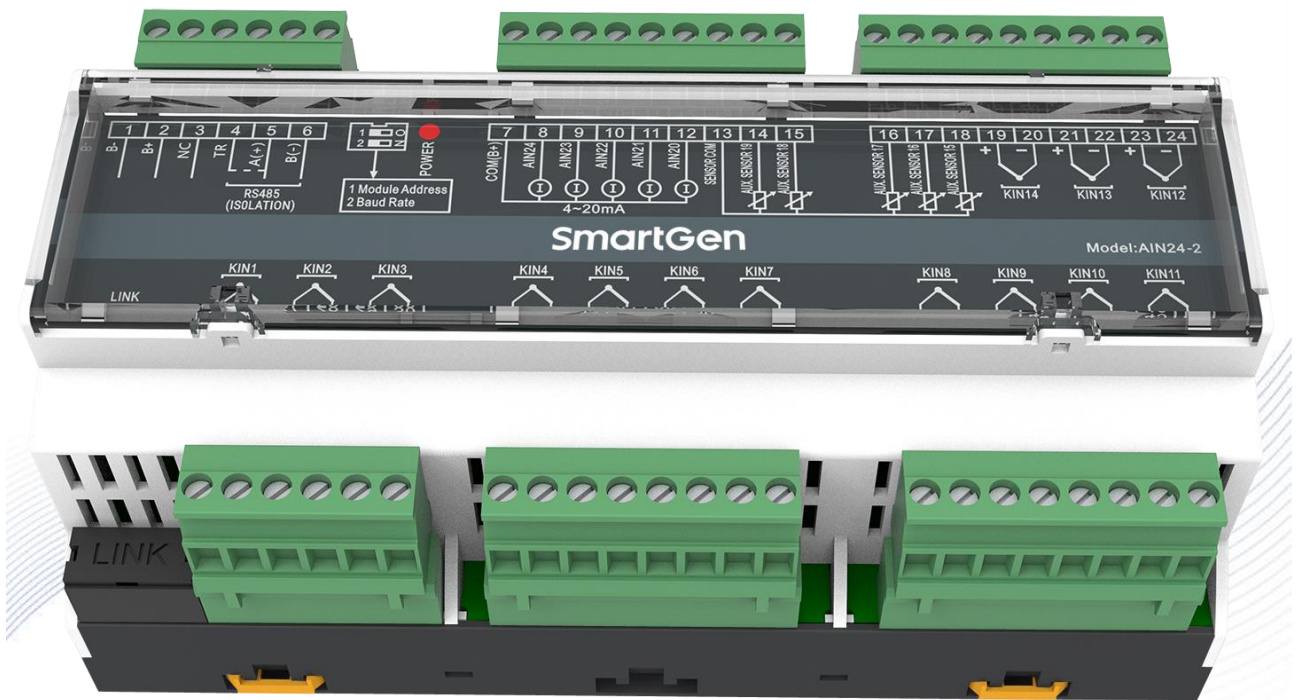


# SmartGen

MAKING CONTROL SMARTER

## AIN24-2 ANALOG INPUT MODULE USER MANUAL



郑州众智科技股份有限公司  
SMARTGEN(ZHENGZHOU)TECHNOLOGY CO.,LTD.

No.28 Xuemei Street, Zhengzhou, Henan, China

Tel: +86-371-67988888/67981888/67992951

+86-371-67981000(overseas)

Fax: +86-371-67992952

Email: [sales@smartgen.cn](mailto:sales@smartgen.cn)

Web: [www.smartgen.com.cn](http://www.smartgen.com.cn)

[www.smartgen.cn](http://www.smartgen.cn)




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**Table 1 – Software Version**

Date	Version	Content
2021-10-26	1.0	Original release.
2023-02-28	1.1	Update the logo of SmartGen.

**Table 2 – Notation Clarification**

Symbol	Instruction
 NOTE	Highlights an essential element of a procedure to ensure correctness.
 CAUTION	Indicates a procedure or practice, which, if not strictly observed, could result in damage or destruction of equipment.
 WARNING	Indicates a procedure or practice, which could result in injury to personnel or loss of life if not followed correctly.

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## 1 OVERVIEW

**AIN24-2 Analog Input Module** is a module which has 14-way K-type thermocouple sensor, 5-way resistance type sensor and 5-way (4-20)mA current type sensor. The sampling data are transmitted to the master controller via RS485 port.

## 2 PERFORMANCE AND CHARACTERISTICS

- With 32-bit ARM based SCM, high integration of hardware and more reliable;
- Must be used with master controller together;
- RS485 communication baud rate can be set as 9600bps or 19200bps via dial switch;
- Module address can be set as 1 or 2;
- Wide power supply range DC(8~35)V, suitable to different battery voltage environment;
- 35mm guide rail mounting type;
- Modular design, pluggable terminal, compact structure and easy installation.

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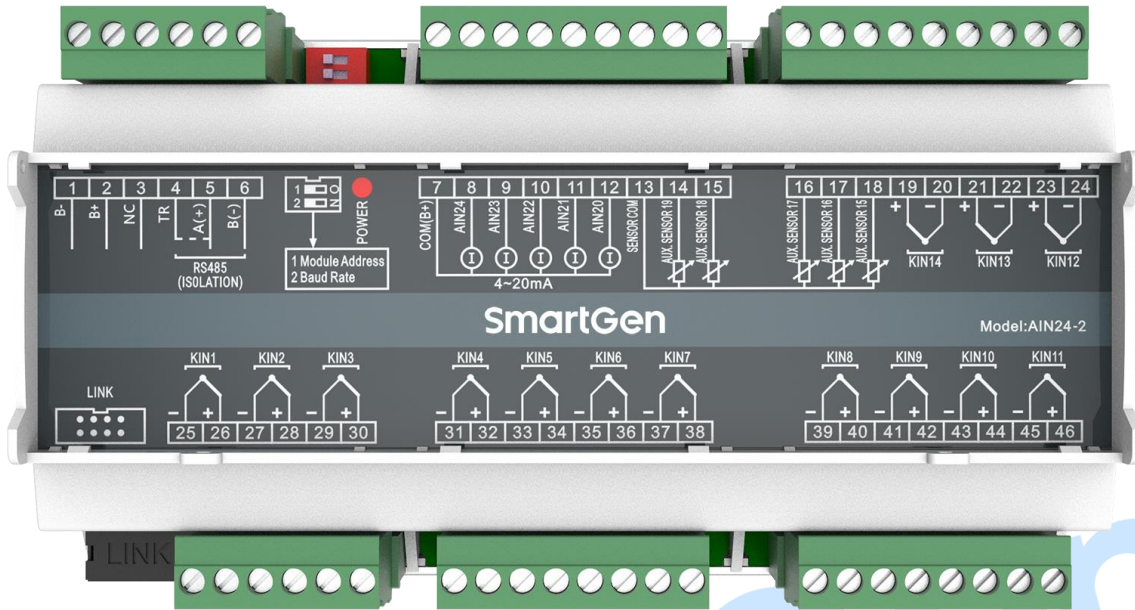
**3 TECHNICAL PARAMETERS**

**Table 3 – Technical Parameters**

Item	Content
Working Voltage	DC(8~35)V, continuous power supply
Power Consumption	<0.5W
K-type Thermocouple Measurement Accuracy	1°C
(4-20)mA Current Measurement Accuracy	Class 1
Case Dimension	161.6mm x 89.7mm x 60.7mm
Rail Dimension	35mm
Working Temperature	(-25~+70)°C
Working Humidity	(20~93)%RH
Storage Temperature	(-40~+80)°C
Weight	0.33kg



## 4 WIRE CONNECTION



**Fig.1 – AIN24-2 Panel Drawing**

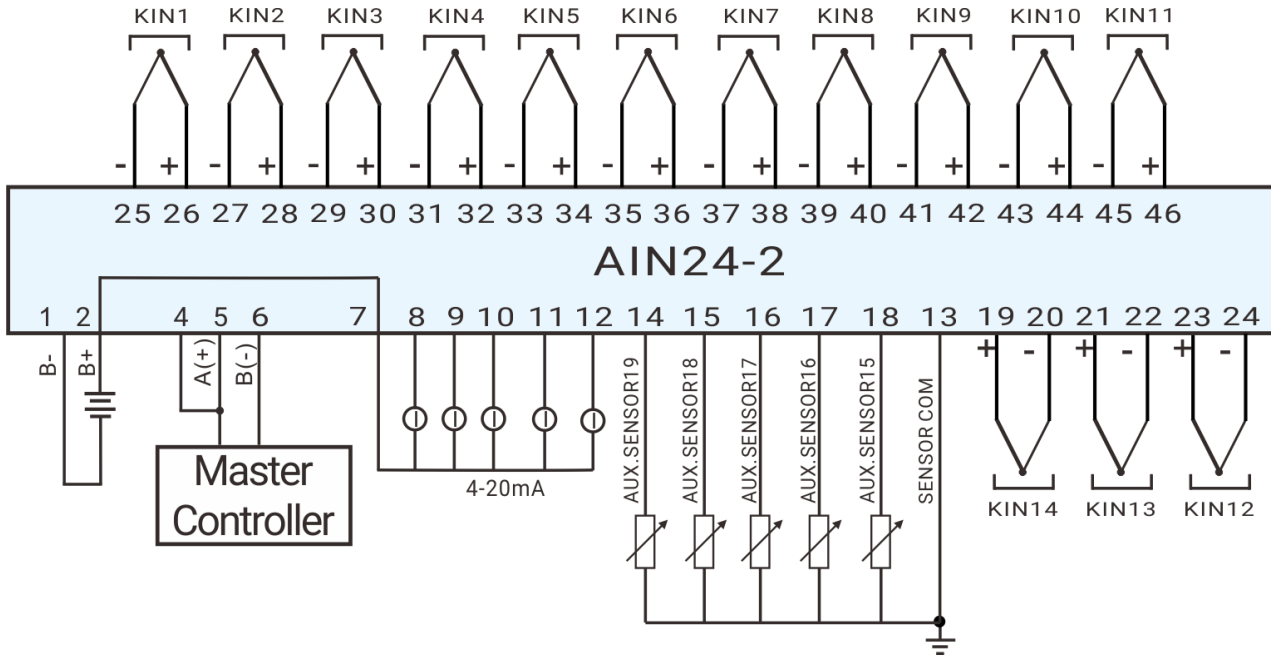
**Table 4 – Terminal Connection**

No.	Function	Cable Size	Description
1	B-	1.0mm <sup>2</sup>	DC power supply negative input.
2	B+	1.0mm <sup>2</sup>	DC power supply positive input.
3	NC		No Contact.
4	TR	0.5mm <sup>2</sup>	Short connect Terminal 4 and Terminal 5 if the matched resistance is required.
5	RS485 A(+)	0.5mm <sup>2</sup>	The RS485 port for communication with master controller. 120Ω shielding wire with its one end grounded is recommended.
6	RS485 B(-)		
7	COM (B+)	1.0mm <sup>2</sup>	4-20mA current sensor COM terminal (B+)
8	AIN24	0.5mm <sup>2</sup>	4-20mA current sensor terminal
9	AIN23	0.5mm <sup>2</sup>	4-20mA current sensor terminal
10	AIN22	0.5mm <sup>2</sup>	4-20mA current sensor terminal
11	AIN21	0.5mm <sup>2</sup>	4-20mA current sensor terminal
12	AIN20	0.5mm <sup>2</sup>	4-20mA current sensor terminal
13	SENSOR COM	0.5mm <sup>2</sup>	Resistance sensor COM terminal (B+)
14	AUX.SENSOR 19	0.5mm <sup>2</sup>	Resistance sensor terminal
15	AUX.SENSOR 18	0.5mm <sup>2</sup>	Resistance sensor terminal
16	AUX.SENSOR 17	0.5mm <sup>2</sup>	Resistance sensor terminal

No.	Function	Cable Size	Description
17	AUX.SENSOR 16	0.5mm <sup>2</sup>	Resistance sensor terminal
18	AUX.SENSOR 15	0.5mm <sup>2</sup>	Resistance sensor terminal
19	KIN14+	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
20	KIN14-		
21	KIN13+	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
22	KIN13-		
23	KIN12+	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
24	KIN12-		
25	KIN1-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
26	KIN1+		
27	KIN2-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
28	KIN2+		
29	KIN3-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
30	KIN3+		
31	KIN4-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
32	KIN4+		
33	KIN5-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
34	KIN5+		
35	KIN6-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
36	KIN6+		
37	KIN7-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
38	KIN7+		
39	KIN8-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
40	KIN8+		
41	KIN9-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
42	KIN9+		
43	KIN10-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
44	KIN10+		
45	KIN11-	0.5mm <sup>2</sup>	"K-type" thermocouple sensor
46	KIN11+		
	SWITCH	<p>The master controller can connect to two AIN24-2 modules at the same time.</p> <p>Address selection: It is module 1 when the switch 1 is connected to 12 while module 2 when connect to ON position.</p> <p>Baud rate selection: It is 9600bps when the switch 2 is connected to 12 while 19200bps when connect to ON position.</p>	
	POWER	<p>Power supply normal indicator;</p> <p>It is flashing when the communication is abnormal for over 10s.</p>	

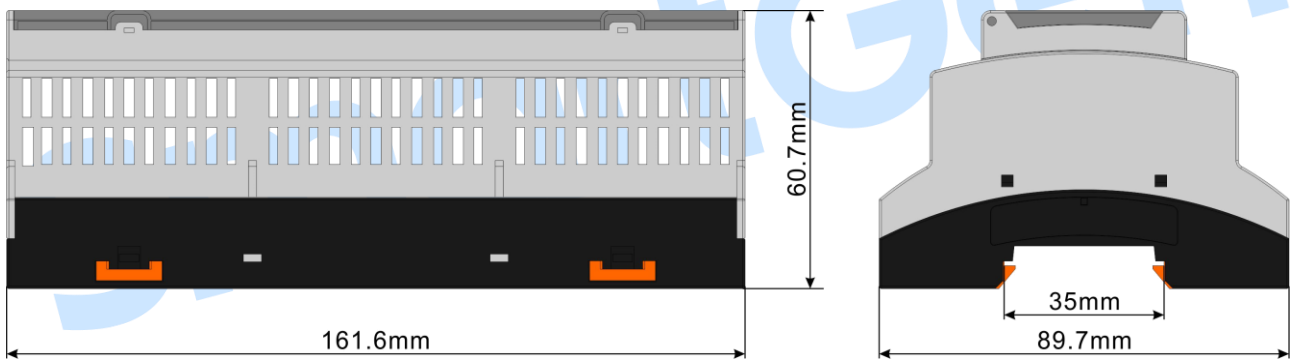


**5 ELECTRICAL CONNECTION DIAGRAM**



**Fig.2 – AIN24-2 Electrical Connection Diagram**

**6 CASE DIMENSIONS**



**Fig.3 – Overall Dimensions**

**7 TROUBLE SHOOTING**

**Table 5 – Troubleshooting**

Problem	Possible Solution
Controller no response with power	Check power voltage; Check controller connection wirings; Check DC fuse.
RS485 communication failure	Check if RS485 wires are connected correctly.