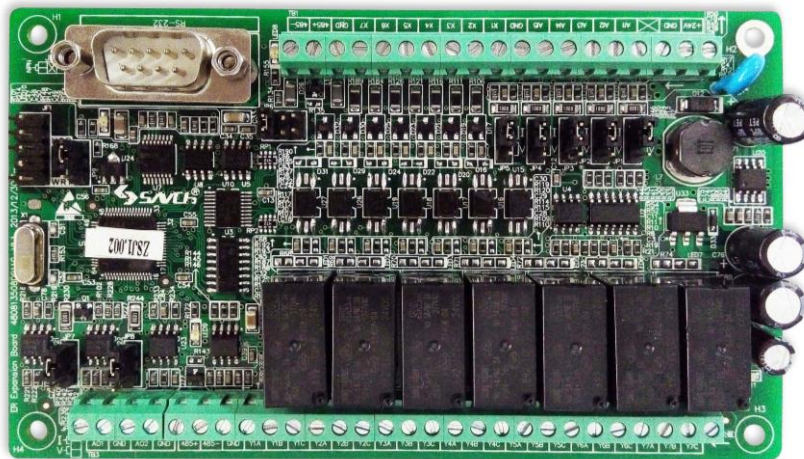


Thank you for purchasing SAVCH inverter extension board. In order to fully utilize the function of the inverter extension board and ensure the safety of the user, please refer to this operation manual. When you find any problems in your use and this manual can not provide you with answers, please contact your SAVCH dealer or our business people. Our professionals are happy to assist you. And please continue to use SAVCH products.

### Inverter extension board user manual

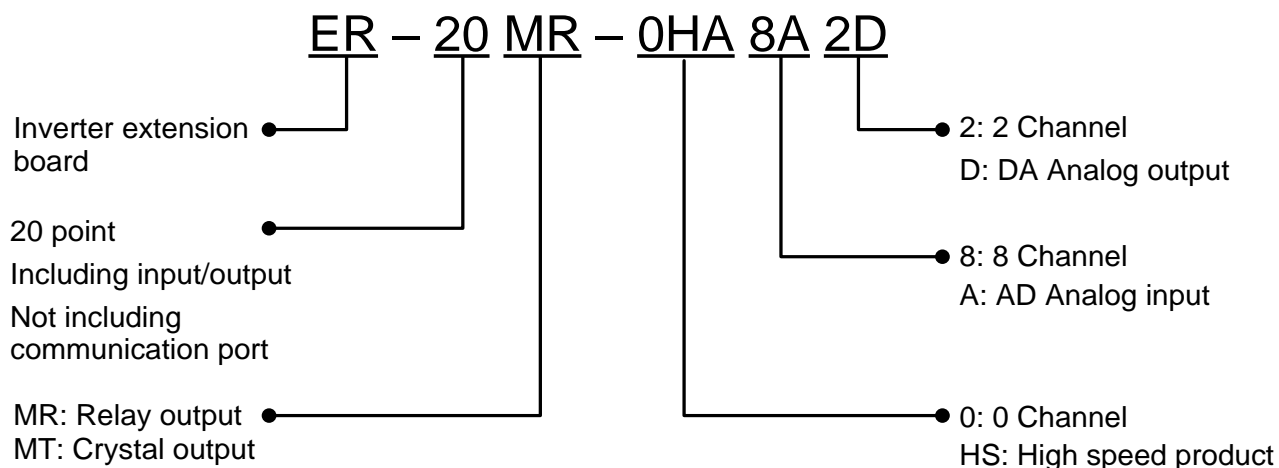


## 1. Function overview

The inverter extension board can be used to collect the input of the switch signal, analog input, relay and analog output. It can complete various types of logic action control. The dual RS485 communication can complete the data communication with the host computer and the controlled device. The hardware has the following functions:

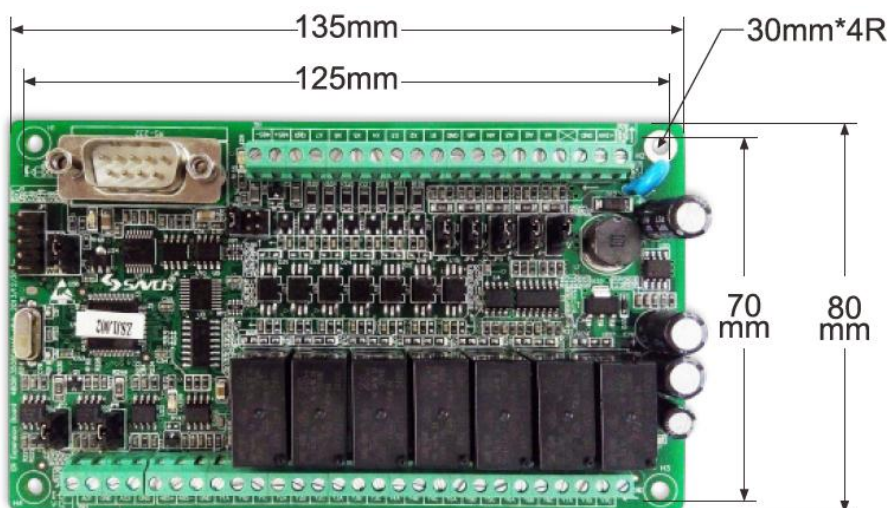
- 6-line switch signal input, NPN / PNP input mode optional, general model input frequency response 5kHz, high-speed model input frequency corresponding to 100kHz.
- 7-line output, relay (normally open / normally closed), transistor, high-speed output (100kHz) three output mode optional.
- 5-line analog input, can choose 0~10V voltage signal input or 4~20mA current signal input.
- 2-line analog output, can choose 0~10V voltage signal input or 4~20mA current signal output.
- 3-line PT100 temperature sensor signal acquisition, measuring range 0 ~ 150 degrees.
- 2-line RS485 communication port, Modbus RTU communication protocol, can be connected to the host computer, man-machine interface and meet the Modbus RTU communication format of various types of controlled equipment.
- 1 RS232 communication port, can complete the communication with the peripherals and software upgrades.

## 2. Model Description



## 3. Installation and wiring

- To ensure safety, the wiring must be carried out after power failure;
- Extension board wiring as far as possible with the power line to distinguish, the key signal shielded to prevent interference;
- The height distance between the extension board and the fixed metal plate should be kept above 10mm. If it can not be satisfied, it is necessary to add the insulating paper under the extension board.
- Working power supply DC24V  $\pm$  20%, power consumption less than 12W, does not include the external sensor energy consumption, in order to ensure the system is stable and reliable, please choose not less than 25W power supply;



## 4. Port wiring instructions

### Input port TB1

Port name	Function description
+24V	Extension board power port, connect DC24V power supply.
GND	Extension board power supply 0V.
+5V	+ 5V power supply for external devices to provide 5V power supply

Port name	Function description
AI1	Analog signal input channel 1, through the JP1 jumper selection input 0~10V voltage signal, or 4~20mA current signal.
AI2	Analog signal input channel 2, through the JP2 jumper selection input 0~10V voltage signal, or 4~20mA current signal.
AI3	Analog signal input channel 3, through the JP3 jumper selection input 0~10V voltage signal, or 4~20mA current signal.
AI4	Analog signal input channel 4, through the JP4 jumper selection input 0~10V voltage signal, or 4~20mA current signal.
AI5	Analog signal input channel 5, through the JP5 jumper select input 0~10V voltage signal, or 4~20mA current signal.
GND	Analog signal input common.
X1	Digital switch signal input channel 1, through the JP6 jumper select NPN / PNP input.
X2	Digital switch signal input channel 2, through the JP6 jumper select NPN / PNP input.
X3	Digital switch signal input channel 3, can be selected by JP6 jumper NPN / PNP input.
X4	Digital switch signal input channel 4, through the JP6 jumper select NPN / PNP input.
X5	Digital switch signal input channel 5, through the JP6 jumper select NPN / PNP input.
X6	Digital switch signal input channel 6, through the JP6 jumper select NPN / PNP input.
GND	Digital switch signal input common
PT100A	PT100 temperature sensor input channel A
PT100B	PT100 temperature sensor input channel B
PT100C	PT100 temperature sensor input channel C

- Signal input channels 1 to 7 can only be selected by JP6 jumper. NPN / PNP input mode can not be selected.
- 485 communication lines such as the distance from the power line, then the need to use shielded cable to reduce the impact of interference on the communication.
- The common ends of all signals are connected together, but the internal PCB traces have a distinction between the signal flow and the interference limit on the control system according to the maximum limit of the corresponding common wiring.

### Output port TB2

Port name	Function description
485+	RS485 communication port, host mode, baud rate 9600, data bit 8, stop bit 1, station number 1, no parity.
485-	RS485 communication port, host mode, baud rate 9600, data bit 8, stop bit 1, station number 1, no parity.
GND	Transistor or high-speed output when the signal is common

Port name	Function description
Y1A	Relay output signal channel 1, A / C is normally open contact, B / C is normally closed contact.
Y1B	Relay output signal channel 1, A / C is normally open contact, B / C is normally closed contact.
Y1C	Relay output signal channel 1, A / C is normally open contact, B / C is normally closed contact, transistor or high-speed output by the C contact output.
Y2A	Relay output signal channel 2, A / C is normally open contact, B / C is normally closed contact.
Y2B	Relay output signal channel 2, A / C is normally open contact, B / C is normally closed contact.
Y2C	Relay output signal channel 2, A / C is normally open contact, B / C is normally closed contact, transistor or high-speed output by the C contact output.
Y3A	Relay output signal channel 3, A / C is normally open contact, B / C is normally closed contact.
Y3B	Relay output signal channel 3, A / C is normally open contact, B / C is normally closed contact.
Y3C	Relay output signal channel 3, A / C is normally open contact, B / C is normally closed contact, transistor or high-speed output by C contact output.
Y4A	Relay output signal channel 4, A / C for the normally open contact, B / C for the normally closed contact.
Y4B	Relay output signal channel 4, A / C for the normally open contact, B / C for the normally closed contact.
Y4C	Relay output signal channel 4, A / C for the normally open contact, B / C for the normally closed contact, transistor or high-speed output by the C contact output.
Y5A	Relay output signal channel 5, fixed as a normally open contact.
Y5C	Relay output signal channel 5, fixed to normally open contact, transistor or high-speed output by the C contact output.
Y6A	Relay output signal channel 6, fixed to normally open contacts.
Y6C	Relay output signal channel 6, fixed to normally open contact, transistor or high-speed output by the C contact output.
Y7A	Relay output signal channel 7, fixed as a normally open contact.
Y7C	Relay output signal channel 7, fixed to normally open contact, transistor or high-speed output by the C contact output.
GND	485 communication shielded ground terminal
485+	RS485 communication port, slave mode, baud rate 19200, data bit 8, stop bit 1, station number 1, no parity
485-	RS485 communication port, slave mode, baud rate 19200, data bit 8, stop bit 1, station number 1, no parity

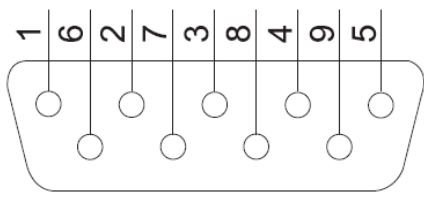
- If the 485 communication cable is near to the power cable, then it needs to use shielded cable to reduce the impact of interference on the communication.
- LED8 as the slave communication indicator, after the success of the flash quickly flashing state, communication is not connected when the 1s interval flashing.
- LED9 as the host communication indicator, after the success of fast flashing state, communication is not connected when the 1s interval flashing.

### Output port TB3

Port name	Function description
AO1	Analog signal output channel 1, the output 4 ~ 20mA current signal.
GND	Analog signal output channel 1 common
AO2	Analog signal output channel 2, the output 4 ~ 20mA current signal.
GND	Analog signal output channel 2 common

### Communication port JF2

Port name	Function description
1	None PIN
2	RXD
3	TXD
4	None PIN
5	GND
6	None PIN
7	None PIN
8	None PIN
9	None PIN



- RS232 communication port is slave mode, baud rate 19200, data bit 8, stop bit 1, station number 1, no parity.
- LED10 as a communication indicator, after the success of fast flashing state, communication is not connected when the 1s interval flashing.
- The communication port can also be used as a program upgrade port. When it is used to upgrade the program, it is necessary to short the JP9 jumper in WRT mode and work normally in NOR mode.

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#### Qualification

Received ISO9001 and CE recognition

520202922000 V1.0 2018-05-02

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