






**AC switcher
PW031-S11
User manual
IM19H19-E**

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Symbol Definition	
	WARNING: Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death.
	RISK OF ELECTRICAL SHOCK: Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be accessible.
	ESD HAZARD: Indicates information that Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user.

Security& Caution Symbols

The following table lists Security& Caution symbols used on equipments.














No.	Symbol	Description
1		Direct current (DC)
2		Alternating current (AC)
3		Ground (Earth) terminal
4		Protective earth (ground) terminal
5		Reference ground (Earth) terminal
6		Frame or chassis
7		Equipotentiality
8		On (power)
9		Off (power)
10		Caution, risk of electric shock
11		Caution, hot surface
12		Caution, risk of danger
13		Electrostatic sensitive devices (ESD)

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PW031-S11

Section 1 Overview

The AC switcher PW031-S11 is an intelligent switch, which is mainly applied on the front of devices applied AC power (such as operation station or switch) in control system, and judges and switches the 2-channel AC powers intelligently, to guarantee the normal work for the devices required power or the load when one channel power is abnormal.

Operation steps of PW031-S11 are composed of 2 automatic conversion processes:

- If the working power is detected as quality falling and cannot satisfy requirements, convert the load from working power to backup power automatically.
- If the working power restores to normal, return the load to working power automatically.

PW031-S11 chooses the power coming from L1 and N1 as working power preferentially.

Section 2 Specification

Table 2-1 Specification of PW031-S11

Performance	Parameter	Instruction
Electric Performance	Rated Input Voltage	220V AC
	Permitted Input Voltage	$\pm 10\%$ of Rated Voltage (198V~242V)
	Input Frequency	45Hz~65Hz
	Maximum Output Current	3A
	Conversion Time	<25ms
	Insulated Voltage	500V AC (Input/Output-Shell)
	Insulated Resistance	100M Ω (Input/Output-Shell)
Physical Dimension	Device Dimension	76.3mm \times 95mm \times 63mm (Width \times Height \times Depth)
	Weight	About 500g
Environment Performance	Storage Temperature	-40 $^{\circ}$ C~+70 $^{\circ}$ C
	Working Temperature	-20 $^{\circ}$ C~+70 $^{\circ}$ C
	Storage Humidity	5%RH~95%RH, No Condensation
	Working Humidity	10%RH~90%RH, No Condensation
EMC Performance	Static Discharge Level	Industrial Level 3
	Surge Voltage Level	Industrial Level 3
	Fast Pulse Group Level	Industrial Level 3

Section 3 Usage

3.1 Appearance

The appearance of PW031-S11 is shown in Figure 3-1.

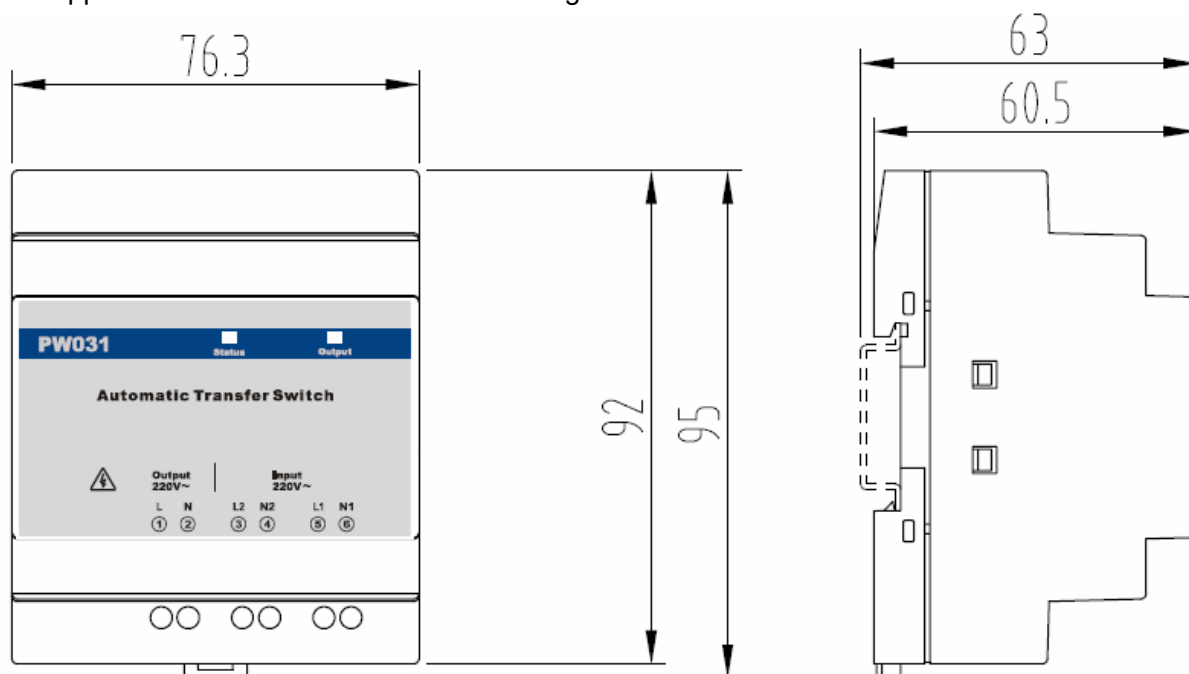


Figure 3-1 Appearance of PW031-S11

In Figure 3-1, PW031-S11 is composed of input terminal, output terminal and LED indicator.

3.2 LED Indicator

The panel of PW031-S11 is shown in Figure 3-2.

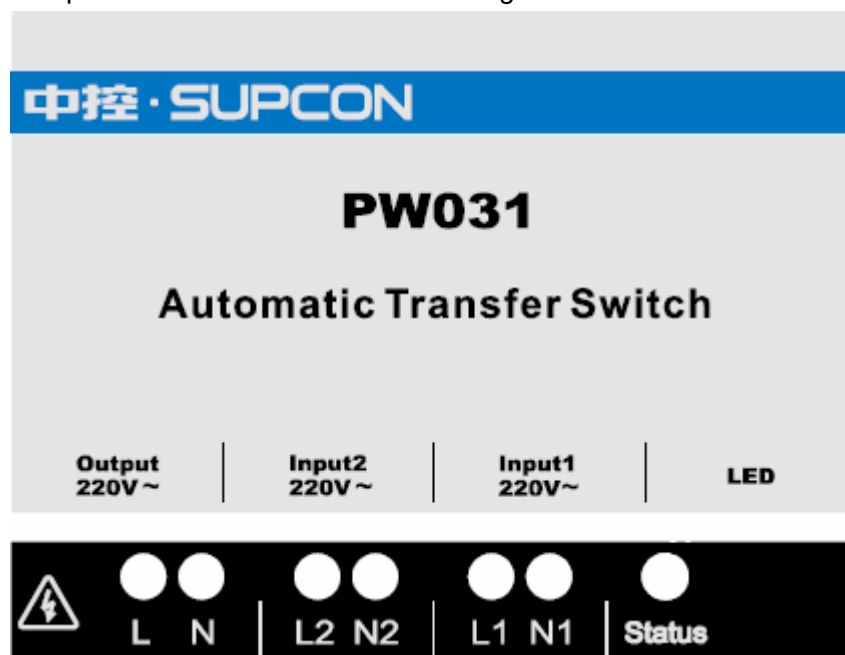


Figure 3-2 Panel of PW031-S11

Function and status instructions of LED indicator on PW031-S11 are shown in Table 3-1.

Table 3-1 Instruction of LED indicator

LED Indicator	Status	Instruction
Status	ON	Normal Work
	OFF	Redundancy Fails (See 4.1 Troubleshooting)
	Flash	Module fails, and you need replace or fix it.

3.3 Wiring Illustrations for Terminals

Input terminals of PW031-S11 are shown in Figure 3-2, and their instruction is shown in Table 3-2.

Table 3-2 Instruction of input terminals

Name/Icon	Instruction	Power
L1	Terminal 1 of AC power, which is used for connecting live wire.	Working Power
N1	Terminal 1 of AC power, which is used for connecting neutral wire.	
L2	Terminal 2 of AC power, which is used for connecting live wire.	Backup Power
N2	Terminal 2 of AC power, which is used for connecting neutral wire.	

Output terminals of PW031-S11 are shown in Figure 3-2, and their instruction is shown in Table 3-3.

Table 3-3 Instruction of output terminals

Name/Icon	Instruction
L	Terminal of AC power, which is used for connecting live wire.
N	Terminal of AC power, which is used for connecting neutral wire.

3.4 Switch

Table 3-4 Switch conditions

Input Voltage of Working Power	Input Voltage of Backup Power	AC Switcher Output
>200V	Any Status	Working Power
<170V	>200V	Backup Power
Any Status	<170V	Working Power

- When the input voltage of working power $\geq 170V$, output the working power first.
- To avoid frequent switching for relay, it cannot be switched twice in 2s.
- If system power is failed, AC switcher will switch to the working power automatically.

3.5 Installation and Uninstallation

PW031-S11 is installed in rail, so please pay attention to the electrical safety when installing or uninstalling the module.

3.5.1 Installation

The installation of PW031-S11 to rail is shown in Figure 3-3. Plug the side without buckle on module into rail, and rotate the module to plug another side into rail to finish the installation.

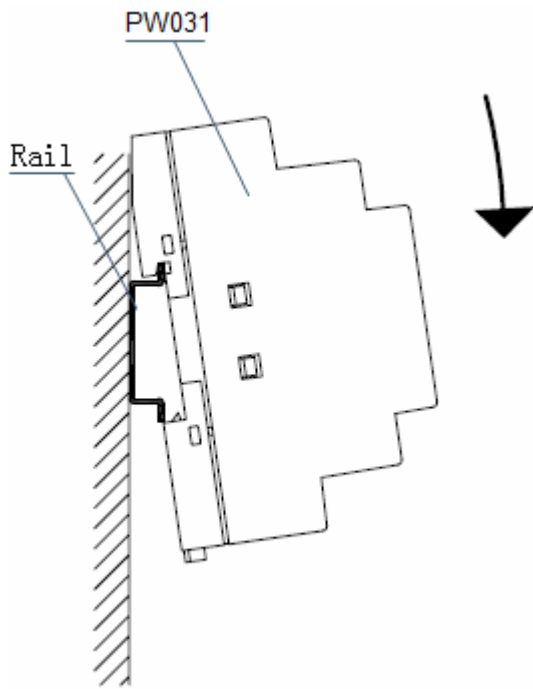


Figure 3-3 Install PW031-S11

3.5.2 Uninstallation

The uninstalling of PW031-S11 to rail is shown in Figure 3-4. After removing the wires on module, pry up the buckle by straight screwdriver, and rotate the module to remove it from rail.

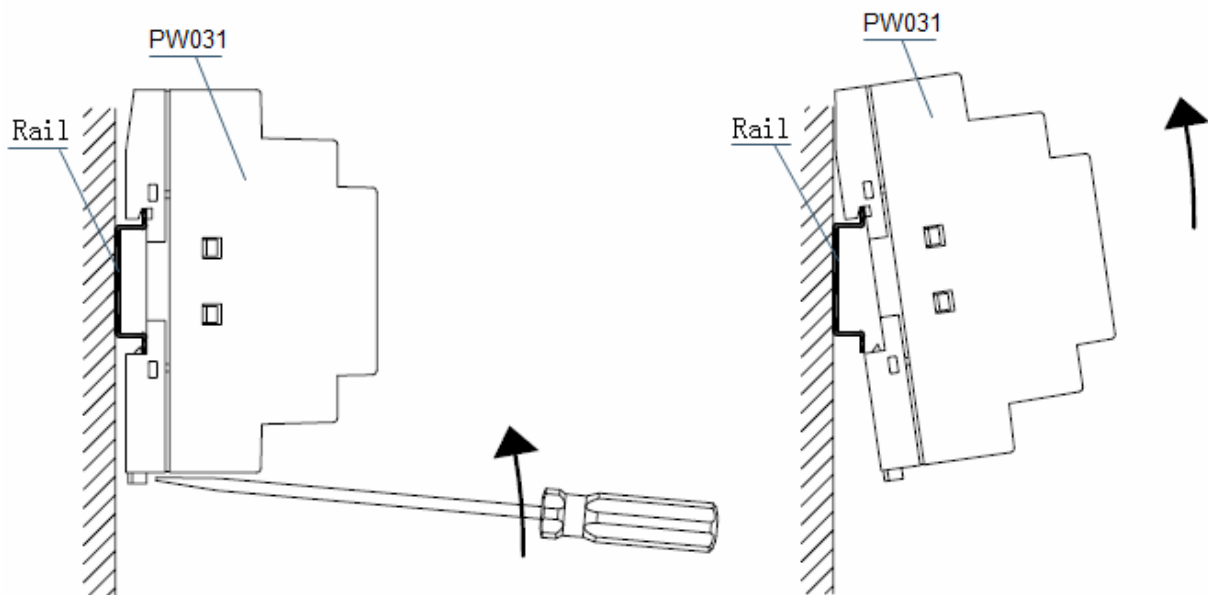


Figure 3-4 Uninstall PW031-S11

Section 4 Troubleshooting and Notice

4.1 Troubleshooting

Generally, the LED indicator Status is always ON. If it is OFF, may be caused by following reasons:

- The working power fails or its quality is poor (<170V, and frequency isn't within 47-63Hz).
- The backup power fails or its quality is poor (<170V, and frequency isn't within 47-63Hz).

If the abnormality is caused by the poor power quality, after the problem is solved, the module will restore to normal.

When Status indicator flashes, it means the inside module fails, please replace the AC switcher.

When Status indicator is always ON and without output voltage, the inside fuse may be melt due to overload, please replace AC switcher.

4.2 Notice

- PW031-S11 is an AC switch. The external protection devices for over-current and short-circuit are recommended.
- PW031-S11 is an AC switch and cannot be applied in DC occasion.
- PW031-S11 cannot be set as parallel directly.
- PW031-S11 is supplied by the backup power. In 2s after powered, the switcher should be initialized. During this process, Status is OFF and no switch will be performed.

Section 5 Revision

Table 5-1 Retrofit list of the version

Document Version	Applicable Product Version	Remarks
V1.0(20140228)	PW031-S11 V10.10.00	The first version.
V1.1(20161018)	PW031-S11 V10.10.00	Add code.
V1.2 (20191023)	PW031-S11 V12.11.00 and later versions	Update the module panel and the illustrations for light indicators.