



SmartGen
ideas for power

HOC300

OVER CURRENT PROTECTION RELAY

MULTIFUNCTIONAL PROTECTION MODULE

USER MANUAL



SMARTGEN (ZHENGZHOU) TECHNOLOGY CO.,LTD.



Chinese trademark

SmartGen English trademark

Smartgen – make your generator *smart*

Smartgen Technology Co., Ltd

No.28 Jinsuo Road, Zhengzhou, Henan Province, China

Tel: +86-371-67988888/67981888/67992951

+86-371-67981000(overseas)

Fax: +86-371-67992952

Email: sales@smartgen.cn

Web: www.smartgen.com.cn

www.smartgen.cn

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Table 1- Version History

Date	Version	Content
2014-08-07	1.0	Original release.
2014-10-09	1.1	Rename the product.
2015-03-24	1.2	Add “Multifunctional Protection Module” to the name
2021-09-29	1.3	

Table 2 - Symbol Instruction

Symbol	Instruction
 NOTE	Highlights an essential element of a procedure to ensure correctness.
 CAUTION	Indicates a procedure or practice, which, if not strictly observed, could result in damage or destruction of equipment.



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SmartGen

1 OVERVIEW

HOC300 over current protection relay is widely used in marine genset field and land genset field. HOC300 over current protection relay detects load current accurately. Over current trip or pre-trip relay outputs and alarm protection activates when the load current has exceeded the set value.

2 PERFORMANCE AND CHARACTERISTICS

- Suitable for 3-phase 4-wire, 3-phase 3-wire, single phase 2-wire, and 2-phase 3-wire systems with frequency 50/60/400Hz;
- Detects load current accurately.
- Adjustable potentiometer allows for set value adjusting and delay value setting.
- relay output;
- One test button, test the over current trip/pre-trip relay and indicator.
- Widely power supply range DC(8~35)V, suitable to different starting battery voltage environment;
- 35mm guide rail mounting.
- Modular design, pluggable terminal, compact structure with easy installation;

3 TECHNICAL PARAMETERS

Table 3 – Technical Parameters

Parameter	Details
Working Voltage	DC8. 0V to 35. 0V, continuous power supply
Overall Consumption	<0.9W (Standby mode: ≤0.28W)
Pre-Trip Relay Output	5A AC250V Volts free output
Trip Relay Output	5A AC250V Volts free output
Case Dimensions	89.7mm x 71.6mm x 60.7mm
CT Secondary Current	Rated 5A
Working Conditions	Temperature: (-25~+70)°C Humidity: (20~93)%RH
Storage Conditions	Temperature:(-25~+70)°C
Insulation Intensity	Apply AC2.2kV voltage between high voltage terminal and low voltage terminal; The leakage current is not more than 3mA within 1min.
Weight	0.24kg

4 PANEL TERMINAL DESCRIPTION

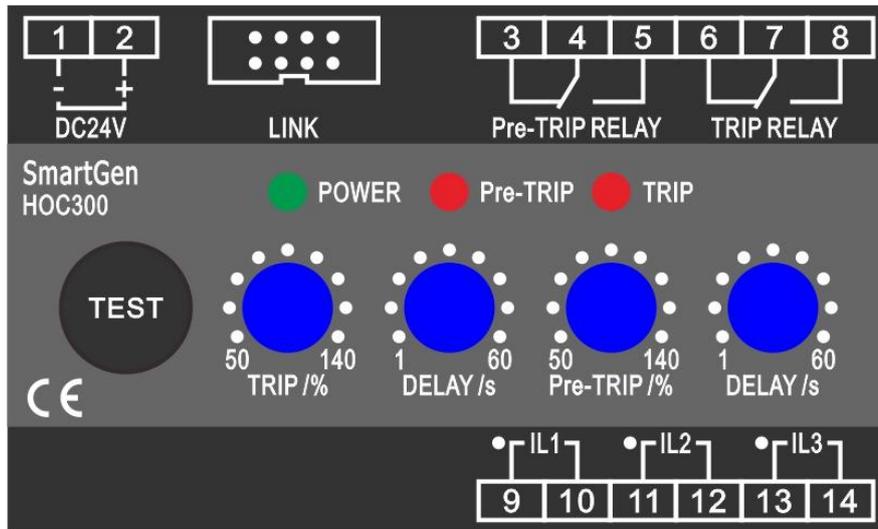


Fig.1 – Panel Drawing

Table 4 - Description of Terminal Connection

NO.	Functions	Cable Size	Remark		
1	B-	1.0mm ²	Connected with negative of starter battery.		
2	B+	1.0mm ²	Connected with positive of starter battery.		
3	Pre-TRIP RELAY	Normally Open	2.5 mm ²	Active when the load current has exceeded the set value and the delay timer has expired while deactivate when the load current returns to normal.	Normally open; Volts free output; 5A Rated
4		COM			
5		Normally Open			
6	TRIP RELAY	Normally Close	2.5 mm ²	Active when the load current has exceeded the set value and the delay timer has expired while deactivate when the load current returns to normal.	Normally open; Volts free output; 5A Rated
7		COM			
8		Normally Open			
9	IL1	Dotted Terminals	1.5 mm ²	CT A-phase input; Externally connected to secondary coil of current transformer (rated 5A).	
10					
11	IL2	Dotted Terminals	1.5 mm ²	CT B-phase input; Externally connected to secondary coil of current transformer (rated 5A).	
12					
13	IL3	Dotted Terminals	1.5 mm ²	CT C-phase input; Externally connected to secondary coil of current transformer (rated 5A).	
14					
LINK Port	Used for parameters setting.				

5 FUNCTION DESCRIPTION

Table 5 – Function Description

Item	Description
Power Indicator	Power supply indicator; It is illuminated when the relay is powered up. (green light)
Pre-Trip Indicator	It flashes once per second when the load current has exceeded the set value and Pre-TRIP indicator light on when the delay timer has expired. The indicator extinguished after current returns to normal. (red light)
Trip Indicator	It flashes once per second when the load current has exceeded the set value and TRIP indicator light on when the delay timer has expired. The indicator extinguished after current returns to normal. (red light)
TEST Button	Press the button for 3 seconds and enter the Test Mode. The Pre-Trip relay and Pre-Trip indicator output; Release and press the button again, the over current trip relay and indicator output. Press the button a third time to exit the Test Mode. Exit the Test Mode after 30s without any operation.
TRIP /% Over Current Trip Set Value	Used for adjusting over current set value. Range: (50~140)%; Setting value is the percentage of rated current value(5A).
DELAY /s Delay Value Potentiometer	Used for adjusting over current action delay value. Range: (1~60)s
Pre-TRIP /% Pre-Trip Set Value	Used for adjusting pre-trip set value. Range: (50~140)%; Setting value is the percentage of rated current value(5A).
DELAY /s Delay Value Potentiometer	Used for adjusting delay value. Range: (1~60)s

6 SCOPES AND DEFINITIONS OF PROGRAMMABLE PARAMETERS

Table 6 - Programmable Parameters

No.	Items	Parameters	Defaults	Description
1	AC System	(0-3)	0	0: 3P4W, 1: 3P3W 2: 2P3W, 3:1P2W
2	CT Ratio	(5-6000)/5	500	
3	Full Load Rated Current	(5-6000)A	500	
4	Communication Address	(1-254)	1	

PC Program:

Parameters setting and real-time monitoring can be implemented via LINK port by using PC software and an SG72 adapter which produced by our company. As follows:

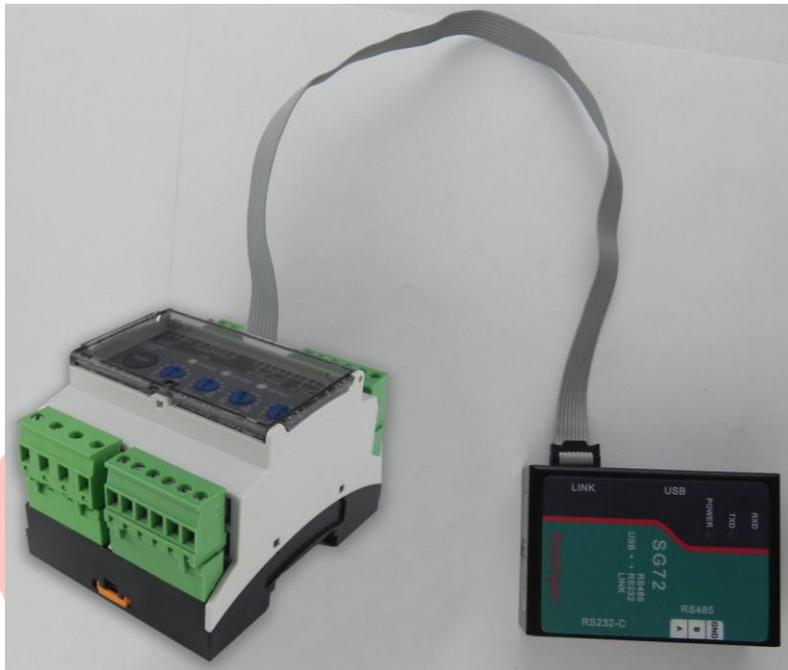


Fig.2 – PC Program Connection

7 TYPICAL DIAGRAM

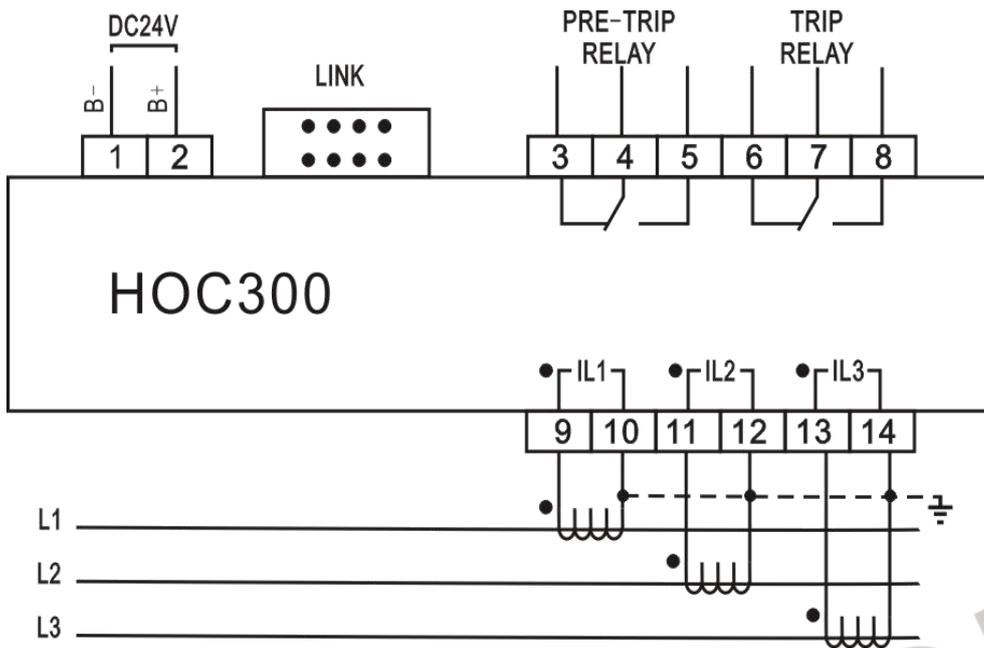


Fig.3 - 3 Phase 4 Wire Typical Application

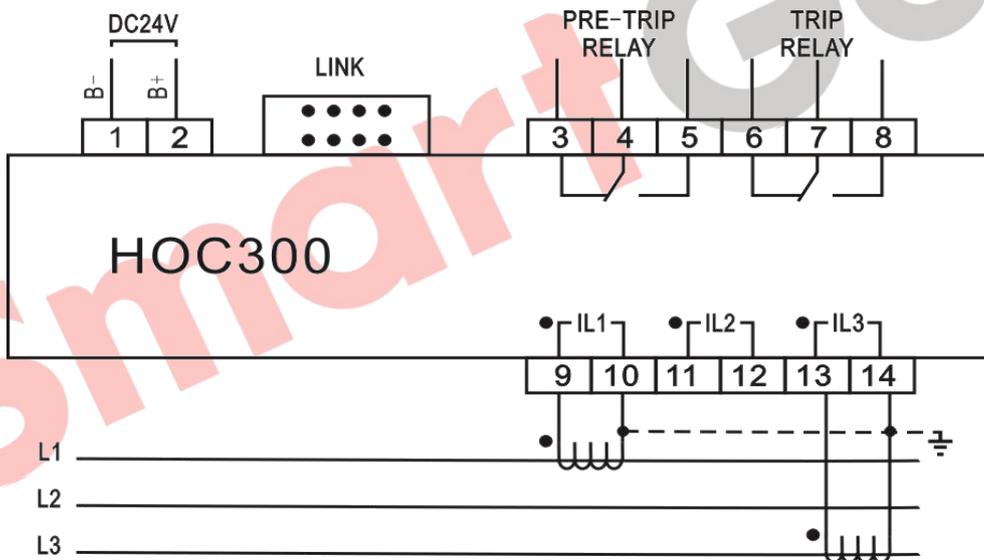


Fig.4 - 3 Phase 3 Wire Typical Application

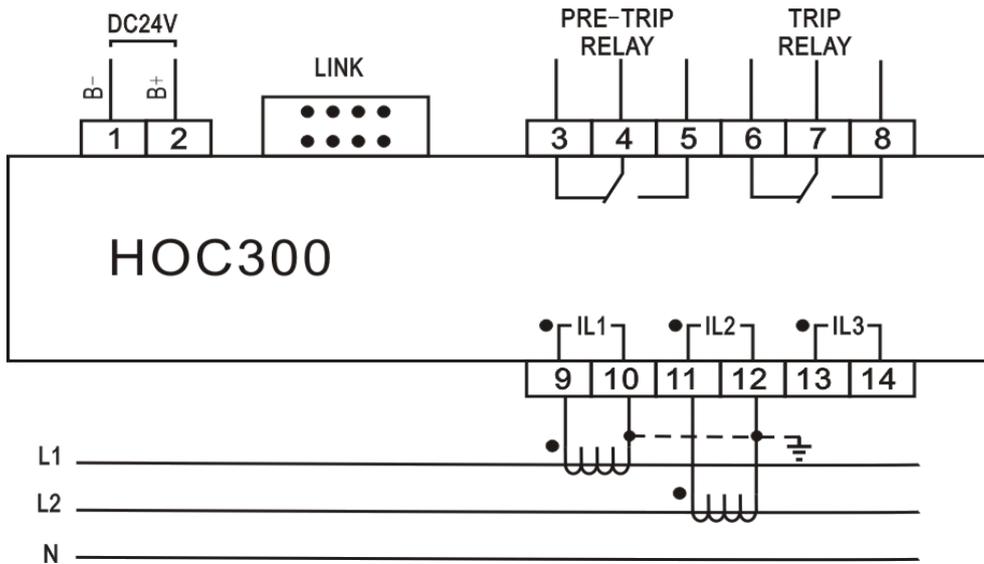


Fig.5 - 2 Phase 3 Wire Typical Application

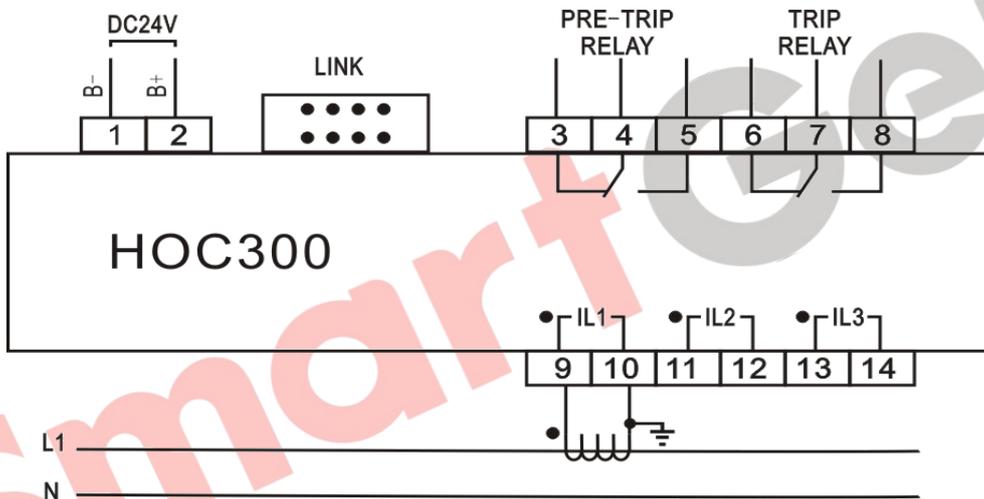


Fig.6 - Single Phase 2 Wire Typical Application

8 INSTALLATION DIMENSIONS

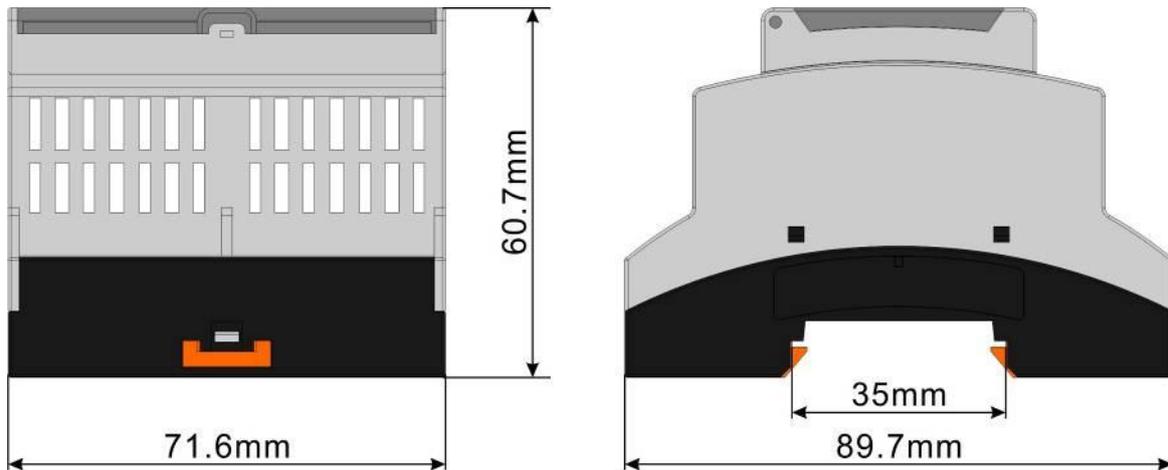


Fig.7 – Case Dimensions and Cutout

1) Output And Expand Relays

All outputs are relay contact output type. If need to expand the relays, please add freewheel diode to both ends of expand relay's coils (when coils of relay has DC current) or, add resistance-capacitance return circuit (when coils of relay has AC current), in order to prevent disturbance to controller or others equipment

2) AC Input

Current input must be connected to outside current transformer. And the current transformer's secondary side current must be 5A.

▲ Note: When there is load current, transformer's secondary side prohibit open circuit.

3) Withstand Voltage Test

▲ **CAUTION!** When relay had been installed in control panel, if need the high voltage test, please disconnect relay's all terminal connections, in order to prevent high voltage into relay and damage it.