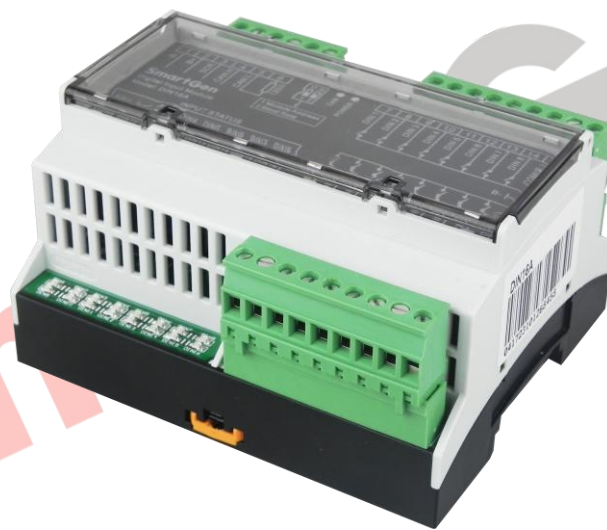




**SmartGen**  
ideas for power

**DIN16A**  
**DIGITAL INPUT MODULE**  
**USER MANUAL**



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



Chinese trademark

**SmartGen** English trademark

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

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#### Software Version

Date	Version	Content
2017-04-15	1.0	Original release.



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## 1 OVERVIEW

DIN16A digital input module is an expansion module which has 16 auxiliary digital input channels and the name of each channel can be defined by users. The input port status collected by DIN16A is transmitted to the HMC9000S controller for processing via CANBUS port.

## 2 TECHNICAL PARAMETER

Item	Content
Working Voltage	DC18.0V~ DC35.0V continuous power supply
Power Consumption	<2W
Case Dimension	107.6mm x 89.7mm x 60.7mm
Working Conditions	Temp.: (-25~+70)°C      Humidity: (20~93)%RH
Storage Conditions	Temp.: (-25~+70)°C
Weight	0.25kg

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### 3 PROTECTION

#### 3.1 WARNING

Warnings are not shutdown alarms and do not affect the operation of the gen-set. When DIN16A module is enabled and detects the warning signal, the controller HMC9000S will initiate a warning alarm and the corresponding alarm information will be displayed on LCD.

Warning types are as follows,

No.	Items	DET Range	Description
1	DIN16A Auxiliary Input 1-16	User-defined.	When the HMC9000S controller detects that the DIN16A auxiliary input 1-16 alarm signal and the action set as "Warning", it will initiate a warning alarm and the corresponding alarm information will be displayed on LCD. (Each string of DIN16A input can be defined by users, such as input port 1 defined as "High Temp Warning", when it is active, corresponding alarm information will displayed on LCD.)

#### 3.2 SHUTDOWN ALARM


When DIN16A module is enabled and detects the shutdown signal, the controller HMC9000S will initiate a shutdown alarm and the corresponding alarm information will be displayed on LCD.



Shutdown alarms are as follows:

No.	Items	Detection Range	Description
1	DIN16A Auxiliary Input 1-16	User-defined.	When the HMC9000S controller detects that the DIN16A auxiliary input 1-16 alarm signal and the action set as "Shutdown", it will initiate a shutdown alarm and the corresponding alarm information will be displayed on LCD. (Each string of DIN16A input can be defined by users, such as input port 1 defined as "High Temp Shutdown", when it is active, corresponding alarm information will displayed on LCD.)

**▲Note:** The types of shutdown alarm of auxiliary input port are effective only when users configure them. Only emergency shutdown and overspeed shutdown work when the controller is in override mode.

## 4 PANEL CONFIGURATION

Users can set the parameters of DIN16A via HMC9000S module. Pressing and holding  button for more than 3 seconds will enter the configuration menu, which allows users to set all DIN16A parameters, as follows:

 **Note:** Pressing  can exit setting directly during setting.

### Parameter Configuration List

Items	Range	Default Values	Remarks
1. Input 1 Set	(0-50)	0: Not used	DIN16A setting
2. Input 1 Type	(0-1)	0: Close to activate	DIN16A setting
3. Input 2 Set	(0-50)	0: Not used	DIN16A setting
4. Input 2 Type	(0-1)	0: Close to activate	DIN16A setting
5. Input 3 Set	(0-50)	0: Not used	DIN16A setting
6. Input 3 Type	(0-1)	0: Close to activate	DIN16A setting
7. Input 4 Set	(0-50)	0: Not used	DIN16A setting
8. Input 4 Type	(0-1)	0: Close to activate	DIN16A setting
9. Input 5 Set	(0-50)	0: Not used	DIN16A setting
10. Input 5 Type	(0-1)	0: Close to activate	DIN16A setting
11. Input 6 Set	(0-50)	0: Not used	DIN16A setting
12. Input 6 Type	(0-1)	0: Close to activate	DIN16A setting
13. Input 7 Set	(0-50)	0: Not used	DIN16A setting
14. Input 7 Type	(0-1)	0: Close to activate	DIN16A setting
15. Input 8 Set	(0-50)	0: Not used	DIN16A setting
16. Input 8 Type	(0-1)	0: Close to activate	DIN16A setting
17. Input 9 Set	(0-50)	0: Not used	DIN16A setting
18. Input 9 Type	(0-1)	0: Close to activate	DIN16A setting
19. Input 10 Set	(0-50)	0: Not used	DIN16A setting
20. Input 10 Type	(0-1)	0: Close to activate	DIN16A setting
21. Input 11 Set	(0-50)	0: Not used	DIN16A setting
22. Input 11 Type	(0-1)	0: Close to activate	DIN16A setting
23. Input 12 Set	(0-50)	0: Not used	DIN16A setting
24. Input 12 Type	(0-1)	0: Close to activate	DIN16A setting
25. Input 13 Set	(0-50)	0: Not used	DIN16A setting
26. Input 13 Type	(0-1)	0: Close to activate	DIN16A setting
27. Input 14 Set	(0-50)	0: Not used	DIN16A setting
28. Input 14 Type	(0-1)	0: Close to activate	DIN16A setting
29. Input 15 Set	(0-50)	0: Not used	DIN16A setting
30. Input 15 Type	(0-1)	0: Close to activate	DIN16A setting
31. Input 16 Set	(0-50)	0: Not used	DIN16A setting
32. Input 16 Type	(0-1)	0: Close to activate	DIN16A setting

## 5 DEFINITION OF INPUT PORT



### 5.1 DEFINITION CONTENTS OF DIGITAL INPUT

NO.	Items	Contents	Description
1	Function set	(0-50)	More details please refer to Function Setting.
2	Active Type	(0-1)	0: Close to activate 1: Open to activate
3	Effective Range	(0-3)	0: From Safety on 1: From Crank 2: Always 3: Never
4	Effective Action	(0-2)	0: Warn 1: Shutdown 2: Indication
5	Input Delay	(0-20.0)s	
6	Display string	User-defined names of input port	Input port names can be edited via PC software only.

### 5.2 FUNCTION SETTING

No.	Contents	Description
0	Not used	
1	User-defined	Users configured input port settings
2	Alarm Mute	Can prohibit "Audible Alarm" output when input is active.
3	Reset alarm	Can reset all alarms when input is active.
4	Raise Speed	The generator will increase speed by GOV when the input is active.
5	Drop Speed	The generator will decrease speed by GOV when the input is active.
6	Reserved	
7	Reserved	
8	Lamp test	All LED indicators are illuminating when input is active.
9	Local mode	Places generator into its local mode
10	Remote mode	Places generator into its remote mode.
11	Remote start	Automatically starts the generator in remote mode when the input is active. Only the active shutdown input will be able to stop the generator. (Inch or hold the button for more than 1s)
12	Remote stop	Stops the running generator in remote mode when the input is active.
13	Remote start/stop	Automatically starts the generator in remote mode; the generator will shut down when this input is deactivated.
14	Pre-lubricate	If output is set as pre-lubrication output, the relay disconnects after the set pre-lubrication delay.

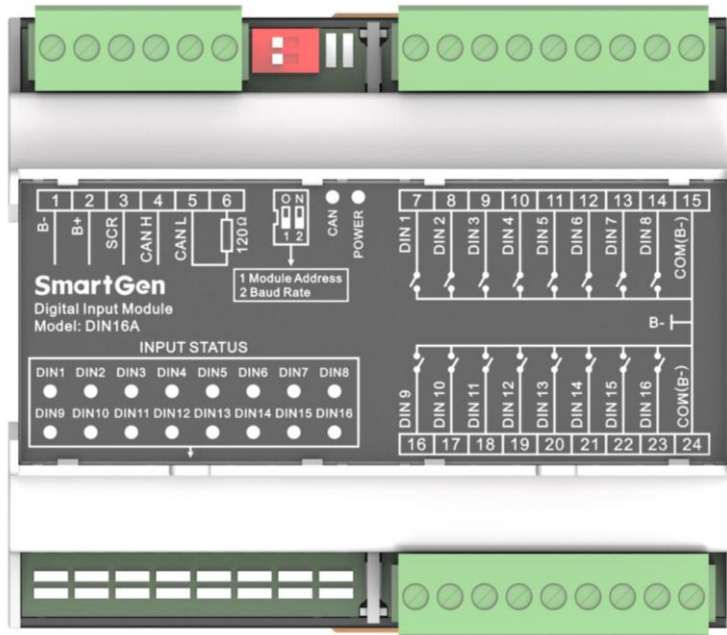


No.	Contents	Description
15	Override mode	Places the generator into its override mode; in override mode only overspeed shutdown and emergency shutdown will stop the engine.
16	Emergency stop	The controller shuts down the engine immediately and records occurrence time.
17	Panel lock	All buttons in panel is inactive except for  and  is shown on the right of the first line in LCD status page.
18	Reserved	
19	Power Change	Transfers from main battery to standby battery.
20	Raise Speed Aux. input	Raise speed relay will disconnect when the input is active.
21	Reserved	
22	Drop Speed Aux. input	Drop speed relay will disconnect when the input is active.
23	Water Heating feedback	The feedback signal of water heating output; The screen displays <i>Water Heating feedback</i> when the input is active.
24	Pre-lube feedback	The feedback signal of Pre-lube output; The screen displays <i>Pre-lube feedback</i> when the input is active.
25	Charging feedback	The feedback signal of Charging output; The screen displays <i>Charging feedback</i> when the input is active.
26	Reserved	
27	Reserved	
28	Quick start	Cranking will start directly (without preheating) when the input is active.
29	Reserved	
30	60Hz Select	Frequency selection of ECU engine
31	Turning Chain	Start inhibition when the input is active.
32	cylinder Scavenging	Starter relay outputs when the input is active.
33	Reserved	
34	Self-inspection	Inspect each warning point without crank genset when the input is active.
35-50	Reserved	



## 6 PANEL CONFIGURATION

Panel drawing of DIN16A:



Description of terminal connection:

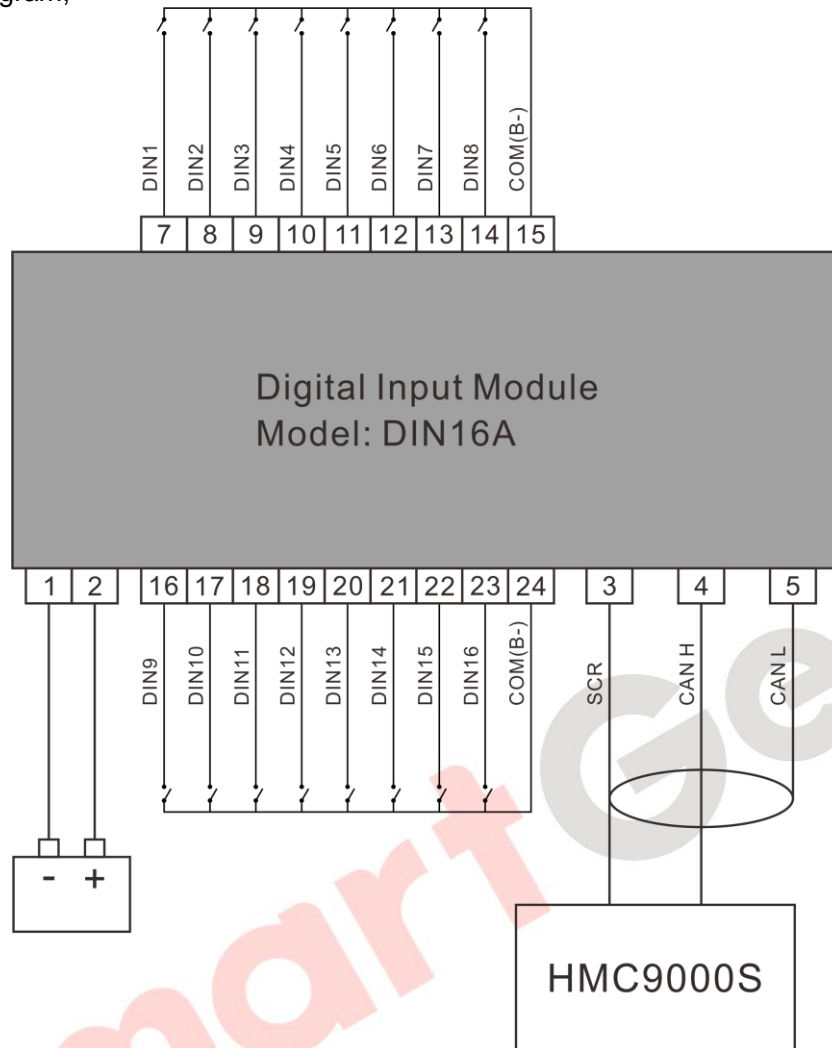
No.	Function	Cable Size	Description
1.	DC input B-	2.5mm <sup>2</sup>	DC power supply negative input.
2.	DC input B+	2.5mm <sup>2</sup>	DC power supply positive input.
3.	SCR (CANBUS)	0.5mm <sup>2</sup>	Connect CANBUS communication port to expansion CAN port of HMC9000S. Impedance-120Ω shielding wire with its one end grounded is recommended. There is 120Ω terminal resistance inside already; if needed, make terminal 5, 6 short circuits.
4.	CAN(H) (CANBUS)	0.5mm <sup>2</sup>	
5.	CAN(L) (CANBUS)	0.5mm <sup>2</sup>	
6.	120Ω	0.5mm <sup>2</sup>	
7.	DIN1	1.0mm <sup>2</sup>	Digital input
8.	DIN2	1.0mm <sup>2</sup>	Digital input
9.	DIN3	1.0mm <sup>2</sup>	Digital input
10.	DIN4	1.0mm <sup>2</sup>	Digital input
11.	DIN5	1.0mm <sup>2</sup>	Digital input
12.	DIN6	1.0mm <sup>2</sup>	Digital input
13.	DIN7	1.0mm <sup>2</sup>	Digital input
14.	DIN8	1.0mm <sup>2</sup>	Digital input
15.	COM(B-)	1.0mm <sup>2</sup>	Connect to B- is allowed.
16.	DIN9	1.0mm <sup>2</sup>	Digital input



No.	Function	Cable Size	Description
17.	DIN10	1.0mm <sup>2</sup>	Digital input
18.	DIN 11	1.0mm <sup>2</sup>	Digital input
19.	DIN 12	1.0mm <sup>2</sup>	Digital input
20.	DIN 13	1.0mm <sup>2</sup>	Digital input
21.	DIN 14	1.0mm <sup>2</sup>	Digital input
22.	DIN 15	1.0mm <sup>2</sup>	Digital input
23.	DIN 16	1.0mm <sup>2</sup>	Digital input
24.	COM(B-)	1.0mm <sup>2</sup>	Connect to B- is allowed.
DIP switch	SWITCH		Address selection: It is module 1 when the switch 1 is connected to terminal 12 while module 2 when connect to ON terminal. Baud rate selection: It is 250kbps when the switch 2 is connected to terminal 12 while 125kbps when connect to ON terminal.
LED Indicator	INPUT STATUS		When DIN1~DIN16 input are active, corresponding DIN1 ~ DIN16 indicators are illuminate.

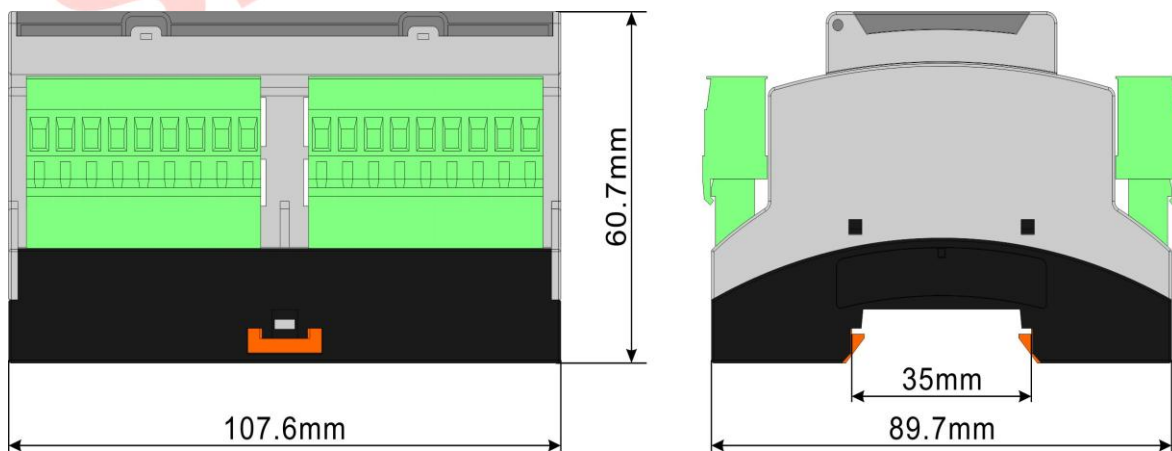
## 7 DIN16A TYPICAL APPLICATION

Typical wiring diagram,



## 8 INSTALLATION

Case dimension:





## 9 FAULT FINDING

Symptom	Possible remedy
Controller no response with power.	Check starting batteries; Check controller connection wirings;
CANBUS communication failure	Check wiring.
Auxiliary input alarm	Check wiring. Check if input polarities configuration is correct.

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