MICROPROCESSOR CONTROL (CPU)

# AUTOMATIC VOLTAGE REGULATOR

AVR & BYPASS FUNCTION


## Instruction Manual

Please read user manual carefully before use.

# 1. FEATURES

- Microprocessor Control (CPU)
- Wall-Mounted AVR
- AVR & Bypass Function
- Display: input and output voltage digital display
- Wide range voltage regulation.
- Automatically executes protection. when protection finished ,goes off.
- High voltage protection：Yes
- Low voltage protection： Yes
- High temperature protection: Yes
- Overload protection： Yes
- Circuit protection: circuit breaker
- Smart cooling system: Yes

# 2. DESCRIPTION

**FIG 1 Front Panel: 3000-5000VA**

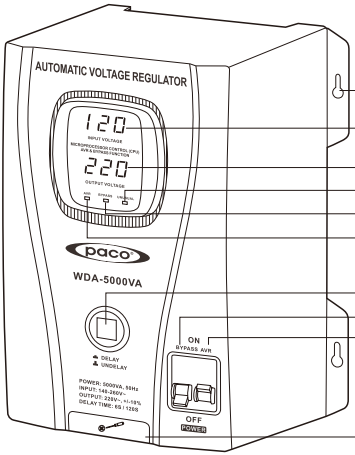
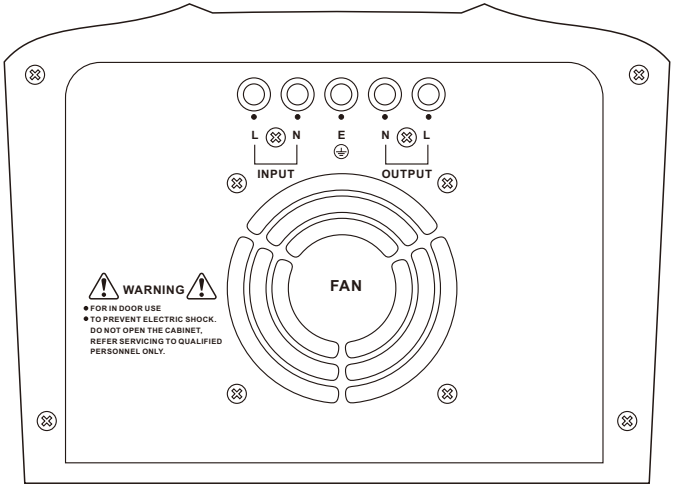


**FIG 2** **Rear Panel: 3000VA-5000VA**



## 3. INDICATING SIGN

**AVR**

WHEN AVR GREEN LED INDICATOR IS FLASHING EVERY ONE SECOND, THE SYSTEM IS TURNING INTO DELAY STATE, THE REGULATOR HAS NO OUTPUT, AFTER DELAY, AVR GREEN LED INDICATOR ILLUMINATES SOLID AND OUTPUT RESUMES, THE REGULATOR ENTER NORMAL WORKING STATE.

**BYPASS**

WHEN BYPASS YELLOW LED INDICATOR ILLUMINATES, THE SYSTEM ENTER INTO BYPASS MODE, THE PRODUCT HAS NO AVR FUNCTION.

**UNUSUAL**

**1:** WHEN OUTPUT VOLTAGE OF AVR IS HIGHER THAN SET VALUE, THE SYSTEM ENTER INTO HIGH & LOW VOLTAGE PROTECTION, UNUSUAL RED LED FLASHES EVERY ONE SECOND AND OUTPUT GOES OFF.WHEN OUTPUT VOLTAGE OF AVR IS UNDER SET VALUE, THE SYSTEM ENTER NORMAL WORKING STATE,UNUSUAL RED LED EXTINGUISHES.

**2:** WHEN TEMPERATURE OF AVR IS HIGHER THAN SET TEMPERATURE, THE SYSTEM ENTER INTO TEMPERATURE PROTECTION, UNUSUAL RED LED FLASHES EVERY ONE SECOND AND OUTPUT GOES OFF.WHEN TEMPERATURE OF AVR ARE LOWER THAN SET TEMPERATURE, THE SYSTEM ENTER INTO NORMAL WORKING STATE, UNUSUAL RED LED EXTINGUISHES.

**3:** WHEN AVR USING UNDER OVERLOAD,THE SYSTEM ENTER INTO OVERLOAD PROTECTION, UNUSUAL RED LED FLASHES EVERY ONE SECOND AND OUTPUT GOES OFF. WHEN THE LOAD IS UNDER SET VALUE, THE SYSTEM ENTER INTO NORMAL WORKING STATE, UNUSUAL RED LED EXTINGUISHES.

**NOTE:** Indication for overload features is not equipped in standard configuration. This function should be effective only after users notify manufacturer in advance.

## 4. LED INDICATOR ILLUSTRATION

| LED Indicator Illustration | | | |
|---|---|---|---|
| **CONDITION** | **AVR** | **BYPASS** | **UNUSUAL** |
| Power Off | — | — | — |
| Delay state (power on) | ☆ | — | — |
| Normal state | ¤ | — | — |
| Bypass state | — | ¤ | — |
| Output high voltage protection | ¤ | — | ☆ |
| Output low voltage protection | ¤ | — | ☆ |
| High temperature protection | ¤ | — | ☆ |
| Overload protection | ¤ | — | ☆ |

**NOTE:**

**¤ : SOLID**

**☆ : FLASH**

**— : EXTINGUISH**

## 5. LED DIGITAL DISPLAY INDICATOR ILLUSTRATION

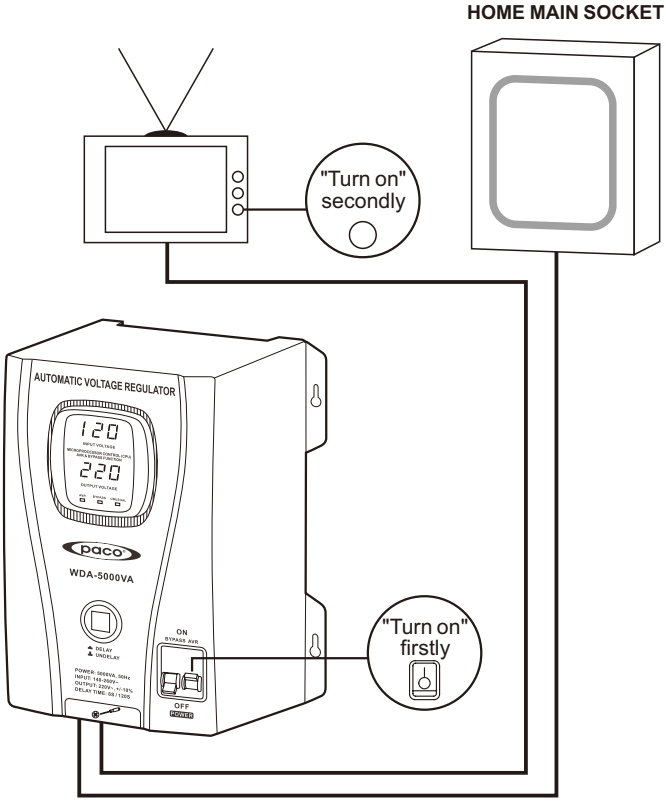
| LED Digital Display Indicator Illustration | | |
|---|---|---|
| CONDITION | INPUT DISPLAY INDICATOR | OUTPUT DISPLAY INDICATOR |
| Power Off | Extinguish | Extinguish |
| Working | Input Voltage | Output Voltage |
| Delay Output | Voltage at low-voltage protection (selective) | Countdown (selective) |
| Output high voltage protection | “HHH” （Flash） | “U-P” |
| Output low voltage protection | “LLL” （Flash） | “U-P” |
| High temperature protection | “FOH” | “F-P” |
| Overload protection | “LOH” | “L-P” |

## 6. OPERATION

- Before use, please make sure the voltage and power of the appliance are accord with the labeled power and specification of the unit to avoid any damage.
- Please connect the appliance before turning on the unit. Switch on appliance after you make sure the unit is working normally with output voltage.
- When connecting the electrical appliance with motor or compressor, such as drill, air-conditioner and so on to the automatic voltage regulator, please make sure that the power rating of the automatic voltage regulator is at least 3 times of the power rating of the electrical appliance, so that it can work smoothly, because the starting up power is much beyond of the power rating of the electrical appliance.

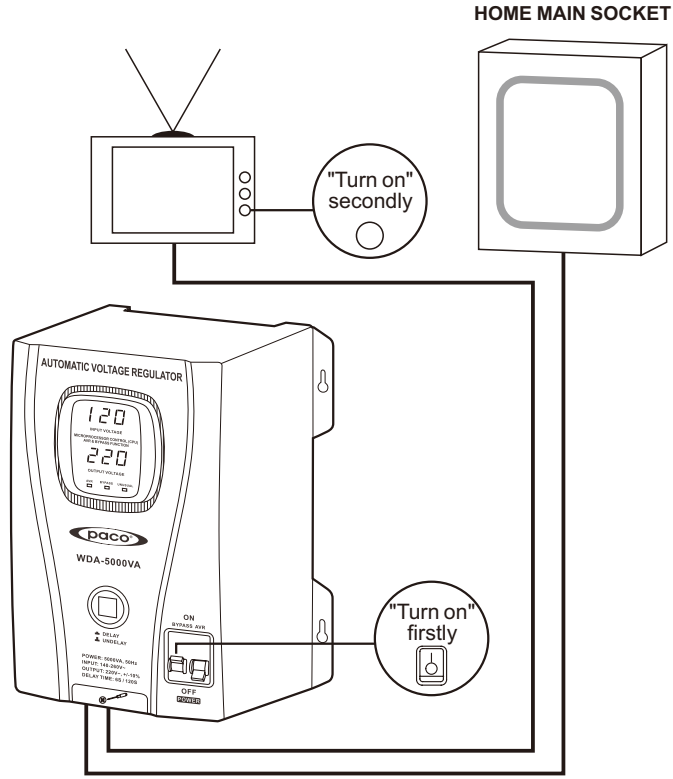
- Output Delay: Delay time 6 seconds (DEFAULTED) and 120 seconds (MANUAL SWITCH) are alternative.

## AVR CONNECT STATE (FIG 1)




**NOTE:** DELAY only take effect when the system is restarted into normal.

## BYPASS CONNECT STATE (FIG 2)




- Bypass function
  1. When the unit does not use for long time or leave unattended, you can choose bypass function.
  2. When the unit fails under using,you can choose bypass function to avoid effecting the use of the appliance.
  3. Bypass output is without avr function.

## 7. LOW & HIGH VOLTAGE PROTECTION

- When output voltage is lower or higher than labeled voltage, AVR will turn into self-protection state automatically ,the UNUSUAL RED indicator flashes every one second and output voltage will be cut off.
- When output voltage comply with labeled voltage, AVR will go into automatic recovering state, the UNUSUAL RED indicator extinguishes. Then AVR (DELAYING) GREEN indicator flashes every one second, the system goes into delaying state. After delay, AVR (DELAYING) GREEN indicator extinguishes and output voltage resume.

## 8. THERMAL PROTECTION

- When the temperature of the transformer exceeds 120℃+/-5% , the system will automatically turn into self-protection state, UNUSUAL RED indicator will flash every one second and output voltage shut down. While temperature is lower 70℃+/-5% , the system will recover automatically. UNUSUAL RED indicator will extinguish, and output resume.

## 9.OVERLOAD PROTECTION

- When avr is overload, the system will turn into self-protection, red led indicator will flash every one second and there is no output. To resume the output, you should lessen the load and then restart the unit.

**NOTE:** Indication for overload features is not equipped in standard configuration. This function should be effective only after users notify manufacturer in advance.

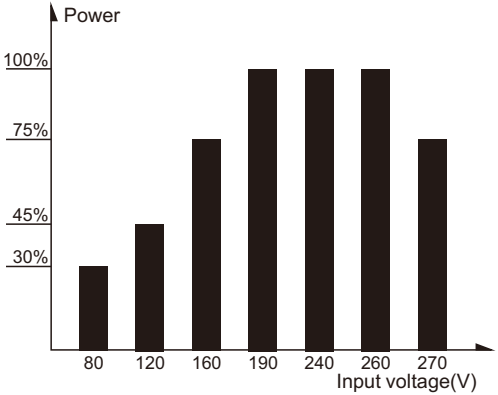
## 10. WITH COOLING FAN

- When the temperature of transformer excessed 65℃+/-5%, the cooling fan will switch on automatically to low down inside temperature and will stop working while the temperature comes down.

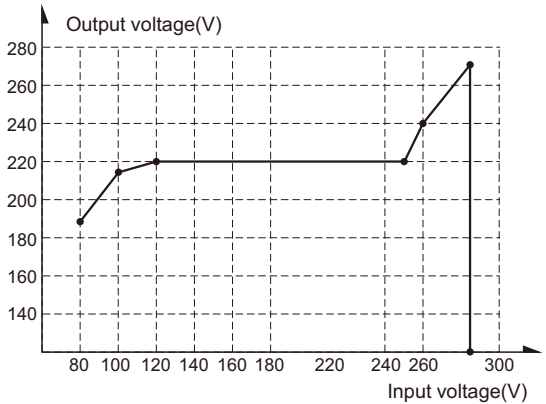
## 11. OUTPUT CAPACITY

- The automatic voltage regulator will switch off automatically if the total wattage of the electrical appliances exceed the automatic voltage regulator output capacity.

- If this voltage is in the range of 190-250V, the regulator provides the 100% listed maximum output power. The maximum output power will change as the curve shown below.




**Loading capability diagram**



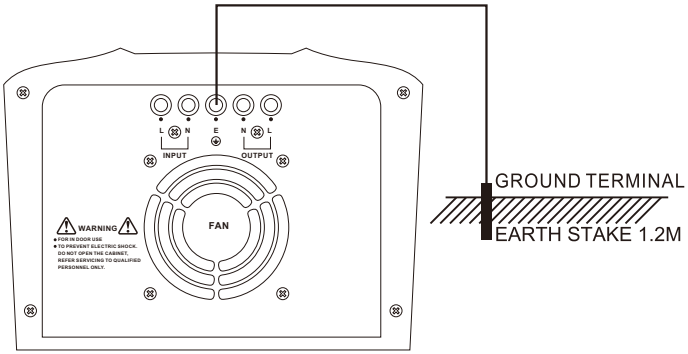

**Input / output voltage diagram**

## 12. GROUNDING CONNECTION

WARNING: BEFORE USING THIS AUTOMATIC VOLTAGE REGULATOR YOU MUST PROVIDE A GROUND CONNECTION TO THE AUTOMATIC VOLTAGE REGULATOR.

- On the rear panel of the automatic voltage regulator is a terminal fitted with a nut. This terminal is connected to the case of the automatic voltage regulator and also to the earth terminal of the AC output socket. The use of this terminal will depend on your particular installation. In any installation, heavy duty, green-insulated wire should be used for this connection.

**profile panel**




In a stationary land based installation, the earth terminal should be connected to a metal earthing stake driven into the ground to a depth of 1.2m or more.

**NOTE:** The earth terminal of the AC outlet is connected to the neutral terminal.
This is the same as a standard household power point where the neutral line is bonded to earth and there is normally no voltage between them.

## 13.CAUTION

- In case of trouble with the AC output, e.g.short-circuit, overload, etc… the protection circuit will automatically cut off the output.
  In such cases:
  (A) switch off the power at once
  (B) disconnect all units
  (C) check the connected devices
  (D) use the unit again unless the problems
  concerning the connected devices have been solved

- When in use for a prolonged period of time, the AC output may suddenly be cut off although the input voltage normal, This may be caused by excessive temperatures. If this happens. Please proceed as follows:
  (A) Switch off the automatic voltage regulator at once
  (B) Disconnect some of the appliances or wait until the automatic voltage regulator cools off
  (C) Switch the automatic voltage regulator back on

- Always keep the automatic voltage regulator in an environment which is:
  (A) Well-ventilated
  (B) Not exposed to direct sunlight or any other heat source
  (C) Inaccessible to children
  (D) Safe from water/moisture, oil or grease
  (E) Safe from any flammable substance

**WARNING:** DO NOT DISASSEMBLE THE UNIT. HAZARDOUS VOLTAGE! DANGER! PLEASE RETURN TO THE DEALER IF YOU FIND ANY PROBLEM WITH THE UNIT

## 14. MAINTENANCE

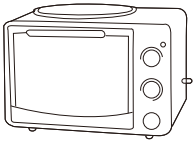
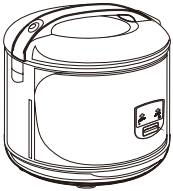
- Very little maintenance is required to keep your automatic voltage regulator operating properly.

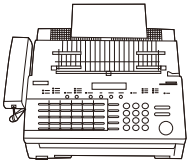
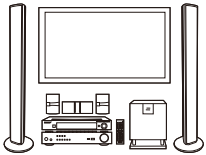
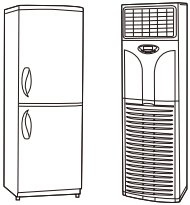
- You should clean the exterior of the unit periodically with a damp cloth to prevent accumulation of dust and dirt. At the same time, tighten the screws on the AC input terminals.

## 15. EXPERT OF PROTECTOR FOR

- Make sure that the to total power does not exceed the listed maximum output power of the regulator.
  Be sure to connect the ground point to the ground for your safty.

***Expert of Protector For:***

# 16. SPECIFICATION

| P/No. | WDA-3000VA | WDA-5000VA |
|---|---|---|
| Output Power | 3000VA | 5000VA |
| Technology | CPU based Digital Circuit | |
| Input Voltage | ☐ 140-260V~ ☐ 120-260V~ ☐ 80-145V~ | |
| Input Frequency | 50/60Hz | |
| Output Voltage | ☐ 220V~ ☐ 230V~ ☐ 240V~ ☐ 120V~ | |
| Output Precision | +/-10% | |
| Efficiency | 98% | |
| Phase Single | Single Phase | |
| High Voltage Protection | Yes | |
| Low Voltage Protection | Yes | |
| Overload Protection | Yes | |
| Thermal Protection | Yes | |
| Bypass Function | Yes | |
| Circuit Protection | Air switch | |
| LED Digital Display Status | Input Voltage/Output Voltage | |
| Circuit breaker | 2x16A | 2x25A |
| Cooler Fan | Automatic temperature controlled | |
| Delay Time | 6 secs / 120 secs | |
| Ambient temperature | -20℃ to +50℃, output power is reduced automatically at high temperatures | |
| Operating Temperature | 0~40℃ | |
| Storage Temperature | -15℃~45℃ | |
| Operating Relative Humidity | 10%RH~102%RH | |
| Inner Box (L×W×H) | 260 x170 x360mm | |
| Unit Weight | 9.5kg | 12kg |

* specification are subjected to change without prior notice.

## CAUTION

- Avoid overloading
  Do not use the regulator beyond its maximum power.

- When connected to any appliance with built-in motor compressor, the starting power is generally several times of the appliance's listed power rating. Make sure that the total starting power capacity of all connected appliance does not exceed the listed maximum output power of the regulator. For color TV, calculate it twice as its listed capacity.

- Make sure that the regulator is of the same output voltage and frequency as the appliance's it connected.

- Make sure that the voltage of electrical source is within the listed range of the input voltage of the regulator.

- Always place the regulator in an environment that is:
  (A) Well ventilated.
  (B) Not exposed to direct sunlight or heat source.
  (C) Out of reach from children.
  (D) Away from water moisture oil or grease.
  (E) Away from any flammable substance.