

# **USER MANUAL**

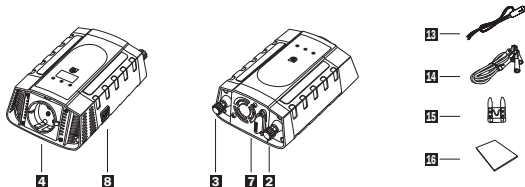
**PI&PID SERIES**

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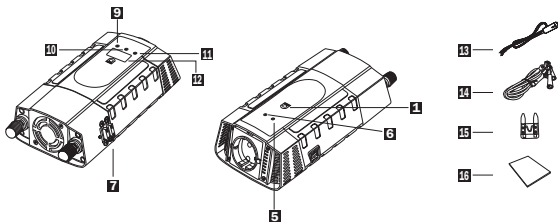
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## 1. INTRODUCTION:

Thank you for making the excellent decision to purchase our PI&PID series power inverters  
 Inverter unit for PI&PID Series 400W



Inverter unit for PI&PID Series 600W



1 ON/OFF button	9 "Volt" LED (PID series)
2 DC- input"+"	10 " Watt" LED (PID series)
3 DC- input"-"	11 " Warning" LED (PID series)
4 AC outlet	12 LED display (PID series)
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## 2. SAFETY INSTRUCTION AND HAZARD WARNINGS:

- Electrical appliances and accessories are not toys and have no place in the hands of children.
- Always shut off the power supply when working on the inverter!
- Please make sure that your hands, your shoes, your clothing, the floor and the devices are dry.
- Live components may be exposed if covers are removed or parts are removed unless this can be done by hand.
- Before opening, disconnect the device from all voltage source.
- Capacitors inside the device may still be charged, even if the device has been disconnected from all voltage source.
- Never switch the device on immediately after having taken it from a cold to a warm environment. Under adverse conditions, the resulting condensation could destroy the device, all the device to reach room temperature before switch it on.
- As the inverter generators heat while operating, ensure that it is adequately ventilated. Do not cover the ventilation apertures of the device!
- Do not leave the inverter and connected consumer devices in operation unattended.
- Ensure sufficient ventilation of the inverter and batteries.
- Do not connect the AC outlet of the inverter with another AC source.
- Never use the device on hot surfaces.

## 3. DC CONNECTION

### 3.1 Cigarette lighter plug

Connect the inverter to the DC power voltage using the cigarette lighter plug, which is the plugged into a cigarette lighter socket or dash socket. The center pin of the plug is connected with the (+) plus lead and the two side clamps of the plug with the (-) lead.


**!When inserting the cigarette lighter plug, ensure secure connection. An insecure / loosen connection can lead to excess heating and in the worst case scenario could cause a fire.**

**Do not operate any devices which are connected to the inverter while you are driving.**

**Note that some vehicle models require you to turn on the ignition so that the inverter is supplied with power.**

### 3.2. Dc cables

As high currents flow through and connection cables when operating the inverter, the connection cables must be dimensioned accordingly.

 The thicker and shorter the connection cable, the lower the voltage loss in the cable. High voltage loss may lead to low voltage supply to the inverter, although the battery provides sufficient supply voltage. Therefore, it is important to keep the connection cables as short as possible.

We recommend securing the connection cable close to the battery with a separate fuse to prevent damage to the battery through short-circuits of the connection cable (worn cables etc.) the fuse must be designed for the max. input current of the inverter.

We recommend only using the optionally available connection cables we supply.

Prior to attaching the inverter to the battery voltage, turn it off. To do so, put the switch to the position "OFF".

## **4. OPERATION**

After connect to the battery, you may begin operating the inverter.

Attach an end device with appropriate nominal load to the outlet socket.

Switching the inverter on with the operating switch, switch position "ON". If the connection is correct, the power LED is lit and indicates correct operation.

## **5. SAFETY FEATURES**

The inverter is equipped with extensive safety features, which ensure safe operation and protect the inverter, the battery and the connected end device.

### **5.1 PI SERIES**

#### **Protection against incorrect polarity**

If the polarity of the input is incorrect, a safety diode cuts the electric current and the inbuilt fuse is triggered, the polarity must be corrected and the fuse must be exchanged for a new one of the same type. The fuses of the 400W and 600W inverters are accessible from the outside.

#### **Excess voltage cutout**

The inverter switches off automatically as soon as the input voltage exceeds the admissible range. The "FAULT" LED lit indicates the protection status. If this LED lights up, switch the inverter off and reduce the input voltage.

#### **Low voltage cutout**

The inverter switches off automatically as soon as the input voltage fails below the admissible range. The "Fault" LED lights on and with alarm sound first.

If this LED lights up, switch the inverter off and increase the input voltage. The low voltage cutout normally triggers when the batteries are empty. In most cases, it is sufficient to recharge the battery.

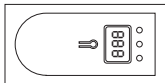
#### **Overload cutout**

The inverter cuts out automatically if there is an overload. An overload may occur through exceeding the permanent output, overheating due to insufficient ventilation or a short circuit on the output. The "FAULT" LED lights on.

If this LED lights up, turn the inverter off and reduce the connection power and/ or improve the ventilation of the inverter. Our inverters are equipped with an automatic restart function after overload; this restart feature makes sense particularly when running end devices with high startup power.

## 5.2 PID SERIES

### LED digital display:



- Input voltage (Volt)
- Output power (Watt)
- Protection status (Warning)

### Protections Status (code display):

A: warning:	A-1	overload warning
	A-2	overheat warning
	A-3	less voltage warning
P: Protection:	P-1	overload protection
	P-2	over heat protection
	P-3	less voltage protection
	P-4	over voltage protection

## 6. GENERAL INFORMATION ABOUT OPERATING END DEVICES ON INVERTER

In principle, you can operate all AC end devices on inverters. However, in order to estimate the power requirement and the corresponding reserves, it is important to know some properties of typical AC end devices. Many AC end devices have a much higher startup output than the permanent output indicated on the specifications plate. The startup output does not play a major role with mains operation, because the corresponding power reserves are always available. However, the output of inverters is limited. They can provide the peak load for a short time in order to provide the high startup output of end devices. If the startup of an end device is higher than the peak load, the inverter is not suitable to operate this end device. For example, an inverter for operating a small compressor driven refrigerator with a permanent output of approx.50W must have a peak load of 500W.

### 6.1 Further examples:

- Light bulbs approx.1 sec. up to 8times higher startup output.
- Refrigerators approx. 3 sec. up to 10times higher startup output
- Tvs approx. 1 sec. up to 10times higher startup output

Our inverters are thus equipped with an automatic restart function after overload. This restart then automatically restarts the inverter after overload. This makes it possible to operate some end devices on inverters despite an extremely high input load. Should it not be possible to operate a consumer on the inverter despite repeated automatic restart, you need to obtain an inverter with next higher output class.

## 7. DISPOSAL



used electronic devices are raw materials and must not be disposed of in the domestic waste. When the device has become unusable, dispose of it in accordance with the current statutory regulations at the communal collections points. Disposal in the household waste is prohibited.

## 8. MAINTENANCE AND CLEANING

Apart from an occasional cleaning or exchanging the fuse, the inverters are maintenance-free.

Switch the device off during maintenance work. Separate it from the supply voltage and the connected end devices if you do not use the inverter for longer periods.

Use a clean, lint-free, antistatic and dry cloth to clean the device. Do not use any abrasive or chemical agents or detergents containing solvents.


Regularly check the connections clamps to ensure the connection is still tight and secure.

## 9. TROUBLESHOOTING

In purchasing in inverter, you have acquired a product that is reliable and operationally safe.


Problems and malfunctions may, however, still arise.

For this reason we want to describe how you can troubleshoot penitential malfunctions.

 Always follow the safety instructions!

<b>Error</b>	<b>Possible cause</b>
The inverter cannot be switched on	Is the LED light on or? Check the power supply; check the input fuse and the connection cables to ensure they are correctly attached.
Connected end devices do not work	Is the inverter overloaded? Is the power supply sufficient? Check the technical data of the end devices
The Fault LED is lit ( only for PI series)	A fault has occurred, switch off the inverter and check if Overvoltage, lower voltage, overload, over heat, short circuit protection effect and the inverter shutoff?
Alarm sound and Fault LED is flashing	The input power has fallen too much Switch off the inverter and check the power supply source. Recharge the battery if necessary

Regularly check the technical safety of the device e.g. for damaged housing or cables etc.

 Any other repair work must always be carried out by a specialist familiar with the hazards involved and with the relevant regulations. Unauthorized modifications or repairs to the device invalidate the guarantee. Fuses are replacement parts and not covered by the warranty!

## 10. TECHNICAL DATA

Model	PI400		PI600		PID400		PID600	
	12V/DC	24V/DC	12V/DC	24V/DC	12V/DC	24V/DC	12V/DC	24V/DC
Normal input voltage	11-15V	22-30V	11-15V	22-30V	11-15V	22-30V	11-15V	22-30V
Input voltage range	0.3A	0.3A	0.5A	0.5A	0.3A	0.3A	0.5A	0.5A
Power consumption when idle	40A	20A	60A	30A	40A	20A	60A	30A
Max. input current	400		600		400		600	
Rated power	800		1200		800		1200	
Surge power	100~120V		100~120V		100~120V	220~240V	100~120V	220~240V
Output voltage	220~240V		220~240V		50/60HZ±3			
Output frequency								
Operating temperature	-10~50							
Storage temperature	-30~70							
Efficiency	85%							
DC fuse	40A	20A	60A	30A	40A	20A	60A	30A
LED indicators	GREEN POWER			RED FAULT			VOLT WATT WARNING	
LED display	V. P. CODE DISPLAY							