

# Smartgen®

HGM150 Genset Control Module

## USER MANUAL



Smartgen Technology

# Smartgen®

**Smartgen Technology Co., Ltd**

**No.28 Jinsuo Road**

**Zhengzhou**

**Henan Province**

**P. R. China**

**Tel:** 0086-371-67988888/67981888

0086-371-67991553/67992951/67992952

0086-371-67981000(overseas)

**National Free Tel:** 4000318139

**Fax:** 0086-371-67992952/67981000

**Web:** <http://www.smartgen.com.cn>

<http://www.smartgen.cn>

**Email:** [sales@smartgen.com.cn](mailto:sales@smartgen.com.cn)

All rights reserved. No part of this publication may be reproduced in any material form (including photocopying or storing in any medium by electronic means or other) without the written permission of the copyright holder.

Applications for the copyright holder's written permission to reproduce any part of this publication should be addressed to Smartgen Technology at the address above.

Any reference to trademarked product names used within this publication is owned by their respective companies.

Smartgen Technology reserves the right to change the contents of this document without prior notice.

## Software Version

Date	Version	Note
2006-05-08	1.0	Original release
2010-08-09	1.1	Optimize some details of the manual.
2011-06-13	1.2	Change the name of the company "Smartgen electronics" to "Smartgen Technology".
2011-12-22	1.3	Modify <b>Typical Application</b> .

## CONTENTS

1 SUMMARY .....	4
2 PERFORMANCE AND CHARACTERISTICS .....	4
3 SPECIFICATION.....	4
4 PANEL OPERATION .....	5
5 TERMINALS FUNCTION .....	6
6 TYPICAL APPLICATION .....	7
7 CASE DIMENSIONS (Panel Cutout 78 mm*66mm).....	8
8 HGM170RE RELAY EXPANSION MODULE (Optional).....	8
9 OVERALL DEMENIONS OF HGM170RE .....	9

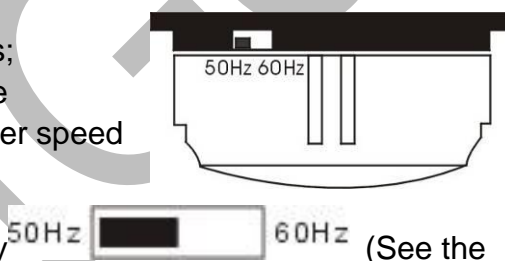
SmartGen

## 1 SUMMARY

**HGM150** is an engine protection module designed to control the engine via pushbuttons on the front panel. When detecting failures, such as low oil pressure, high water/cylinder temperature, over speed and external alarm, it will initiate shutdown/alarm signal. LED screen displays the faults, which can offer real and effective alarm information. It is of modular structure design, embedded installation, and compact structure with small volume, advanced SCM control, stable performance and convenient operation.

## 2 PERFORMANCE AND CHARACTERISTICS

- ◆ Wide range of DC supply input, 12V and 24V in common use;
- ◆ With low oil pressure, high water/cylinder temperature, over speed and external alarm protection;
- ◆ With ETS output. Crank disconnect output, alarm output and over speed output;
- ◆ LED displays all kinds of alarm states;
- ◆ Crank disconnect and over speed are decided by generator voltage, and over speed threshold can be set;
- ◆ Built-in dial switch to select frequency 50Hz 60Hz (See the picture).

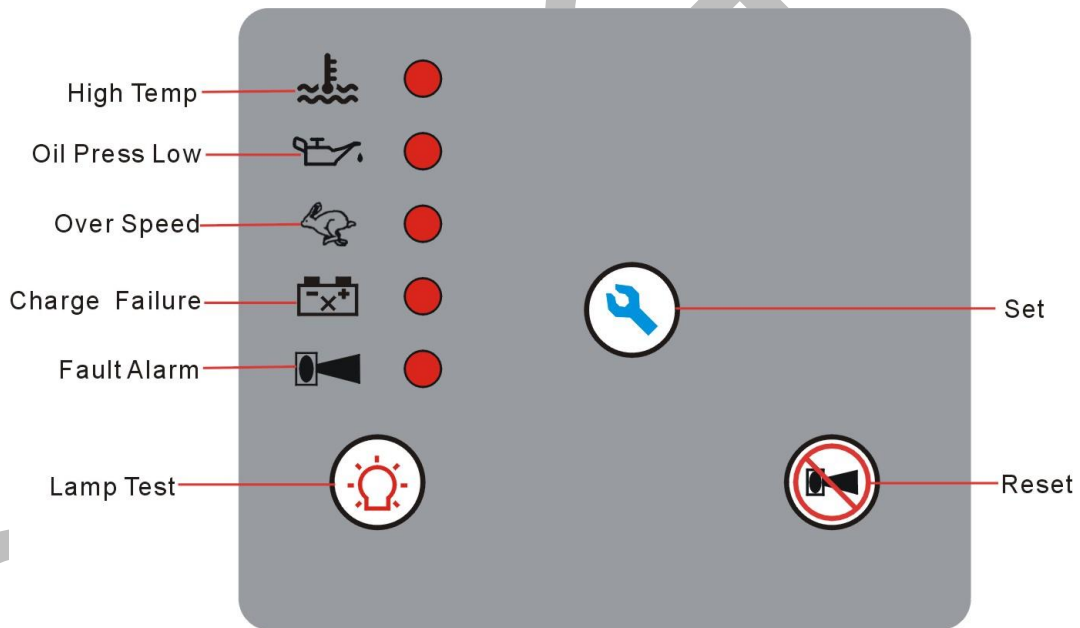


## 3 SPECIFICATION



Item	Contents
Working Voltage	DC8.0V to 35.0V continuous
Power Consumption	Standby (12V: 0.12W, 24V:0.24W) Working (12V: 0.5W, 24V:1W)
Alternator Voltage Input 1P2W	15VAC - 360VAC (ph-N)
Alternator Rated Freq.	50/60Hz
Over Speed Freq.	Default: 114% of rated freq.
Condition of Crank Disconnect	Generator voltage $\geq$ 15VAC and frequency $\geq$ 15Hz
Charge Failure Voltage	<3V
3 Digital Inputs	Connect to B- active
Start Output	1Amp DC28V relay output B+
Stop Output	1Amp DC28V relay output B-
Common Alarm Output	1Amp DC28V relay output B-
Over Speed Output	1Amp DC28V relay output B-








Item	Contents
Case Dimensions	84mm x72mm x 35mm
Panel Cutout	78mm x 66mm
Operation Condition	Temperature: (-30~+70)°C Humidity: (20~90)%
Storage Condition	Temperature: (-40~+80)°C
Protection Level	IP55: when waterproof rubber gasket added between controller and its panel. IP42: when waterproof rubber gasket not added between controller and its panel.
Insulation Intensity	Object: among input/output/power Quote standard: IEC688-1992 Test way: AC1.5kV/1m 3mA leakage current
Weight	0.2kg

## 4 PANEL OPERATION



- ◎ Lamp test (🔦): press this key at least 1 second, all the indicators in the panel will illuminate. It will test whether the indication lights are normal or not.
- ◎ Alarm reset (🔇): when module had failure and alarm, press this key to reset the alarm.
- ◎ Parameter configuration (🔧): can be used for setting over speed threshold of generator. Setting procedures are as following:
  - 1) Disconnect the module power (B+), press 🔧 key and hold, then turn on

the module power. If over speed indicator   is flashing rapidly, it means that over speed threshold can be set.

- 2) Adjust engine speed to a specified over speed value, press , all indicators illuminate; over speed threshold is the current rotating speed. The valid range to set value is (51-75) Hz. Over speed can be set repeatedly by pressing .
- 3) During setting over speed, if engine speed is over the pre-setting,   will always illuminate; if it is under the pre-setting,   will rapidly illuminate. This can judge whether the over speed threshold is successfully set or not.
- 4) During setting, pressing  can resume the factory default: 114% of rated frequency.
- 5) When the setting is completed, turn off the power to exit the setting state.

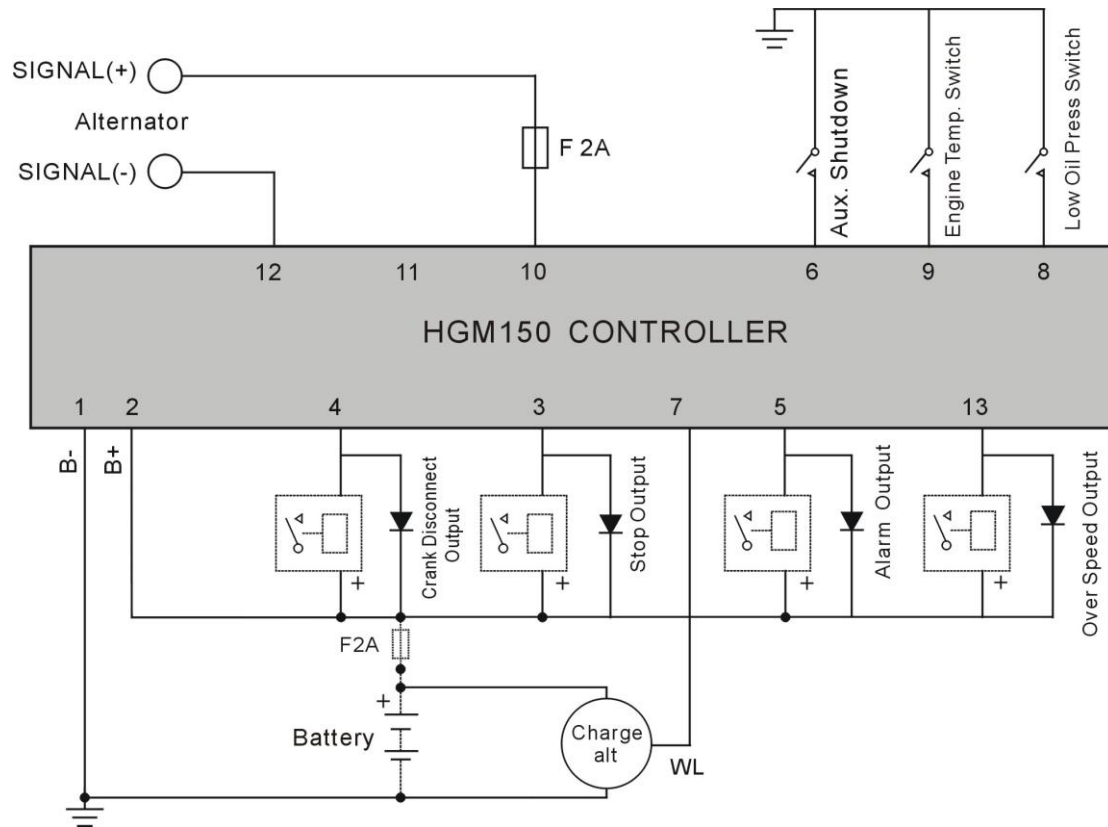
## 5 TERMINALS FUNCTION

- ◆ Terminal 1 (B-): Connected to plant battery negative (GND).
- ◆ Terminal 2 (B+): Connected to plant battery positive.
- ◆ Terminal 3 (ETS Output): When module detects fault, the output is enabled and will disconnect after 3 seconds.
- ◆ Terminal 4 (Crank Disconnect Output): output when module detects output frequency more than 15Hz; disconnect when less than 15Hz.
- ◆ Terminal 5 (Alarm Output): When module detects fault, the output is enabled and will disconnect after resetting the alarm or turning off the power.
- ◆ Terminal 6 (Aux. Shutdown Input): auxiliary shutdown alarm input, connect to ground.
- ◆ Terminal 7 (Alternate Charger WL (D+)): Connect to alternator WL (or D+) terminal. When charge failure, annunciator on the front panel illuminates. (indication only, not shutdown)
- ◆ Terminal 8 (Low Oil Pressure Input): Low Oil Pressure Input port, connect to ground. The output will be enabled after 10s' start delay.
- ◆ Terminal 9 (High Engine Temp Input): High water/cylinder temperature input port, connect to ground. The output will be enabled after 10s' start delay.
- ◆ Terminal 10 (SIGNAL (+)), 12(SIGNAL (-)): Connect to AC voltage signal for judging crank disconnect and over speed protection. Voltage input range is

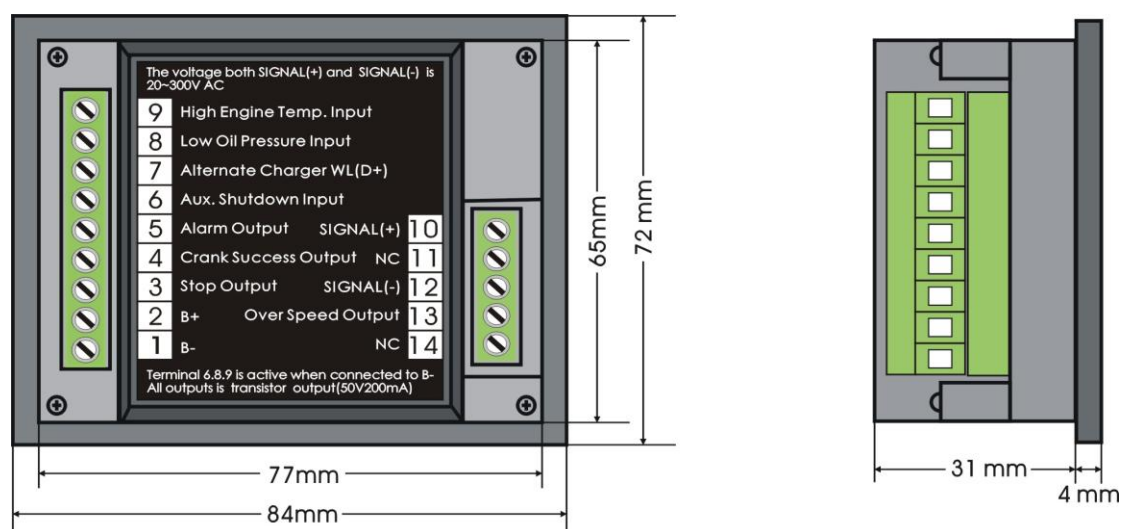
(20~300) V AC, rated frequency is 50/60Hz.

- ◆ Terminal 11 (NC): Not connection.
- ◆ Terminal 13 (Over Speed Output): When module detects output frequency more than pre-setting over speed threshold, it will output and hold after 3s' delay and will disconnect after resetting the alarm or turning off the power.
- ◆ Terminal 14 (NC): Not connection.

## 6 TYPICAL APPLICATION



## 7 CASE DIMENSIONS (Panel Cutout 78 mm\*66mm)



## 8 HGM170RE RELAY EXPANSION MODULE (Optional)

HGM170RE is modular structure which can be fixed in various guides with compact structure, small size and easy installation.

Expansion circuits output:

1. Fuel relay 30A, output voltage B+, coil power $\leq$ 0.9W
2. Start relay 30A, output voltage B+, coil power $\leq$ 0.9W
3. Stop relay 30A, output voltage B+, coil power $\leq$ 0.9W
4. Auxiliary relay 30A, passive output, coil power $\leq$ 0.9W

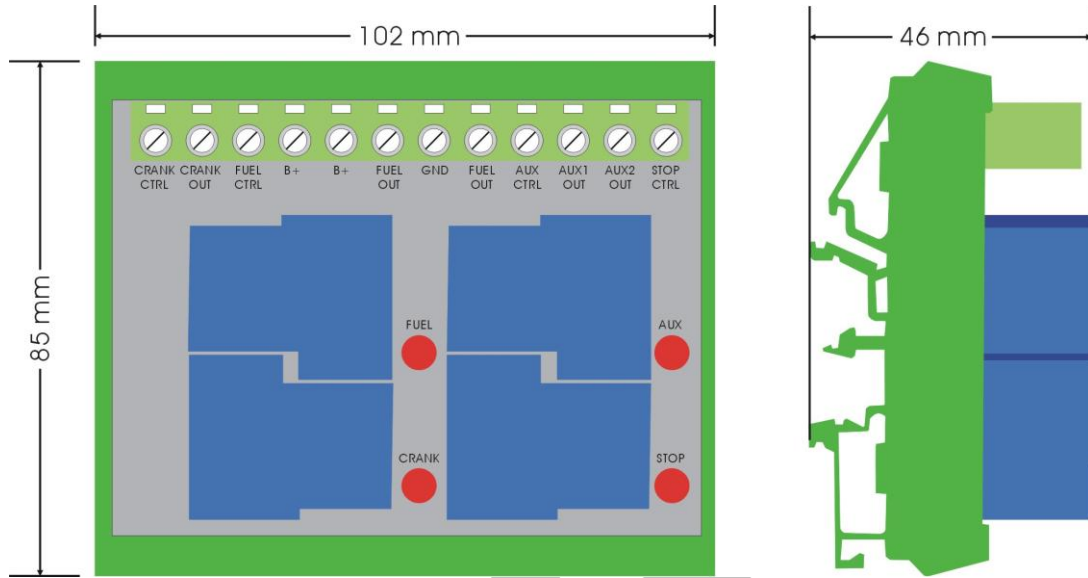
### Terminals Description

No.	Items	Description	Notes
1	CRANK CTRL	Start relay control, connect to ground.	HGM170RE terminals: 1: CRANK CTRL 3: FUEL CTRL 9: AUX CTRL 12: STOP CTRL HGM150 terminal: 3: Stop Output 4: Crank Disconnect Output 5: Alarm Output 13: Over speed Output These terminals can be arbitrarily
2	CRANK OUT	Start relay output, B+ output.	
3	FUEL CTRL	Fuel relay control, connect to ground.	
4	B+	battery positive	
5	B+	Battery negative	
6	FUEL OUT	Fuel relay output, B+ output.	
7	GND	Battery negative (GND)	
8	STOP OUT	Stop relay output, B+ output.	
9	AUX CTRL	Auxiliary relay control, connect to ground.	
10	AUX OUT1	Auxiliary relay output, free	



11	AUX OUT2	contact normally opens.	interconnected to control corresponding items.
12	STOP CTRL	Stop relay control, connect to ground.	

## 9 OVERALL DEMENIONS OF HGM170RE



**Note:** When ordering please specify 12V or 24V.