otomasyon AVM

High Performance, Low Noise/ MINI AC Motor Drive
Using New Generation IGBT Technology

S100 Glove Machine Specialized Inverter
User Manual

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Preface

Firstly we show our sincere appreciation for your use of SANCH inverters. 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 SANCH ELECTRIC representative or contact with our company directly. Our professional technicians will serve for you actively. And we will be sincerely grateful if you will continue to adopt products of SANCH.

1. Reading Instructions

Since inverters are electronic products, for your security, symbols of "DANGER" and "ATTENTION" are given in this manual to indicate the safety precautions 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, 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 is supplied. Do not check components or signal for circuit board during operation. • Do not dismantle or change inner wire, circuit or components without permission. • Make sure grounding terminals are correctly grounded. 220V level: Grounding. • After power supply is switched off, if CHARGE indicator is still ON, it indicates that there is still hazardous high voltage inside the AC motor driver, pay attention not to touch circuit board or other components.

CAUTION
• Do not perform a withstand voltage test 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. • CMOS IC on the main circuit board of the inverter is easily influenced and damaged by the electrostatic influence. Do not touch main circuit board.

2. Products Receiving

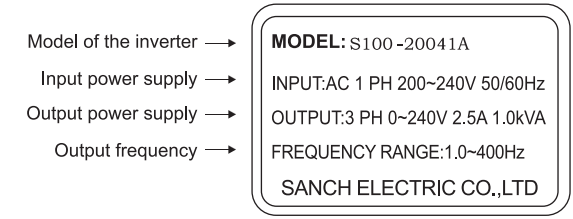
Each SANCH inverter has been performed with functional tests. After the customer receiving the inverters, the following checks shall be performed.

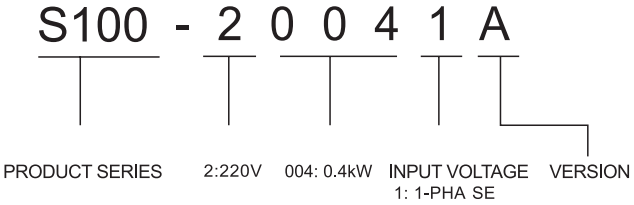
- Check that a SANCH inverter and an instruction manual are inside of the package
- Check that the model number of the inverter is corresponded with model and capacity of your purchase order.
- Check whether there are damaged parts during transportation and delivering. If there are, do not connect with power supply.

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

CHAPTER 1
DESCRIPTIONS FOR SANCH AND INSTALLATION

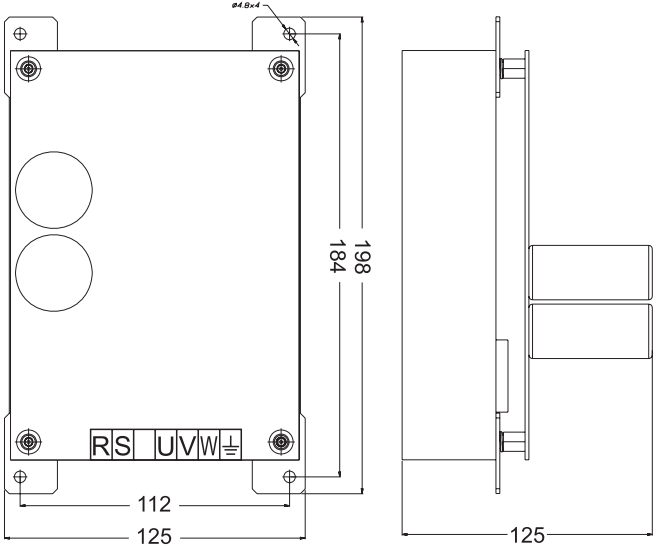
1.MODEL DESCRIPTION





2.OUTLINE DRAWING

Specialized Installation Drawing for Glove Machine (Unit: mm)

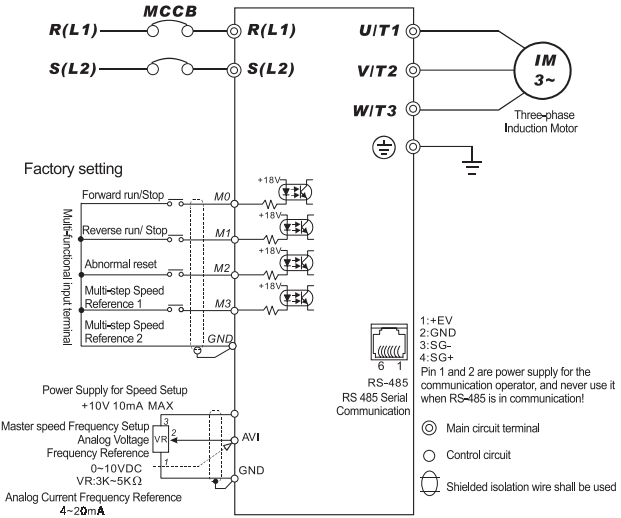


CHAPTER 2 WIRING

1. Basic Wiring Diagram

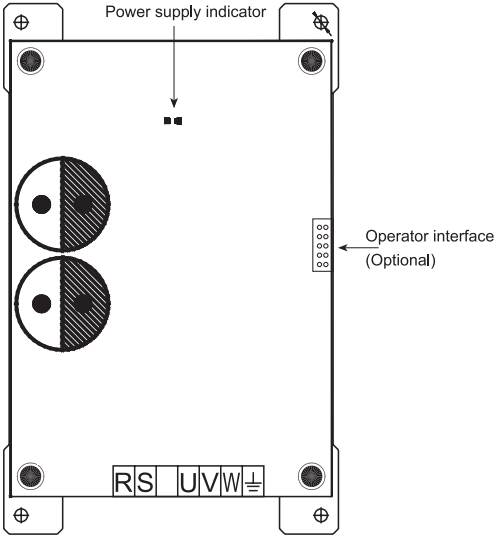
The wiring for AC motor drive can be divided into main circuit and control circuit. Users shall connect the wiring correctly according to the following circuit diagram. Below is the factory set standard wiring diagram for the AC motor of S100.

Main circuit power supply:

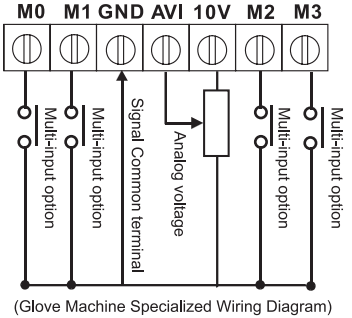


(Glove Machine Specialized Wiring Diagram)

2. Main Circuit Wiring



Control circuit wiring diagram Wire Gauge: 12-20AWG Torque: 5KG-CM



(Glove Machine Specialized Wiring Diagram)

3. Precautions for wiring

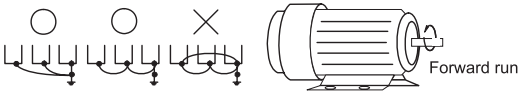
•The selection of wire gauge during wiring shall be in accordance with relative specifications of Electrical Code to guarantee the security.

• A non-fuse switch and fuse must be connected between the two-phase AC input power supply and the main circuit terminals (R/L1 and R/L2). A magnetic contactor (MC) is recommended to be connected in series additionally, facilitating to switch off the power supply simultaneously while the protection of AC motor drive is in function. (R-C surge absorber shall be fitted besides the magnetic contactor). Notes: 15A rated current is recommended for the non-fuse switch.

• The input power supply R/L1 and S/L2 can be used without phase sequence, thus they can be connected and used randomly; the Grounding Category ¢ó shall be adopted for the grounding terminal . (Grounding resistance shall be below 100¦¸)

• Never ground simultaneously for AC motor drive ground wire with other large current loads such as welding machine or large Power motor. They shall be grounded separately. Ground wire shall be as 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 is 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 lights up, it indicates that the AC motor drive is in reverse run, 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 in forward run reference, while motor is at reverse run, change any two of 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 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 a 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, W/T3 of AC motor drive, it is mandatory to use the inductive L-filter, while phase advance capacitor or L-C or R-C filter 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.
- Shielding wire or shielding wire tube shall be used for wiring of power supply. Both ends of the shielding wire or tube shall be grounded.
- In case the AC motor drive is fitted to a place which is extremely sensitive to interference, fit RFI filter in addition, and location of installation shall be as close to AC motor drive as possible. The low carrier frequency of PWM is, the less interference there is.
- If leakage circuit breaker is provided for the AC motor drive as protection measures against leakage, to prevent mal-operation of the leakage breaker, select those of which the sensitivity current is above 200mA, and operation time is more than 0.1sec.

CHAPTER 2 LIST OF DESCRIPTION FOR FUNCTION AND PARAMETERS

NOTE: For descriptions below, the glove machine is abbreviated as "Glove", and flat knitting machine is abbreviated as "Flat knitting".

0 User's parameter				Available to set during operation
	Parameter	Parameter Functions	Setting range	Factory setting
	0-00	AC motor drive Machine Model Recognition (Read-only)	3:220V/200KW 4:220V/400KW 5:220V/750KW	Factory setting
	0-01	AC Motor Drive Rated Current Display (Read-only)	220V/200W:1.6A 220V/400W:2.5A 220V/750W:4.2A	Factory setting
	0-02	Parameter Reset	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 content of multi-function determination) 3: A (Display motor running current) 4: P (Master frequency display) 5: b (Auxiliary frequency display)	0
✓	0-04	Determining contents for multifunctional display	0: Displaying output physical quantity(u) defined by operators 1: Displaying count value (c) 2: Displaying program operation content (1=tt) 3: Displaying DC-BUS voltage(U) 4: Displaying output voltage (E) 5: Displaying rotating speed (R)	0
✓	0-05	Proportional constant set-up determined by operators	0.1~160	1.0
	0-06	Software Version	Read-only	#.#
	0-07	Input parameter locking code	0~999	0
✓	0-08	Setting parameter locking code	0~999	0

1 Basic Parameters			Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
	1-00	Max operation frequency setting	5.0~400Hz	60.0
	1-01	Max voltage frequency setting	10.00~400Hz	60.0
	1-02	Max output voltage setting	220V:2.0~255V	220
	1-03	Intermediate frequency setting	0. 1~400Hz	1.0
	1-04	Intermediate voltage setting*	220V:2.0~255V	12.0
			440V:2.0~510V	16.0
	1-05	Min output frequency setting	1~110%	100
	1-06	Min output voltage setting	220V:2.0~255V	12.0
	1-07	Max frequency of output frequency	1~110%	100
	1-08	Min frequency of output frequency	1~100%	0.0
✓	1-09	1st Acceleration time selection	0.01~600s	10.0
✓	1-10	1st Deceleration time selection	0.01~600s	10.0
✓	1-11	2nd acceleration time selection	0.01~600s	10.0
✓	1-12	2nd deceleration time selection	0.01~600s	10.0
✓	1-13	JOG acceleration time setting	0.01~600s	10.0
✓	1-14	JOG deceleration time setting	0.01~600s	10.0
✓	1-15	JOG frequency setting	1.00~400Hz	6.0
	1-16	Auto accel/decel setting	0: Normal accel/decel	0
			1: Auto-acceleration; normal deceleration	
			2:Normal acceleration; auto deceleration	
			3: Auto accel/decel	
			4: Normal acceleration; Stall prevention during deceleration at the time of auto deceleration.	
			5: Auto accel and auto decel. Stall prevention during deceleration at the time of auto deceleration.	
	1-17	Accel S curve setting	0~7	0
	1-18	Decel S curve setting	0~7	0
	1-19	V/f curve setting	0~6	0

2 Operation mode parameters			Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
	2-00	Master Frequency Reference Source Setting	0: Keyboard(OP) input	0
			1: Input analog signals DC 0~ +10V from external Terminal AVI	
			2: Input analog signals DC 4~ 20mA from external Terminal ACI	
			3: Reserved	
			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: Reserved	

2 Operation mode parameter			∿ Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
	2-01	Auxiliary Frequency Reference Source Setting (Reserved)	0: Keyboard(OP) input	0
			1: Input analog signals DC 0~ +10V from external Terminal AVI	
			2: Input analog signals DC 4~ 20mA from external Terminal ACI	
			3: Reserved	
			4: Operated by RS-485 communication interface	
			5: Operated by RS-485 communication interface(Frequency memory)	
			6: Controlled by UP/DOWN	
			7: Reserved	
			8: Reserved	
	2-02	Selection of Master/Auxiliary Frequency (Reserved)	0: Master frequency	0
			1: Master frequency + Auxiliary frequency	
			2: Master frequency + Auxiliary frequency	
	2-03	Operation Reference Source	0: Operated by keyboard	0
			1: Operated by external terminals. STOP on keyboard available	
			2: Operated by external terminals. STOP on keyboard disabled	
			3: Operated by RS-485Communication Interface RS-485. STOP on keyboard available	
			4: Operated by RS-485 Communication Interface RS-485. STOP on keyboard disabled	
	2-04	STOP mode for motor	0: Deceleration and stop	0
			1: Coast to a stop	
	2-05	Reserved		
	2-06	External fault EF stop mode	0: Reserved	1
			1: EF free running to stop	
	2-07	AVI Zeroing stop mode	0: AVI Zeroing braking to stop	2
			1: AVI Zeroing free running to stop	
	2-08	Reserved		6
	2-09	PWM carrier frequency setting	2~10kHz	6
	2-10	Reverse run inhibition	0: Rev run available	0
			1: Reverse run inhibited	
			2: Fwd run inhibited	
	2-11	ACI(4 to 20mA) broken line treatment (Reserved	0: Free operation stops	0
			1: Braking to stop and EF is in display	
			2: Run in final set frequency after ACI line broken	
	2-12	Power supply starting operation locking	0: Operation available	0
			1: Operation unavailable	

4 Input Function Parameters			Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
↗	4-00	Analogue input frequency bias voltage setting	0.0~350Hz	0.0
↗	4-01	Bias direction setting	0: Positive 1: Negative	0
↗	4-02	Input frequency gain setting	1~200%	100
	4-03	Setting of negative bias operation	0: Without negative bias voltage 1: Negative bias voltage reverse run available 2: Negative bias voltage reverse run disabled	0
	4-04	Function Options of Multi-functional Input Terminal (M0,M1)(Setting range: d0~ d31)	0: No function 1: M0: forward run/stop, M1: reverse run/stop 2: M0: forward run/stop, M1: operation /stop	1
	4-05	Function Options of Multi-functional Input Terminal (M2)(Setting range: d0, d5~ d31)	3:Three line operation control(1): M0 run, M1 fwd/rev run, M2 STOP(Normally closed) 4:Three line operation control(2): M0 FWD run (Normally open), M1 REV run(Normally open), M2 STOP(Normally closed)	8
	4-06	Function Options of Multi-functional Input Terminal (M3)(Setting range: d0, d5~ d31)	5: E.F, normally open contactor input (N.O) 6: E.F, normally closed contactor input (N.C) 7:RESET reference 8: Multi-step speed Reference 1 9:Multi-step speed Reference 2 10:Multi-step speed Reference 3 11:Multi-step speed Reference 4 12: Reserved 13:Accel/decel inhibition reference 14:Switching of 1ST and 2nd Accel/Decel time 15:bb, normally open (NO) input 16:bb, normally closed(NC) input 17:UP COMMAND reference 18:DOWN COMMAND reference 19:Auto-program operation performance 20:Auto-program operation pause 21: Count trigger signal input 22:Count reset 23: Select ACI/Cancel AVI 24:JOG FWD 25:JOG REV 26: Reserved 27: Reserved 28: Reserved 29:Inhibiting output (N.O) 30:Inhibiting output (N.C) 31:Reserved	9

4 Input Function Parameters			Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
	4-07	Multi-functional Input Terminal M4 (Specially for flat knitting machine)		10
	4-08	Multi-functional Input Terminal M45 (Specially for flat knitting machine)		11
	4-09	Speed tracking after b.b reset	0:Tracking downwards from speed before b.b 1:Tracking upwards from min speed	0

5 Multi-step Speed and Auto-Program Operation Parameters			Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
	5-00	1st Step Speed	0.00~400Hz	0.0
	5-01	2nd Step Speed	0.0~400Hz	0.0
	5-02	3rd Step Speed	0.0~400Hz	0.0
	5-03	4th Step Speed	0.0~400Hz	0.0
	5-04	5th Step Speed	0.0~400Hz	0.0
	5-05	6th Step Speed	0.0~400Hz	0.0
	5-06	7th Step Speed	0.0~400Hz	0.0
	5-07	8th Step Speed	0.0~400Hz	0.0
	5-08	9th Step Speed	0.0~400Hz	0.0
	5-09	10th Step Speed	0.0~400Hz	0.0
	5-10	11th Step Speed	0.0~400Hz	0.0
	5-11	12th Step Speed	0.0~400Hz	0.0
	5-12	13th Step Speed	0.0~400Hz	0.0
	5-13	14th Step Speed	0.0~400Hz	0.0
	5-14	15th Step Speed	0.0~400Hz	0.0
	5-15	Auto Program Operation Mode	0. Auto operation mode cancelled 1. Stop after auto operating for 1 cycle. 2. Auto operation perform in cycles 3. Stop after auto operating for 1 cycle (STOP intervals). 4. Stop after auto operating for 1 cycle (STOP intervals).	0
	5~16	PLC Rotating Direction 1 (0 to 7th step speed)	0-255(0: Forward Run 1: Reverse Run)	0
	5-17	PLC Rotating Direction 2 (8th to 15th step speed)	0-255(0: Forward Run 1: Reverse Run)	0
	5-18	PLC Step 0 Time	0~65500S	0
	5-19	PLC 1st Step Time	0~65550S	0
	5-20	PLC 2nd Step Time	0~65550S	0
	5-21	PLC 3rd Step Time	0~65550S	0
	5-22	PLC 4th Step Time	0~65550S	0
	5-23	PLC 5th Step Time	0~65550S	0
	5-24	PLC 6th Step Time	0~65550S	0
	5-25	PLC 7th Step Time	0~65550S	0
	5-26	PLC 8th Step Time	0~65550S	0
	5-27	PLC 9th Step Time	0~65550S	0
	5-28	PLC 10th Step Time	0~65550S	0

5 Multi-step Speed and Auto-Program Operation Parameters			Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
	5-29	PLC 11th Step Time	0~65550S	0
	5-30	PLC 12th Step Time	0~65550S	0
	5-31	PLC 13th Step Time	0~65550S	0
	5-32	PLC 14th Step Time	0~65550S	0
	5-33	PLC 15th Step Time	0~65550S	0

6 Protection Parameters			Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
	6-01	Over current stall prevention level setting during operation	0: Unavailable	170
			20-200%	
	6-02	Over-torque detection function option	0: No detection	0
			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.	
	6-03	Over torque detection level	30~200%	150
	6-04	Setting for time of operation after over torque detection	0.1~10.0S	0.1
	6-05	Electrical thermal relay selection	0:No action	0
			1:Act in standard motor	
			2:Act in special motor	
	6-06	Thermal relay action time	30~600S	60
	6-07	Recent 1st fault record	0:No fault records	0
	6-08	Recent 2nd fault record	1:oc (over current)	0
	6-09	Recent 3rd fault record	2:ov (over voltage)	0
	6-10	Recent 4th fault record	3:oh (over heating)	0
	6-11	Recent 5th fault record	4:oL (drive over load)	0
	6-12	Recent 6th fault record	5:oL1(Electrical thermal relay)	0
			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)	

7 Special Parameters			Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
✓	7-00	Motor full load current setting	30~120%	85
✓	7-01	Motor no load current setting	0~90%	50
✓	7-02	Auto-torque compensation setting	1~10	0
✓	7-03	Auto slip compensation setting	0.0~10.0	0.0
	7-04~7-09	(Reserved)		

8 High Function Parameters			Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
	8-00	DC braking current level setting	0~100%	0
	8-01	DC braking time setting at the time of starting	0.0~60.0S	0.0
	8-02	DC braking time setting at the time of stopping	0.0~60.0S	0.0
	8-03	Initiation frequency of DC braking at the time of STOP	0.00~400Hz	0.00
	8-04	Restarting after momentary power loss	0:Stop running after momentary power loss	0
			1:Run continuously after momentary power loss, AC motor drive tracks downwards from frequency after power loss	
			2: Run continuously after momentary power loss, AC motor drive tracks upwards from frequency after power loss	
	8-05	Max time allowable for power loss	0.3~5.0S	2.0
	8-06	B.B time setting of Speed tracking	0.3~5.0S	0.5
	8-07	Max current setting for speed tracking	30~200%	150
	8-08	Max of inhibited frequency setting1	0.0~400Hz	0.0
	8-09	Min of inhibited frequency setting1	0.0~400Hz	0.0
	8-10	Max of inhibited frequency setting2	0.0~400Hz	0.0
	8-11	Min of inhibited frequency setting2	0.0~400Hz	0.0
	8-12	Max of inhibited frequency setting3	0.0~400Hz	0.0
	8-13	Min of inhibited frequency setting3	0.0~400Hz	0.0
	8-14	Fault restarting times	0~10	0
	8-15	AVR function options	0:AVR function available	1
			1:AVR function disabled	
			2:AVR function cancelled during deceleration	
	8-16	DC-bus braking level	220V series:350~450v	380

9 Communication Parameters			Available to set during operation	
	Parameter	Parameter functions	Setting range	Factory setting
✓	9-00	Communication address	1~247	1
✓	9-01	Communication transmitting speed	0:Baud rate 4800	1
			1: Baud rate 9600	
			2:Baud rate 14400	
			3: Baud rate 19200	
			4: Baud rate 38400	
✓	9-02	Transmitting fault treatment	0:Warning and running continuously	0
			1:warning and deceleration to stop	
			2:warning and coasting to a stop	
			3:no warning and running continuously	
✓	9-03	Communication watchdog	0: Prohibiting	0
		Range of setting	1~20:1~20s	
✓	9-04	Communication Material Format 1 ASCII mode	0:8,N,1	0
			1:8,N,2	
			2:8,E,1	
			3:8,E,2	
			4:8,O,1	
			5:8,O,2	
		Communication Material Format 1 RTU mode	6:8,N,2	
			7:8,E,1	
			8:8,O,1	

CHAPTER 4 TROUBLE SHOOTING

AC motor drive is provided with functions of warning and protection such as over voltage, low voltage and over current. Once fault occurs, protection function shall act, AC motor drive output stops, fault contactor acts and also free running of motor shall stop. For causes and corrective measures of a particular fault, fault display shall be taken as reference. Fault records shall be stored into computer memory inside AC motor drive (fault records for recent six times are available), and records can be read from digital control panel.

Attention shall be paid that, depressing RESET after fault shall only be available after fault has been eliminated.

Fault and corrective measures

Display	Descriptions of fault	Corrective measures
oc	AC motor drive detects false over current at output side.	1. Check rated current of motor complies with that of AC motor drive. 2. Check that there is no short circuit in U/t1-V/t2-W/T3. 3. Check that no short circuit or grounding occur to connection of motor. 4. Check that screws are securely tightened to AC motor drive. 5. Increase acceleration time (1-09, 1-10). 6. Check there is no over load to motor.
ou	AC motor drive detects Over voltage at inside DC high voltage side.	1. Check input voltage is within rated voltage range of AC motor drive, and see that no voltage surge occurs. 2. If over voltage occurs at DC high voltage side of AC motor drive is due to inertia back up voltage, deceleration time shall be increased.
oH	AC motor drive detects that at inside it is over heat, exceeding protection level.	1. Check that ambient environment is not over heat. 2. Check that the radiator is without foreign substance and air fan is running. 3. Check enough clearance for air flowing is provided to AC motor drive.
Lu	DC high voltage side over low inside AC motor drive.	1. Check power supply voltage is correct. 2. Check the load is free from sudden heavy load.
oL	Output current exceeds allowable current of AC motor drive. 60 sec shall be available in case of 150% rated current of AC motor drive is output.	1. Check motor is not over loaded. 2. Decrease torque (7-02) to improve set value. 3. Increase output capacity of AC motor drive.
oL 1	Inner electric relay protection acts	1. Check motor is not over loaded. 2. Check rated current (07-00) of motor is proper. 3. Check electric relay function setting 4. Increase motor capacity.
oL2	Motor load overlarge	1. Check motor load is not overlarge. 2. Check over-torque detection level setting (06-03~06-05).

Display	Descriptions of fault	Corrective measures
ocA	Over current during acceleration	1. Check screws securing AC motor drive 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 the AC motor into one with larger output capacity
ocd	Over current during deceleration	1. Check insulation of wiring from U-V-W to motor 2. Increase acceleration time 3. Replace the AC motor into one with larger output capacity
ocn	Over current during running	1. Check insulation of wiring from U-V-W to motor 2. Check motor running is not blocked 3. Replace the AC motor into one with larger output capacity.
EF	Output of AC motor drive stops when external multifunction input Terminal (MI1~MI5) is set to Emergency Stop	Depress RESET key after fault has been eliminated.
cF1	Inner memory IC data writing fault	1. Supply power again after power off. 2. Factory maintenance and overhaul
cF2	Inner memory IC data reading fault	1. Depress RESET key and reset parameter to factory setting. 2. If unavailable, search for factory maintenance and overhaul.
cF3	AC motor drive 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 and HPF.3)	Factory maintenance and overhaul
bb	When external multifunction terminals (MI1, MI2, and MI3) is set to this function and GND is closed, A C motor drive output stops	“b.b” shall disappear immediately after signal source eliminated.
cFA	Auto accel/decel mode failure	1. Check AC motor drive complies with motor properly 2. Load back up inertia overlarge 3. Sudden load variation
CE1		1. Check communication signals were not reversely connected (SG+, SG-) 2. Check communication format is correct.
codE	Software protection activation	Factory maintenance and overhaul

CHAPTER 5 Standard Specification

Input voltage			220V		
Model number S100-20041 A			002	004	007
Power of applicable motor (KVA)			0.2	0.4	0.75
Output	Output rated capacity(kVA)		0.6	1.0	1.6
	Output rated current (A)		1.6	2.5	4.2
	Max output voltage		Three phase corresponded input voltage		
	Output frequency range (Hz)		1.0~400Hz		
Power supply	Rated input current (A)		4.9	6.5	9.7
	Variation range for allowable input voltage		Single phase power supply 200~240V 50/60Hz		
	Variation range for power supply frequency		±5%		
Control Characteristics	Control mode		SVPWM space vector modulation (Carrier frequency 2kHz~10 kHz)		
	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 to 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 5k /0.5W, DC 0~+10V (Input resistance 47 k), 4~+20mA (Input resistance 250), multi-input options 1~3 (3-step speed; Jog run, Up/Down reference), communication set up		
	Running set signal	External terminals	Various operation modes combined by M0, M1, M2 and M3; RS-485 Communication Board		
	Multi-function Input Terminal		Step-speed reference 0~3 selection, Jog run reference, acceleration/deceleration inhibition reference, Switching of First/Second acceleration/deceleration; selection of counter, program operation and external B.B (NC, NO) selection		
	Multi-function output Terminal		During running, frequency agreement, set up frequency agreement, count agreement, Zero-speed, fault reference during B.B, LOCAL/REMOTE reference, program running reference		
Other functions			AVR function, S curve, over voltage stalling prevention, over current stalling prevention, fault records inspection, carrier frequency regulation, reverse run inhibition setting, DC braking, initiation frequency setting, Restarting after momentary power loss, Max/Min frequency setting, Parameter locking/reset		
Protection functions			Over voltage, Over current, low voltage, over load limitation, electronic thermal relay, over heat, self-test, grounding protection and fault contactor		
Cooling methods			Natural cooling down		
environment	Operational Environment		Below 100m, indoor (free from corrosive gas, fluid or dust/dirt)		
	Ambient temperature		-10℃ to +40℃ (free from moister or frost)		
	Storing temperature		-20℃ to +60℃		
	Environment dampness		Below 90%RH without moister		
	Vibration		Lower than 20Hz: 9.80665m/s^2(1G); 20~50Hz: 5.88m/s^2(0.6G)		