

SmartGen

MAKING CONTROL SMARTER

TPS31

THREE POWER SUPPLY MODULE

USER MANUAL



郑州众智科技股份有限公司
SMARTGEN(ZHENGZHOU)TECHNOLOGY CO.,LTD.

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
2021-11-20	1.0	Original release.
2022-04-14	1.1	Modify the storage temperature from 80 °C to 70 °C.

Table 2 Notation Clarification

SIGN	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.
 WARNING!	Indicates error operation may cause death, serious injury and significant property damage.

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CONTENT

1 OVERVIEW	5
2 PERFORMANCE AND CHARACTERISTICS	5
3 SPECIFICATION	5
4 INDICATOR STATUS	6
5 PARAMETERS LIST	7
6 CONTROLLER TERMINAL DESCRIPTION	8
7 WORKING MODE DESCRIPTION	8
8 INTERNAL LAYOUT AND INSTALLATION WAY	9
8.1 OVERALL DIMENSION	9
8.2 INTERNAL TRANSFER SCHEMATIC DIAGRAM	9
8.3 INSTALLATION WAY	10

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1 OVERVIEW

TPS31 Three Power Supply Module is composed of microprocessor as the core, providing three selective AC power output, which can precisely detect 3-way voltage and make accurate judgment and control output for voltage abnormal situations (over voltage, under voltage).

2 PERFORMANCE AND CHARACTERISTICS

- System type is 3-way single phase AC power;
- Intelligent and precise MCU monitoring and control;
- Two working mode: mutual backup and power supply by priority;
- Measure 3-way input voltage and load voltage;
- Over/under voltage detection function, over/under voltage threshold can be set (via PC software);
- Transfer time<60ms;
- LED can intuitively indicate 3-way input voltage status and output voltage status;
- Can be used for 3-way or 2-way power input;
- 3-way independent switch power supply is adopted internally;
- 3-way N wire isolated design;
- Guide rail installation and screw installation;
- Modular structure design, pluggable terminal, compact structure and easy mounting.

3 SPECIFICATION

Table 2 Technical Parameters

Item	Content
3-way AC Voltage IN	AC(90~305)V
Overall Consumption	≤4.8W
Max. Output Current	12A
Rated Power	50/60 Hz
LINK	SmartGen special interface for program upgrade and module parameter configuration.
Overall Dimension (LxWxH)	115.5mmx 102mmx72. 5mm
Working Temperature	(-40~+70)°C
Working Humidity	(20~93)%RH
Storage Temperature	(-40~+70)°C
Weight	0.4 kg

4 INDICATOR STATUS

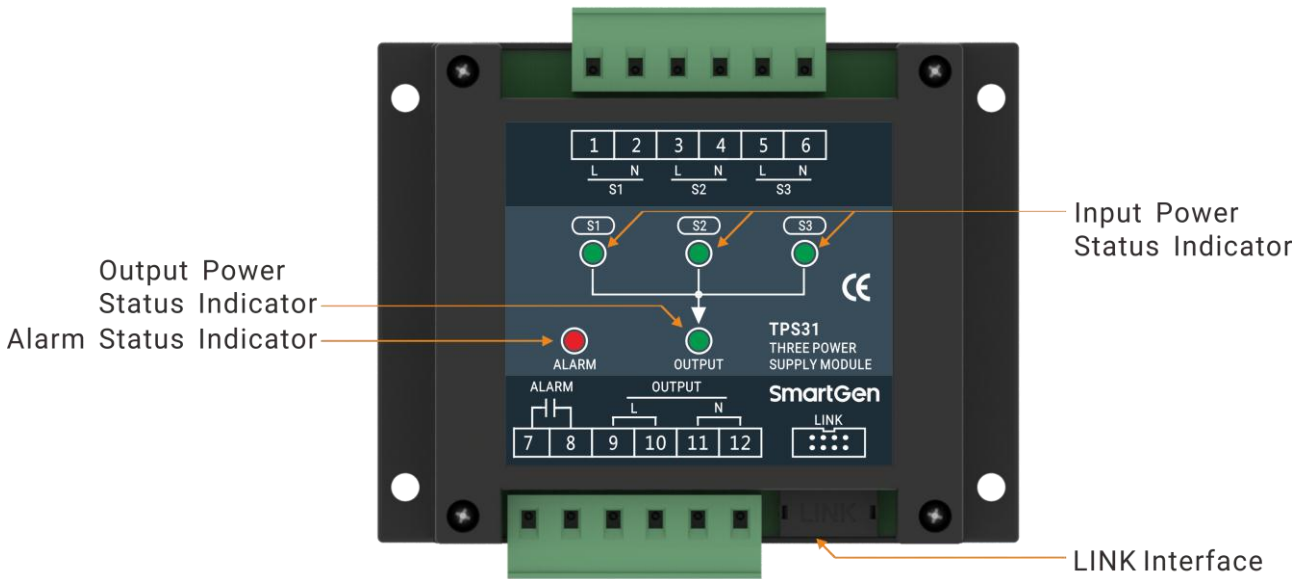


Fig.1 Mask Drawing

Table 3 Indicator Description

Status	Description
S1 Power Status Indicator	S1 blackout, green indicator extinguishes; S1 normal, green indicator illuminates; S1 abnormal, green indicator flashes.
S2 Power Status Indicator	S2 blackout, green indicator extinguishes; S2 normal, green indicator illuminates; S2 abnormal, green indicator flashes.
S3 Power Status Indicator	S3 blackout, green indicator extinguishes; S3 normal, green indicator illuminates; S3 abnormal, green indicator flashes.
Output Power Status Indicator	Output blackout, green indicator extinguishes; Output normal, green indicator illuminates; Output abnormal, green indicator flashes.
Alarm Status Indicator	S1 outputs and output blackout, red indicator flashes; S2 outputs and output blackout, red indicator flashes; S3 outputs and output blackout, red indicator flashes; S1, S2, S3 inactive but output voltage, red indicator flashes.

5 PARAMETERS LIST

LINK interface is used for connecting upper computer via SG72A to configure parameters.

Table 4 Fixed Parameters

No.	Name	Range	Default	Description
1	Module Address	1-254	1	Baud rate: 9600bps Stop bit: 1-bit Parity bit: None
2	Working Mode	0-1	0	0: Mutual backup 1: Power supply by priority (S1>S2>S3) Refer to Table 6 Working Mode Description.
4	Rated Voltage	(1-600)V	220V	Rated voltage value of AC system.
5	Overvoltage Threshold	(0-200)%	130%	Voltage upper limit value, abnormal when greater than the value.
6	Overvoltage Return Threshold	(0-200)%	125%	Voltage upper limit return value, normal when less than the value.
7	Undervoltage Threshold	(0-200)%	75%	Voltage lower limit value, abnormal when less than the value.
8	Undervoltage Return Threshold	(0-200)%	80%	Voltage lower limit return value, normal when greater than the value.

6 CONTROLLER TERMINAL DESCRIPTION

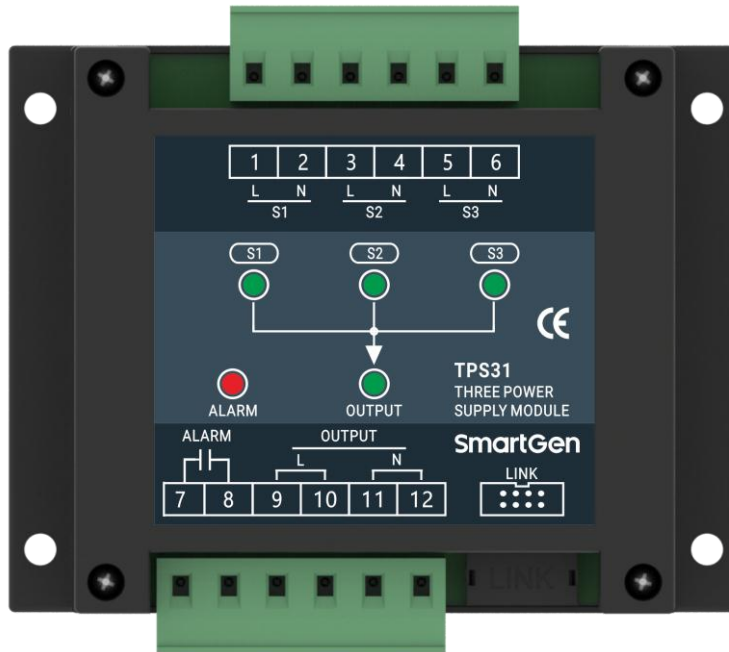


Fig.2 Terminal Definition

Table 5 Terminal Description

No.	Name	Description	Remark
1	S1	S1 Power L Phase	Input voltage 90-305VAC, frequency 50/60Hz.
2		S1 Power N Phase	
3	S2	S2 Power L Phase	
4		S2 Power N Phase	
5	S3	S3 Power L Phase	
6		S3 Power N Phase	
7	ALARM	Alarm Output	Relay volts-free output, capacity is 250V/5A.
8			
9	OUTPUT	Output L Phase	Max. output current is 12A.
10			
11		Output N Phase	
12			

7 WORKING MODE DESCRIPTION

Table 6 Working Mode Description

Working Mode	Description
Mutual Backup	It outputs when any one power is normal, only transfer to other normal powers when this power is abnormal.
Power Supply by Priority (S1>S2>S3)	Power with higher priority will supply first. 3-way power priority sequence is S1>S2>S3.

8 INTERNAL LAYOUT AND INSTALLATION WAY

8.1 OVERALL DIMENSION

Unit: mm

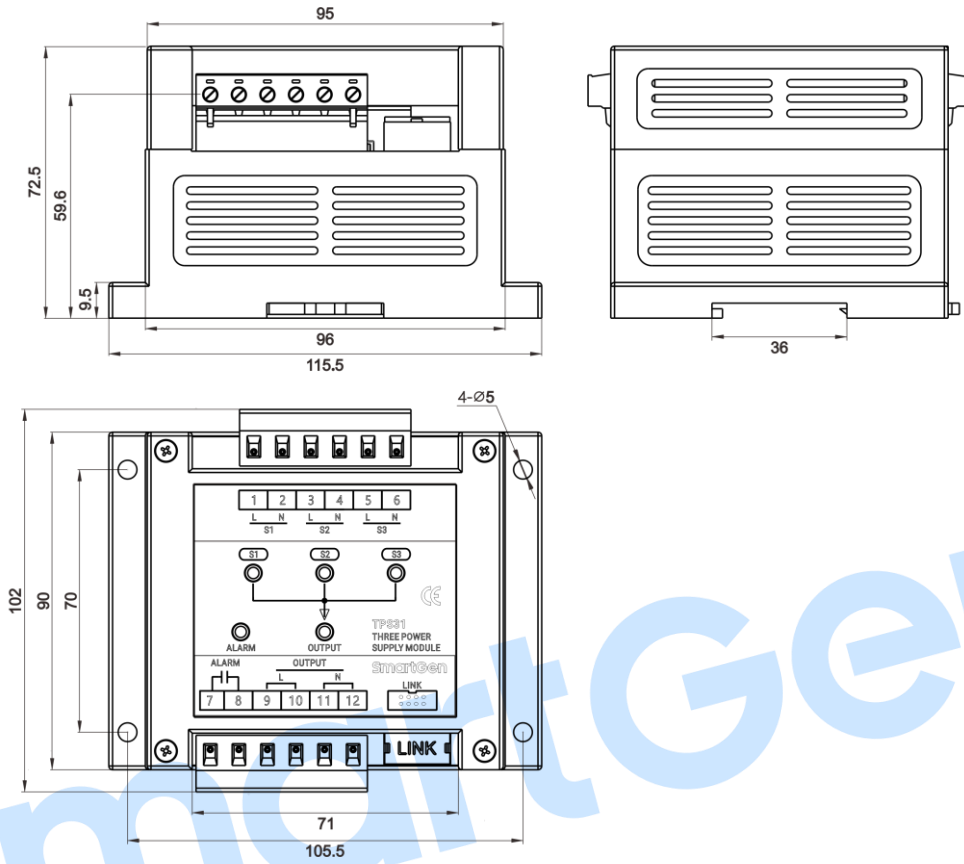


Fig.3 Overall Dimension

8.2 INTERNAL TRANSFER SCHEMATIC DIAGRAM

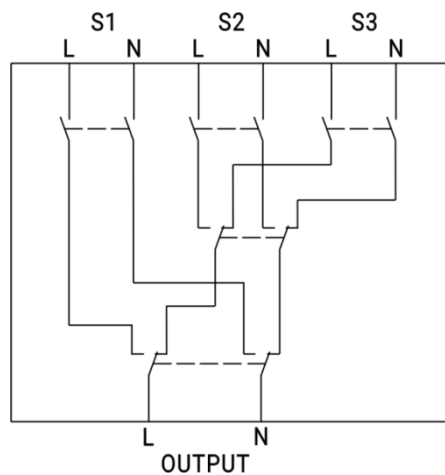


Fig.4 Internal Transfer Schematic Diagram

8.3 INSTALLATION WAY

The module can be installed with 35mm guide rail or M4 screw.

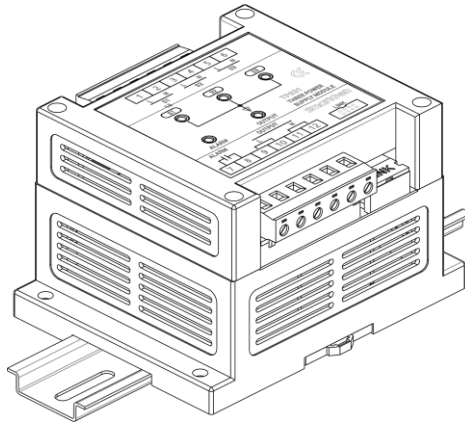


Fig.5 Guide Rail Installation

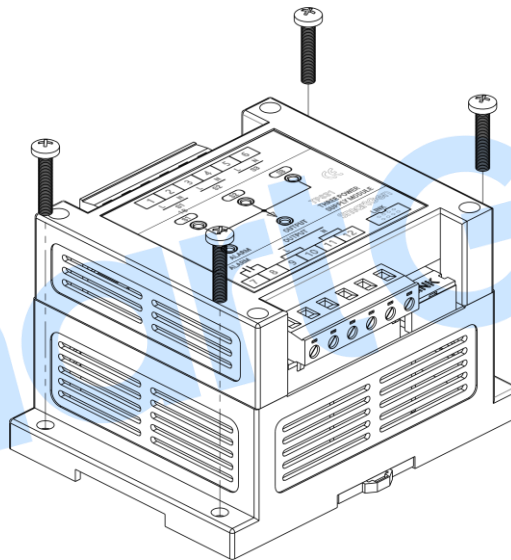


Fig.6 Screw Installation