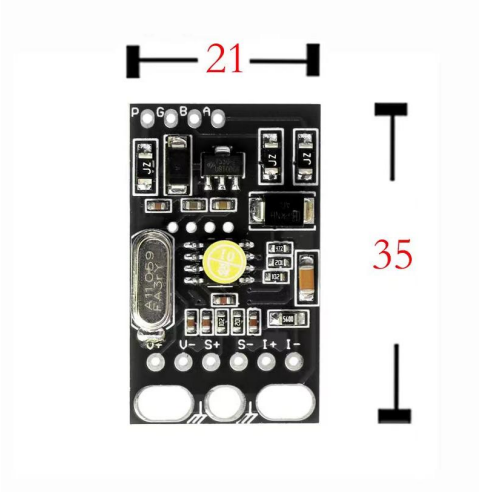
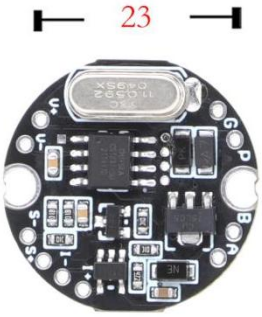
SIER ELECTRONICS CO., LTD
A: No.1 Binhe nan road, Baoji, 721004,Shaanxi, China
Tel: +86 917 3652001 Fax: +86 917 3652001
Email: kenny@sierelectro.com Web: www.sierelectro.com

SS01 and SS09 Series Circuit Modules

Introduction

The SS01 and SS09 series circuit modules convert the sensor output analog signals into standard Modbus RTU protocol suitable for RS485 interface communication through dedicated conditioning chips. The circuit module has a small dimension, reliable performance, easy application, wide suitability for sensors, and can be powered by constant current and constant voltage. Additionally, the sensor signal can be calibrated at multiple points, which can be widely used for signal conditioning of various sensors.





Specification

Parameter	Min.	Typ.	Max.	Unit	Remark
Input voltage(V_{in})	DC9	DC24	DC28	V	Power supply
constant-current source	0.6	0.7	0.8	mA	Sensor power supply
Differential signal-(S-) Differential signal+(S+)	+-VREF/ GAIN （VREF is ADC reference voltage,GAIN is ADC's magnification）			mV	Sensor differential signal input
Protective voltage	28		30	V	Circuit Board Protection Insertion Voltage
Sampling ADC	24 bits			bit	
Temperature drift performance	±25ppm				
Sensor Type	Can be connected to diffuse silicon, ceramic piezoresistive, strain gauge or other suitable sensors.				
Operation Temp.	-20		85	℃	
Storage Temp.	-40		85	℃	

Product debugging

SS01 and SS09 series circuit board wiring is shown in the below,

Sensor terminals
V+：constant voltage source supply+
V-：constant voltage source supply-
S+：Sensor Output +
S-：Sensor Output-
I+：constant current source supply+
I-：constant current source supply-

Module Output Terminal
P: V+
G: GND
A: RS485A
B: RS485B

Debugging method

SS01 and SS09 series circuit modules software interface is as below,

Debugging and calibration process:

1. Complete the connection between the circuit module and the sensor according to the circuit wiring method
2. Use the RS485 USB conversion module to connect the circuit module to the computer based on the output terminal wiring definition.
3. Select the corresponding serial port from the "Serial Port Selection" drop-down menu, and click the

"Search" button to start searching for online transmitters. When the number of online transmitters is displayed in the bottom left corner, click the "Stop" button to automatically read the current product information.
4. You can also click the "Read All" button to read the default parameter settings of the current transmitter
5. If the user needs to write relevant data, they must enter the unlock password, hexadecimal 3879 before operating.
6. Set the required product address, baud rate, and unit based on the software interface information.
7. Select the amplification factor based on the sensor dimension, and write it into the zero display, full scale display, decimal place, and production year. Click "Write" on the right side of the input box for each parameter input to save the settings
8. When calibrating, the product defaults to 2 o'clock, and customers can also change it according to their requirements. Select the points to be calibrated in the data collection area and click "Write Points" to complete the settings. According to the prompts at each point, pressurize to the target pressure, and click "Collect 1" when the pressure stabilizes. By analogy, until the last point collection is completed, click on "User Save and Factory Save".
9. Due to the inherent characteristics of the sensor, there may be zero deviation during long-term use. Using this module can effectively solve this problem. You can click the "zero" button to perform overall translation of the sensor to achieve passive calibration.
For example: Now adjust 0~1Mpa, input 0 for zero point display, input 1000 for full scale display, and select 0.000 for decimal point. During normal operation, the range of 0.000~1.000MPa is displayed, and customers can also display 0.00~1.00MPa according to their own product requirements., Zero display input 0. Full scale display input 100, decimal point selection 0.00.

Appendix 1 SS01 and SS09 series circuit modules Communication Protocol

Item	Name	Command	Modify function 06	Readout function 03	Remark
1	Address	0000	OK	OK	
2	Baud rate	0001	OK	OK	
3	Unit	0002	OK	OK	
4	Decimal point	0003	OK	OK	
5	Real-time pressure value	0004	/	OK	
6	Offset value	0005	OK	OK	
7	Communications calibration	0006	OK	OK	
8	Zero display	0007	OK	OK	
9	Span display	0008	OK	OK	
10	Product ID No.	0009	OK	OK	
11	Unlocking Code	000A	OK	OK	
12	Collection Points	000B	OK	OK	
13	Magnification	000C	OK	Ok	

14	Collection Point 1	000D	OK	OK	
15	Collection Point 2	000E	OK	Ok	
16	Collection Point 3	000F	OK	OK	
17	Collection Point 4	0010	OK	OK	
18	Collection Point 5	0011	OK	OK	
19	Display 1	0012	OK	OK	
20	Display 2	0013	OK	OK	
21	Display 3	0014	OK	OK	
22	Display 4	0015	OK	OK	
23	Display 5	0016	OK	OK	
24	User Save	01081001xxxx	OK	/	
25	Save Factory	01081002xxxx	OK	/	0044
26	Restoration of the factory	01081003xxxx	OK	/	0055
E.g.：01 03 00 00 00 01 84 0A					