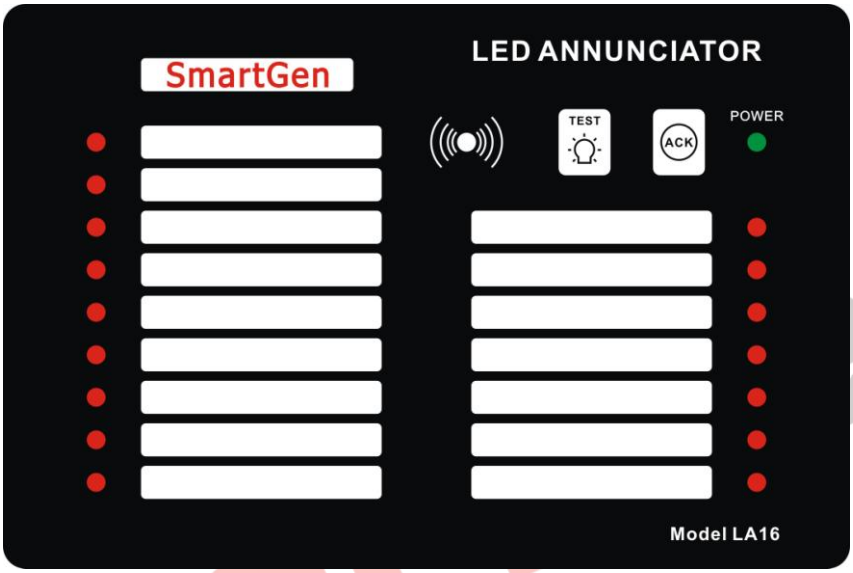
LA16 LED LAMP EXPANSION MODULE

USER MANUAL



ZHENGZHOU SMARTGEN TECHNOLOGY CO.,LTD

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

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Software Version

Date	Version	Content
2013-11-19	1.0	Original release
2015-03-25	1.1	Modify case dimension and cutout.

Contents

1 OVERVIEW

LED lamp expansion module is a LED display module which has 16 programmable lamp

and there are 3 kinds of color (red, green, yellow) can be chosen. The data collected by LA16 are transmitted to the HMC9000 controller for processing via CANBUS port.

2 TECHNICAL PARAMETERS

Item	Content
Working Voltage	DC18.0V~35.0V continuous power supply

Item	Content
Power Consumption	<5W
Case Dimension	180mm x 120mm x 37mm
Cutout	163mm x 103mm
Working Conditions	Temp.：(-25~+70)°C Humidity：(20~93)%RH
Storage Conditions	Temp.：(-25~+70)°C
Weight	0.60kg

3 PANEL CONFIGURATION

3.1 FUNCTION DESCRIPTION

Each lamp on the LA16 module can be set via HMC9000. The corresponding indicator will flash when the setting is activated while turns into illuminating after press 

button; in addition, it is extinguished when the setting is deactivated.

3.2 LED BUTTON DESCRIPTION

is lamp test/dimmer button. All 5 kinds of lamp brightness levels will convert once for every pushing. All lights on the LED panel will illuminate after long press this button and all three kinds of lamp color will transfer once every 1 second.

is acknowledge button. Press this button can change the flashing lamp on the LED to illuminating.

3.3 PARAMETER CONFIGURATION

The parameters of LA16 can be set via HMC9000. Pressing and holding Enter for more than 3s will enter into configuration interface in which users can set all kinds of parameters. More details are as following:

Note: Pressing Stop can exit setting directly during setting.

Parameter Configuration List

Items	Range	Default	Remarks
1. LED1 Set	(0-190)	0：Not used	LA16 Setting
2. LED 1 Color Set	(0-2)	0：Red	LA16 Setting
3. LED 2 Set	(0-190)	0：Not used	LA16 Setting
4. LED2 Color Set	(0-2)	0：Red	LA16 Setting
5. LED3 Set	(0-190)	0：Not used	LA16 Setting
6. LED3 Color Set	(0-2)	0：Red	LA16 Setting
7. LED4 Set	(0-190)	0：Not used	LA16 Setting
8. LED4 Color Set	(0-2)	0：Red	LA16 Setting
9. LED5 Set	(0-190)	0：Not used	LA16 Setting
10. LED5 Color Set	(0-2)	0：Red	LA16 Setting
11. LED6 Set	(0-190)	0：Not used	LA16 Setting
12. LED6 Color Set	(0-2)	0：Red	LA16 Setting
13. LED7 Set	(0-190)	0：Not used	LA16 Setting
14. LED7 Color Set	(0-2)	0：Red	LA16 Setting
15. LED8 Set	(0-190)	0：Not used	LA16 Setting
16. LED8 Color Set	(0-2)	0：Red	LA16 Setting
17. LED9 Set	(0-190)	0：Not used	LA16 Setting
18. LED9 Color Set	(0-2)	0：Red	LA16 Setting
19. LED10 Set	(0-190)	0：Not used	LA16 Setting
20. LED10 Color Set	(0-2)	0：Red	LA16 Setting
21. LED11 Set	(0-190)	0：Not used	LA16 Setting
22. LED11 Color Set	(0-2)	0：Red	LA16 Setting
23. LED12 Set	(0-190)	0：Not used	LA16 Setting
24. LED12 Color Set	(0-2)	0：Red	LA16 Setting
25. LED13 Set	(0-190)	0：Not used	LA16 Setting
26. LED13 Color Set	(0-2)	0：Red	LA16 Setting
27. LED14 Set	(0-190)	0：Not used	LA16 Setting
28. LED14 Color Set	(0-2)	0：Red	LA16 Setting
29. LED15 Set	(0-190)	0：Not used	LA16 Setting
30. LED15 Color Set	(0-2)	0：Red	LA16 Setting
31. LED16 Set	(0-190)	0：Not used	LA16 Setting
32. LED16 Color Set	(0-2)	0：Red	LA16 Setting

4 LED SETTING

NO.	Items	Description
00	Not used	
01	User Configured	See 4.1
02	Air flap	Action when over speed shutdown and emergence stop. It also can close the air inflow to stop the engine as soon as possible.
03	Audible alarm	Action when warning, shutdown. Can be connected annunciator externally. When “alarm mute” configurable input port is active, it can remove the alarm.
04	ECU power	Used for ECU engine.
05	ECU Stop	Used for ECU engine.
06	Crank Relay	Action when genset is starting and disconnect when crank success.
07	Fuel Relay	Action when genset is starting and disconnect when stop is completed.
08	ETS Hold	Action period: ETS hold delay.
09	Reserved	
10	Fuel Pump Control	It is controlled by fuel pump of level sensor’s limited threshold.
11	Reserved	
12	Louver Control	Action when genset is starting and disconnect when stop is completed.
13	Loss of Speed	After safety on delay, the controller active when the engine speed is 0.
14	Heater Control	The controller disconnect when water temperature lower than minimum setting threshold value or higher than maximum setting threshold value.
15	Pre-lubricate	The controller output when the engine is in standby mode (user-defined output delay) if pre-lubrication input is active.
16	Remote PC Output	The controller output when remote control is active however disconnect when inactive.
17	Over Ride Output	The controller output when it is in override mode.
18	Ready Go	The controller output when it is in standby mode and no alarms.
19	Reserved	
20	Idle Control	Action from “crank delay” to “start idle delay” and from “stop idle delay” to “wait for stop delay”.
21	Pre-Supply Fuel	Action from “crank delay” to “safety on delay”.

22	Raise Speed	Mechanical Governor: The controller output when Raise Speed Output is active however disconnect when inactive. ECU Governor: Users can govern speed via this port. User-defined rate.
23	Drop Speed	Mechanical Governor: The controller output when Speed Droop Output is active however disconnect when inactive. ECU Governor: Users can govern speed via this port. User-defined rate.
24	Crank Again	The relay outputs when controller start failed and start secondary if the configuration is active (expansion relay is needed).
25	Power Change	Action when battery 1 voltage has fallen below the transfer value. Deactivate when battery 1 voltage has exceed the transfer value.
26	High Speed	The controller act from warming up delay to cooling down delay. (contrary to idle speed output)
27	Common Alarm	Action when genset common warning, common shutdown alarm.
28	Common Shutdown	Action when common shutdown alarm.
29	Common Warn	Action when common warning alarm.
30	Aux. Input 1 Active	Action when input port 1 is active.
31	Aux. Input 2 Active	Action when input port 2 is active.
32	Aux. Input 3 Active	Action when input port 3 is active.
33	Aux. Input 4 Active	Action when input port 4 is active.
34	Aux. Input 5 Active	Action when input port 5 is active.
35	Aux. Input 6 Active	Action when input port 6 is active.
36	Aux. Input 7 Active	Action when input port 7 is active.
37	Aux. Input 8 Active	Action when input port 8 is active.
38	Aux. Input 9 Active	Action when input port 9 is active.
39	Aux. Input 10 Active	Action when input port 10 is active.
40	Aux. Input 11 Active	Action when input port 11 is active.
41	Aux. Input 12 Active	Action when input port 12 is active.
42	Aux. Input 13 Active	Action when input port 13 is active.
43	Aux. Input 14 Active	Action when input port 14 is active.
44	Aux. Input 15 Active	Action when input port 15 is active.
45	Aux. Input 16 Active	Action when input port 16 is active.
46	Aux. Input 17 Active	Action when input port 17 is active.
47	Aux. Input 18 Active	Action when input port 18 is active.
48	Reserved	

49	Crank Success	The gen-set start when the engine speed reaches requirements.
50	Normal Running	The gen-set is normal running when the speed reaches rated requirements.
51	Remote Mode	The controller output in remote control mode.
52	Local Mode	The controller output in local mode.
53	Waiting For Load	The controller output in Waiting For Load delay.
54	Reserved	
55	Reserved	
56	Pulse Stop	Action during stop delay while deactivate after the delay.
57	AIN16 Com Fail	Action when the controller detects communication failure with AIN16. (3s overtime)
58	DIN16 Com Fail	Action when the controller detects communication failure with DIN16. (3s overtime)
59	RPU560 Com Fail	Action when the controller detects communication failure with RPU560 safeguard module. (1s overtime)
60	DOUT16 Com Fail	Action when the controller detects communication failure with DOUT16. (3s overtime)
61	Reserved	Reserved
62	LA16 Com Fail	Action when the controller detects communication failure with LA16. (3s overtime)
63	ECU Com Fail	Action when the controller detects no ECU connection after ECU powered on.
64	ECU Warn	Action when the controller receives warning alarm from ECU.
65	ECU Shutdown	Action when the controller receives shutdown alarm from ECU.
66	Bat 1 Under Volt	Action when the controller detects that the battery 1 voltage has fallen below the set value.
67	Bat 2 Under Volt	Action when the controller detects that the battery 2 voltage has fallen below the set value.
68	Under Speed Warn	Action when under speed warning.
69	Under Speed Shutdown	Action when under speed shutdown alarm.
70	Over Speed Warn	Action when over speed warning.
71	Over Speed Shutdown	Action when over speed shutdown alarm
72	Emergency Stop	Action when emergency stop alarm.
73	Charge Alt Fail	Action when charge failure warning.
74	Reserved	
75	Failed To Start	Action when failed stop alarm.

76	Reserved	
77	Reserved	
78	Sensor 1 Open	Action when sensor 1 is open circuit.
79	Sensor 1 Warn	Action when sensor 1 warning alarm.
80	Sensor 1 Shutdown	Action when sensor 1 shutdown alarm.
81	Sensor 2 Open	Action when sensor 2 is open circuit.
82	Sensor 2 Warn	Action when sensor 2 warning alarm.
83	Sensor 2 Shutdown	Action when sensor 2 shutdown alarm.
84	Sensor 3 Open	Action when sensor 3 is open circuit.
85	Sensor 3 Warn	Action when sensor 3 warning alarm.
86	Sensor 3 Shutdown	Action when sensor 3 shutdown alarm.
87	Sensor 4 Open	Action when sensor 4 is open circuit.
88	Sensor 4 Warn	Action when sensor 4 warning alarm.
89	Sensor 4 Shutdown	Action when sensor 4 shutdown alarm.
90	Sensor 5 Open	Action when sensor 5 is open circuit.
91	Sensor 5 Warn	Action when sensor 5 warning alarm.
92	Sensor 5 Shutdown	Action when sensor 5 shutdown alarm.
93	Sensor 6 Open	Action when sensor 6 is open circuit.
94	Sensor 6 Warn	Action when sensor 6 warning alarm.
95	Sensor 6 Shutdown	Action when sensor 6 shutdown alarm.
96	Sensor 7 Open	Action when sensor 7 is open circuit.
97	Sensor 7 Warn	Action when sensor 7 warning alarm.
98	Sensor 7 Shutdown	Action when sensor 7 shutdown alarm.
99	Sensor 8 Open	Action when sensor 8 is open circuit.
100	Sensor 8 Warn	Action when sensor 8 warning alarm.
101	Sensor 8 Shutdown	Action when sensor 8 shutdown alarm.
102	AIN16-1 Sensor 1 Open (expansion 1)	Action when sensor 1 opening circuit. (expansion 1)
103	AIN16-1 Sensor 1 Warn (expansion 1)	Action when sensor 1 warning alarm. (expansion 1)
104	AIN16-1 Sensor 1 Stop (expansion 1)	Action when sensor 1 shutdown alarm. (expansion 1)
105	AIN16-1 Sensor 2 Open (expansion 1)	Action when sensor 2 opening circuit. (expansion 1)
106	AIN16-1 Sensor 2 Warn (expansion 1)	Action when sensor 2 warning alarm. (expansion 1)
107	AIN16-1 Sensor 2 Stop (expansion 1)	Action when sensor 2 shutdown alarm. (expansion 1)
108	AIN16-1 Sensor 3 Open (expansion 1)	Action when sensor 3 opening circuit. (expansion 1)
109	AIN16-1 Sensor 3 Warn	Action when sensor 3 warning alarm. (expansion 1)

	(expansion 1)	
110	AIN16-1 Sensor 3 Stop (expansion 1)	Action when sensor 3 shutdown alarm. (expansion 1)
111	AIN16-1 Sensor 4 Open (expansion 1)	Action when sensor 4 opening circuit. (expansion 1)
112	AIN16-1 Sensor 4 Warn (expansion 1)	Action when sensor 4 warning alarm. (expansion 1)
113	AIN16-1 Sensor 4 Stop (expansion 1)	Action when sensor 4 shutdown alarm. (expansion 1)
114	AIN16-1 Sensor 5 Open (expansion 1)	Action when sensor 5 opening circuit. (expansion 1)
115	AIN16-1 Sensor 5 Warn (expansion 1)	Action when sensor 5 warning alarm. (expansion 1)
116	AIN16-1 Sensor 5 Stop (expansion 1)	Action when sensor 5 shutdown alarm. (expansion 1)
117	AIN16-1 Sensor 6 Open (expansion 1)	Action when sensor 6 opening circuit. (expansion 1)
118	AIN16-1 Sensor 6 Warn (expansion 1)	Action when sensor 6 warning alarm. (expansion 1)
119	AIN16-1 Sensor 6 Stop (expansion 1)	Action when sensor 6 shutdown alarm. (expansion 1)
120	AIN16-1 Sensor 7 Open (expansion 1)	Action when sensor 7 opening circuit. (expansion 1)
121	AIN16-1 Sensor 7 Warn (expansion 1)	Action when sensor 7 warning alarm. (expansion 1)
122	AIN16-1 Sensor 7 Stop (expansion 1)	Action when sensor 7 shutdown alarm. (expansion 1)
123	AIN16-1 Sensor 8 Open (expansion 1)	Action when sensor 8 opening circuit. (expansion 1)
124	AIN16-1 Sensor 8 Warn (expansion 1)	Action when sensor 8 warning alarm. (expansion 1)
125	AIN16-1 Sensor 8 Stop (expansion 1)	Action when sensor 8 shutdown alarm. (expansion 1)
126	AIN16-1 Sensor 9 Open (expansion 1)	Action when sensor 9 opening circuit. (expansion 1)
127	AIN16-1 Sensor 9 Warn (expansion 1)	Action when sensor 9 warning alarm. (expansion 1)
128	AIN16-1 Sensor 9 Stop (expansion 1)	Action when sensor 9 shutdown alarm. (expansion 1)
129	AIN16-1 Sensor 10	Action when sensor 10 opening circuit. (expansion

	Open (expansion 1)	1)
130	AIN16-1 Sensor 10 Warn (expansion 1)	Action when sensor 10 warning alarm. (expansion 1)
131	AIN16-1 Sensor 10 Stop (expansion 1)	Action when sensor 10 shutdown alarm. (expansion 1)
132	AIN16-1 Sensor 11 Open (expansion 1)	Action when sensor 11 opening circuit. (expansion 1)
133	AIN16-1 Sensor 11 Warn (expansion 1)	Action when sensor 11 warning alarm. (expansion 1)
134	AIN16-1 Sensor 11 Stop (expansion 1)	Action when sensor 11 shutdown alarm. (expansion 1)
135	AIN16-1 Sensor 12 Open (expansion 1)	Action when sensor 12 opening circuit. (expansion 1)
136	AIN16-1 Sensor 12 Warn (expansion 1)	Action when sensor 12 warning alarm. (expansion 1)
137	AIN16-1 Sensor12 Stop (expansion 1)	Action when sensor 12 shutdown alarm. (expansion 1)
138	AIN16-1 Sensor 13 Open (expansion 1)	Action when sensor 13 opening circuit. (expansion 1)
139	AIN16-1 Sensor 13 Warn (expansion 1)	Action when sensor 13 warning alarm. (expansion 1)
140	AIN16-1 Sensor 13 Stop (expansion 1)	Action when sensor 13 shutdown alarm. (expansion 1)
141	AIN16-1 Sensor 14 Open (expansion 1)	Action when sensor 14 opening circuit. (expansion 1)
142	AIN16-1 Sensor 14 Warn (expansion 1)	Action when sensor 14 warning alarm. (expansion 1)
143	AIN16-1 Sensor 14 Stop (expansion 1)	Action when sensor 14 shutdown alarm. (expansion 1)
144	AIN16-1 Sensor 15 Open (expansion 1)	Action when sensor 15 opening circuit. (expansion 1)
145	AIN16-1 Sensor 15 Warn (expansion 1)	Action when sensor 15 warning alarm. (expansion 1)
146	AIN16-1 Sensor 15 Stop (expansion 1)	Action when sensor 15 shutdown alarm. (expansion 1)
147	AIN16-1 Sensor 16 Open (expansion 1)	Action when sensor 16 opening circuit. (expansion 1)
148	AIN16-1 Sensor 16 Warn (expansion 1)	Action when sensor 16 warning alarm. (expansion 1)
149	AIN16-1 Sensor 16 Stop (expansion 1)	Action when sensor 16 shutdown alarm. (expansion 1)

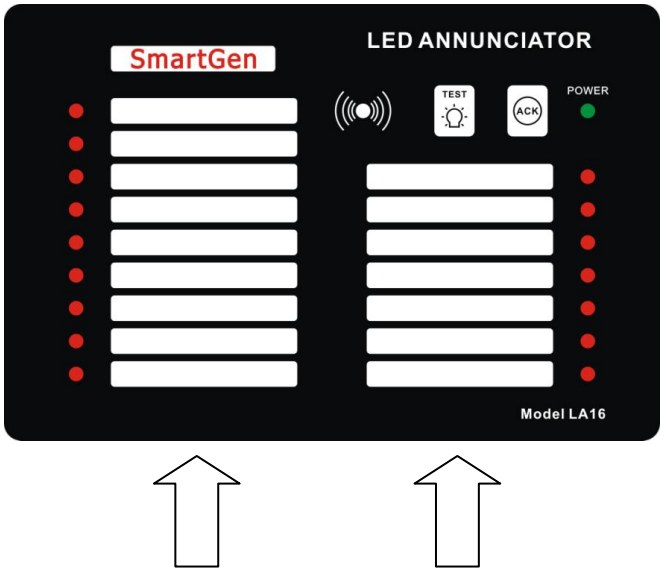
150	DIN16-1 Input 1 Active (expansion 1)	Action when input port 1 is active (expansion 1)
151	DIN16-1 Input 2 Active (expansion 1)	Action when input port 2 is active (expansion 1)
152	DIN16-1 Input 3 Active (expansion 1)	Action when input port 3 is active (expansion 1)
153	DIN16-1 Input 4 Active (expansion 1)	Action when input port 4 is active (expansion 1)
154	DIN16-1 Input 5 Active (expansion 1)	Action when input port 5 is active (expansion 1)
155	DIN16-1 Input 6 Active (expansion 1)	Action when input port 6 is active (expansion 1)
156	DIN16-1 Input 7 Active (expansion 1)	Action when input port 7 is active (expansion 1)
157	DIN16-1 Input 8 Active (expansion 1)	Action when input port 8 is active (expansion 1)
158	DIN16-1 Input 9 Active (expansion 1)	Action when input port 9 is active (expansion 1)
159	DIN16-1 Input 10 Active (expansion 1)	Action when input port 10 is active (expansion 1)
160	DIN16-1 Input 11 Active (expansion 1)	Action when input port 11 is active (expansion 1)
161	DIN16-1 Input 12 Active (expansion 1)	Action when input port 12 is active (expansion 1)
162	DIN16-1 Input 13 Active (expansion 1)	Action when input port 13 is active (expansion 1)
163	DIN16-1 Input 14 Active (expansion 1)	Action when input port 14 is active (expansion 1)
164	DIN16-1 Input 15 Active (expansion 1)	Action when input port 15 is active (expansion 1)
165	DIN16-1 Input 16 Active (expansion 1)	Action when input port 16 is active (expansion 1)
166~190	Reserved	

4.1 CUSTOM FOUNCTION

NO.	Items	Contents	Remarks
1	Active period	Bit0: Not used Bit1: At rest Bit2: Preheating Bit3: Fuel on Bit4: Cranking Bit5: Crank rest Bit6: Safety on Bit7: Start idle Bit8: Warming up Bit9: Wait for load Bit10: Normal running Bit11: Cooling down Bit12: Stop idle delay Bit13: ETS hold Bit14: Wait For Stop Bit15: Fail to stop	
2	Output delay	(0-100.0)s	
3	Output time	(0-3600)s	

4.2 LED LABEL

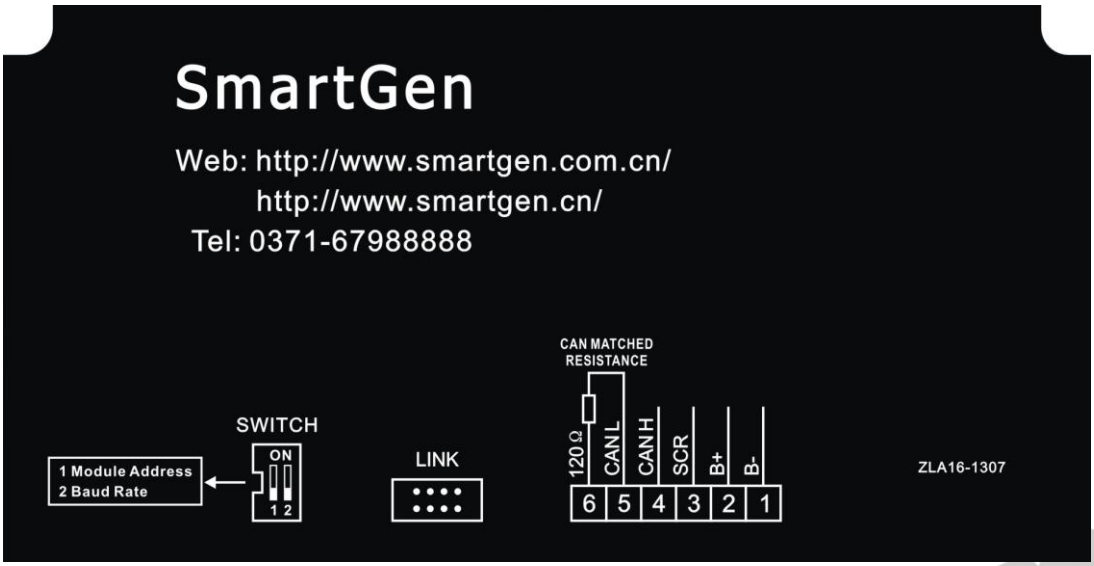
1. LED name windows can be set by users. The insertion way is as following:



2. Label information can be set by users using PC software. The procedures are listed as following: Edit Configuration→ Extension Module→LA16 Module. The set information can be printed by pressing "Label Print" button and the printed label can be placed in the name window in one-to-one correspondence.

5 BACKPLATE

Panel diagram

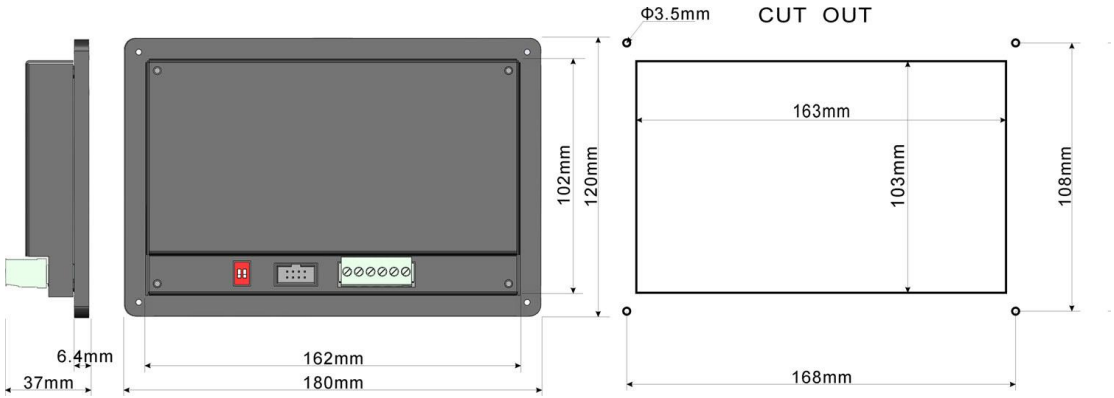


Description of terminal connection：

No.	Function	Cable Size	Description
1.	DC input B-	2.5mm^2	DC power supply negative input.
2.	DC input B+	2.5mm^2	DC power supply positive input.
3.	SCR (CANBUS)	0.5mm^2	A CANBUS port which communicate with HMC9000 controller. 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)		
5.	CAN(L) (CANBUS)		
6.	120Ω		
	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.

6 INSTALLATION

Case dimensions：



7 TROUBLESHOOTING

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