/deceleration, the AC motor driver will accelerate or decelerate in linear or (S curve).

1-17	Setting of accelerating S curve		Factory setting value	d 0
1-18	Setting of decelerating S curve		Factory setting value	d 0
	Setting range	d 0 <-> d 7	Unit	1

📖 This parameter can be used to set the AC motor driver to have non-impacting slow start-up when the start-up is beginning to accelerate, and the acceleration/deceleration curve can adjust S acceleration and deceleration curves of different degrees by setting value 1~7, and the start-up S curve slowly accelerates/decelerates; the AC motor driver will make acceleration/deceleration curves of different rates according as the original acceleration/deceleration time. It is normal acceleration and deceleration, when setting as d0.

Acceleration/deceleration character without S curve

Acceleration/deceleration character when S curve is turned on

1-19	Setting of V/F curve		Factory setting value	d 0
	Setting range	d 0 <->d 6	Unit	1

32

1-19	3	High start-up torque

V (v)   V/F curve

220
143
2.2

0   1.0   30.0   60.0   400Hz

1-19	4	High start-up torque

V (v)   V/F curve

220
154
2.2

0   1.0   30.0   60.0   400Hz

1-19	5	Descending torque

V (v)   V/F curve

220
88
2.2

0   0.1   30.0   60.0   400Hz

1-19	6	Descending torque

V (v)   V/F curve

220
77
2.2

0   0.1   30.0   60.0   400Hz
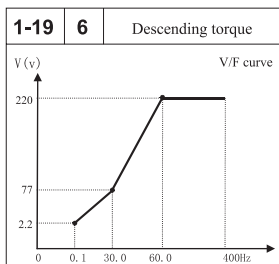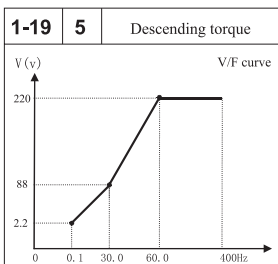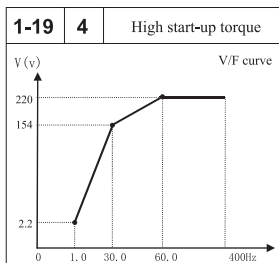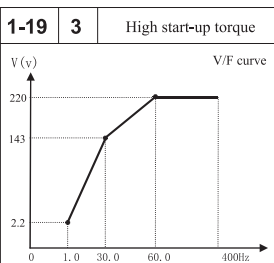
2 Operation Mode Parameter

2-00	Setting main frequency command source		Factory setting value	d 0
	Setting range	d 0	Entered through keyboard	
		d 1	Input analog signal DC0~+10V by external terminal (AVI)	
		d 2	Input analog signal DC4~20mA by external terminal (ACI)	
		d 3	Controlled by V.R on the panel	
		d 4	Operated by the communications interface of RS-485	
		d 5	Operated by the communications interface of RS-485(frequency memory)	
		d 6	Controlled by UP/DOWN	
		d 7	Controlled by UP/DOWN (frequency memory)	
		d 8	Input by pulse (M3)	

📖 This parameter can set the main frequency source of the AC motor driver. When the main frequency source Settings use the external terminal (AVI) to input DC0~+10V or 4~20mA for control, they must be used in combination with the switch on the panel.

◎ Diagram of switch position: J1 determined whether the analog signal input by the external terminal AVI is voltage signal or current signal.

2-01	Setting of auxiliary frequency command source		Factory setting value	d 0
	Setting range	d 0	Entered through keyboard	
		d 1	Input analog signal DC 0 ~ +10V by external ter minal (AVI)	
		d 2	Input analog signal DC 4 ~ 20mA by external terminal (ACI)	
		d 3	Controlled by V.R on panel	
		d 4	Operated by the communications interface of RS-485	
		d 5	Reserved.	
		d 6	Controlled by UP/DOWN	
		d 7	Reserved	
		d 8	Input by pulse (M3)	

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2-02	Selection of main/auxiliary frequency		Factory setting value	d 0
	Setting range	d 0	Main frequency	
		d 1	Main frequency+auxiliary frequency	
		d 2	Main frequency - auxiliary frequency	

📖 This parameter can set the combination mode of the main/auxiliary frequency. When it is set as d1, the totaled final frequency is given at less than or equal to the highest operation frequency (1-00); when Set as d2, it will be given as a result of the bigger one minus the smaller one.

2-03	Setting of operation command source		Factory setting value	d 0
	Setting range	d 0	Operation command is controlled by operation panel	
		d 1	Operation command is controlled by external terminal, and keyboard STOP is valid	
		d 2	Operation command is controlled by external terminal, the keyboard STOP is invalid	
		d 3	Operation command is controlled by the RS-485 communication interface, the keyboard STOP key is valid	
		d 4	Operation command is controlled by the RS-485 communication interface, the keyboard STOP key is invalid	

📖 Regarding the source command of external operation instruction, in addition to the Setting of the parameter 2-03, please refer to the detailed notes of parameter group 4 for relevant parameters.

2-04	Setting of motor stop mode		Factory setting value	d 0
	Setting range	d 0	Deceleration braking mode stops	
		d 1	Free run mode stops	

📖 When the AC motor driver receives the "STOP" command, it will control the motor stop mode according to the setting of this parameter.

The motor is stopped with the mode of deceleration braking: according to the deceleration time set by 1-10 or 1-12, the AC motor driver decelerates to (lowest output frequency) (1-05) and stops.

The motor is stopped with the mode of free run mode: The AC motor driver immediately stops output and the motor has free run according to the load inertia until it stops.
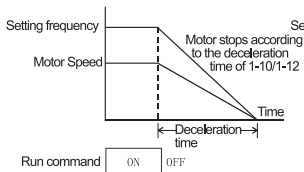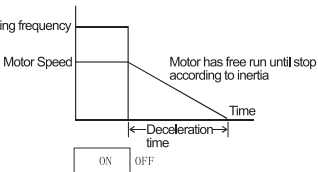
Fig. 1 Deceleration braking   Fig. 2 Free run

Usually determining the stop mode of the motor, it will be setting according to the load or the character when the machinery is stopped.

■ When the machine is stopped, the motor need stop immediately so as to prevent human harms and material wastes. It is recommended to setting it as deceleration braking, and the length of the deceleration time shall be setting in combination with the character of debugging machine on the scene.

■ When the machine is stopped, even if motor be just as well without load or when load flexibility very great, it is recommended to set as free running, such as fans, pump and mixing machine, etc.

2-05	Reserved		

2-06	Setting of external fault (EF) stop mode		Factory setting value	d 1
	Setting range	d 0	Reserved	
		d 1	EF free run stops	

📖 Notes of action: When the system detects EF fault, it begins to send out a stop signal, and the AC motor stops according to the stop mode of this parameter.

2-07	Setting of AVI zero stop mode		Factory setting value	d 1
	Setting range	d 0	Along with AVI zero, stops with the time of deceleration braking.	
		d 1	AVI zero free run stops.	

📖 Notes of action: When the frequency is given as AVI, and the system detection needs the operation frequency given by AVI to be 0, it begins to send out stop signal. The AC motor selects stop mode according to the setting of this parameter. Note: If the AVI input is 0, the running key is invalid.

2-08	Reserved		Factory setting value	d0

2-09	Selection of PWM carrier frequency		Factory setting value	d6
	Setting range	d 2 <-->d 10kHz	Unit	1kHz

📖 This parameter can set the carrier frequency of PWM output.

Carrier frequency	Electromagnetic noise	Noise, overflow and leakage current	Thermal runaway
2kHz	Big	Little	Little
6kHz	|	|	|
10kHz	Little	Big	Big

📖 You can know from the above table that carrier frequency of the PWM output has effects on electromagnetic noise of motor, thermal runaway and disturbance for environment; therefore, the noise of the surrounding environment is greater than the noise of the motor, and reduction of the carrier frequency is beneficial to reduce temperature rise for the driver; when the carrier frequency is high, although quiet run can be obtained, relative integrated wiring and disturbance prevention must be considered.

2-10	Setting of run direction forbiddance		Factory setting value	d0
	Setting range	d 0	REV allowed	
		d 1	REV banned	
		d 2	FWD banned	

📖 When this parameter is set as 1 "REV banned", the "REV" reverse command of the operator and the external terminal are invalid. If the current status is REV, it will be directly switched to FWD; based on the same theory, when FWD is banned, the inverter will in the stratus of REV.

2-11	ACI(4~20mA) breakwire disposal		Factory setting value	d 0
	Setting range	d 0	Free run stops	
		d 1	Braking mode stops Display EF	
		d 2	Have continuous run with the last frequency command	

📖 This parameter determines the breakwire disposal when the frequency command is 4~20mA(ACI), and when it is set as 1, press data key to reset after troubleshooting.

2-12	Locking of power start-up run		Factory setting value	d 0
	Setting range	d 0	Run allowed	
		d 1	Run banned	

📖 The function of the parameter is to determine the state of motor operation, when run command is from external terminal and in the state the run command keeping all the times and the power of the AC motor driver turn on. If it is set as d0, driver accepts run command and motor run;

if it is set as d1, the driver does not accept the run command and the motor stops; if it is necessary to run the motor, first eliminate the run command and then launch the run command again.

📖 When the function of this parameter is set as 1, the motor driver cannot guarantee that the machine absolutely does not run. Because it may be affected by machine vibration or the bad switch parts resulting in the jumping phenomenon of switch, and result in run. Special cautions must be taken when using this function.

3 Output Function Parameter

3-00	Setting of any frequency arrival	Factory setting value	d 1.0
	Setting range	d 1.0 <->d 400Hz	Unit	1Hz

📖 When the output frequency of AC motor driver has reached any designated frequency, the contact of the multi-function output terminal will be "closed" if the multi-function output terminal is Setting as d 9 (3-05).

3-01	Setting of count value arrival	Factory setting value	d 0
	Setting range	d 0 <->d 999	Unit	1

📖 This parameter sets the count value of the S800 internal counter, and the counter can choose any one of the multifunction external terminals (M1-M3) as the triggering terminal; when the counter ends (reaches), its designated output signal terminal is activated.

3-02	Setting of appointed count value arrival	Factory setting value	d 0
	Setting range	d 0 <->d 999	Unit	1

📖 When the counting value begins to count upward to the setting of this parameter from C1, the corresponding multi-function output terminal contact of "the designated count reaches the output indication" is activated; Application of the parameter can be as when counter will end, before it stops, it is possible to use this output signal to make the AC motor driver have low speed run until it stops.
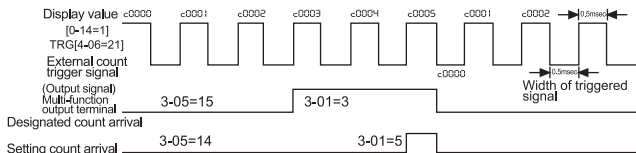
3-03	Setting of FWD indication delay		Factory setting value	d0.0
	Setting range	d 0.0 <->d 60.0S	Unit	0.1 Sec

3-04	Setting of REV indication delay		Factory setting value	d0.0
	Setting range	d 0.0 <->d 60.0S	Unit	0.1 Sec

3-05	Multi-function output (relay)		Factory setting value	d8
	Setting range	d 0 <->d 19	Unit	1

List of Functions

Setting value	Explication of functions
d 0	No function
d 1	In Operation indication. When the driver output, the contact of the output terminal that Settings this parameter will be "closed".
d 2	Setting frequency arrival indication. When the output frequency of driver has reached the Setting frequency, this contact will be "closed".
d 3	Zero speed indication. When the Setting frequency of driver is smaller than the setting of lowest startup frequency, this contact will be "closed".
d 4	Indication of over torque detection. When the driver detects the occurrence of over torque, this contact will be "closed". 6-03 sets the level of over torque detection, 6-04 sets the over torque detection time.
d 5	Indication in external interruption (B.B.). When the driver encounters an external interruption (B.B.) and stops output, the contact will be "closed".

Setting value	Explication of functions
d 6	Indication of low voltage detection. When the driver detects the input voltage is too low, this contact will be "closed".
d 7	Indication of driver operation mode. When the run command of the AC motor driver is controlled by the external terminal, the contact will be "closed."
d 8	Trouble indication. When the AC motor driver detects an occurrence of failure, the contact will be "closed"
d 9	Indication of any frequency arrival. When the output frequency has reached the appointed frequency (3-00), the contact will be "closed"
d 10	Indication during automatic program run, When the program automatic run is executed, this contact will be "closed"
d 11	Indication of one stage operation completion. program automatic run, when each stage is completed, this contact will be "closed", but it will only be retained for 0.5Sec.
d 12	Indication of program run completion. After the program operation has completed all the steps, this contact will be "closed", but it will only be retained for 0.5Sec.
d 13	Indication of program run pause. During automatic program run, when the external pause automatic operation terminal is activated, this contact will be "closed"
d 14	Indication of Setting count value arrival. When the count value equals to the setting value of the parameter 3-01, this contact will be "closed"
d 15	Indication of designated count value arrival. When the count value equals to the setting value of the parameter 3-02, this contact will be "closed"
d 16	Indication of driver preparation completion. When the driver is supplied with power, if without any abnormality, this contact will be "closed"
d 17	Indication of FWD direction, when the driver is in FWD, it makes delay indication based on the time set by 3-03, and when the time is reached, this contact will be "closed". When the driver stops or is switched to REV, the relay will be switched off. Please be cautious that the timing starts from FWD.
d 18	Indication of REV direction, when the driver is in REV, it makes delay indication based on the time set by 3-04, and when the time is reached, this contact will be "closed". When the driver stops or is switched to FWD, the relay will be switched off. Please be cautious that the timing starts from REV.
d 19	Indication of FWD/REV direction, when the driver is switched between FWD and REV runs, there will be indications; Notes of actions: when the driver switches its directions, the relay is first switched off, then it makes delay based on the delay time set by 3-03, 3-04. When the delay time is reached, the relay will be closed. If the delay time of 3-03, 3-04 is zero, then the relay is in a constantly closed status, It will switch off until stop signal.

Notes: When it is set as d 17.d18.d19, the relay will immediately switch off once there is a stop signal.

The time sequence is shown in the following figure.
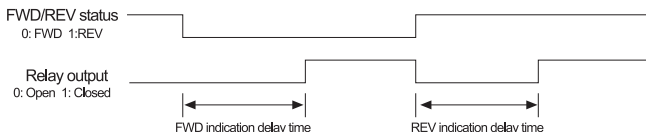
4 Input Function Parameter

4-00	Setting bias voltage of analogical input frequency		Factory setting value	d 0.0
	Setting range	d 0.0 <-->d350Hz	Unit	0.1Hz

4-01	Setting biased voltage direction		Factory setting value	d 0
	Setting range	d 0	Positive direction	
		d 1	Negative direction	

4-02	Setting gain of input frequency		Factory setting value	d 100
	Setting range	d 1 < -->d 200%	Unit	1%

4-03	Setting negative bias voltage run		Factory setting value	d 0
	Setting range	d 0	No negative biased voltage	
		d 1	REV allowed when negative biased voltage	
		d 2	REV banned when negative biased voltage	

📖 The above parameters are from the functions of 4-00, 4-01, 4-02, 4-03, and they all set and adjust the parameters that are applied when setting frequency with the external voltage/current signals or the panel V.R. When you use the AVI input of the external terminal (0-10V or 4-20mA) or the panel V.R, please read the following notes of the examples.
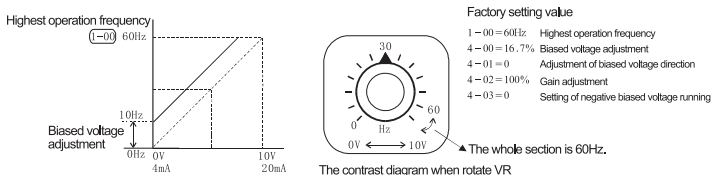
Example1:

It is the most commonly used adjustment method for the industry and the user only needs to set the parameter 2-00 as d1 (the main frequency is set as 0--+10V voltage signal), or set as d2 (the main frequency is set as 4~20mA current signal), or set it as d3 main frequency setting V.R control on the panel); d1 and d2 must cooperate with the setting of the switch. In this way, the current signal of the potentiometer of the external terminal can be used to set frequency.
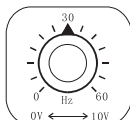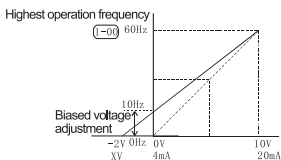

Highest operation frequency

1−00 = 60Hz	Highest operation frequency
4−00 = 0%	Biased voltage adjustment
4−01 = 0	Adjustment of biased voltage direction
4−02 = 100%	Gain adjustment
4−03 = 0	Setting of negative biased voltage running

Factory setting value

The contrast diagram when VR rotation
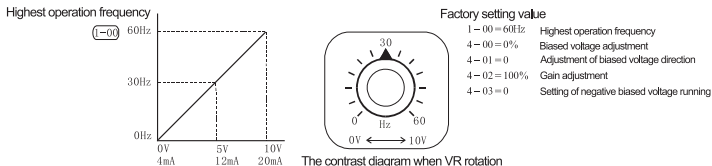
Example2:

In this example, when the industry uses it to operate the AC motor driver, and the potentiometer that desires to be set is 10Hz when it rotates to the leftest position, i.e. when start-up, the AC motor driver must have an output of at least 10Hz, and the other frequencies can be adjusted on its own for industry. It can be seen from the figure that at this time the relationship between external input voltage or current signal and the setting frequency has changed from the corresponding relationship of 0-10V (4~20mA) that corresponds to 0~60Hz to 0~8.33V(4~12.33mA) that corresponds to 10-60Hz. Therefore, the central point of the potentiometer is changed into 40Hz, and in the region of the potentiometer's the later section they are all 60Hz. If it is desired the region in the later section of the potentiometer to be operational, please refer to example 3.

Highest operation frequency

Biased voltage adjustment

Factory setting value

1−00 = 60Hz	Highest operation frequency
4−00 = 16.7%	Biased voltage adjustment
4−01 = 0	Adjustment of biased voltage direction
4−02 = 100%	Gain adjustment
4−03 = 0	Setting of negative biased voltage running

The whole section is 60Hz.

The contrast diagram when rotate VR

Example3:

This example is also one that is often used by the industry. The setting of potentiometer can have full use of the full fields so as to improve flexibility. However, regarding the voltage setting signals commonly used by the industry, in addition to 0~10V, 4~20mA, there are still the voltage signals of 0~5V, 20~4mA or voltage signals below 10V. For these settings, please refer to the following examples.

Highest operation frequency

Biased voltage adjustment

The contrast diagram when rotate VR

Factory setting value

$1-00 = 60Hz$ Highest operation frequency
$4-00 = 20.0\%$ Biased voltage adjustment
$4-01 = 0$ Adjustment of biased voltage direction
$4-02 = 83\%$ Gain adjustment
$4-03 = 0$ Setting of negative biased voltage running

Calculations of gains and biased voltage value

$$4-02 = \frac{10V}{12V} \times 100\% = 83\%$$

Calculation of biased voltage value

$$\frac{60-10Hz}{10V} = \frac{10-0Hz}{XV}$$

$$XV = \frac{100}{50} = 2V$$

$$\therefore 4-00 = \frac{2}{10} \times 100\%$$

4-04	Selection of multi-function input terminals (M0 M1) function	Factory setting value	d 1
	Setting range	d 0<-> d 31	

4-05	Selection of multi-function input terminals (M2) function	Factory setting value	d 7
	Setting range	d 0, d 5 <-> d 31	

4-06	Selection of multi-function input terminals (M3) function	Factory setting value	d 8
	Setting range	d 0, d 5 <-> d 31	

List of Functions

Setting value	Function	Setting value	Function
d 0	Setting as non-function	d 16	External interruption, normally closed contact (N.C) input
d 1	M0: FWD/stop, M1: REV/Stop	d 17	Up frequency command
d 2	M0: run/stop, M1: FWD/REV	d 18	Down frequency command
d 3	3-line style operation control (1): M0 run, M1 FWD/REV, M2 Stop (normally closed)	d 19	Execution of automatic program operation

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List of Functions

Setting value	Function	Setting value	Function
d 4	3-line style operation control (2): M0 FWD(normally opened), M1 REV (normally opened), M2 stops	d 20	Operation of automatic program is paused
d 5	E.F, normally open contacts (N.O) input	d 21	The counter triggers signal input
d 6	E.F, normally closed contacts (N.C) input	d 22	The counter is removed
d 7	RESET command	d 23	Select AC1/cancelled AV1
d 8	Multi-step speed command 1	d 24	JOG FWD
d 9	Multi-step speed command 2	d 25	JOG REV
d 10	Multi-step speed command 3	d 26	Pulse input (M3)
d 11	Multi-step speed command 4	d 27	Launch of swing frequency function
d 12	Reserved	d 28	Swing frequency status reset
d 13	Acceleration/deceleration ban command	d 29	No output (N.O)
d 14	Switching of first, second acceleration/deceleration time	d 30	No output (N.C)
d 15	External interruption, normally open contact (N.O) input	d 31	Reserved

Explication of functions:

■ No function (d0): M1 (4-04), M2 (4-05), M3 (4-06) can be set

Explication of action: The intention of setting non-functional terminal is to enable the external terminal to be in isolated status and this can avoid incorrect actions of unknown reasons.
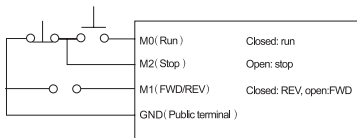
■ The operation terminal of external terminals setting (d 1, d 2, d3, d4)

2-line style operation control d1 (mode 1):Finite parameter 4-04, finite terminals M0, M1. M0: FWD/STOP, M1: REV/STOP.
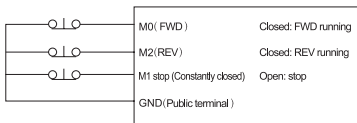
2-line style operation control d2 (mode 2):Finite parameter 4-04, finite terminals M0, M1. M0: RUN/STOP, M1: FWD/REV.

The multi-function terminal M0 has no corresponding parameter and is appended to the parameter 4-04 and cooperates with M1 terminal to complete together the function settings of d1, d2, d3.

3-line style operation control: finite parameter 4-04, settings d3 or d4, finite terminals M0, M1, M2

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M0(Run)   Closed: run

M2(Stop)   Open: stop

M1(FWD/REV)   Closed: REV, open:FWD

GND(Public terminal)

3-line style control (1)

M0(FWD)   Closed: FWD running

M2(REV)   Closed: REV running

M1 stop (Constantly closed)   Open: stop

GND(Public terminal)

3-line style control (2)

When the parameter 4-04 is set as d3, in addition to the wiring according to the 3-line style control (1) in the above figure, when it is set as d4, in addition to the wiring according to the 3-line style control (2) in the above figure, at this time, and any function set by the parameter 4-05 is immediately invalidated, this is because the 3-line style operation as the self-keep contact. When the parameter 4-04 is not set as d3 and d4, the originally setting functions of the parameter 4-05 will be restored.

■ Input (d5, d6) of external fault (E.F): the action explication of the terminals M1 (4-04), M2 (4-05). M3 (4-06) can be set: when the AC motor driver receives info that the E.F terminal has some status changes, it will stop output immediately and display E.F on the digital operator. The motor is in free run, until the reason for external fault has disappeared (the terminal status is restored), and run will continue only after the RESET key is pressed.

■ External RESET input (d7): The action explication of the terminals M1 (4-04), M2 (4-05). M3 (4-06) can be set: when the AC motor driver encounters abnormalities, such as troubles of E.F, O.H, O.C, O.V etc, when the trouble causes have been eliminated, this terminal can be used to reset the AC motor driver and it has the same function as that of the RESET key on the digital operator.

■ Instruction input of multi-step speed (d8、 d9 、d10 、d11): The action explication of the terminals M1 (4-04), M2 (4-05). M3 (4-06) can set: by using the switch combination of these three terminals, a total of 8 levels speed can be composed. If in combination with the main speed and inching motion, the function of 9 levels speed can be realized. The relevant cooperated parameters include (5-00~5-14). Regarding the multi-step speeds execution, in addition to the relevant parameters need cooperate and setting, the run will not start unless the run instructions are cooperated. This function can also be coupled with to have programmed run to have self-run. For the Setting of this function, please refer to the detailed notes of (5-18~5-33).

■ Function d12 is reserved.

■ Input of acceleration/deceleration ban instruction (d13): The action notes of the terminals M1 (4-04), M2 (4-05). M3 (4-06) can Setting: when the function of acceleration/deceleration ban is executed, the AC motor driver will immediately stop acceleration/deceleration. After this instruction is removed, the AC motor driver will continue to accelerate/decelerate at the banned point. This command is only valid in the acceleration/deceleration of AC motor driver.

■ Switching instruction input of first and second acceleration/deceleration(d14):The action notes of the terminals M1 (4-04), M2 (4-05) and M3(4-06) can Setting:before the terminal switch of this Set function is not closed, the acceleration/deceleration of the AC motor driver runs on the acceleration/deceleration time Setting by the parameters 1-09, 1-10. When the switch is closed, the acceleration/deceleration of the AC motor driver is run on the acceleration/deceleration time set by the parameters 1-11, 1-12. When the AC motor driver is at constant speed, the changing of switching status does not change the output frequency, and its real function is to bring into full play the status when the AC motor driver is executing acceleration/deceleration.

■ Instruction input (d15, d16) of external interruption (B.B): The action notes of the terminals M1 (4-04), M2 (4-05). M3(4-06) can be Setting：when the switch of this Setting function terminal is activated, the output of AC motor driver will be cut off immediately; and the motor is in free run. When the switch status is restored, the AC motor driver will trace the synchronous run speed from up to down with the frequency before the interruption of the B.B, and then accelerate to the Setting frequency. Even when the motor is completely at stall after B.B, the speed tracing will be executed as long as the switching status is restored.

■ Instruction input of UP/DOWN frequency (d17, d18): The action notes of the terminals M1 (4-04), M2 (4-05). M3(4-06) can be Setting:When the switch of this Setting function terminal is activated, the frequency of AC motor driver setting will increase or decrease by one unit; if the switch action is continuously retained, the frequency will gradually increase or decrease the frequency at fixed rates.

This UP/DOWN button actually has the same functions and operations as those of the ▼▲ of the digital operator, the only difference is that it cannot be used for changing the parameters. After frequency has been Setting for the UP/DOWN button, run is possible only after it has coupled with the run instructions; whether the power-off frequency will be memorized or not depends on the Setting of 2-00.

■ Start instruction input of programmable automatic run (d19): The terminals M1 (4-04), M2(4-05). M3(4-06) can be Setting.

■ Pause instruction input of programmable automatic run (d20): The action notes of the terminals M1 (4-04), M2(4-05). M3(4-06) can be set when the function terminal switch of programmable automatic run is activated, the output frequency of AC motor terminal will run automatically according to the setting of the parameter group 5-00~5-14. During running, the pause terminal can be used to temporarily interrupt the run program, and the program will continue to be run after the interruption is restored. For detailed action notes, please refer to the notes of the parameter 5-15.

■ Signal input of counter triggering (d21):The action notes of the terminals M1 (4-04), M2(4-05). M3(4-06) can be Setting：It suppose that this function terminal can use the external triggering signal, such as the signals of the close-up switch and photoelectric detector to make the inverter count, and the indicative signal of the multi-function output terminal (count arrival and random count arrival) can be used to complete such controlling applications based on the counter as winding machine and packaging machine.

■ Counting value removal (d22): The action notes of the terminals M1 (4-04), M2 (4-05). M3 (4-06) can be Setting: When this function terminal is activated, the display value of the current count will be removed, restore the display of "C0", and it is until this signal has disappeared that the AC motor driver will accept the trigger signal to have upward counting.

■ Select ACI/ cancel AVI (d23): The action notes of the terminals M1 (4-04), M2 (4-05). M3(4-06) can be Setting: When this function terminal is activated, the AVI function will be banned and ACI function will be selected, and at this time the setting of 2-00 is invalidated and it is determined by the status of the terminal instead.

■ Forward running point motion JOG FWD (d24): the point motion is in FWD and for the relevant uses, please refer to the notes of parameters (1-13, 1-14, 1-15).

■ Reverse running point motion JOG REV (d25): the point motion is in REV and for the relevant uses please refer to the notes of parameters (1-13, 1-14, 1-15).

Notes of actions: The execution of inching motion can only be conducted under the status when the AC motor driver is completely stopped, and accepts the (STOP) button on the digital controller; when the contact of the external terminal is OFF, the motor will stop according to the inching motion deceleration time, and for relevant use please refer to the Notes of parameters (1-13, 1-14).

■ Pulse input (M3) (d26): this function is only confined as M3. When the pulse input is selected as the main frequency source, other functions of M3 are invalid and only correspond to the pulse input. For the concrete applications, please refer to 4-08~4-13. When the pulse input function is going to run out, only after 2-00 is set as 8, 4-06 is set as 26 can the pulse be connected from M3, otherwise the external input pulse will conflict with of the external terminal functions and lead to abnormalities.

■ Launch of swing frequency function (d27): When the launch of swing frequency start is manual, when the terminal is closed, it will enter the swing frequency status, and when it is opened, it will exit the swing frequency status. and the run frequency is kept at the Setting frequency of swing frequency A-02.

■ Swing frequency function restoration (d28): when the swing frequency function is selected, no matter whether it is automatic or manual launch mode, the closing of the terminal will delete the status info of the swing frequency in the internal memory of the inverter, and the run frequency is maintained at the Setting frequency of the swing frequency. After the terminal is disconnected, the swing frequency starts again. If it is automatic launch mode, it will not enter the swing frequency status until the swing frequency delay time.

■ Forbid output (d29, d30): This function can enable the driver to accept the emergency stop contact from the power distribution system or other fault signal, and it is free of any fault output display and there is no need for RESET. After it is stopped, the run signal will only start after the run signal is entered once again, and the driver will restart from 0Hz.

■ The function d31 is reserved.

4-07	Setting after external interruption (B.B) restoration		Factory setting value	d 0
	Setting range	d 0	Have downward tracing at previous B.B speed	
		d 1	Have upward tracing at minimum speed	

📖 For concrete notes of actions, please refer to parameter 8-04.

4-08	Pulse input minimum frequency		Factory setting value	d 0.2
	Setting range	d 0.2 <−>d 50kHz	Unit	0.1kHz
4-09	Minimum frequency correspondence of pulse input		Factory setting value	d 0%
	Setting range	d 0%<−>d 100%	Unit	1%
4-10	Pulse input maximum frequency		Factory setting value	d 50.0
	Setting range	d 0.2<−>d 50kHz	Unit	0.1kHz
4-11	Maximum frequency correspondence of pulse input		Factory setting value	d 100
	Setting range	d 0%<−>d 100%	Unit	1%
4-12	Pulse input filter time		Factory setting value	d 0.1
	Setting range	d 0.0 <−>d 10. 0S	Unit	0.1 Sec

📖 The above 5 parameters define the corresponding relationship when pulse is used as the mode of frequency setting. When the pulse input frequency exceeds the set maximum input or minimum input range, the exceeded portions will be calculated as maximum frequency or minimum frequency.

4-13	Reserved

5 Mlti-step speed and automatic program operation parameter

5-00	Frequency setting of first step speed	Factory setting value	d 0.0
5-01	Frequency setting of second step speed	Factory setting value	d 0.0
5-02	Frequency setting of third step speed	Factory setting value	d 0.0
5-03	Frequency setting of fourth step speed	Factory setting value	d 0.0
5-04	Frequency setting of fifth step speed	Factory setting value	d 0.0
5-05	Frequency setting of sixth step speed	Factory setting value	d 0.0
5-06	Frequency setting of seventh step speed	Factory setting value	d 0.0
5-07	Frequency setting of eighth step speed	Factory setting value	d 0.0
5-08	Frequency setting of ninth step speed	Factory setting value	d 0.0
5-09	Frequency setting of tenth step speed	Factory setting value	d 0.0
5-10	Frequency setting of eleventh step speed	Factory setting value	d 0.0
5-11	Frequency setting of twelfth step speed	Factory setting value	d 0.0
5-12	Frequency setting of thirteenth step speed	Factory setting value	d 0.0
5-13	Frequency setting of fourteenth step speed	Factory setting value	d 0.0
5-14	Frequency setting of fifteenth step speed	Factory setting value	d 0.0
	Setting range	d0.0<—>d400Hz	Unit	0.1Hz

📖 The multi-function input terminal (refer to 4-04~4-08) can be used to select multi-step speed run (with a maximum 16 section speeds), and the step speed frequencies are respectively Setting at 5-00~5-14. And the parameters (5-18~5-33) can also be coordinated as the programmable automatic run.

5-15	Automatic program run mode		Factory setting value	d 0
		d 0	No automatic run	
		d 1	Stops after automatic run one cycle	
	Setting range	d 2	Cyclic run of automatic run	
		d 3	Stops after automatic run one cycle (STOP interval)	
		d 4	Cyclic run of automatic run (STOP interval)	

📖 The application of this parameter can be the control on the run process of small scale machinery, food processing machinery and washing equipment and can replace such control circuitry as relay, switch and timer etc; when this function is in use, there are many correlative parameter setting and any detail cannot be incorrect. Please read the following notes carefully.

5-16	PLC run direction 1 (direction of 0-7 speed section)	Factory setting value	d 0
5-17	PLC run direction 1 (direction of 8-15 speed section)	Factory setting value	d 0
	Setting range	d 0<-> d 255 (0: FWD; 1: REV)	Unit	1

📖 The setting of this parameter determine the run directions of 5-00~5-14 in program run and the various sections of the main speed.

Setting method: The setting of run directions is set with the method of binary 8 bit and then converted into the value of decimal before this parameter can be entered.

5-18	Zeroth section PLC time	Factory setting value	d 0
5-19	First section PLC time	Factory setting value	d 0
5-20	Second section PLC time	Factory setting value	d 0
5-21	Third section PLC time	Factory setting value	d 0
5-22	Fourth section PLC time	Factory setting value	d 0
5-23	Fifth section PLC time	Factory setting value	d 0
5-24	Sixth section PLC time	Factory setting value	d 0
5-25	Seventh section PLC time	Factory setting value	d 0
5-26	Eighth section PLC time	Factory setting value	d 0
5-27	Ninth section PLC time	Factory setting value	d 0
5-28	Tenth section PLC time	Factory setting value	d 0
5-29	Eleventh section PLC time	Factory setting value	d 0
5-30	Twelfth section PLC time	Factory setting value	d 0
5-31	Thirteenth section PLC time	Factory setting value	d 0
5-32	Fourteenth section PLC time	Factory setting value	d 0
5-33	Fifteenth section PLC time	Factory setting value	d 0
	Setting range	D 0 <-> d 65500S	Unit	1 Sec

📖 The setting time of the above 16 parameters cooperates with the run time of every section in automatic programmable run, and the highest setting value of the parameter is 65500 seconds and it is displayed as d 65.5.
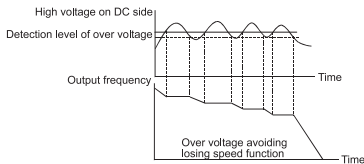
Special notes: If the setting of this parameter is d 0 (0 second), this represents that the run of this section will be omitted and will automatically jump to the next section for execution, i.e. although S800 series provide 16 sections of programmed runs, the user can still shorten the programmed run to two sections according to application needs, and the action executions can be applied flexibly by set the section time that is not desired for execution as d 0 (0 second).

6 Protection Parameter

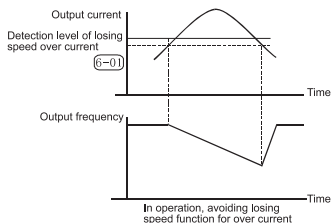| 6-00	Setting the over voltage avoiding losing speed function		Factory setting value	d 390, d 780
	Setting range	d 0	No over voltage avoiding losing speed function	
		d 1	220V series: 350V~410V 440V series: 700V~820V	

📖 When the AC motor driver executes deceleration, due to the influence of the motor's load inertia, the motor will generate upturn energy to the interior of motor driver, making the voltage of the DC side rise to the maximum permissible value. Therefore, when startup the over voltage avoiding losing speed function and the AC motor driver detects that the voltage on the DC side is too high, the AC motor driver will stop deceleration (with output frequency remaining unchanged). It is until the voltage of the DC side is lower than the setting that the AC motor driver will execute deceleration again.

Technical lecture: The application of this function is set regarding the uncertain circumstances of the load inertia. When it stops at normal load, it will not generate the phenomenon of deceleration over voltage and it will meet the set deceleration time. But occasionally when the load upturn inertia increase stops, it cannot have a jump due to over voltage; at this moment, the inverter will automatically prolong the deceleration time until it stops. But if the deceleration time hampers the application, this function will not apply. The solution scheme is to increase the deceleration time or add a braking resistor to absorb excessive upturn voltage.

High voltage on DC side
Detection level of over voltage

Output frequency — Time

Over voltage avoiding
losing speed function — Time

6-01	Setting position standard over current avoiding losing speed in operation		Factory setting value	d 170
	Setting range	d 0	Invalid	
		d 1	d 20 <−>d 200%	Unit	1%

 📖 In the AC motor driver operation, if the output current exceeds the setting of 6-01 (in operation, current standard position of over current avoiding losing speed), the AC motor driver will reduce output frequency so as to avoid the losing speed of motor. If the output current is lower than the setting of 6-01, then the AC motor driver will again accelerate to the Setting frequency. The setting unit is setting according to the percentage of the rated output current (100%) of the AC motor driver.

Output current
Detection level of losing speed over current
6-01
Time
Output frequency
Time
In operation, avoiding losing speed function for over current

 📖 Setting the detection level of over torque and is Setting with the percentage of rated current (100%) of the AC motor driver.

6-02	Selection of over torque detection function		Factory setting value	d 0
	Setting range	d 0	No over torque detection	
		d 1	Over torque detection in fixed speed run (OL2), and after the over torque detection the run continues	
		d 2	Over torque detection in fixed speed run (OL2), and after the detection of over torque the run stops	
		d 3	Over torque detection in acceleration run (OL2), and after the over torque detection the run continues	
		d 4	Over torque detection in acceleration run (OL2), and after the over torque detection the run stops	

6-03	Setting standard position of over torque detection		Factory setting value	d 150
	Setting range	d 30 <-->d 200%	Unit	1%

📖 Setting the detection level of over torque and is Setting with the percentage of rated current (100%) of the AC motor driver.

| 6-04	Setting of over torque detection time		Factory setting value	d 0.1
	Setting range	d 0.1 <-->d 10.0S	Unit	0.1 Sec

📖 After the over torque detection is defined, the time for continuous run at the continuous run mode of the AC motor driver is Setting by this parameter. When the output current exceeds the detection standard of over torque detection (setting value of 6-03, factory setting value: 150%) and exceeds the setting of detection time 6-04 of over torque detection, factory setting value: 0.1 second, if (the multi-function output terminal) is set as the indication of over torque detection, then the contact will be "closed". Please refer to the Notes of 3-03.

6-05	Electronic Thermoelectric station selection		Factory setting value	d 0
	Setting range	d 0	No action	
		d 1	Have action with standard motor	
		d 2	Have action with special motor	

📖 In order to prevent the phenomenon of motor overheating when the self-cooling motor is running at low speed, the user can set electronic thermo-dynamic station so as to limit the output power permitted by the AC motor driver.

6-06	Setting action time of electronic thermo-dynamic station		Factory setting value	d 60
	Setting range	d 30 <-->d 600S	Unit	1 Sec

📖 This parameter can set the time of protective action property of electronic thermo-dynamic station I^2t, set short time rated style, standard rated style or long-time rated style.
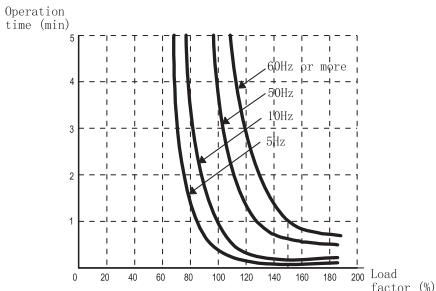
6-07	Latest first fault record		Factory setting value	d 0
6-08	Latest second fault record		Factory setting value	d 0
6-09	Latest third fault record		Factory setting value	d 0
6-10	Latest fourth fault record		Factory setting value	d 0
6-11	Latest fifth fault record		Factory setting value	d 0
6-12	Latest sixth fault record		Factory setting value	d 0
	Setting range	None		

📖   The parameter 6-07~6-12 can record the latest six times fault message. If the trouble has been eliminated, the AC motor driver can be reset as standby state. The records of these six times will not restore the factory setting values due to the resetting.

Meaning of values

d0 No fault record	d7 (Reserved)
d1 Over current (OC)	d8 (Reserved)
d2 Over voltage (OV)	d9 In acceleration the current exceeds the rated current value by two times (OCA)
d3 Overheating (OH)	d10 In deceleration the current exceeds the rated current value by two times (OCD)
d4 Driver overload (OL)	d11 At fixed speed the current exceeds the rated current value by two times (OCN)
d5 External thermal dynamic electric station (OL1)	
d6 External fault (EF)	

55

7 Special Parameters

7-00	Setting motor full load current	ꑥ	Factory setting value	d 85
	Setting range	d 30 <-> d 120%	Unit	1%

📖 This parameter must be set according to the nameplate specification of motor. The factory setting value will be set according to the rated current of AC motor driver. This parameter can be used to limit the output current of AC motor driver to prevent motor overheating. If the motor current exceeds the setting, the output frequency will decrease until the current is lower than the limit value.

7-01	Setting motor empty load current	ꑥ	Factory setting value	d 30
	Setting range	d 0 <-> d 90%	Unit	1%

📖 The setting of motor non-load current will directly affect the amount of slip compensation, and it regards the rated current of AC motor driver as 100%. When this value is setting, it must be smaller than the setting of the parameter 7-00.

7-02	Setting automatic torque compensation	ꑥ	Factory setting value	d 1
	Setting range	d 1,2,3<->d 10	Unit	1

📖 This parameter can set the extra voltage of the automatic output when the AC motor driver is in run so as to obtain relatively higher torque.

7-03	Setting automatic slip compensation	ꑥ	Factory setting value	d 0.0
	Setting range	d 0.0 <-> d 10.0	Unit	0.1

📖 When the AC motor driver drives an asynchronous motor, the load increases and the slip will increase. This parameter (the setting value 0.0-10.0) can set the emendation frequency to reduce the slip and make the run speed of the motor closer to the synchronous speed under rated current. When the AC motor driver's output current is greater than the non-load current of motor (the Setting value of 7-01), the AC motor driver will compensate the frequency based on this parameter.

7-04	Reserved

⋮

7-09	Reserved

8-00	Setting standard position of DC braking current		Factory setting value	d 0
	Setting range	d 0 <-> d 100%	Unit	1%

📖 Send into the motor DC braking voltage level when the parameter set startup and stop. The percentage of the DC braking current is based on 100% of the rated current of the AC motor driver. Therefore, when Setting this parameter, it is a must to increase it slowly from little until sufficient braking torque is obtained, but it must not exceed the rating of the motor.

8-01	Setting DC braking time at start-up		Factory setting value	d 0.0
	Setting range	d 0.0 <-> d 60.0S	Unit	0.1 Sec

📖 Send into the duration of motor DC braking voltage when the parameter set the AC motor driver startup.

8-02	Setting DC braking time when stop		Factory setting value	d 0.0
	Setting range	d 0.0 <-> d 60.0S	Unit	0.1 Sec

📖 Send into the duration of motor DC braking voltage when the parameter set braking. If it is necessary to have DC braking when stop, then only when the parameter (2-04) is set as deceleration stop (d 0), this function is valid.

8-03	DC braking starting frequency when stop		Factory setting value	d 0.0
	Setting range	d 0.0<-> d 400Hz	Unit	0.1 Hz

📖 Before the AC motor driver decelerates to stop, this parameter set the DC braking starting frequency. When the setting is smaller than the lowest frequency (1-05), the DC braking starting frequency starts from lowest frequency.
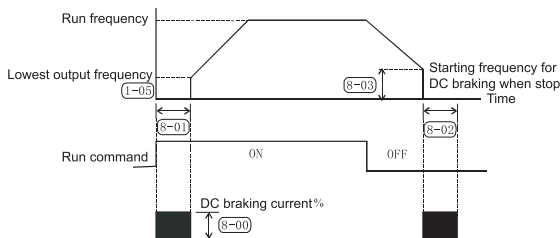
Technical lecture: DC braking before run is usually used in such circumstances such as fans and pumps etc that the load can be moved when stop. The motor is usually in the free operation, and operation direction is indefinite for these loads before the AC motor driver startup. It can perform DC braking firstly, and then startup the motor before startup.

The DC braking when stop is usually applied with the intention of braking the motor very quickly, or used as positioning control, such as crane and cutting machine.

8-04	Selection of rerunning for transient power-off		Factory setting value	d 0
	Setting range	d 0	Discontinue run after transient power-off	
		d 1	Continue run after transient power-off and the AC motor driver conducts downward tracing based on the frequency before power-off	
		d 2	Continue run after transient power-off and the AC motor driver conducts upward tracing based on the starting frequency	
8-05	Setting longest time for permissible power-off		Factory setting value	d2.0
	Setting range	d 0.3<-> d 5.0 Sec	Unit	0.1 Sec

📖 If the power is temporarily cut off, and starts the re-start function of transient power-off , this parameter can set the maximum time of permissible power-off, and if the power-off time exceeds the maximum time of the permissible power-off, then the AC motor driver stops output after power is resumed.

8-06	Setting B.B time for speed tracing		Factory setting value	d 0.5
	Setting range	d 0.3 <-> d 5.0 Sec	Unit	0.1 Sec

📖 When the temporary power-off is detected, the AC motor driver stops output and it will wait for the time Setting by this parameter to execute start-up. This setting had better residual voltage of near 0V of the output side before the AC motor driver is started.

📖 When execute the external B.B and abnormal re-start, this parameter is also used for the time Setting of speed tracing.

8-07	Setting maximum current of speed tracing		Factory setting value	d 150
	Setting range	d 30 <-> d 200%	Unit	1%

Longest time of permissible power-off — Longest time of permissible power-off

Input power — $8-05$ / $8-05$

Output frequency — $8-04$=d1 — Speed synchronous detection — $8-04$=d02 — Inverter is downward tracing with speed before power-off — Inverter is upward tracing with starting frequency

Output voltage — B.B. time $8-06$ — B.B. time $8-06$

Speed searching
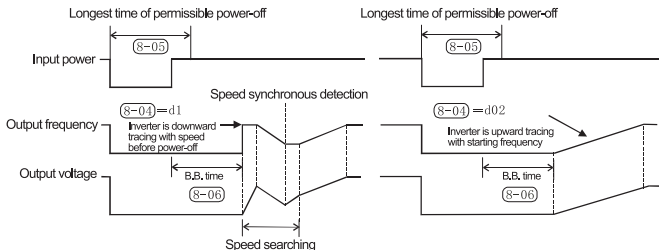
8-08	The upper limit of prohibitive operation frequency1	Factory setting value	d 0.0
8-09	The lower limit of prohibitive operation frequency1	Fac tory setting value	d 0.0
8-10	The upper limit of prohibitive operation frequency2	Factory setting value	d 0.0
8-11	The lower limit of prohibitive operation frequency2	Factory setting value	d 0.0
8-12	The upper limit of prohibitive operation frequency3	Factory setting value	d 0.0
8-13	The lower limit of prohibitive operation frequency3	Factory setting value	d 0.0
	Setting range	d 0.0<-> d 400Hz	Unit	0.1 Hz

📖 The 6 parameters set the banned frequency setting. The given frequencies of the AC motor driver had better not be set in the ranges of these frequencies, because the frequency output will not be stabilized within the range of these frequencies and stop out of the range of these frequencies. However, the frequency output is continuous, and when the given frequencies are not within the range of these frequencies, the frequency output is continuous and will not have jumping changes at the locations of banned frequencies.

8-14	Selection of failure re-starts times	Factory setting value	d 0
	Setting range	d 0 <-> d 10		

📖 After abnormality (permissible abnormality: over current OC, over voltage OV), the number of automatic re-starts of the AC motor driver can be set 10 times. If it is set as 0, the function of automatic reset/startup will not be executed after abnormality. When re-start of abnormality, the AC motor driver will startup the AC motor driver by means of up to down speed tracing.

8-15	AVR function selection		Factory setting value	d 2
	Setting range	d 0	With AVR function	
		d 1	No AVR function	
		d 2	AVR function is cancelled when deceleration	

📖 Usually the ratings of motors are AC220V/200V, 60Hz/50Hz, and the input voltage of AC motor driver can be from AC180V-264V, 50Hz/60Hz; therefore, if the AC motor driver has no function of AVR automatic voltage regulator output, if the power input the AC motor driver is AC250V, then the voltage of output to the motor is also AC250V; when the motor runs at the exceeds the rated voltage by 12%.20% power leads to the increase of the temperature rise of the motor、the damage of insulation capacity and instability of torque output. In the long run, the life reduction of the motor will speed up, leading to losses.

📖 When the input power exceeds the rated voltage of the motor, the AC motor driver automatic voltage regulator output will automatically stabilize the output power at the rated voltage of motor. For example, the V/F curve is Setting as AC200V/50Hz, at this moment, if the input power is AC200-264V, the voltage that is output to the motor will be automatically stabilized AC200V/50Hz and will never exceed the Setting voltage. If the input power fluctuates at AC180~200V, the voltage that output to the motor will be in positive proportion to the input power.

📖 We found that when the motor stops for deceleration braking, the closing of automatic voltage regulator AVR will shorten the deceleration time, and coupled with the excellent function of automatic acceleration/deceleration, the deceleration of the motor will be speedier.

8-16	DC-bus braking standard position		Unit	1V
220V	Setting range	d 350 <-> d 450	Factory setting value	d 380
440V		d 700 <-> d 900	Factory setting value	d 760

📖 The upturn energy of motor will raise the voltage of the DC-bus.

9-00	Communication address		✔	Factory setting value	d 1
	Setting range	d 1 <-> d 247			

📖 If the AC motor driver is set as the control of RS-485 serial communications interface, each AC motor driver must set its individual address at this parameter and each address in the same connection network with "unique" and must not be repeated.

9-01	Communication transmission speed		✔	Factory setting value	d 1
		d 0	Baud rate 4800 (data transmission rate. bit/sec)		
		d 1	Baud rate 9600 (data transmission rate. bit/sec)		
	Setting range	d 2	Baud rate 14400 (data transmission rate. bit /sec)		
		d 3	Baud rate 19200 (data transmission rate. bit /sec)		
		d 4	Baud rate 38400 (data transmission rate. bit /sec)		

📖 With its internal communication port (RS-485 serial communication interface), S800 Settings and alter the internal parameters of the AC motor driver and controls the run of the AC motor driver. It can also monitor the run status of the AC motor driver. This parameter is used for setting the communication transmission rate.

9-02	Transmission error disposal		✔	Factory setting value	d 0
		d 0	Give alarm and continue run		
		d 1	Give alarm and decelerate and stop		
	Setting range	d 2	Give alarm and stops freely		
		d 3	Not warning and continue run		

📖 This parameter is used to set the disposing status of the driver at overtime of communications transmission.

9-03	Setting communication (Watchdog) time		✔	Factory setting value	d 0
	Setting range	d 0	Disable		
		d 1	1~20 S		

| 9-04	Communications transmission speed		✐	Factory setting value	d 0
Setting range	d 0	Modbus ASCII mode, data format <8,N,1>			
	d 1	Modbus ASCII mode, data format <8, N, 2>			
	d 2	Modbus ASCII mode, data format <8, E, 1>			
	d 3	Modbus ASCII mode, data format <8, E, 2>			
	d 4	Modbus ASCII mode, data format <8, O, 1>			
	d 5	Modbus ASCII mode, data format <8, O, 2>			
	d 6	Modbus RTU mode, data format <8, N, 2>			
	d 7	Modbus RTU mode, data format <8, E, 1>			
	d 8	Modbus RTU mode, data format <8, O, 1>			

📖 Computer control

■ *S800 series AC motor driver has built-in RS-485 serial communication port and the communication port is located on the control loop terminal, and the terminal definition is as follows:*

1 : 17V
2 : GND
3 : SG-
4 : SG+
5 : NC
6 : Communication

6~1
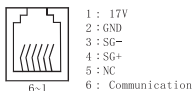
Note: 2, 5pin are the power of the communication digital operator, and please do not use it when as RS-485 communication.

■ *When the RS-485 serial communication port is used, each S800 must be designate its communication address at (9-00), and the computer will conduct control based on its individual communication address.*

■ *When S800 AC motor driver is set to have communication with Modbus networks, it can use the following two modes: ASCII (American Standard Code for Information Interchange) mode or RTU (Remote Terminal Unit) mode. The users can set the needed mode and communication protocol in the parameter (9-04).*

The meanings of its codes:

ASCII mode:

Each 8-bit datum is composed of two ASCII characters. For example: a 1-byte datum 64H (in hexadecimal expression) is represented by ASCII code (64), containing (6) (36H) and (4) (34H).

Character symbol	'0'	'1'	'2'	'3'	'4'	'5'	'6'	'7'
ASCII code	30H	31H	32H	33H	34H	35H	36H	37H

Character symbol	'8'	'9'	'A'	'B'	'C'	'D'	'E'	'F'
ASCII code	38H	39H	41H	42H	43H	44H	45H	46H

RTU mode:

Each 8-bit datum is composed of two hexadecimal characters of 4-bit. For example: 64H.

Character structure:

11-bit character frame (used for 8-bit characters) (These are explained based on the following several examples):

❖ (8,N,2: parameter 9-04=1 or 6)

Start bit	0	1	2	3	4	5	6	7	Stop bit	Stop bit

8-data bits

11-bits character frame

❖ (8,O,1: parameter 9-04=4 or 8)

Start bit	0	1	2	3	4	5	6	7	Odd parity	Stop bit

8-data bits

11-bits character frame
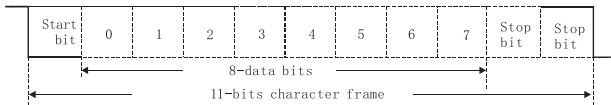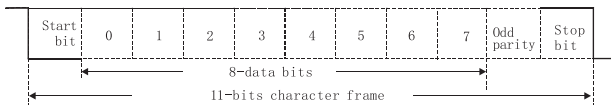
Communication data structure

Format frame of communication data:

ASCII mode

STX	starting character(3AH)
ADR1	Communication add:
ADR0	8-bit address contains 2 ASCII codes
CMD1	Command code:
CMD0	8-bit command contains 2 ASCII codes
DATA（N-1）	Data content:
……	n×8-bit data contains 2n ASCII codes
DATA0	n<=25, A maximum of ASCII codes is 50;
LRCCHK1	Error detection value:
LRCCHK0	8-bit error detection value contains 2 ASCII codes.
END1	END character:
END0	END1=CR(0DH), END0=LF(0AH)

RTU Mode

START	The quiet period of over 10ms
ADR	Communication address: 8-bit address
CMD	Command code: 8-bit command
DATA(n-1)	Data content:
……	n×8-bit data, n<=25
DATA0	
CRC CHK Low	CRC error detection value:
CRC CHK High	16-bit error detection value is composed of two 8-bit characters
END	The quiet period of over 10ms

ADR (Communication address)
The legal communication address range is from 0 to 247. When the communication address is 0, it means broadcasting to all the AC motor drivers. Under such circumstance, the AC motor driver will not respond any info to the main facility.
For example: Communicate with a AC motor driver whose communication address is 16 (decimal):
ASCII mode: (ADR 1, ADR 0) = '1', '0' =>'1'=31H, '0'=30H
RTU mode: (ADR) = 10H

CMD (Command instruction) and DATA (Data character)
The data character format is defined by command code. The applicable command codes are explained as follows:
● Command code:03H，read N word and N is 12 maximum. For example: continuously read 2 words from the starting address 2102H of the AC motor driver of the address 01H.

ASCII mode

Command message:

STX	':'
ADR 1	'0'
ADR 0	'1'
CMD 1	'0'
CMD 0	'3'
The address of starting data	'2'
	'1'
	'0'
	'2'
Number of data (counted in word)	'0'
	'0'
	'0'
	'2'
LRC CHK 1	'D'
LRC CHK 0	'7'
END 1	CR
END 0	LF

Response message:

STX	':'
ADR 1	'0'
ADR 0	'1'
CMD 1	'0'
CMD 0	'3'
Number of data (counted in byte)	'0'
	'4'
content of starting data address 2102H	'1'
	'7'
	'7'
	'0'
Content of data address 2103H	'0'
	'0'
	'0'
	'0'
LRC CHK 1	'7'
LRC CHK 0	'1'
END 1	CR
END 0	LF

RTU Mode:

Command message:

ADR	01H
CMD	03H
The address of starting data	21H
	02H
Number of data (counted in word)	00H
	02H
CRC CHK Low	6FH
CRC CHK High	F7H

Response message:

ADR	01H
CMD	03H
Number of data (counted in byte)	04H
Content of starting data address 2102H	17H
	70H
Content of data address 2103H	00H
	00H
CRC CHK Low	FEH
CRC CHK High	5CH

● Command code: 06H, write one word. For example, write 6000 (1770H) to the address of 0100H of the AC motor driver whose address is 01H.

ASCII mode

Command message:

STX	':'
ADR 1	'0'
ADR 0	'1'
CMD 1	'0'
CMD 0	'6'
	'0'
Data address	'1'
	'0'
	'0'
	'1'
Data content	'7'
	'7'
	'0'
LRC CHK 1	'7'
LRC CHK 0	'1'
END 1	CR
END 0	LF

Response message:

STX	':'
ADR 1	'0'
ADR 0	'1'
CMD 1	'0'
CMD 0	'6'
	'0'
Data address	'1'
	'0'
	'0'
	'1'
Data content	'7'
	'7'
	'0'
LRC CHK 1	'7'
LRC CHK 0	'1'
END 1	CR
END 0	LF

RTU Mode

Command message:

ADR	01H
CMD	06H
Data address	01H
	00H
Data content	17H
	70H
CRC CHK Low	86H
CRC CHK High	22H

Response message:

ADR	01H
CMD	06H
Data address	01H
	00H
Data content	17H
	70H
CRC CHK Low	86H
CRC CHK High	22H

CHK(check sum: error detection value)

ASCII mode:
ASCII mode adopts the check sum of LRC (Longitudinal Redundancy Check). The LRC check sum is a totaling of the data from ADR1 to the last data content and the derived result is based on the unit of 256. The exceeded portion is removed (for example, if the derived result is 128H of hex, then only 28H is taken), then after the secondary reverse compensation is calculated, the derived result is the LRC check sum.

For example, read one word from the address of 0401H of the AC motor driver whose address is 01H.

STX	':'
ADR 1	'0'
ADR 0	'1'
CMD 1	'0'
CMD 0	'3'
The address of starting data	'0'
	'4'
	'0'
	'1'
Number of data	'0'
	'0'
	'0'
	'1'
LRC CHK 1	'F'
LRC CHK 0	'6'
END 1	CR
END 0	LF

01H+03H+04H+01H+00H+01H=0AH, the second reverse compensation of is F6H.
RTU mode:
RTU mode adopts the check sum of CRC (Cyclical Redundancy Check). The CRC check sum is calculated according to the following steps:

Step 1: Load a 16-bit buffer with the content of FFFFH (called CRC buffer).

Step 2: Conduct exclusive OR calculation on the first byte of the command message and the secondary byte of the 16-bit CRC buffer, and store its result back into the CRC buffer.

Step 3: Move the content in the CRC buffer 1 bit to the right, and enter 0 into the leftist bit, and check the value of the lowest bit of the CRC buffer.

Step 4: If the lowest bit of the CRC buffer is 0, then repeat Step 3; otherwise conduct Exclusive OR calculation on CRC buffer and A001H.

Step 5: Repeat Step 3 and Step 4 until the content of the CRC buffer has been moved to the right for 8 bits. At this time, the processing of the byte has been completed.

Step 6: For the next bit of the command message repeat Step 2 to Step 5 until all the processing of all the bytes has been completed. The final content of the CRC buffer is the CRC value. When the CRC value is transferred in the command message, the low bytes need to have sequence exchange with the high bit group, i.e. the lower bits will be transmitted at first.

For example, to read two words from the address of 2102H of the AC motor driver whose address is 01H, the final content of the CRC buffer that is calculated from ADR to last byte of data number is F76FH, then its command message is as follows, among which 6FH is transmitted before F7H:

<div align="center">Command message</div>

ADR	01H
CMD	03H
The address of starting data	21H
	02H
Number of data (counted in word)	00H
	02H
CRC CHK Low	6FH
CRC CHK High	F7H

Example:

The following example generate CRC value with C language, and the function need two parameters:

Unsigned char* data ← // Index of message command

Unsigned char length ← // Length of command

The function will return CRC value of unsigned integer type.

```
unsigned int crc_chk(unsigned char* data,unsigned char length){
    int j;
    unsigned int reg_crc=0xffff;
    while(length-){
        reg_crc ^=*data++;
        for(j=0;j<8;j++){
            if(reg_crc & 0x01){/* LSB(b0)=1 */
                reg_crc=(reg_crc>>1) ^ 0xA001;
            }else{
                reg_crc=reg_crc>>1;
            }
        }
    }
    return reg_crc                // Finally transmit the value of CRC buffer
}
```

Parameter address definition of communications protocol:

The applicable addresses are as follows:

Function	Add.	Content	
Parameters of AC motor driver	ggnnH	gg: represents parameter group, nn: represents parameter, For example, 0401H represents parameter (4-01). Functions of various parameters refer to the details in the previous contents. When parameters are read from the command code of 03H, only one parameter value can be read every time.	
Command (only writable)	2000H	Bit 0-1	00: Without function 01: Stop command 10: Run command 11: JOG+Run command
		Bit 4-5	00: Without function 01: FWD command 10: REV command 11: Change direction
		Bit 2-3 Bit 6-15	Without use
	2001H	Main frequency command	
	2002H	Bit0	1: E.F. ON (External fault)
		Bit1	1: Reset command
		Bit2	Reserved
	2003H	Auxiliary frequency command	
Monitoring state (Read of instruction)	2100H	Error code:	
		00: Without fault	
		01: Over current (OC)	
		02: Over voltage (OV)	
		03: Overheating (OH)	
		04: Driver overload (OL)	
		05: Motor overload (OL1)	
		06: External fault (EF)	
		07: CPU write fault (Cf1)	
		08: CPU or analog circuit fault (Cf3)	
		09: Hardware circuit fault (HPF)	
		10: Over current acceleration (OCA)	
		11: Over current deceleration (OCD)	
		12: Over current constant speed (OCN)	
		13: Grounding short circuit (GFF)	
		14: Low voltage (LV)	
		15: Reserved	
		16: CPU read fault (Cf2)	
		17: b.b	
		18: Over torque (OL2)	
		19: Accelerating/decelerating Fault automatic (CFA)	
		20: Software code egis (CodeE)	

Monitoring state (Read of instruction)	2101H	Bit 0-1	00:Stop LED OFF, Run LED ON 01:Stop LED Sparkling, Run LED ON 10: Stop LED ON, Run LED Sparkling 11: Stop LED ON, Run LED OFF
		Bit 2	1: JOG active
		Bit 3, Bit 4	00:REV LED OFF, FWD LED ON 01:REV LED Sparkling, FWD LED ON 10: REV LED OFF, FWD LED Sparkling 11: REV LED ON, FWD LED OFF
		Bit 5-7	Reserved
		Bit 8	1:The main frequency is from communication interface
		Bit 9	1:The main frequency is from analog signal input
		Bit 10	1:The run command is from communication interface
		Bit 11	1:Parameter locked
		Bit 12	0:Stop 1:Run
		Bit 13	1:JOG command available
		Bit 14,15	Reserved
	2102H	Combined frequency given (F) (a bit decimal)	
	2103H	Output frequency (H) (a bit decimal)	
	2104H	Output current (A) (a bit decimal)	
	2105H	DC-BUS voltage (U) (a bit decimal)	
	2106H	Output voltage (E) (a bit decimal)	
	2107H	Multi-step speed instruction, the current step speed (step)	
	2108H	PLC running step speed (step)	
	2109H	PLC running time (sec)	
	210AH	The content value of external TRIGER (count)	
	2113H	The main frequency command (P) (a bit decimal)	
	2114H	The Auxiliary frequency command (b) (a bit decimal)	

Exceptional response:

In addition to the broadcast info, after the AC motor driver received the command message from the main facility, it should return a message of normal response. The instances in which no normal response is returned to the main facility are described as follows:

■ *Due to communication error, the AC motor driver has not received the message; therefore, the AC motor driver has no response. Finally the main facility will process it as the status of timeout.*

■ *When the AC motor has received the message inerrably, but is unable to process the message. it will send an exceptional response to the main facility and an error message "CExx" will be displayed on the digital operator. "xx" is an exceptional decimal code. In the exceptional response, the highest bit of the original command code will be setting as 1, and the exceptional code that explains the occurrence cause of the exceptional situation will be sent back.*

The following examples are the exceptional response of the communication command 06H and exceptional code 02H, among which the highest bit of 06H is setting as 1 and becomes 86H.

ASCII Mode:

STX	':'
ADR 1	'0'
ADR 0	'1'
CMD 1	'8'
CMD 0	'6'
Exceptional code	'0'
	'2'
LRC CHK 1	'7'
LRC CHK 0	'7'
END 1	CR
END 0	LF

RTU Mode:

ADR	01H
CMD	86H
Exceptional code	02H
CRC CHK Low	C3H
CRC CHK High	A1H

The meaning of exceptional codes are as follows:

| Exceptional code		Meaning
1	Illegal command code:	In the command message, the received command code has no function on the AC motor driver
2	Illegal data address:	In the command message, the received data address has no meaning on the AC motor driver
3	Illegal data value:	In the command message, the received data value exceeds the acceptable range
4	Command invalidation	The AC motor driver is unable to run the required action.

■ The AC motor driver has received the message, but it has also detected a communication error, therefore, no response being transmitted back. But on the panel the "CExx" display of communication error is displayed. The main equipment finally processes the time-out status. "xx" is a decimal error code and it is detailed as follows:

Error code	Meaning
5	Reserved.
6	The AC motor driver is busy: The interval time between commands is too short. After transmitting a command, an interval of 10ms must be maintained at least. If no command is transmitted, an interval of least 10ms must be maintained for the same reason.
7	Reserved
8	Reserved
9	Check Cum error: check if the check cum is correct or not.
10	Time-out (only for ASCII mode): In addition to the checking of no time-out limit, the time interval between the characters should not exceed 500ms
11	Format error: Check if the communication Baud rate conforms to the data format.
12	The command message is too short.
13	The command message length exceeds the range.
14	In addition to starting and ending characters, the command message also include the ASCII data non-zero to 9 and "A "to "F". (only regarding Modbus ASCII mode).

A Textile Swing Frequency Parameters

Swing frequency is applicable to such industries such as spinning and chemical fiber and circumstances which need transverse vibration and winding functions and its typical working figure is as follows:
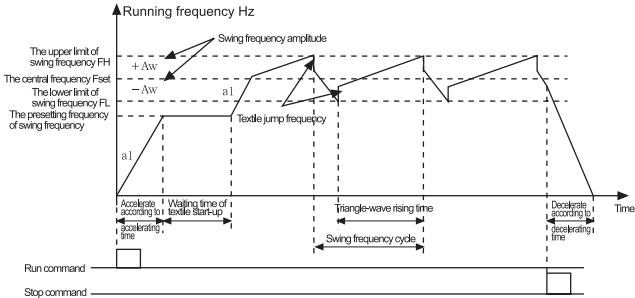
The swing frequency process is as follows usually: first accelerate the setting frequency A-02 of swing frequency according to the acceleration time, wait for a period of time A-03, transfer to the swing central frequency (A-04, A-05) according to acceleration and deceleration time, and then it has cyclic run according to the setting swing frequency amplitude (A-06, A-07), jumpping frequency (A-08) of swing frequency, swing frequency cycle A-09 and the upturn time (A-10) of triangle wave, until it decelerate to stop according to deceleration time when there is a stop command.

Besides, precautions shall be taken in the two following points: when point motion and closed-ring run swing frequency is automatically cancelled.

When PLC and swing frequency are running at the same time, the switching during PLC stage section the swing frequency will fail, and based on the acceleration and deceleration settings it transfer to PLC setting frequencies the swing frequency begins, when stop, it will decelerate according to PLC stage deceleration time.

A-00	Swing frequency function selection		Factory setting value	d0
	Setting range	d 0	Not use swing frequency function	
		d 1	Use swing frequency function	

📖 This parameter determines whether the swing frequency will be used or not.

A-01	Swing frequency Launch mode selection		Factory setting value	d0
	Setting range	d 0	Automatic launch mode (according to A-03)	
		d 1	Manual launch mode of external terminal	

📖 This parameter Settings the swing frequency launch mode:

■ Setting of 0 indicates automatic launch mode, i.e. after start-up it will first run for a period of time (A-03) in the setting frequency of swing frequency (A-02), and then it automatically launches into swing frequency run.

■ Setting of 1 indicates mode of manual launching of external terminal, i.e. when the setting of multi-function input terminal (set as of swing frequency launch of function 27) is valid, it enters the swing frequency status; when it is invalid, it exists the status of swing frequency and the run frequency is maintained the Setting frequency A-02 of the swing frequency.

A-02	Setting frequency of swing frequency	Factory setting value	d 0.0
	Setting range	d 0.0<->d 400Hz	Unit	0.1Hz

📖 This parameter Settings the run frequency of the inverter before entering the swing frequency run status.

A-03	Waiting time of Setting frequency of swing frequency	Factory setting value	d 0.0
	Setting range	d 0.0<->d 600S	Unit	0.1Sec

📖 When automatic start-up mode is selected, A-03 is used to Setting the duration time of run with Setting frequency of swing frequency before entering the status of duration frequency; when the manual start-up mode is selected, the Setting of A-03 is invalid.

A-04	Selection of swing frequency center Frequency		Factory setting value	d 0
	Setting range	d 0	Based on the run frequency source	
		d 1	based on fixed frequency Setting (A-05)	
A-05	Setting of swing frequency fixed center Frequency		Factory setting value	d 20.0
	Setting range	d 0.0<->d 100% (relative maximum operation frequency)	Unit	0.1%
A-06	Setting of swing frequency amplitude reference source		Factory setting value	d 0
	Setting range	d 0	Relative center frequency	
		d 1	Relative maximum operation frequency (1-00)	

📖 The run frequency of swing frequency is confined by the upper and lower limit frequency; if setting is not properly, the swing frequency will not work normally.

A-07	Setting swing frequency amplitude size	Factory setting value	d 0.0
	Setting range	d 0.0<->d 50.0%	Unit	0.1%

📖 After this parameter is Setting, it is still necessary to calculate the swing amplitude according to A-06.

A-08	Jump Frequency of swing frequency	Factory setting value	d 0
	Setting range	d 0.0<->d 50.0% (relative swing amplitude)	Unit	0.1%

📖 If this parameter is Setting as 0, it indicates there is no sudden jump frequency.

A-09	Swing frequency cycle	Factory setting value	d 10.0
	Setting range	d 0.1 <-> d 655S	Unit	0.1Sec

📖 This parameter defines the time of a swing frequency's complete cycle of the upgrade and descend process; in addition, under the swing frequency run mode, it is not allowed to select the automatic acceleration/deceleration running mode, otherwise the swing frequency cycles will be abnormal.

A-10	Triangle wave upturn time	Factory setting value	d 50.0
	Setting range	d 0.1 <-> d 99.9% (relative cycle)	Unit	0.1%

📖 This parameter defines the run time of the upturn stage of the swing frequency=(A-09)✕(A-10)(Sec), to derive the run time of the descend stage of the swing frequency=(A-09)✕(1-(A-10))(Sec).

A-11	Startup mode selection of swing frequency stop		Factory setting value	d 0
	Setting range	d 0	Start based on the mode memorized before it stopped	
		d 1	Begin to restart	
A-12	Power-off memory of swing frequency status		Factory setting value	d 0
	Setting range	d 0	Power-off memorizes swing frequency status	
		d 1	Power-off does not memorize swing frequency status	

📖 The setting of this parameter is only valid under the mode of 0 selection of A-11 (startup according to the status memorized before it stops).

Chapter5
Trouble Indications and Countermeasures

The AC motor driver itself has such a plurality of various alarm information and protection functions as over voltage, low voltage and over current, and in case of abnormalities, the protection function is activated and the AC motor driver will stop output, the abnormality contacts are activated and the motor's free run stops.

Please refer to the fault causes and treatment methods according to the contents of abnormality displays of the AC motor driver. The fault records will be stored in the memory of the AC motor driver (abnormality data of the latest sixth times can be recorded) and they can be read out by the digital operation panel.

Please be noted: after failure happens, it must eliminate the abnormality and it will become valid only after RESET button is pressed.

Abnormality Occurrence and Troubleshooting

Display symbol	Explaining of abnormal phenomena	Troubleshooting
OC	The AC motor driver detects abnormal sudden increase of over current on the output side	1. Check if the motor rating matches the AC motor driver's rating 2. Check if there is short -circuited among U/T1-V/T2-W/T3 of the AC motor driver. 3. Check if there is short - circuited or grounding in the linkage with the motor 4. Check if the screws of the AC motor driver and the motor are loose. 5. Prolong acceleration time (1-09,1-11) 6. Check if the motor has overload.
OU	The AC motor driver detects over voltage on the internal DC high voltage side	1. Check if the input voltage is within the range of the AC motor driver's rated input voltage, and monitor if there is a surge voltage 2. If the inertia upturn voltage of the motor leads to high internal DC high voltage side voltage of the AC motor driver, at this moment the deceleration time can be prolong.

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Display symbol	Explaining of abnormal phenomena	Troubleshooting
oH	The AC motor driver detects the internal temperature is too high and exceeds the level of protection.	1. Check if the ambient temperature is too high 2. Check if there are foreign objects in the heatsink and whether the fans rotate 3. Check if the ventilation space of the AC motor driver is sufficient
Lu	1. The internal DC high voltage side of the AC motor driver is too low	1. Check if the voltage of the input power is normal 2. Check if the loads have sudden heavy loads
oL	Output current exceeds the current tolerable by the AC motor driver, if 150% of the rated current of the AC motor driver, 65 seconds can be tolerated	1. Check if the motor is overloaded. 2. Reduce the setting value of (07-02) torque upturn. 3. Increase the output capacity of AC motor driver.
oL1	1.The protection of internal electronic thermoelectric station is activated	1. Check if the motor is overloaded 2. Check if the rated current value of (07-00) motor is appropriate 3. Check the setting of the electronic thermoelectric station function 4. Increase the capacity of the motor
oL2	The load of motor is too large	1. Check if the motor's load is too large. 2. Check the setting (06-03) of the position standard of over torque detection
ocA	Over current during acceleration	1. Check if the screws of the AC motor driver and the motor's are loose. 2. Check if the wiring from U-V-W to the motor has poor insulation 3. Increase acceleration time 4. Reduce the setting of (7-02) torque upturn 5. Replace it with an AC motor driver with large output capacity

Display symbol	Explaining of abnormal phenomena	Troubleshooting
ocd	Over current during deceleration	1. Check if the wiring from U-V-W to the motor has poor insulation 2. Prolong deceleration time 3. Replace it with a AC motor driver with large output capacity
ocn	Over current is generated during run	1. Check if the wiring from U-V-W to the motor has poor insulation 2. Check if the motor has blocked run 3. Replace it with a AC motor driver with large output capacity
cFA	When the external multi-function input terminals (M1~M3) set external abnormal and GND closure, the AC motor driver stops output	Press the RESET button after the trouble is eliminated.
cF1	Writing abnormal of internal memory IC data.	1. Re-power after power-off. 2. Send to factory for maintenance.
cF2	Reading abnormal of internal memory IC data.	1. Press RESET key to restore it to factory setting value 2. If the method is ineffective, then send it to factory for maintenance.

Display symbol	Explaining of abnormal phenomena	Troubleshooting
cF3	Abnormal of the AC motor driver detecting line (There are 7 kinds of CF3.1-CF3.7)	Send it to factory for maintenance.
HPF	Abnormal of controller protective line (there are three kinds of HPF.1, HPF. 2, HPF. 3)	Send it to factory for maintenance.
bb	When the multi-function input terminal (M1~M3) is used to Setting this function, it closes with GND, and the AC motor driver stops output.	After the signal origin is removed, "bb" disappears immediately
CFA	Failure of automatic acceleration and deceleration mode	1. Whether the matching of the AC motor driver and the motor is appropriate 2. The inertia of load upturn is over large 3. The load changes are too abrupt
CE1	Abnormal communication	1. Check if the communication signals are in reverse connection (SG+, SG-) 2. Check if the communication format is correct.
codE	Software protection is activated	Send it to factory for maintenance

Chapter6 Six Standard Specifications

Level of input voltage		220V			
Type S800- 2S		0.2G	0.4G	0.75G	1.5G
Applicable motor power (kW)		0.2	0.4	0.75	1.5
Output	Rated output capacity (kVA)	0.6	1.0	1.6	2.9
	Rated output current (A)	1.6	2.5	4.2	7.0
	Maximum output voltage (V)	Three-phase corresponding input voltage			
	Range of output frequency (Hz)	1.0~400Hz			
Power	Rated input current (A)	4.9/2.4	6.5/3.0	9.7/5.1	15.7/9
	Permissible variation range of input voltage	Single/three-phase power 200~240V 50/60Hz			
	Variation range of power frequency	±5%			
Control Characteristic	Control mode	V/F and static vector regulation (carrier frequency 2kHz~10kHz)			
	Output frequency resolution	0.1Hz			
	Torque characteristic	There is torque compensation, slip compensation and at 3Hz the activating torque can reach above 150%.			
	Tolerance of overload	150% of the rated output current, 60 sec			
	Acceleration/deceleration time	0.1~600 sec (can have independent settings respectively)			
	V/F curve	Setting 6 fixed curves+any V/F curves			
	Action position standard of avoiding losing speed	Setting with the percentage of rated current, 20~200%			

Running characteristic	Frequency setting signal	Panel operation	Setting by ▼▲ buttons or V.R
		External signal	AVI/ACI setting、 UP/DOWN setting, communication setting, pulse input setting
	Signal of run setting	Panel operation	Setting by RUN, STOP buttons
		External signal	M0, M1, M2 and M3 form run of various run modes; RS-485 communication port
	Multifunction input signal		Selection of section command 0~15, FWD/REV inching motion command, acceleration/ deceleration prohibition command, switching command of first and second acceleration/deceleration, selection of counter, program run, external B.B. (NC, NO), pulse input, two kinds of 3-line wiring modes, output prohibition
	Multifunction output signal		During run, run frequency arrival, Setting frequency arrival, counter arrival, zero speed, abnormal displays in B.B, program run command, FWD/REV running direction command
Other functions		Swing frequency function, 16-level speed PLC programmed run, AVR function, S-curve, avoid losing speed of over voltage, check of abnormal records, adjustment of carrier frequencies, setting of REV prohibiting, DC braking, Setting of re-start after transient power-off using starting frequency, Setting of frequency upper and lower limits, parameter locking/reset	
Protective functions		Over voltage, over current, low voltage, limit of over load, electronic thermoelectric station, overheating, self-testing, grounding protection, abnormal contact	
Cooling mode		Natural cooling/forced cooling	
Environment	Application site	Height below 1000m, indoor, (free of corrosive gas, liquid and dust filth.	
	Ambient temperature	-10 ℃~40°C(no dewing and no freezing)	
	Storage temperature	-20°C~60°C	
	Humidity	Below 90RH % (no dewing)	
	Vibration	Below 20Hz 9.80665m/s²(1G) 20~50Hz 5.88m/s² (0.6G)	