SAVCH ELECTRIC

S100 Series Inverter

Built-in type

User Manual

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SAVCH

User Manual

Contents

PREFACE

Thanks for your use of SAVCH inverter! This instruction manual, which includes operation descriptions and notes for maintenance, shall be delivered to the end-user.

For safety running and effective operation, this instruction manual shall be read thoroughly prior to use, which shall also be preserved for later use.

Provided problems occur and solution is not provided in this instruction manual, contact your SAVCH Electric representative or contact with our company directly. Our professional technicians will serve for you actively. And please continue to adopt products of SAVCH, give valuable opinion and advice.

1. Reading Instructions

Symbols of" DANGER" and" CAUTION" in the manual indicates that, for safety running or maintenance of inverters or other electrical products, attention shall be attached during delivering, installation, operation and checks for the inverter. And these notes shall be applied for a better and safer operation.

DANGER	Indicates a potentially hazardous situation visiting. If not used correctly, personnel damage even death may be caused.
CAUTION	Indicates a potentially hazardous situation visiting. If not used correctly, serious damage to inverter or machine may be resulted.

DANGER
● Never connect wires while power on. Do not check components or signal for circuit board during operation.
● Do not dismantle or change inner wire, circuit or components unnecessarily.
● Make sure grounding terminals are correctly grounded. 220V class: Grounding Ⅲ;
● After power supply is switched off, if CHARGE indicator is still ON, it indicates that there is still hazardous high voltage inside the inverter, pay attention not to touch circuit board or other components.

CAUTION
● Do not perform a withstand voltage tests for components of inverter,it can cause semi-conductor components to be damaged by high voltage.
● Never connect the output terminals U, V, W to AC power supply.
● IC of CMOS on control circuit of the inverter shall be damaged by electrostatic influence. Do not touch main circuit board.

2. Products receiving

All products have been performed with strict test and inspection. After receiving the inverters, the following checks shall be performed.

● To check that SAVCH inverter, an instruction manual.

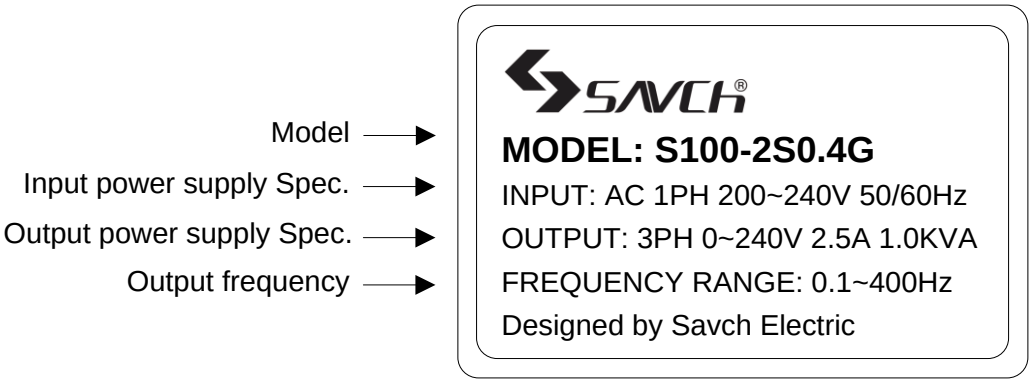
● To check whether model number correspond with model and capacity your purchase order.

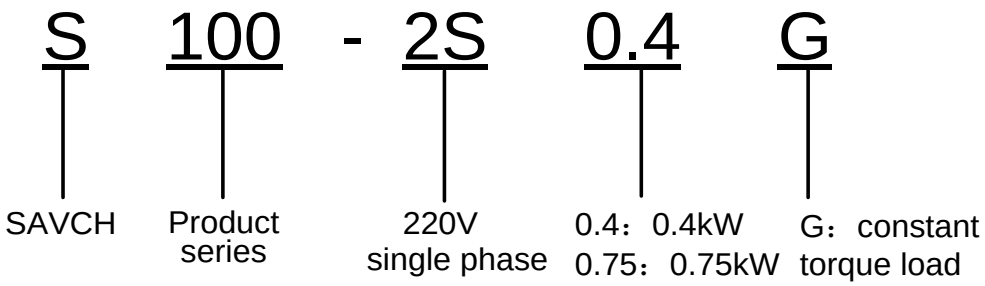
● To check whether there are damaged parts during transportation and delivering. If there are, do not connect with power supply.

If any of the above checkpoints are not satisfactory, contact your SAVCH representative for a quick resolution.

CHAPTER 1 DESCRIPTIONS FOR BODY AND INSTALLATION

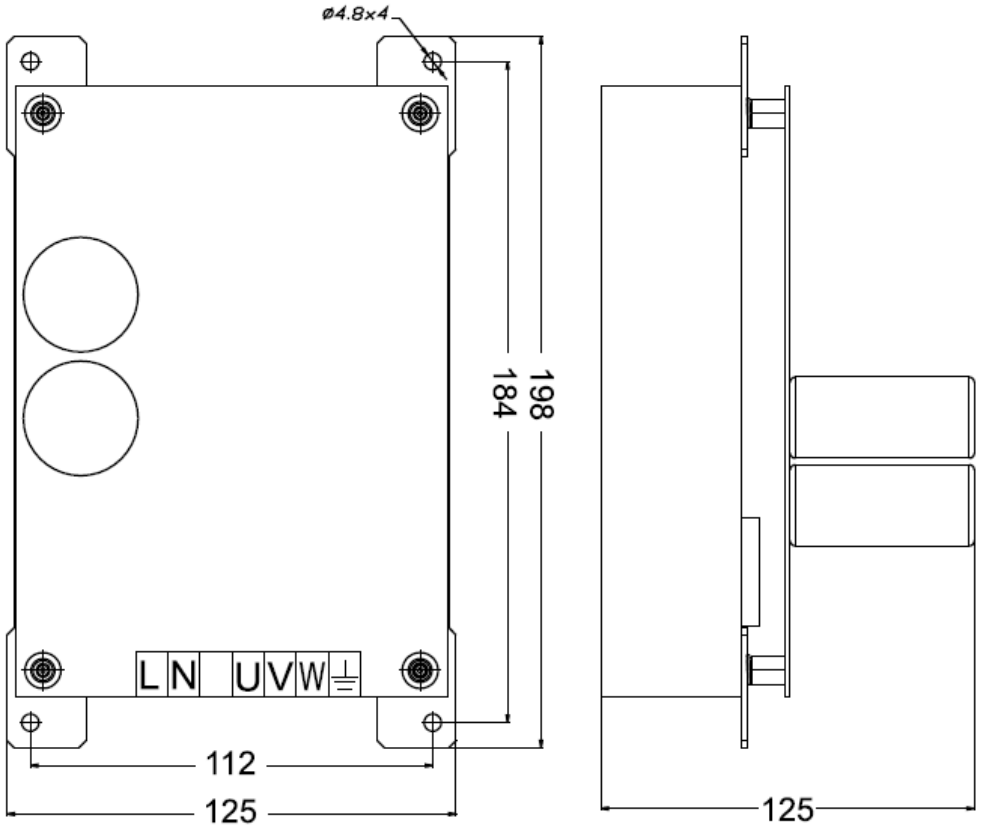
1.1. Model Description





1.2 External Dimensions

Uint：mm



1.3 Product Specification

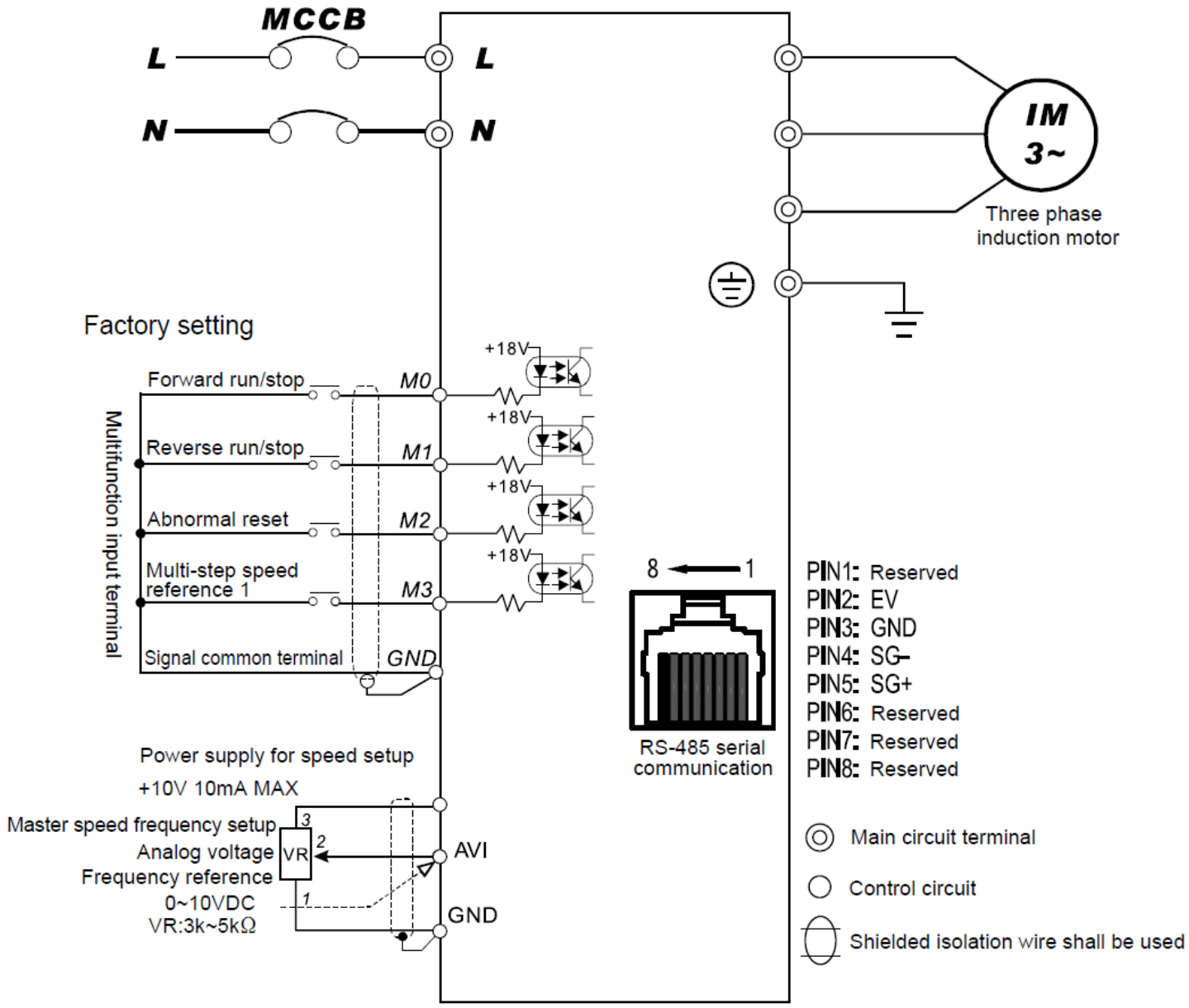
Input voltage			220V	
Model number S100-2S			0.4G	0.75G
Max applicable motor output power (kW)			0.4	0.75
Output	Output rated capacity(kVA)		1.0	1.6
	Output rated current (A)		2.5	4.2
	Max output voltage(V)		Three phase corresponding input voltage	
	Output frequency range(Hz)		1.0～400Hz	
Input	Rated Input current(A)		6.5	9.7
	Allowable variation range for Voltage. Frequency		Single phase power supply 200~240V 50/60Hz	
	Variation range for power supply frequency		±5%	
Controlling Characteristics	Control mode		SVPWM space vector modulation(Carrier frequency 2kHz~12kHz)	
	Output frequency resolution		0.1Hz	
	Torque characteristics		Provided with torque-compensation and slip compensation, at 5Hz,the activation torque can be 150% above the rated torque.	
	Over-load tolerance		150% of the rated output current, one minute	
	Acceleration/deceleration time		0.1～600 seconds(Available to be set respectively)	
	V/f curve		Any V/f curve setting	
	Stall Prevention Level		Set in accordance with percentage value of rated current, 20~200%	
Operation Characteristics	Frequency setting signal	External terminals	Potentiometer 5kΩ/0.5W, DC 0 to +10V(Input impedance 47 kΩ), multi-function input selection 1 to 3 (3 step speed: jog-on, up/down command), communication setting	
	Running operating signal	External terminals	Various operation modes combined by M0, M1, M2 and M3; RS485 communication board	
	Multi-function input terminal		Step-speed reference 0~15 selection, forward / reverse jog reference, acceleration/deceleration prohibited reference, switching of first/second acceleration/deceleration, selection of counter, program operation, external B.B (NC, NO) selection, pulse input,two kinds of three wire connection mode, and Inhibiting output.	
	Multi-function output terminal		During running, operation frequency arrival, set frequency arrival, counter arrival, zero speed, B.B anomaly indication, program operation indication, forward / reverse direction	
Other functions			AVR function, overvoltage stall prevention, over current stall prevention, abnormal record check, carrier frequency adjustment, reverse run Inhibition setting, DC braking, initiation frequency setting, restarting after momentary power loss, Max/Min frequency setting and parameter locking / reset.	
Protection functions			Over current, over voltage, low voltage,overload limitation, electronic thermal relay, overheating, self testing, grounding protection, and abnormal contactor	
Cooling methods			Natural cooling	
Environment	Installation height		Lower than 1000m, without corrosive gas, fluid and dust.	
	Environment temperature		-10℃~40℃(no condensation, no freezing)	
	Storing temperature		-20℃~+60℃	
	Environment dampness		Below 90%RH without moister	
	Vibration		Below 20Hz 9.80665m/s^2(1G),20~50Hz 5.88m/s^2(0.6G)	

2.1 Basic wiring Diagram

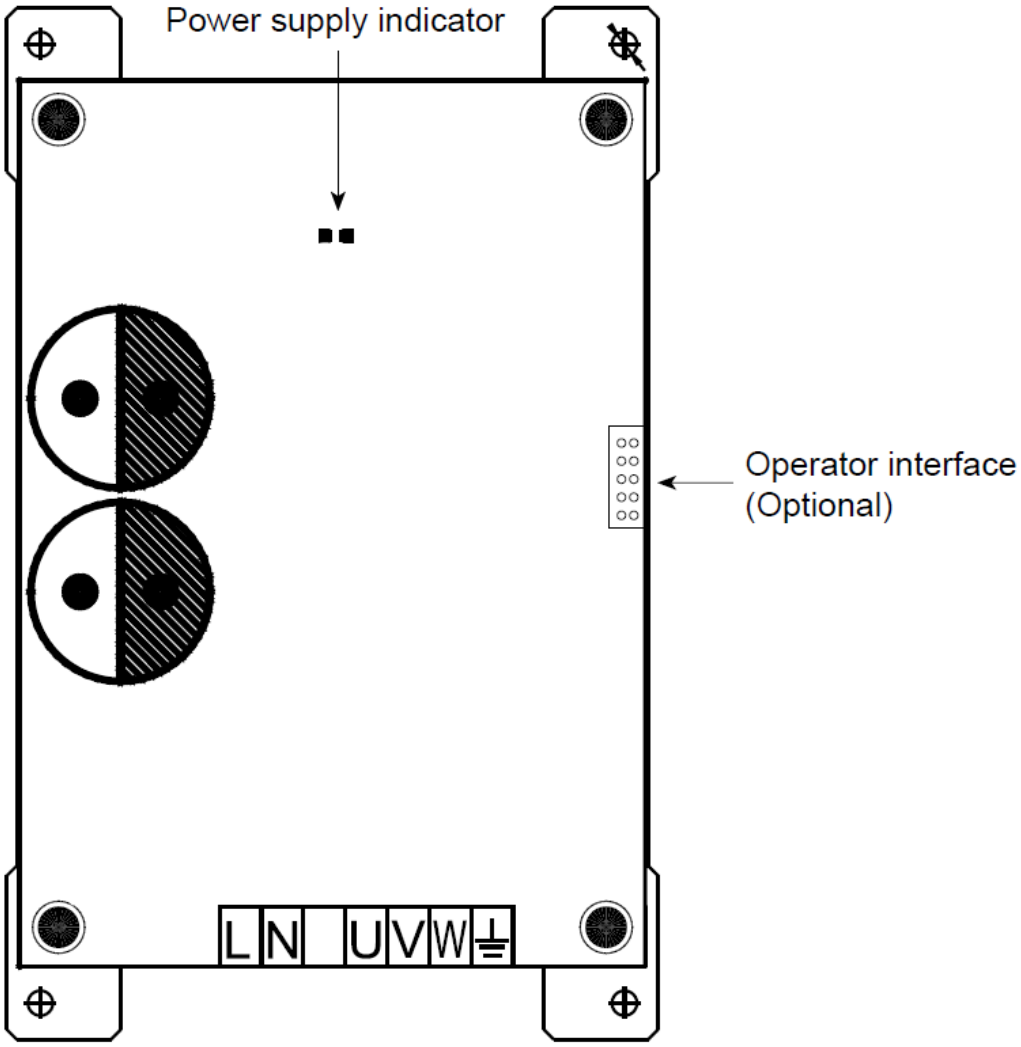
Wiring of inverter can be divided into two parts, the main circuit and control circuit. Users must connect terminals as diagram shows.

The following diagram is the standard wiring diagram of S100 series inverter.

Main circuit power supply



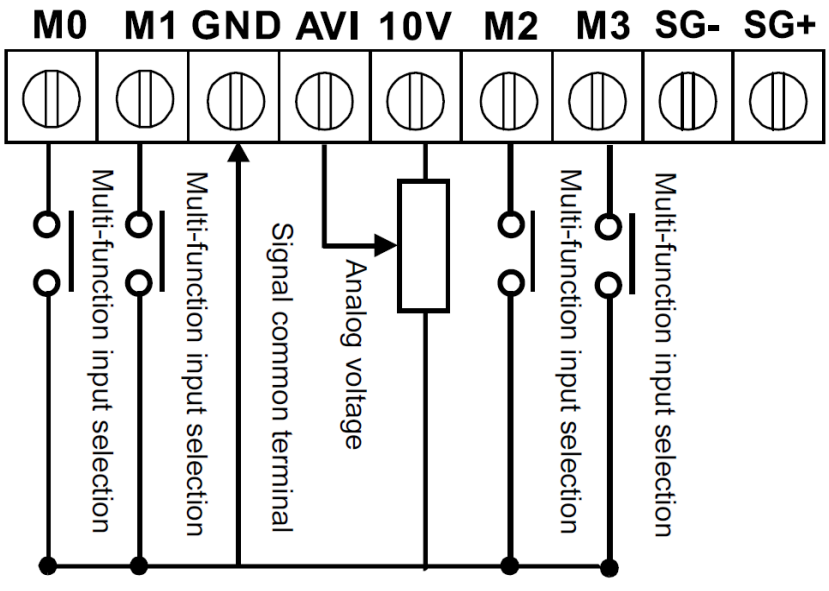
2.2 Main Circuit Wiring



Control circuit wiring diagram

Wire gauge:12-20AWG

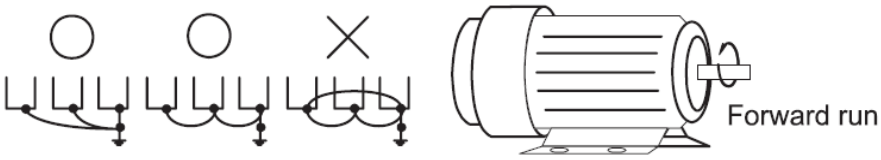
Torque:5KG-CM



Wiring Diagram

2.3 Precautions for Wiring

- The selection of wire gauge during wiring shall be in accordance with relative specifications of Electrical code to guarantee the security.
- A non-fuse switch and fuse must be connected between the single-phase AC input power supply and the main circuit terminals (L and N).A magnetic contactor(MC) is recommended to be connected in series additionally facilitating to switch off power supply simultaneously while the protection of inverter is in function.
  Note：15A rated current is recommended for the non -fuse switch.
- The input power supply L and N can be used without phase sequence, thus they can be connected and used randomly; the grounding category shall be adopted for the grounding terminal. (grounding resistance shall be below 100Ω)
- Never ground simultaneously for inverter ground wire with other large current loads such as welding machine or large power motor, They shall be grounded separately. Ground wiring must be short as possible
- Ground circuit shall be avoided when several inverters are grounded simultaneously. See diagram below for reference.



- If output terminals U/T1, V/T2, W/T3 of AC motor drive are connected to U, V, W of the motor correspondently, and the Forward Run (FWD) indicator on digital control panel of AC motor drive lights up, it indicates that the AC motor drive is in forward Run, and direction of rotation of the motor is the same to direction indicated on the diagram at right above; if Reverse Run(REV) indicator light up, it indicates that the AC motor drive is in reverse on, and direction of rotation shall be reverse to that of the diagram. In case it is not certain whether output terminals U/T1, V/T2, W/T3 of AC motor drive is connected to U,V,W of the motor in correspondence, and if the inverter output is forward run reference. while motor is at reverse run, change any two of the motor U, V or W, then the motor will forward run.
- Confirm the voltage and max capacity that is available to be supplied of the power supply system.
- Never connect or dismantle any wiring when the digital operator is in display or power supply indicator is still ON.
- Extend the deceleration time to avoid the drive from pass over the over- voltage or over- current protection.
- Never connect AC power supply to the output terminals U/T1, V/T2, W/T3 of AC motor drive.
- Make sure that the screw(s) for main circuit terminal is securely tightened; otherwise sparks may occur due to loosening as t result of vibration.
- Wiring for the main circuit and for control circuit must be separated from each other otherwise mal-function may occur. If cross wiring is mandatory, cross them in 90°.
- In case of a noise filter is necessary to be fitted at main circuit output terminals U/T1, V/T2 and W/T3 of inverter, it is mandatory to use the inductive L- filter, while phase advance capacitor or L-C or R-C filters shall not be allowed.
- Isolation wire is preferred for the control wiring, and the stripped part without isolation mesh at the front of the terminal shall not be exposed.
- Shielded wire or shielded wire tube shall be used for wiring of power supply. Both ends of the shielded wire or tube shall be grounded.
- In case the inverter is fitted to a place which is extremely sensitive to interference, please fit RFI filter in addition, and location of installation shall be as close to inverter as possible. The low carrier frequency of PWM is, the less interference there is.
- If leakage circuit breaker is provided for the inverter as protection measures against leakage, to prevent mal-operation of the leakage breaker, please select those of which the sensitivity circuit is above 200mA,and operation time is more than 0.1 sec.

CHAPTER 3 LIST OF DESCRIPTIONS FOR FUNCTIONAL PARAMETERS

0. User's parameters			↗ set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
	0-00	Inverter type code recognition (Only for Reading)	4:220V/0.4kW 5:220V/0.75kW	Factory setting
	0-01	Rated Current Display for Inverter (Only for Reading)	220V/0.4kW:2.5A 220V/0.75kW:4.2A	Factory setting
	0-02	Data initialization	10: Parameter reset to factory setting	0
↗	0-03	Machine ON Display Selection	0: F(Display set frequency reference) 1: H(Display actual running frequency) 2: U (Display multi-function determination) 3: A(Display motor running current) 4: P(Master frequency display) 5: b(Auxiliary frequency display)	0
↗	0-04	Determining multifunctional display	0: Displaying output physical quantity(u) defined by operators 1: Displaying count value (c) 2: Displaying program operation content (X=tt) 3: Displaying DC-BUS voltage(U) 4: Displaying output voltage (E) 5: Displaying rotating speed(r) 6: Reserved 7: Module temperature 8: Charging resistance temperature 9: Display the current carrier frequency	0
↗	0-05	Proportional constant setting	0.1 to 160	1.0
	0-06	Software Version	Only for reading	#.##
	0-07	Input parameter password protection	0 to 999	0
↗	0-08	Setting parameter password protection	0 to 999	0

1. Basic Parameters			↗ Set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
	1-00	Max operation frequency setting	5.0 to 400Hz	50.0
	1-01	Maxi voltage frequency setting	10.0 to 400.0Hz	50.0
	1-02	Maxi output voltage setting	2.0 to 255.0V	220
	1-03	Intermediate frequency setting	0.1 to 400Hz	0.5
	1-04	Intermediate voltage setting*	2.0 to 255V	12.0
	1-05	Min output frequency setting	0.1 to 60.0Hz	0.5
	1-06	Output voltage at starting frequency	2.0 to 255V	12.0
	1-07	Frequency limiter(Upper)	1 to 110%	100

1. Basic Parameters			↗ Set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
	1-08	Frequency limiter(Lower)	0 to 100%	0.0
↗	1-09	Acceleration time 1	0.1 to 600s	10.0
↗	1-10	Deceleration time 1	0.1 to 600s	10.0
↗	1-11	Acceleration time 2	0.1 to 600s	10.0
↗	1-12	Deceleration time 2	0.1 to 600s	10.0
↗	1-13	Acceleration time (JOG)	0.1 to 600s	10.0
↗	1-14	Deceleration time (JOG)	0.1 to 600s	10.0
↗	1-15	JOG frequency setting	1.0 to 400Hz	6.0
	1-16	Auto acceleration / deceleration setting	0: Normal acceleration / deceleration 1~5: Reserved	0
	1-17	Reserved		
	1-18	Reserved		
	1-19	V/f curve setting	0 to 6	0

2. Operation mode parameters			↗ Set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
	2-00	Master frequency reference source setting	0: Keys on keypad 1: Input DC 0 to 10V by external terminals AVI 2: Reserved 3: Reserved 4:Operated by RS485 communications interface 5:Operated by RS485 communications interface(Frequency memory) 6:Controlled by UP/DOWN 7:Controlled by UP/DOWN (Frequency memory) 8: Reserved	0
	2-01	Auxiliary frequency reference source setting 2(Reserved)	0: Keys on keypad 1: Input DC 0 to 10V by external terminals AVI 2: Reserved 3: Reserved 4: Operated by RS485 communications interface 5: Reserved 6: Controlled by UP/DOWN 7: Reserved 8: Reserved	0
	2-02	Selection of Master / Auxiliary frequency (Reserved)	0: Master frequency 1: Master frequency + Auxiliary frequency 2: Master frequency - Auxiliary frequency	0

2. Operation mode parameters			↗ Set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
	2-03	Operation method	0: Operated by keypad 1: Operated by external terminals. STOP on keypad available 2: Operated by external terminals. STOP on keypad unavailable 3: Operated by Communications Interface RS485. STOP on keypad available 4: Operated by Communications Interface RS485. STOP on keypad unavailable	0
	2-04	Deceleration mode	0: Normal deceleration 1: Coast to stop	0
	2-05	Reserved		
	2-06	External fault (EF) stop mode	0: Reserved 1: External fault (EF) coast to stop	1
	2-07	Reference loss detection (Terminal AVI)(stop mode)	0:Deceleration stop 1:Coast to stop 2:Holding operation command after deceleration stop	0
	2-08	Reserved		
	2-09	Motor sound(Carrier frequency)	2 to 12kHz	6
	2-10	REV run inhibition	0: Rev run available 1: Rev run inhibited 2: Fwd run inhibited	0
	2-11	Reserved		
	2-12	Power on start	0: Operation available 1: Operation unavailable	0

3. Output Function Parameters			↗ Set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
	3-00	Reserved		
	3-01	Count value setting	0 to 999	0
	3-02~3-06	Reserved		
	3-07	Min,AVI input voltage	0.0 to 10V	0
	3-08	Min,AVI input voltage corresponding frequency	0 to 100% Fmax	0
	3-09	Max.AVI input voltage	0.0 to 10V	10.0
	3-10	Max.AVI input voltage corresponding frequency	0 to 100% Fmax	100
	3-11~3-19	Reserved		
	3-20	AVI filter coefficient	0~12	4

4. Input Function Parameters			↗ Set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
↗	4-00	[VR] Input frequency bias setting	0.0 to 350Hz	0.0
↗	4-01	Bias direction setting	0: Positive direction 1: Negative direction	0
↗	4-02	Input frequency gain setting	1 to 200%	100
	4-03	Negative bias operation setting	0: No negative bias 1: Reversible negative bias 2: not reversible negative bias	0
	4-04	Terminal (M0 M1) function (Setting range from d0 to d31)*	0: No function 1: M0: forward run/stop, M1: reverse run/stop 2: M0: run/stop, M1: fwd/rev run 3: 3-line operation control(1): M0 run, M1 fwd/rev run, M2 stop(Normally closed) 4: 3-line operation control(2): M0 forward run (Normally open), M1 reverse run (Normally open), M2 stop (Normally closed) 5: External fault(EF), normally open interface input (N.O) 6: External fault(EF) normally closed interface input (N.C) 7: RESET alarm 8: Select multi-frequency 1 9: Select multi-frequency 2 10: Select multi-frequency 3 11: Select multi-frequency 4 12: Reserved 13: Accel /decel inhibition command 14: Select 1ST and 2nd Accel/Decel time 15: External alarm, normally open (NO) input 16: External alarm, normally closed(NC) input 17: Up command 18: Down command 19: Pattern operation command 20: Pattern operation pause command 21: Counter trigger signal input 22: Count reset 23: Reserved 24: JOG-FWD 25: JOG-REV 26: Reserved 27: Reserved 28: Reserved 29: Inhibiting output (N.O) 30 :Inhibiting output (N.C) 31: Reserved	1
	4-05	Terminal (M2) function (Setting range d0, d5 to d31)		8
	4-06	Terminal (M3) function (Setting range d0, d5 to d31)		9

4. Input Function Parameters			↗ Set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
	4-09	Speed tracking after external alarm reset	0:Tracking downwards from speed before external alarm 1:Tracking upwards from min speed	0

5. Multi-step Speed and Auto-Program Operation Parameters ↗ Set during running available				
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
↗	5-00	Multi frequency 1	0.0 to 400Hz	0.0
↗	5-01	Multi frequency 2	0.0 to 400Hz	0.0
↗	5-02	Multi frequency 3	0.0 to 400Hz	0.0
↗	5-03	Multi frequency 4	0.0 to 400Hz	0.0
↗	5-04	Multi frequency 5	0.0 to 400Hz	0.0
↗	5-05	Multi frequency 6	0.0 to 400Hz	0.0
↗	5-06	Multi frequency 7	0.0 to 400Hz	0.0
	5-07	Multi frequency 8	0.0 to 400Hz	0.0
	5-08	Multi frequency 9	0.0 to 400Hz	0.0
	5-09	Multi frequency 10	0.0 to 400Hz	0.0
	5-10	Multi frequency 11	0.0 to 400Hz	0.0
	5-11	Multi frequency 12	0.0 to 400Hz	0.0
	5-12	Multi frequency 13	0.0 to 400Hz	0.0
	5-13	Multi frequency 14	0.0 to 400Hz	0.0
	5-14	Multi frequency 15	0.0 to 400Hz	0.0
	5-15	Pattern Operation(Mode)	0. Pattern operation inactive 1. Active (Stop after operating for 1 cycle) 2. Active (Pattern operation performs in cycles until STOP command input) 3. Active (Stop after operating for 1 cycle) (with STOP intervals). 4. Active (Pattern operation performs in cycles until STOP command input) (with STOP intervals).	0
	5~16	(Rotating Operation) (0 to 7th step speed)	0 to 255(0: Forward Run 1: Reverse Run)	0
	5-17	(Rotating Operation) (8 to 15th step speed)	0 to 255(0: Forward Run 1: Reverse Run)	0
	5-18	(Step 0 Time)	0 to 65500S	0
	5-19	(Step 1 Time)	0 to 65500S	0
	5-20	(Step 2 Time)	0 to 65500S	0
	5-21	(Step 3 Time)	0 to 65500S	0
	5-22	(Step 4 Time)	0 to 65500S	0
	5-23	(Step 5 Time)	0 to 65500S	0
	5-24	(Step 6 Time)	0 to 65500S	0
	5-25	(Step 7 Time)	0 to 65500S	0
	5-26	(Step 8 Time)	0 to 65500S	0

5. Multi-step Speed and Auto-Program Operation Parameters

Set during running available

	Parameter	Parameter functions	Setting range	Factory setting
	5-27	(Step 9 Time)	0 to 65500S	0
	5-28	(Step 10 Time)	0 to 65500S	0
	5-29	(Step 11 Time)	0 to 65500S	0
	5-30	(Step 12 Time)	0 to 65500S	0
	5-31	(Step 13 Time)	0 to 65500S	0
	5-32	(Step 14 Time)	0 to 65500S	0
	5-33	(Step 15 Time)	0 to 65500S	0

6. Protection Parameters

Set during running available

	Parameter	Parameter functions	Setting range	Factory setting
	6-00	Over voltage stall prevention function setting	0: Inactive 350-410V	390
	6-01	Over current stall prevention level setting	0: Inactive 20-200%	170
	6-02	Over-torque detection (Mode selection)	0: No detection 1: Over torque detection (OL2) during constant speed running, continue to run after detection. 2: Over torque detection (OL2) during constant speed running, stop running after detection. 3: Over torque detection (OL2) during acceleration, continue to run after detection. 4: Over torque detection (OL2) during acceleration, stop running after detection.	0
	6-03	Over torque detection (Detection level)	30 to 200%	150
	6-04	Over torque detection time	0.1 to 10.0s	0.1
	6-05	Electrical thermal overload protection for Motor (Select motor characteristics)	0: No action 1: Action in standard motor 2: Action in special motor	1
	6-06	Electronic thermal relay selection	30 to 600s	60
	6-07	Alarm history (Latest)	0: No alarm records 1: OC (Over current) 2: OV(Over voltage) 3: OH(Over heating) 4: OL(Inverter overload) 5 :OL1(Motor overload) 6: EF(External fault) 7: Reserved 8: Reserved 9: OCA(Over current in acceleration) 10: OCD(Over current in deceleration) 11: OCN(Over current in constant speed)	0
	6-08	Alarm history (1st last)		0
	6-09	Alarm history (2nd last)		0
	6-10	Alarm history (3rd last)		0
	6-11	Alarm history (4th last)		0
	6-12	Alarm history (5th last)		0

7. Motor Parameters			↗ Set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
↗	7-00	Motor(Rated current)	30 to 120%	85
↗	7-01	Motor(No load current)	0 to 90%	30
	7-02	Manual torque compensation setting	0.0 to 30.0%	0.0
↗	7-03	Auto slip compensation setting	0.1 to 10	0.0
	7-04	Torque boost cutoff frequency	0~50%	10
	7-05~7-09	Reserved		

Remark:1. When 7-02 is set to 0, it means no torque boost function.

2. The reference value for 7-02 is parameter 1-02 (maximum output voltage).

3. The reference value for 7-04 is parameter 1-00 (maximum operating frequency).

8. High Function Parameters			↗ Set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
	8-00	DC braking(Braking level)	0.0 to 100%	0.0
	8-01	DC braking(Braking time setting at starting)	0.0 to 60.0S	0.0
	8-02	DC braking(Braking time setting at stopping)	0.0 to 60.0S	0.0
	8-03	DC braking(Braking starting frequency)	0.0 to 400Hz	0.0
	8-04	Restart after momentary power failure (Mode selection)	0: Stop running after momentary power loss. 1: Run continuously after momentary power loss, inverter tracks downwards from frequency after power loss. 2: Run continuously after momentary power loss, inverter tracks upwards from frequency after power loss.	0
	8-05	(Max allowable time for power failure)	0.3 to 5.0s	2.0
	8-06	(Restart time)	0.3 to 5.0s	0.5
	8-07	(Max current setting for speed tracking)	30 to 200%	150
	8-08	Jump frequency 1(Upper)	0.0 to 400Hz	0.0
	8-09	Jump frequency 1(Lower)	0.0 to 400Hz	0.0
	8-10	Jump frequency 2(Upper)	0.0 to 400Hz	0.0
	8-11	Jump frequency 2(Lower)	0.0 to 400Hz	0.0
	8-12	Jump frequency 3(Upper)	0.0 to 400Hz	0.0
	8-13	Jump frequency 3(Lower)	0.0 to 400Hz	0.0
	8-14	Auto-reset(Times)	0 to 10	0
	8-15	AVR function selection	0:AVR function available 1:AVR function unavailable 2:AVR function cancelled during deceleration	2
	8-16	Reserved		

Note: When setting the 8-00 parameter, it must be slowly increased from small until sufficient braking torque is obtained, but it should not exceed the rated motor.

9. Communications Parameters			↗ Set during running available	
	Parameter	**Parameter functions**	**Setting range**	**Factory setting**
↗	9-00	Communication address	1 to 247	1
↗	9-01	Communication transmitting speed	0: Baud rate 4800 bps 1: Baud rate 9600 bps 2: Baud rate 14400 bps 3: Baud rate 19200 bps 4: Reserved	1
↗	9-02	Transmitting fault treatment	0: Warning and running continuously 1: Warning and deceleration to stop 2: Warning and coasting to a stop 3: No warning and running continuously	0
↗	9-03	No-response error detection time	0: Not detected 1-20: 1 to 20s	0
↗	9-04	Communications format 1 ASCII mode	0: ASSII mode <8, N,1> 1: ASSII mode <8, N,2> 2: ASSII mode <8, E,1> 3: ASSII mode <8, E,2> 4: ASSII mode <8, O,1> 5: ASSII mode <8, O,2> 6: RTU mode <8, N,2> 7: RTU mode <8, E,1> 8: RTU mode <8, O,1>	0
		Communications format 2 RTU mode		

CHAPTER 4 TROUBLE SHOOTING

Inverter is provided with functions of warning and protection such as over voltage, low voltage and over current. Once fault occurs, protection function shall act, inverter output stops, fault contactor act and also free running of motor shall stop. For causes and corrective measures of fault, display of fault shall be taken for reference. Fault records shall be stored into computer memory inside inverter (fault records for recent six times shall be available), and records shall be read at digital control keypad.
Attention shall be paid that, pressing RESET after fault shall only be available after fault has been eliminated.

4.1 Alarm and Corrective Measures

Display	Descriptions of fault	Corrective measures
oc	Inverter detects Over current at output side.	1.Check rated current of motor complies with that of inverter. 2.Check that there is no short circuit in U, V, and W. 3.Check that no short circuit or grounding occur to connection of motor. 4.Check that screws are securely tightened to inverter. 5.Increase acceleration time (1-09, 1-11). 6.Check there is no over load to motor.
ou	Inverter detects Over voltage at DC high voltage side.	1.Check input voltage is within rated voltage range of inverter, and see that no voltage surge occurs. 2.If over voltage occurs at DC high voltage side of inverter caused by inertia back up voltage, deceleration time shall be increased.
oH	Inverter detects over heat, exceeding protection level.	1.Check that ambient environment is not over heat. 2.Check radiator and air fan is running. 3.Check enough clearance for air flowing is provided to to inverter
oHc	The inverter detects that the internal charging resistor is too hot and exceeds the level.	Factory maintenance
Lu	DC high voltage side over low inside inverter.	1.Check power supply voltage is correct. 2.Check no sudden heavy load.
oL	Output current exceeds allowable current of inverter. 60 sec shall be in station if 150% of rated current of inverter is output.	1.Check motor over load. 2.Decrease torque (7-02) to improve set value. 3.Increase output capacity of inverter.
oL 1	Inner electric relay protection acts	1.Check motor over load. 2Check rated current (07-00) of motor is proper. 3.Check electric relay function setting. 4.Increase motor capacity.

Display	Descriptions of fault	Corrective measures
oL2	Motor load overlarge	1.Check motor load is not overlarge. 2.Check over-torque detection level setting (06-03).
ocA	Over current during acceleration	1.Check screws securing inverter and motor are tightened. 2.Check insulation of wiring from U-V-W to motor. 3.Increase acceleration time. 4.Decrease torque (7-02) to improve set value. 5.Replace with AC motor with larger output capacity.
ocd	Over current during deceleration	1. Check insulation of wiring from U-V-W to motor. 2.Increase deceleration time. 3.Replace with inverter with larger output capacity.
ocn	Over current during running	1.Check insulation of wiring from U-V-W to motor. 2.Check motor running normally. 3.Replace inverter with larger output capacity.
EF	Output of inverter stops when external multifunction input terminal(M1~M3) is set to emergency stop	Depress RESET key after alarm eliminated.
CF1	Inner memory IC data writing alarm	1.Supply power again after power off. 2.Factory maintenance and overhaul.
CF2	Inner memory IC data reading alarm	1.Depress RESET key and reset parameter to factory setting. 2.If unavailable, search for factory maintenance and overhaul.
CF3	Inverter detects wiring fault (with seven categories from CF3.1 to CF3.7)	Factory maintenance and overhaul.
HPF	Control device protection wiring fault (Three types: HPF.1,HPF.2,HPF.3)	Factory maintenance and overhaul.
bb	When external multifunction terminals (MI1, MI2, and MI3) is set to this function and GND is closed, inverter output stops.	b.b shall disappear immediately after signal source eliminated.
CFA	Auto accel/decel mode failure	1.Check inverter complies with motor properly. 2.Load back up inertia overlarge. 3.Sudden load variation.
CE1	Communication fault	1.Check communication signals were not connection (SG+,SG-). 2.Check communication format is proper.
CodE	Software protection activation	Factory maintenance and overhaul.

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