

SmartGen

MAKING CONTROL SMARTER

HGM4100LT-RM

REMOTE MONITORING CONTROLLER

USER MANUAL



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Table 1 Software Version

Date	Version	Note
2022-12-03	1.0	Original release.
2023-09-22	1.1	Change the module name; Change the function descriptions of remote monitoring module.

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1 OVERVIEW

HGM4100LT-RM Remote Monitoring Module is a remote monitoring module of HGM4100LT genset controller. It realizes the remote start/stop, data measurement, alarm display and other functions through RS485, and is used for remote monitoring system of a single unit.

HGM4100LT-RM Remote Monitoring Module is designed especially for adapting extremely low/high temperature (-40~+70)°C, which integrates digital, intelligent and network technology. It applies LCD display, optional interface operation with eight languages (Chinese, English, Spanish, Russian, Turkish, French, Portugal, and Polish). It is simple to operate and reliable to work. Because of the characteristics of compact structure, simple wiring connection and high reliability, it can be widely used in all types of automatic genset control system.

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2 PERFORMANCE AND CHARACTERISTICS

Main characteristics:

- LCD display with backlight, 132x64 size, and eight language display (Chinese, English, Spanish, Russian, Turkish, French, Portuguese, and Polish), push-button operation;
- Hard acrylic screen material with great wear-resisting and scratch-resisting performance, which are used to protect the screen;
- Silicone panel and pushbuttons which can better adapt extreme temperature environment;
- RS485 communication interface, which enables “Three remote” (remote control, remote measuring and remote communication) functions by MODBUS protocol;
- Displaying 3-phase voltage, 3-phase current, frequency, and power parameters;

Generator

Line voltage (Uab, Ubc, Uca)

Phase voltage (Ua, Ub, Uc)

Frequency (Hz)

Phase sequence

Load

Current Ia, Ib, Ic

A (unit)

Each phase and total active power P

kW (unit)

Reactive power Q

kvar (unit)

Apparent power S

kVA (unit)

Power factor PF

Accumulated total generator power W

kWh, kvarh, kVAh (unit)

Output percentage with loading %

- Displaying all kinds of parameters for the generator:

Temp. °C / °F

Oil Pressure kPa/psi/bar all be displayed

Fuel Level % (unit) Fuel Quantity Left L (unit)

Speed r/min (RPM)

Voltage of Battery V (unit)

Voltage of Charger V (unit)

Hour count accumulation

Start times accumulation

- Parameter setting function: it allows users to change and set parameters and meanwhile they shall be stored in the internal FLASH. They shall not be lost even in case of power outage; All of them can be adjusted from the front panel of the controller and also can be modified on PC via USB or RS485 port;
- Wide power supply range (8~35)VDC, which is suitable for different starting battery voltage environment;
- All parameters apply digital adjustment, getting rid of conventional analog modulation of normal potentiometer, improving the reliability and stability of the whole device;
- Rubber seal designed between the shell and the screen with protection level IP65;
- Metal fixing clips are used to fix the controller;
- Modular structure design, anti-flaming ABS plastic enclosure, pluggable connection terminals and embedded installation way with compact structure and easy mounting.

3 SPECIFICATION









Table 2 Technical Parameters

Items	Contents
Operating Voltage	DC8.0V to DC35.0V, Continuous Power Supply.
Power Consumption	<3W (standby ≤2W)
Case Dimension	135mm x 110mm x 44mm
Panel Cutout	116mm x 90mm
Working Temperature	Temperature: (-40~+70)°C When reaches -40°C, the controller is powered on for 50 seconds, but there is double image, and the display can be normal after 1.5 minutes.
Working Humidity	(20~93)%RH
Storage Temperature	(-45~+80)°C
Protection Level	IP65: rubber seal installed between the controller enclosure and panel window.
Insulation Intensity	Apply AC2.2kV voltage between high voltage terminal and low voltage terminal and the leakage current is not more than 3mA within 1min.
Weight	0.32kg

4 OPERATION

4.1. KEY FUNCTION DESCRIPTION

Table 3 Key Function Descriptions

Icon	Function	Description
	Stop/Reset	Stop the running generator in auto/manual mode; Under alarm status, press it can remove the alarm; In stop mode, press and hold it for 3 seconds and it can test the indicator lights (lamp test); During stop process, press this key again and generator shall stop immediately.
	Start	Under manual mode, press this key and genset shall start; during the start process, press this key and genset shall jump to next status and start quickly.
	Manual	Press this key and controller shall be in manual mode.
	Auto	Press this key and controller shall be in auto mode.
	C/O	The switchover key for breaker close and open; press this key and the C/O page and main page shall display alternately; When C/O page displays and the controller is in manual mode, press Up/Down keys and breaker open and close can be controlled.
	Set/Confirm	Press this key and it shall enter Menu List; During parameter setting, it is used to move the cursor and confirm setting information.
	Up/Increase	Scrolls the screen up; during parameter setting, it is used to move the cursor up and add the value of the place where the cursor is; When the C/O page displays and the controller is in manual mode, it can control Gen breaker close.
	Down/Decrease	Scrolls the screen down; during parameter setting, it is used to move the cursor down and reduce the value where the cursor is; When the C/O page displays and the controller is in manual mode, it can control Gen breaker open.

4.2. CONTROLLER PANEL

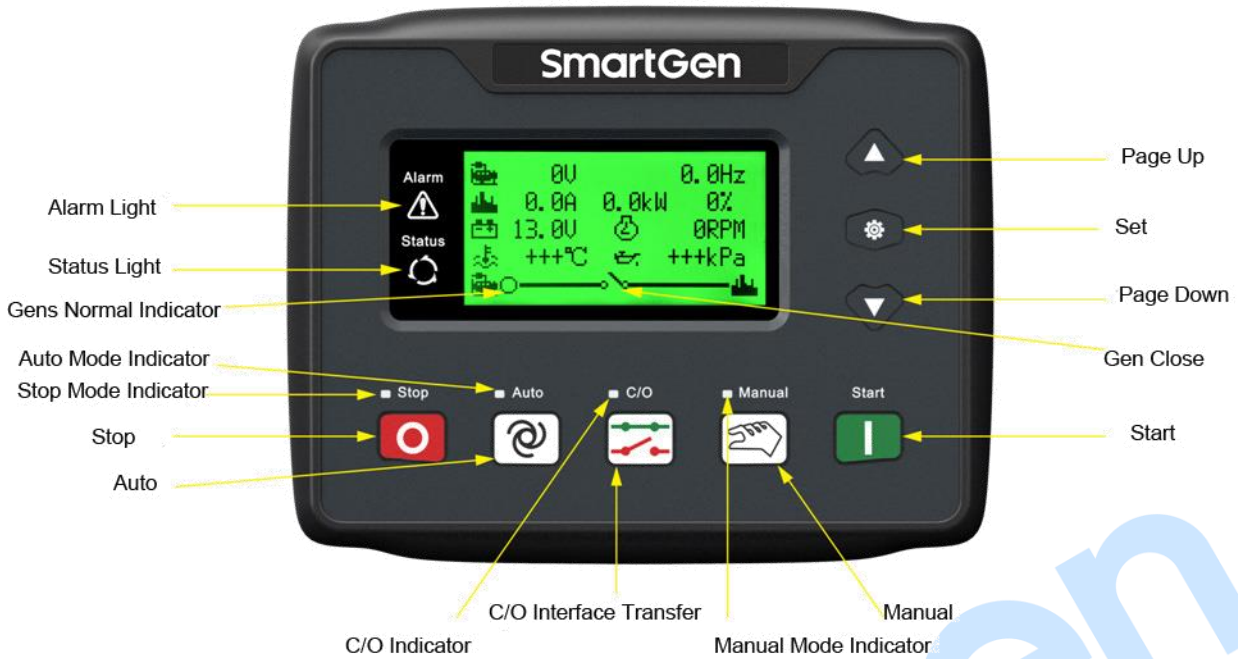


Fig.1 HGM4100LT-RM Front Panel Indication

NOTE: Illustration for some of indicator lights:

Alarm Indicators: slowly flash when warning alarms; fast flash when shutdown alarms; light is off when none alarms.

Status Indicators: Light is off when genset is standby; flash once per second during startup or shutdown; it is always on when it is normal running.

5 WIRING CONNECTION

HGM4100LT-RM controller back panel is as below:

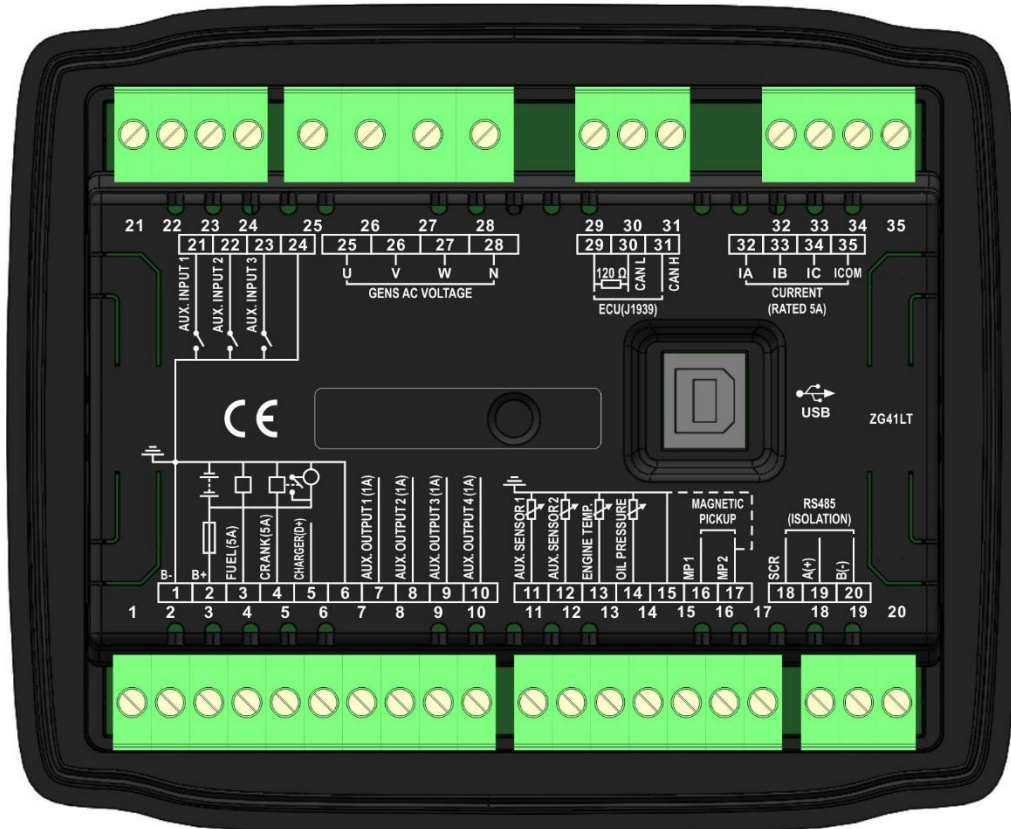


Fig.2 Back Panel

Table 4 Terminal Wiring Connection

No.	Function	Cable Size	Remarks
1	B-	2.5mm ²	Connected with negative of starter battery;
2	B+	2.5mm ²	Connected with positive of starter battery; If wire length is over 30m, it is better to double wires in parallel; Max. 20A fuse is recommended.
3	Fuel relay output	1.5mm ²	Note: This part of terminals are without this function.
4	Starter relay output	1.5mm ²	
5	Charger (D+)	1.0mm ²	
6	COM GND	1.5 mm ²	
7	Aux. Output 1	1.0mm ²	
8	Aux. Output 2	1.0mm ²	
9	Aux. Output 3	1.0mm ²	
10	Aux. Output 4	1.0 mm ²	
11	Aux. Sensor 1	1.0mm ²	
12	Aux. Sensor 2	1.0mm ²	
13	Temperature sensor input	1.0mm ²	
14	Oil pressure sensor input	1.0mm ²	
15	COM GND connected	1.5 mm ²	
16	Speed sensor input	0.5mm ²	

No.	Function	Cable Size	Remarks
17	Speed sensor input; connected with battery negative inside controller	0.5mm ²	
18	RS485 COM GND	/	Impedance-120Ω shielding wire is recommended; One end is ground-connected.
19	RS485+	0.5mm ²	
20	RS485-	0.5mm ²	
21	Aux. Input 1	1.0mm ²	Note: This part of terminals are without this function.
22	Aux. Input 2	1.0mm ²	
23	Aux. Input 3	1.0mm ²	
24	Input COM	1.0mm ²	
25	Genset U-phase voltage monitoring input	1.0mm ²	
26	Genset V-phase voltage monitoring input	1.0mm ²	
27	Genset W-phase voltage monitoring input	1.0mm ²	
28	Genset N wire input	1.0mm ²	
29	CAN TR	0.5mm ²	
30	CAN L	0.5mm ²	
31	CAN H	0.5mm ²	
32	CT A-phase monitoring input	1.5mm ²	
33	CT B-phase monitoring input	1.5mm ²	
34	CT C-phase monitoring input	1.5mm ²	
35	CT COM	1.5mm ²	

▲NOTE: USB ports in controller back panel are programmable parameter ports, and users can directly configure the controller via PC.

▲NOTE: HGM4100LT-RM has the same configuration parameters with HGM4100LT controller.

6 TYPICAL APPLICATION

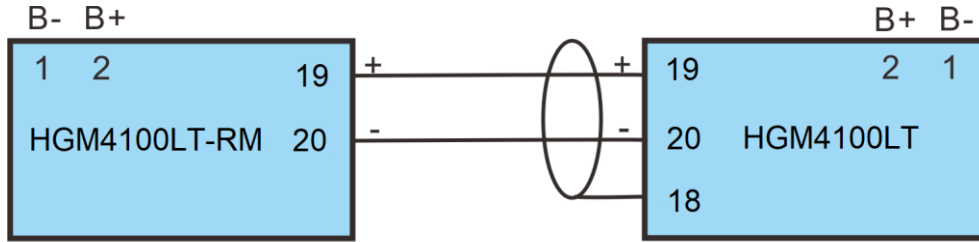


Fig.3 HGM4100LT-RM and HGM4100LT Typical Application Diagram

7 INSTALLATION

7.1. FIXING CLIPS

- 1) The controller is panel built-in design; and it is fixed by clips for installation.
- 2) Withdraw the fixing clip screws (anticlockwise) until they reach proper position.
- 3) Pull the fixing clips backwards (towards the back of the module) and ensure two clips are inside their allotted slots.
- 4) Turn the fixing clip screws clockwise steady until they are fixed on the panel.

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

7.2. OVERALL DIMENSION AND PANEL CUTOUT

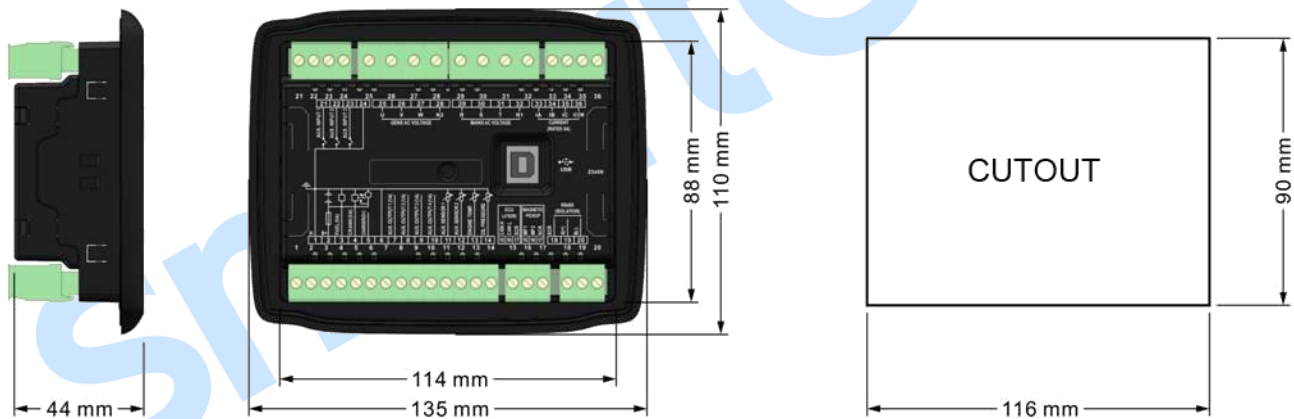


Fig.4 Overall Dimensions and Panel Cutout

HGM4100LT-RM controller can suit wide range of battery voltage DC(8~35)V. Negative of battery must be connected with the engine shell. Diameter of wire which connects power supply with battery must be over 2.5mm². If floating charger is configured, please firstly connect output wires of the charger to battery’s positive and negative directly, then connect wires from battery’s positive and negative to controller’s positive and negative input ports in order to prevent charger disturbing the controller’s normal working.

8 FAULT FINDING

Table 42 Fault and Solutions

Symptoms	Possible Solutions
Controller no response with power	Check starter batteries; Check controller connection wirings; Check DC fuse;
Abnormal RS485 communication	Check connections wirings; Check whether COM port setting is correct or not; Check RS485's connections between A and B is reversely connected or not; It is suggested to add 120Ω resistor between A and B of RS485.

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