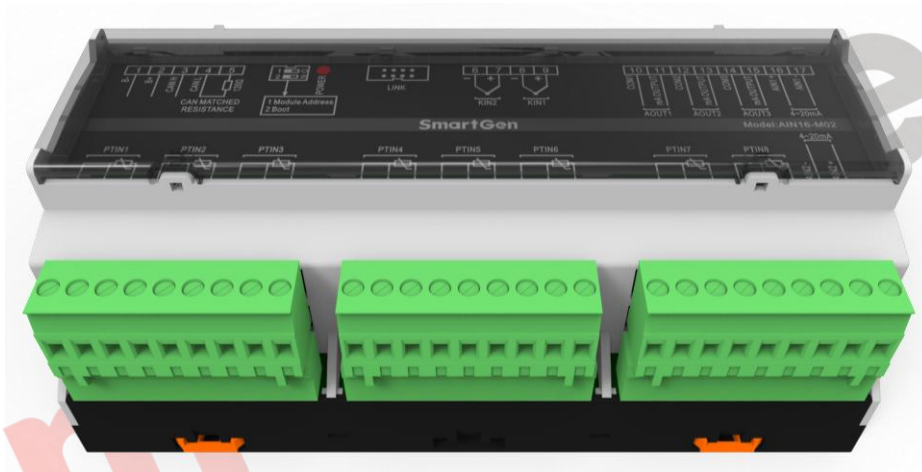




**SmartGen**  
ideas for power

**AIN16-M02**  
**ANALOG INPUT/OUTPUT MODULE**  
**USER MANUAL**



**SMARTGEN (ZHENGZHOU) TECHNOLOGY CO.,LTD.**



Chinese trademark

**SmartGen** English trademark

**SmartGen** — make your generator *smart*

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Table 1 - Software Version

Date	Version	Content
2018-03-26	1.0	Original release.

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## 1 OVERVIEW

AIN16-M02 analog input/output module contains 2 channels of K-type thermocouple sensor, 8 channels of resistor-type sensor and 2 channels of (4~20)mA current-type sensor input channels, and 3 channels of 4~20mA output channels. Collecting data are transmitted to the host controller for processing via CANBUS port, and the host controller can configure alarms of 12 input channels and PID parameters of 3 4~20mA output channels respectively as demand.

## 2 PERFORMANCE AND CHARACTERISTICS

Main characteristics are as below,

- a) 32-bit ARM micro-processor with high integration of hardware and more reliable;
- b) Must be used with host controller together;
- c) CANBUS communication baud rate can be set as 250kbps;
- d) Module address can be set as 1 or 2;
- e) Widely power supply range DC(8~35)V, suitable to different starting battery voltage environment;
- f) 35mm rail mounting type;
- g) Modular design, pluggable terminal, compact structure with easy installation.

## 3 TECHNICAL PARAMETERS

Table 2 – Technical Specification

Item	Content
Working Voltage	DC8.0V~35.0V continuous power supply
Power Consumption	<0.5W
K-type Thermocouple Accuracy	1°C
Resistance Sensor Type	PT100, VDO
4~20mA Current Sensor Accuracy	0.25 level
Case Dimension	161.6mm x 89.7mm x 60.7mm
Rail Dimension	35mm
Working Conditions	Temperature: (-25~+70)°C      Relative Humidity: (20~93)%
Storage Conditions	Temperature: (-25~+70)°C
Weight	0.33kg



**4 WIRE CONNECTION**

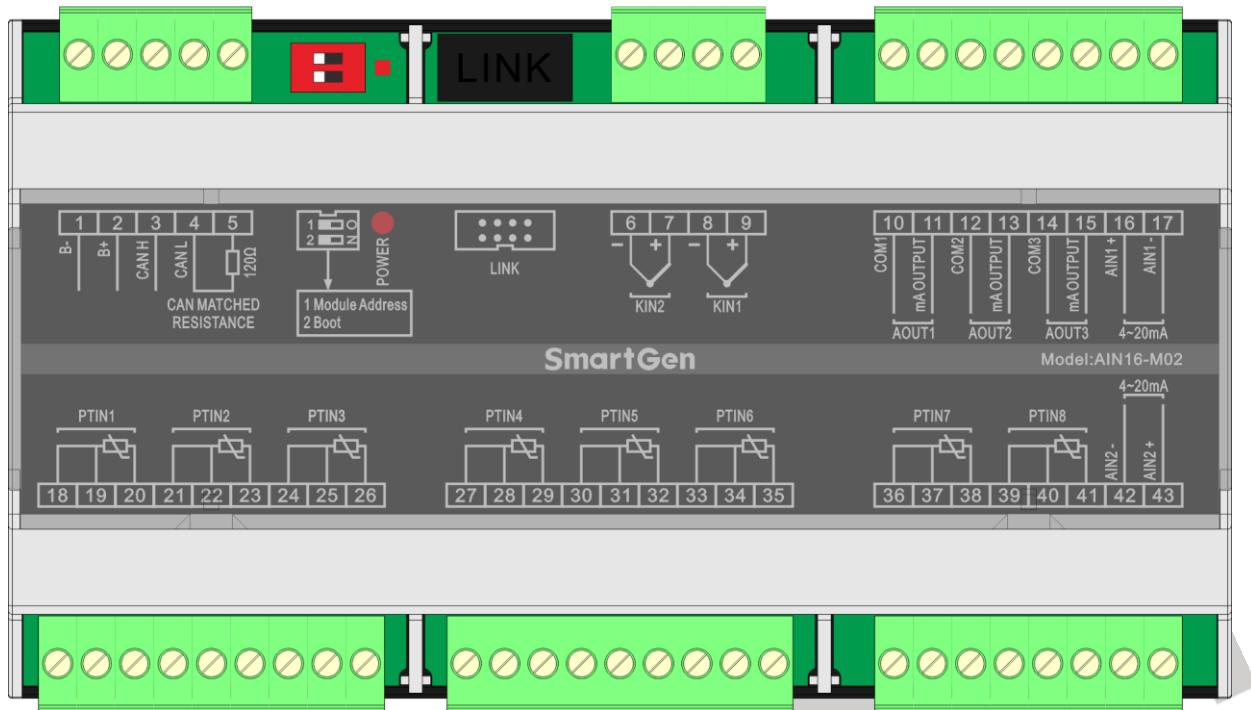


Fig.1 – AIN16-M02 Terminals Drawing

Table 3 – Terminal Description

No.	Function	Cable Size	Remark	
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	CAN(H)	0.5mm <sup>2</sup>	A CANBUS port, communicated with host controller, is using 120Ω shielding wire with one en grounded. If 120Ω matched resistance is needed, short connecting terminal No.3 and No.5.	
4	CAN(L)			
5	Terminal Matched Resistance (120Ω)			
6	KIN2-	0.5mm <sup>2</sup>	K-type thermocouple sensor	
7	KIN2+			
8	KIN1-	0.5mm <sup>2</sup>	K-type thermocouple sensor	
9	KIN1+			
10	COM1	1.0mm <sup>2</sup>	AOUT1((4-20)mA output current 1)	
11	mA OUTPUT	1.0mm <sup>2</sup>		
12	COM2	1.0mm <sup>2</sup>		AOUT2((4-20)mA output current 2)
13	mA OUTPUT	1.0mm <sup>2</sup>		
14	COM3	1.0mm <sup>2</sup>	AOUT3((4-20)mA output current 3)	
15	mA OUTPUT	1.0mm <sup>2</sup>		
16	AIN1+	0.5mm <sup>2</sup>	(4-20)mA current-type sensor 1 input+	
17	AIN1-		(4-20)mA current-type sensor 1 input-	
18	PT100 Sensor 1	C	0.5mm <sup>2</sup>	Sensor common port



No.	Function	Cable Size	Remark
19		B	Sensor terminal
20		A	
21	PT100 Sensor 2	C	Sensor common port
22		B	Sensor terminal
23		A	
24	PT100 Sensor 3	C	Sensor common port
25		B	Sensor terminal
26		A	
27	PT100 Sensor 4	C	Sensor common port
28		B	Sensor terminal
29		A	
30	PT100 Sensor 5	C	Sensor common port
31		B	Sensor terminal
32		A	
33	PT100 Sensor 6	C	Sensor common port
34		B	Sensor terminal
35		A	
36	PT100 Sensor 7	C	Sensor common port
37		B	Sensor terminal
38		A	
39	PT100 Sensor 8	C	Sensor common port
40		B	Sensor terminal
41		A	
42	AIN2-	0.5mm <sup>2</sup>	(4-20)mA current-type sensor 2 input-
43	AIN2+		(4-20)mA current-type sensor 2 input+
	SWITCH		<p>The host controller can connect with two AIN16-M02 modules at the same time.</p> <p>Address selection: It is address 1 (module 1) when the switch 1 is connected to terminal 12 while address 2 (module 2) when connect to ON terminal.</p> <p>BOOT selection: It is normal mode when the switch 2 is connected to terminal 12 while programming mode when connect to ON terminal.</p>
	POWER		It is power supply indicator.

## 5 ELECTRICAL CONNECTIONS

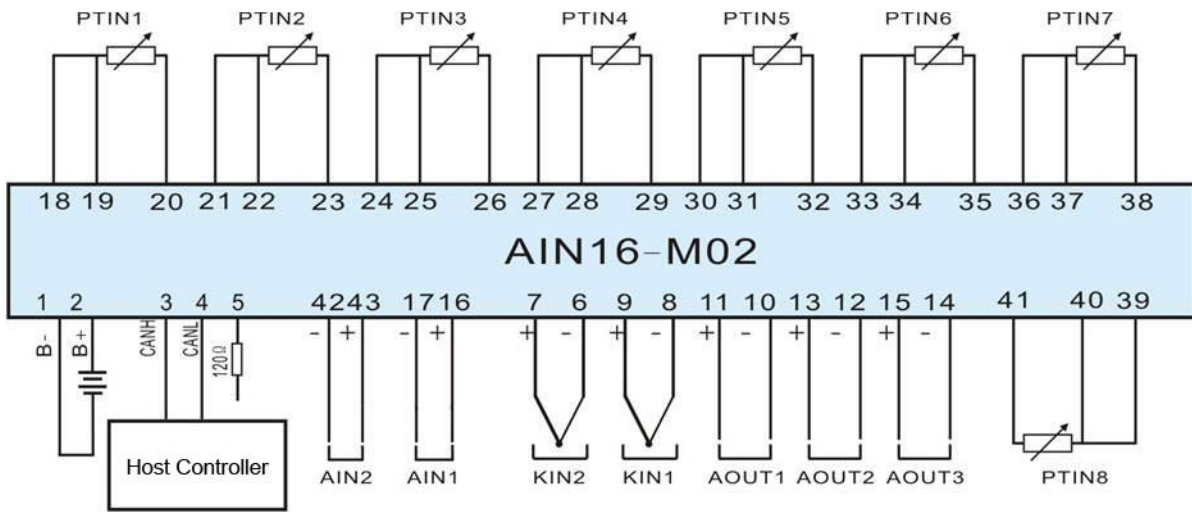


Fig.2 – Electrical Connection Diagram

## 6 INSTALLATION

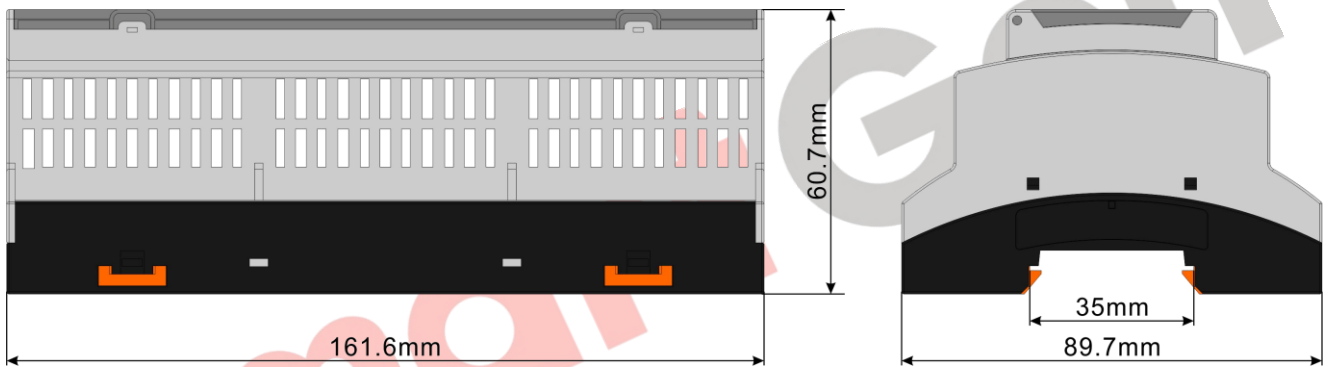


Fig.3 – Overall Dimensions

## 7 TROUBLESHOOTING

Table 4 – Trouble Finding

Problem	Possible Solution
Controller no response with power.	Check power supply; Check controller connection wirings; Check DC fuse.
CANBUS communication failure	Check if CANBUS wires are connected in the opposite way.