

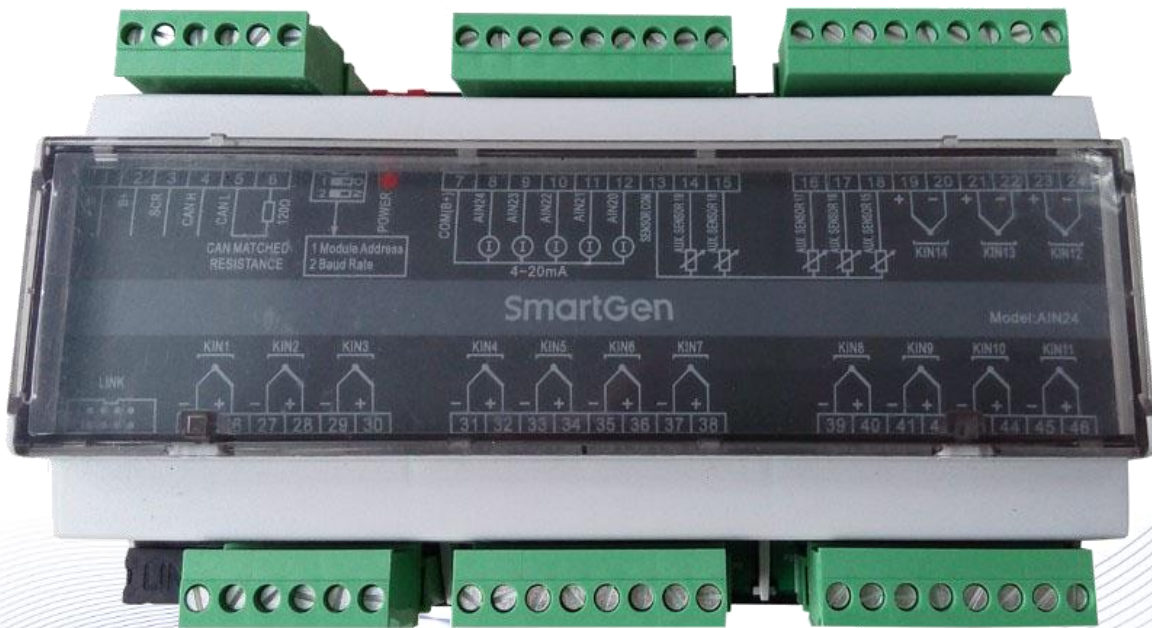
SmartGen

MAKING CONTROL SMARTER

AIN24

ANALOG INPUT MODULE

USER MANUAL



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Table 1 Software Version

Date	Version	Content
2014-07-26	1.0	Original release.
2023-02-25	1.1	Update the manual format, information and logo of SmartGen.

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This manual is suitable for AIN24 Analog Input Module only.

Table 2 Clarification of notation

SIGN	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 error operation may cause death, serious injury and significant property damage.

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1 OVERVIEW

AIN24 analog input module is an expansion module which has 14 “K-type” thermocouple sensor input, 5 resistor sensor input and 5 4mA~20mA current sensor input. The data collected by AIN24 are transmitted to the HMC9000 controller for processing via CANBUS port. Different alarm threshold values can be set for each sensor via HMC9000 controller, enabling module to basically meet all kinds of customer demands.

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2 PERFORMANCE AND CHARACTERISTICS

- With ARM-based 32-bit SCM, high integration of hardware and more reliable;
- Must be used with Main controller together;
- CANBUS communication baud rate can be set as 250kbps or 125kbps via dial switch;
- Module address can be set as 1 or 2.
- Widely power supply range DC(8~35)V, suitable to different starting battery voltage environment;
- 35mm rail mounting type;
- Modular design, pluggable terminal, compact structure with easy installation.

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Table 3 Technical Parameters

Item	Content
Working Voltage	DC8.0V~35.0V continuous power supply
Power Consumption	<0.5W
“K-type” Sensor Measurement Accuracy	1°C
Resistor Sensor type	PT100, VDO
4-20mA Sensor Measurement Accuracy	Class 0.25
Case Dimension	161.6mm x 89.7mm x 60.7mm
Rail Dimension	35mm
Working Temp.	(-25~+70)°C
Working Humidity	(20~93)%RH
Storage Temp.	(-25~+70)°C
Weight	0.33kg

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4 CONNECTION

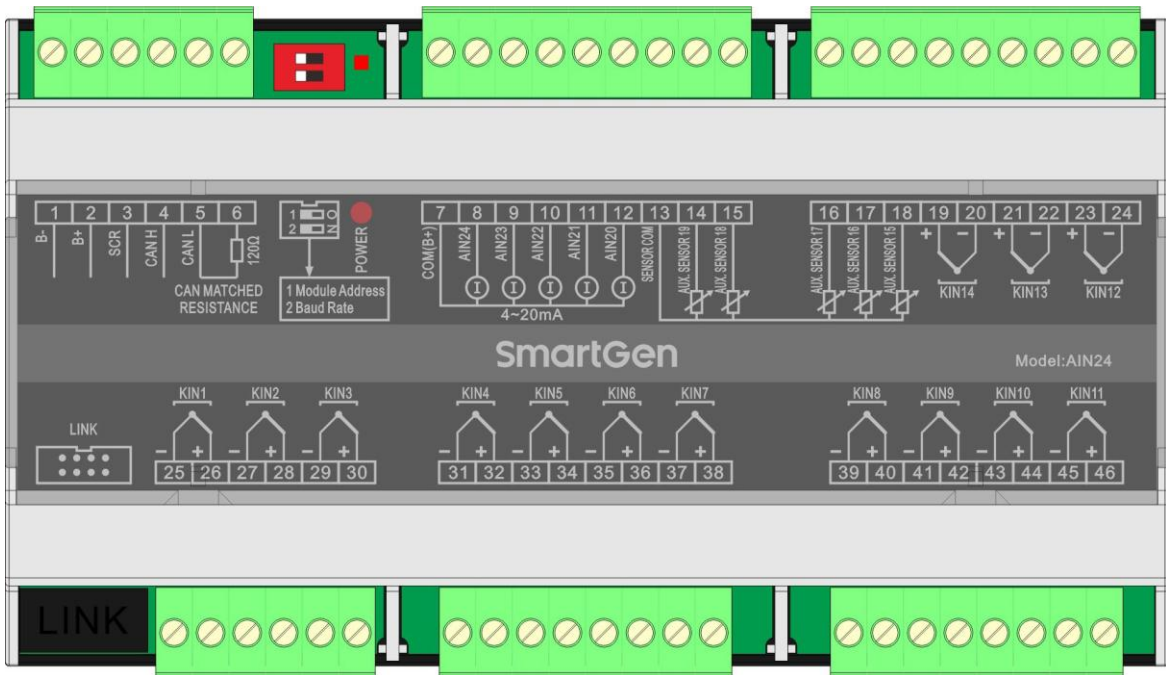


Fig.1 – AIN24 Front Panel

Table 4 Terminal Connection

NO.	Function	Cable Size	Description
1	B-	1.0mm ²	DC power supply negative input.
2	B+	1.0mm ²	DC power supply positive input.
3	SCR	0.5mm ²	A CANBUS port which communicate with HMC9000 controller. 120Ω shielding wire with its one end grounded is recommended. If 120Ω matched resistance is needed, make terminal 5, 6 short circuits.
4	CAN(H)		
5	CAN(L)		
6	Matched Resistance (120Ω)		
7	COM(B+)	1.0mm ²	4-20mA current sensor COM terminal (B+)
8	AIN24	0.5mm ²	4-20mA current sensor terminal
9	AIN23	0.5mm ²	4-20mA current sensor terminal
10	AIN22	0.5mm ²	4-20mA current sensor terminal
11	AIN21	0.5mm ²	4-20mA current sensor terminal
12	AIN20	0.5mm ²	4-20mA current sensor terminal
13	SENSOR COM	0.5mm ²	Resistor Sensor COM terminal (B+)
14	AUX.SENSOR 19	0.5mm ²	Resistor Sensor terminal
15	AUX.SENSOR 18	0.5mm ²	Resistor Sensor terminal
16	AUX.SENSOR 17	0.5mm ²	Resistor Sensor terminal
17	AUX.SENSOR 16	0.5mm ²	Resistor Sensor terminal
18	AUX.SENSOR 15	0.5mm ²	Resistor Sensor terminal
19	KIN14+	0.5mm ²	"K-type" thermocouple sensor
20	KIN14-		
21	KIN13+	0.5mm ²	"K-type" thermocouple sensor

NO.	Function	Cable Size	Description
22	KIN13-		
23	KIN12+	0.5mm ²	"K-type" thermocouple sensor
24	KIN12-		
25	KIN1-	0.5mm ²	"K-type" thermocouple sensor
26	KIN1+		
27	KIN2-	0.5mm ²	"K-type" thermocouple sensor
28	KIN2+		
29	KIN3-	0.5mm ²	"K-type" thermocouple sensor
30	KIN3+		
31	KIN4-	0.5mm ²	"K-type" thermocouple sensor
32	KIN4+		
33	KIN5-	0.5mm ²	"K-type" thermocouple sensor
34	KIN5+		
35	KIN6-	0.5mm ²	"K-type" thermocouple sensor
36	KIN6+		
37	KIN7-	0.5mm ²	"K-type" thermocouple sensor
38	KIN7+		
39	KIN8-	0.5mm ²	"K-type" thermocouple sensor
40	KIN8+		
41	KIN9-	0.5mm ²	"K-type" thermocouple sensor
42	KIN9+		
43	KIN10-	0.5mm ²	"K-type" thermocouple sensor
44	KIN10+		
45	KIN11-	0.5mm ²	"K-type" thermocouple sensor
46	KIN11+		
	SWITCH	<p>HMC9000 can connect to two AIN24 modules at the same time.</p> <p>Address selection: It is module 1 when the switch 1 is connected to terminal 12 while module 2 when connect to ON terminal.</p> <p>Baud rate selection: It is 250kbps when the switch 2 is connected to terminal 12 while 125kbps when connect to ON terminal.</p>	
	POWER	Power Supply Indicator	

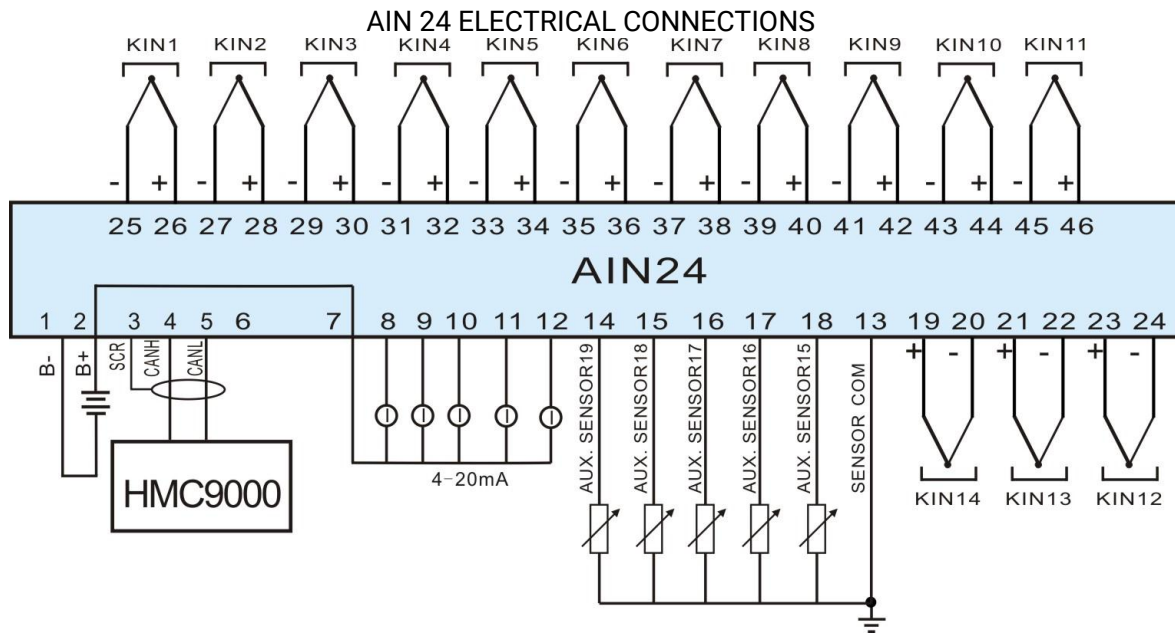


Fig.2 – AIN24 Electrical Connection

6 INSTALLATION

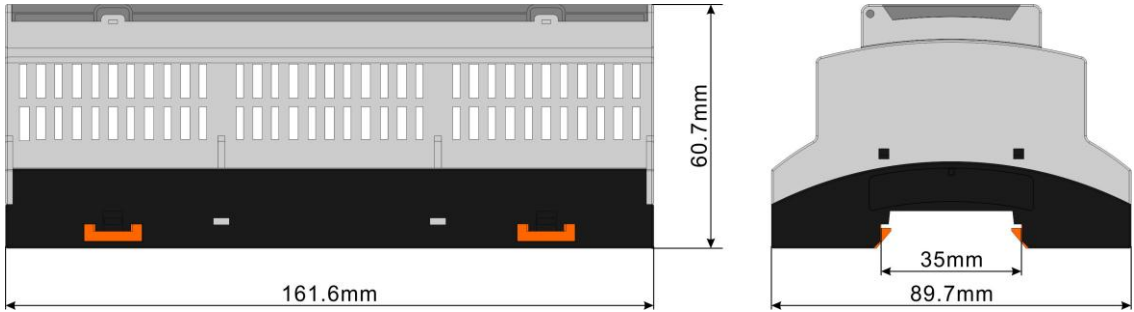


Fig.3 – Case Dimensions and Cutout

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Table 5 Troubleshooting

PROBLEM	POSSIBLE SOLUTION
Controller no response with power.	Check power supply voltage; Check controller connection wirings; Check DC fuse.
CANBUS communication failure	Check if CANBUS wires are connected in the opposite way.

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