HMC6000RM/HMC6000RMD
REMOTE MONITORING CONTROLLER
USER MANUAL

HMC6000RM

HMC6000RMD

SMARTGEN (ZHENGZHOU) TECHNOLOGY CO., LTD.
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1 OVERVIEW

HMC6000RM/RMD controller integrates digitization, intelligentization and network technology which are used for remote monitoring system of single unit to achieve automatic start/stop, data measure, alarm protection and record checking. It fit with 132*64 liquid display, optional Chinese/English languages interface, and it is reliable and easy to use.

2 PERFORMANCE AND CHARACTERISTICS

- 32-bit ARM micro-processor, 132*64 liquid display, optional Chinese/English interface, push-button operation;
- Connect to HMC6000A/EG/ED module via CANBUS port to achieve remote start/stop control;
- With monitor mode which can achieve check data only but not control the engine.
- Modular design, self extinguishing ABS plastic enclosure and embedded installation way; small size and compact structure with easy mounting.

3 TECHNICAL PARAMETERS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Voltage</td>
<td>DC8.0V to DC35.0V, uninterrupted power supply.</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>&lt;3W (Standby mode: ≤2W)</td>
</tr>
<tr>
<td>Case Dimension</td>
<td>197 mm x 152 mm x 47 mm</td>
</tr>
<tr>
<td>Panel Cutout</td>
<td>186mm x 141mm</td>
</tr>
<tr>
<td>Working Conditions</td>
<td>Temperature: (-25<del>70)ºC; Humidity: (20</del>93)%RH</td>
</tr>
<tr>
<td>Storage Conditions</td>
<td>Temperature: (-25~70)ºC</td>
</tr>
<tr>
<td>Protection Level</td>
<td>IP55 Gasket</td>
</tr>
<tr>
<td>Insulation Intensity</td>
<td>Apply AC2.2kV voltage between high voltage terminal and low voltage terminal; The leakage current is not more than 3mA within 1min.</td>
</tr>
<tr>
<td>Weight</td>
<td>0.45kg</td>
</tr>
</tbody>
</table>
4 INTERFACE

4.1 MAIN INTERFACE

All data of HMC6000RM/ HMC6000RMD are read from local controller HMC6000A/HMC6000EG/HMC6000ED via CANBUS. Specific display content stays the same with local controller.

4.2 INFORMATION INTERFACE

After pressing Enter for 3s, the controller will enter into select interface of parameter setting and controller information.

<table>
<thead>
<tr>
<th>Return Parameter Setting</th>
<th>After selected controller information, press Enter to enter into controller information interface.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller Information</td>
<td></td>
</tr>
</tbody>
</table>

First Panel

- Controller Information
- Software Version 2.0
- Release Date 2016-02-10
- 2015-05-15 (5) 09:30:10

This panel will display software version, hardware version and controller time.

Press to enter into second panel.

Second Panel

- O:S F S H A 1 2 3 4 5
- 6 7 8 9 10 11 12

This panel will display output port status, and genset status.

Press to enter into third panel.

Third Panel

- I: E S S 1 2 0 F 3 4 5
- 6

This panel will display input port status, and genset status.

Press to enter into first panel.
## 5 OPERATION

### 5.1 PUSHBUTTONS DESCRIPTION

<table>
<thead>
<tr>
<th>Button</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Stop" /></td>
<td>Stop</td>
<td>Stop running generator in remote mode.</td>
</tr>
<tr>
<td><img src="image" alt="Start" /></td>
<td>Start</td>
<td>Start genset in remote mode.</td>
</tr>
<tr>
<td><img src="image" alt="Mute" /></td>
<td>Mute</td>
<td>Alarm sound off.</td>
</tr>
<tr>
<td><img src="image" alt="Dimmer+" /></td>
<td>Dimmer+</td>
<td>Adjust backlight brighter, 6 kinds of lamp brightness levels</td>
</tr>
<tr>
<td><img src="image" alt="Dimmer-" /></td>
<td>Dimmer-</td>
<td>Adjust backlight darker, 6 kinds of lamp brightness levels</td>
</tr>
<tr>
<td><img src="image" alt="Lamp Test" /></td>
<td>Lamp Test</td>
<td>Press this button will test panel LED indicators and display screen.</td>
</tr>
<tr>
<td><img src="image" alt="Home" /></td>
<td>Home</td>
<td>Return to the main screen.</td>
</tr>
<tr>
<td><img src="image" alt="Alarm History Shortcut" /></td>
<td>Alarm History Shortcut</td>
<td>Turn to the alarm history page.</td>
</tr>
<tr>
<td><img src="image" alt="Storm" /></td>
<td>Storm</td>
<td>Storm Mode is active after pressing the button and LED is illuminated. When active, any shutdown alarms won't alert except for emergency stop. HMC6000RM doesn't have this button.</td>
</tr>
<tr>
<td><img src="image" alt="Override" /></td>
<td>Override</td>
<td>Override Mode is active after pressing the button and LED is illuminated. When active, any shutdown alarms won't alert except for emergency stop and over speed. HMC6000RM doesn't have this button.</td>
</tr>
</tbody>
</table>
| ![Up/Increase](image) | Up/Increase                      | 1. Screen scroll.  
2. Up cursor and increase value in setting menu. |
| ![Down/Decrease](image) | Down/Decrease                   | 1. Screen scroll.  
2. Down cursor and decrease value in setting menu. |
| ![Set/Confirm](image) | Set/Confirm                      | 1. Pressing and holding for more than 3 seconds entry the parameter configuration menu;  
2. In settings menu confirms the set value. |
5.2 CONTROLLER PANEL

HMC6000RM Front Panel

- Alarm Lamp
- Running Lamp
- Dimmer-
- Standby Lamp
- Stop
- Start
- Mute Lamp
- Mute
- Home
- Event Log
- Lamp Test
- Up/Increase
- Set/Confirm
- Down/Decrease
- Dimmer+

HMC6000RMD Front Panel

- Alarm Lamp
- Running Lamp
- Dimmer-
- Standby Lamp
- Stop
- Start
- Mute Lamp
- Mute
- Storm
- Override
- Lamp Test
- Up/Increase
- Set/Confirm
- Down/Decrease
- Dimmer+
5.3 REMOTE START/STOP OPERATION

Configure any auxiliary input port of HMC6000A as remote start input. Remote start/stop can be done via remote controller when remote mode is active.

Pressing “Remote” button of HMC6000EG/ED can enter remote mode. Remote start/stop can be done via remote controller when remote mode is active.

Remote Start Sequence:
1) When “Remote Start” is active, “Start Delay” timer is initiated;
2) “Start Delay” countdown will be displayed on LCD;
3) When start delay is over, preheat relay energizes (if configured), “preheat delay XX s” information will be displayed on LCD;
4) After the above delay, the Fuel Relay is energized, and then one second later, the Start Relay is engaged. The engine is cranked for a pre-set time. If the engine fails to fire during this cranking attempt then the fuel relay and start relay are disengaged for the pre-set rest period; “crank rest time” begins and wait for the next crank attempt;
5) Should this start sequence continue beyond the set number of attempts, the start sequence will be terminated, the first line of LCD display will be highlighted with black and ‘Fail to Start fault’ will be displayed.;
6) In case of successful crank attempt, the “Safety On” timer is activated. As soon as this delay is over, “start idle” delay is initiated (if configured);
7) After the start idle, if the Rotate Speed, Temperature, Oil Pressure of controller are regular, the generator will enter into Normal Running status directly.

Remote Stop Sequence:
1) When the “Remote Stop” or “Stop Input” signal is effective, the Stop Delay is initiated.
2) Once this “stop delay” has expired, the “Stop Idle” is initiated. During “Stop Idle” Delay (if configured), idle relay is energized.
3) Once this “Stop Idle” has expired, the "ETS Solenoid Hold" begins. ETS relay is energized while fuel relay is de-energized.
4) Once this “ETS Solenoid Hold” has expired, the "Fail to Stop Delay" begins. Complete stop is detected automatically.
5) Generator is placed into its standby mode after its complete stop. Otherwise, fail to stop alarm is initiated and the corresponding alarm information is displayed on LCD (If generator is stop successfully after “fail to stop” alarm has initiated, “After stop” delay will be initiated).
6 PARAMETER SETTING

Enter into operating mode setting while pressing the button \( \text{Enter} \) for 3 seconds after the controller started.

2 Operating modes: 0: Monitoring and controlling mode: When HMC6000A/ED/EG is in remote mode, the controller can achieve either remote monitoring data and records or remote start/stop.

1: Monitoring mode: When HMC6000A/ED/EG is in remote mode, the controller can achieve remote monitoring data and records but not remote start/stop.

\( \Delta \text{Note:} \) HMC6000RM/RMD can auto-identify main controller type, language setting and CANBUS baud rate.

7 BACK PANEL

HMC6000RM/RMD controller back panel layout:

<table>
<thead>
<tr>
<th>Icon</th>
<th>No.</th>
<th>Function</th>
<th>Cable Size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>1.</td>
<td>DC input B-</td>
<td>2.5mm²</td>
<td>DC power supply negative input. Connected with negative of starter battery.</td>
</tr>
<tr>
<td>+</td>
<td>2.</td>
<td>DC input B+</td>
<td>2.5mm²</td>
<td>DC power supply positive input. Connected with positive of starter battery.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>NC</td>
<td></td>
<td>Not connected.</td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td>CANL</td>
<td>0.5mm²</td>
<td>Used for connect to HMC6000A/EG/ED local monitor and control module. Using 120Ω shielding wire whose single end earthed is recommended.</td>
</tr>
<tr>
<td></td>
<td>5.</td>
<td>CANH</td>
<td>0.5mm²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.</td>
<td>SCR</td>
<td>0.5mm²</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>LINK</td>
<td></td>
<td>Used for software update.</td>
</tr>
</tbody>
</table>

Description of terminal connection:
8 CANBUS (EXPANSION) BUS COMMUNICATION

HMC6000A/ED/EG can be connected to achieve remote monitoring and controlling via EXPANSION port, which can connect at most 16 HMC6000RMs via only 1 EXPANSION port to achieve monitoring and controlling simultaneously in several places.

HMC6000RM application map:

```
+----------------+-----------------+
|                | DC24V           |
|                | CANBUS          |
+----------------+-----------------+
```

HMC6000RMD application map:

```
+----------------+-----------------+
|                | DC24V           |
|                | CANBUS          |
+----------------+-----------------+
```

**Note:** Remote control module can only be used in remote mode of the engine; in local mode the stop and start buttons cannot work.
9 INSTALLATION

9.1 FIXING CLIPS

Controller is panel built-in design; it is fixed by clips when installed.

1) Withdraw the fixing clip screw (turn anticlockwise) until it reaches proper position.

2) Pull the fixing clip backwards (towards the back of the module) ensuring two clips are inside their allotted slots.

3) Turn the fixing clip screws clockwise until they are fixed on the panel.

**NOTE:** Care should be taken not to over tighten the screws of fixing clips.

9.2 OVERALL DIMENSIONS AND CUTOUT

![Cut Out Diagram]

10 TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller no response with power.</td>
<td>Check starting batteries; Check controller connection wirings; Check DC fuse.</td>
</tr>
<tr>
<td>CANBUS communication failure</td>
<td>Check wiring; Check if CANBUS CANH and CANL wires are connected in the opposite way; Check if CANBUS CANH and CANL wires at both ends are connected in the opposite way; Putting a 120Ω resistance between CANBUS CANH and CANL is recommended.</td>
</tr>
</tbody>
</table>