TRIAC TYPE AUTOMATIC VOLTAGE REGULATOR

Model: **AVR-TRC-AGILE 1000/2000/3000/5000/10000-WL**

Thank you for choosing a **WELL** product. Please read carefully the following instructions and keep them within reach.

Please read and save this manual!

Thank you for selecting this smart NON-CONTACT TRIAC TYPE AUTOMATIC VOLTAGE REGULATOR (AVR). It provides you with a perfect protection for connected equipment.

This manual is a guide to install and use the AVR. It includes important safety instructions for operation and correct installation of the AVR. Should you have any problems with the AVR, please refer to this manual before calling customer service.

This symbol gives information regarding the points important for user's own health and safety, AVR operation and the safety of your data.

This symbol gives information, warnings, and other suggestions.

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1. Important Safety Instructions

This AVR has been designed to provide all the necessary safety conditions needed to protect electronic equipment including information systems. In case of any questions, refer to your authorized technical service representative.

-- In order to avoid any damage to the equipment, it is advised to transport it in its own packing.

-- In the event of sudden temperature changes such as from cold to the normal working temperature, mist can form inside the AVR. It is absolutely essential that the AVR be dry before switching it on. Due to this reason wait for at least 2 hours before operating it.

-- Once it's dry, make sure you observe all the conditions in the environment section of the technical specifications table, before introducing it into the circuit.

Earth cable should be chosen concerning the current capacity. All units' earth connections, which are connected to AVR, should be done with this earth cable. Without earth connection or unproved earth connected units are dangerous for user health and have high risk of electronic circuit board faults. When installing the AVR to use cable with improper diameter can be dangerous for user's health and safety of the unit.

-- Place all the cables in a proper place so that they are not stepped on or get caught into people's feet. Before connecting the AVR to the circuit makes sure you carefully read all the instructions and warnings in the "Installation" section of this manual.

--Don't drop any foreign materials (like clips, nails etc...) into the equip- ment.

-- In emergencies (damage to the cabinet, front panel, or mains connections, splashing of liquid dropping of any foreign materials into the equipment) switch-off the AVR, pull out the plug and inform the authorized service center.

-- Do not connect any loads to the AVR, which exceed its power range.

-- When input distortion or resistance is too high, AVR may not work properly.

--Keep the packing for maintenance or moving.

-- Wiring must be tight, to prevent falling off and oxidation.

The AVR can only be repaired by the authorized technical service personnel. Any attempt to open and to repair by the user on his own could prove to be dangerous.

Intended for installation in a controlled environment.

a. The controlled environment should accord with the requirement of the specification.

b. Do not install or operate your AVR in or near water or in humidity.

c. Do not place AVR on an unstable cart, stand or table.

d. Do not place AVR under direct sunlight or close to heat emitting sources.

e. Do not place AVR power cord in any area where it may get damaged by heavy objects.

Placing magnetic storage media on top of the AVR may result in data corruption.

Special precautions:

When the AVR input comes from a generator:

a. Output power capacity must be higher than the AVR rating, or the AVR and generator may not work properly;

b. Output frequency of generator must be in range of 45 to 65Hz, and wave form must be sine wave, otherwise the AVR and generator may not work properly.

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2. Specifications

2.1 Main Specification

Power Capacity	500VA-10,000VA
Technology	Solid State Relay (Triac) Tap Change + Zero Cross Transfer Technology
Response Time	<50ms
Input & Ouput Voltage	Input 140-250V, Output 230V, ±4%
Input Frequency	45-65Hz
Output Frequency	Same as input frequency
Protection	Under voltage, over voltage, over temperature, out of frequency, short circuit, surge
Delay Time	6s / 180s selectable
Manual Bypass Switch	No manual bypass switch for 500VA-5000VA, Manual bypass switch for 10,000VA
Buzzer	Yes, will beep when AVR is overloaded
Protection Class	I
IP Class	IP20
Operating Temperature	-10°C - +40°C
Operating Humidity	<90%, non-condensing
Storage Temperature	-15°C - +45°C
Certification	CE (EMC + LVD)

*: Please refer to rating plate on the AVR for actual specification

2.2. Loading Capability Chart

At different input voltage, the loading capability of the AVR is different, please connect the appliances based on below loading chart, make sure the AVR is not overloaded.

Input Voltage (V)	Actual Loading Capability (% of Rated Power)
90	33%
100	39%
110	44%
120	48%
130	53%
140	58%
150	65%
60	71%
170	73%
180	80%
190	86%
200	91%
210	99%
220	100%
230	100%
240	100%
250	100%
260	100%
270	100%

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Delivered pack includes:

AVR	1 piece
User's manual	1 piece
Warranty card	1 piece

A. visual observation

a. Check the name plate to verify the rated capacity is according to your purchase order.

b. Make sure appearance of the AVR is not damaged. If you notice any damage, contact the transport firm and the authorized dealer.

Do not try to operate the AVR in this situation!

Do not try to repair the AVR by yourself!

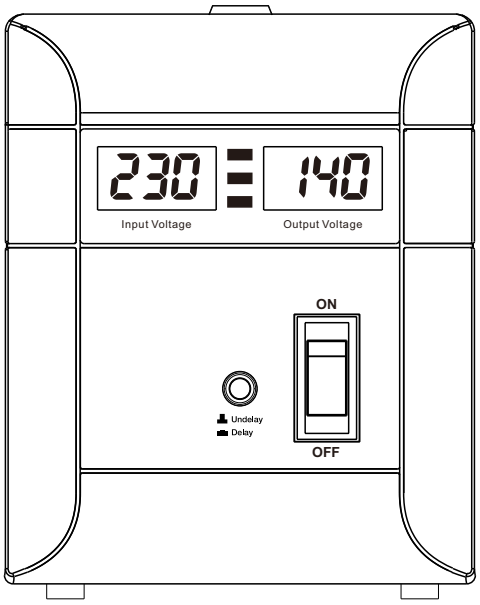
4. Introduction of the AVR

Familiarize yourself with the various features and facilities by studying the two diagrams below to obtain maximum benefit from the regulator.

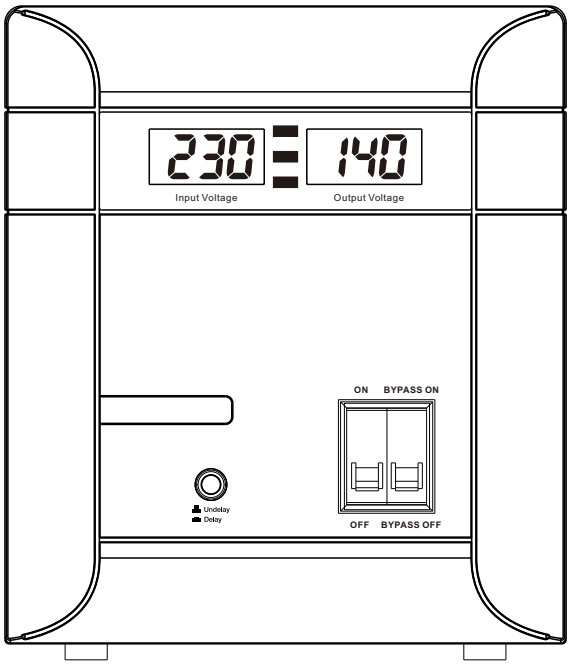
LED INDICATORS

Green LED: power on
Yellow LED: delaying
Red LED: protecting

Front of the Regulator 500/5000VA model



Front of the Regulator 10,000VA model



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a. Rear of the Regulator

500/1000VA model

2000VA model

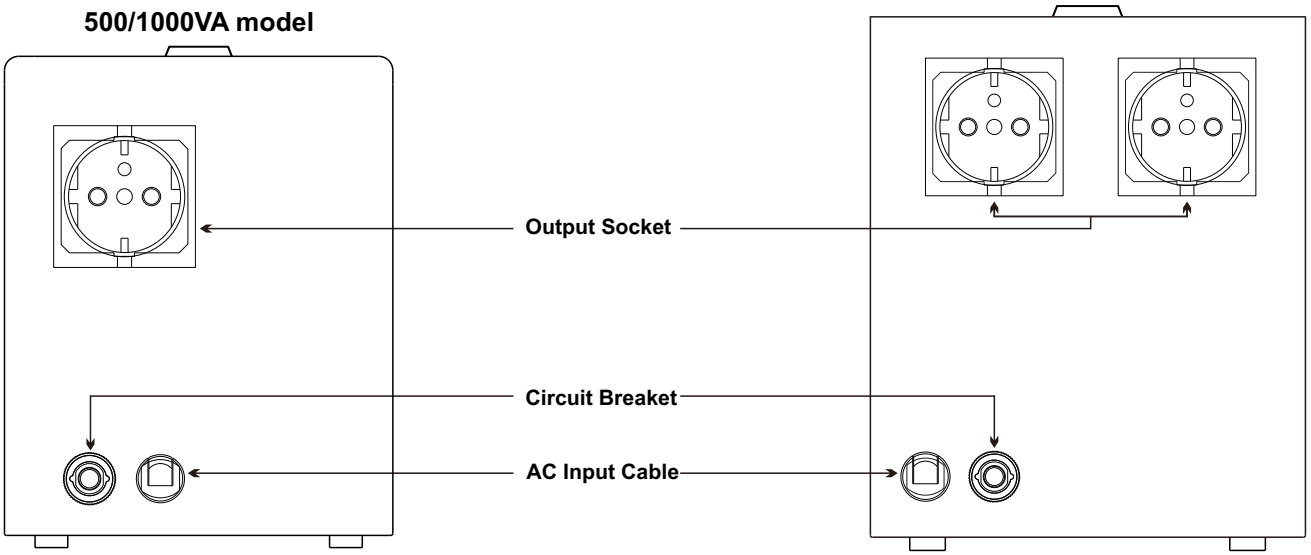

Figure 1

3000/5000VA model

10000VA model

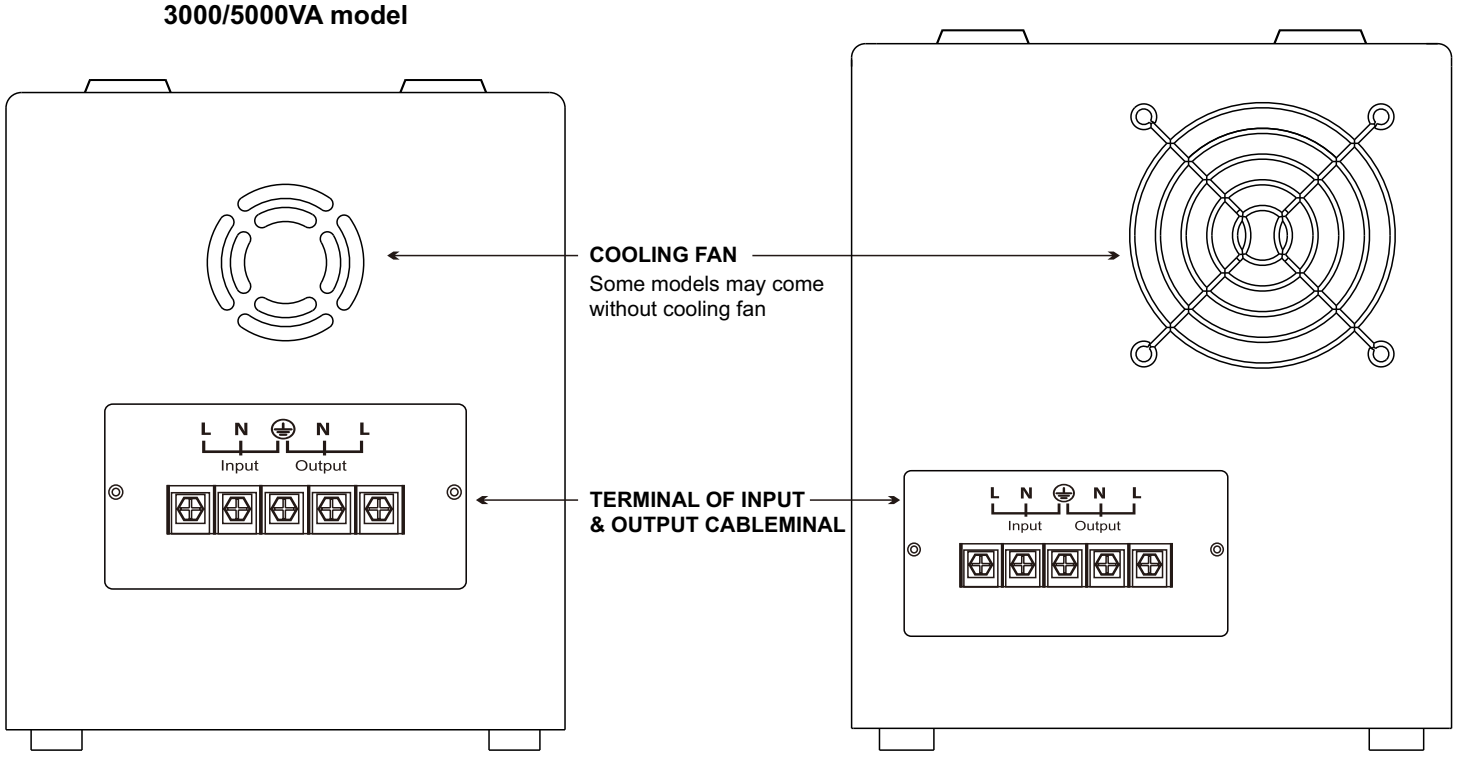

Figure 2

5. INSTALLATION OF THE AVR

Install the AVR in a cool, dry and clean place, away from windows, dust, moisture and cold to prevent fire or electrical shock, do not expose the AVR to rain or water.

- Install the AVR in a place where the children can't reach for
- Do not install the AVR in or near water or in humidity
- Do not place AVR on an unstable cart, stand or table.
- Do not place AVR under direct sunlight or excessive humidity.
- Keep away from fire and heat sources.
- Keep away from corrosive gas or fluid.

Connect the Electrical Appliances to the AVR

- Make sure all appliances are turned "***OFF***" and put the ***POWER SWITCH*** of **AVR** to "***OFF***" position.
- For 500-2,000VA, plug the appliances into the ***OUTPUT SOCKET*** of the AVR. For 3,000-10,000VA, make wiring connection as shown in ***Figure 3.***

.**Connect the AVR to Mains Power**

- For 500-2,000VA, plug the ***AC INPUT CABLE*** into wall socket.

For 3,000-10,000VA, make wiring connection as *shown* in ***Figure 3.***

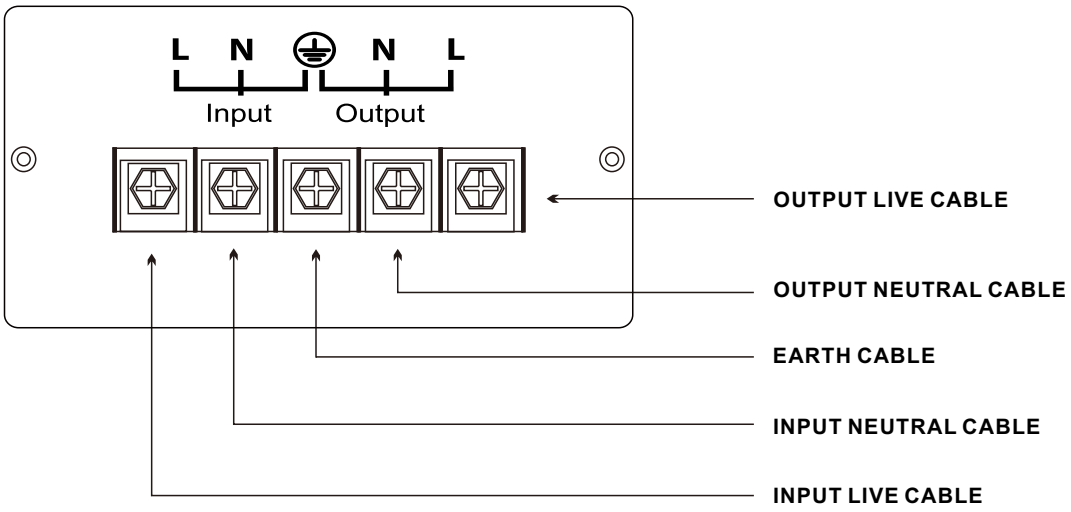

Figure 3

6. OPERATION OF THE AVR

6.1. Delay Operation

The " **DELAY**" means the output of the AVR will be delayed for a specific time, after switching on the AVR or the output is restored from a protecting status.

It will prevent the appliances from being damaged due to frequent switching on and off .

 **Undelay**  **Delay**

The default delay time is 6 seconds (UNDELAY) or 3 minutes (DELAY). Press down the ***DELAY BUTTON*** to select the "DELAY", or press it up to select the "UNDELAY".

For the appliances with motors and compressors, like **fans, *refrigerators, cooler, freezers, air-conditioners, pumps, small motors***, please select **Delay .**

6.2. Switch on the AVR

• Push the *POWER SWITCH* to "*ON* " position to switch on the AVR.
• Switch on the appliances one by one.

If more than one appliance is connected, please switch on from the big capacity at first, then the smaller one, and the smallest one at the last.

In Case of Power Failure:

• Switch off the AVR and all the appliances.
• Repeat above steps when power is restored.

6.3. Over Voltage (High Voltage) Protection

• In case that input voltage is over the normal range, the output will be cut off automatically and a letter "*H*" will be shown in the display.
• When input mains power returns to normal range, the AVR will restore the output automatically.

6.4. Under Voltage (Low Voltage) Protection

• In case that input voltage is below the normal range, the output will be cut off automatically and a letter "*L*" will be shown in the display.

• When input mains power returns to normal range, the AVR will restore the output automatically.

6.5. Over Temperature Protection

• In case that the temperature of Triacs is beyond the normal range, the output will be cut off automatically and letter "*c*" will

be flashing in the display.

In case that the temperature of transformer windings is beyond the normal range, the output will be cut off automatically and letter "*t*" will be flashing in the display.

• When temperature of transformer windings or Triacs returns to normal range, the AVR will restore the output automatically.

6.6. Short Circuit Protection

• In case a short circuit happens to the AVR or appliances, the *AIR BREAKER* or *CIRCUIT BREAKER* will trip off to cut off the input power supply.
• Check if the appliances have been short circuited, if so, please remove them.

If the AVR is short circuited, do not use it! Please turn to the authorized dealer or service center

6.7. Smart Overload Protection

• Once the it is overloaded, the AVR will give beeping and display warning to inform the user to reduce the connected appliances

When load is >110%±8%: AVR gives beeping, output will be cut off within 30s if overload is not removed

When load is >120%±8%: AVR gives rapid beeping, output will be cut off within 5s if overload is not removed

• Once it's protected, the AVR will retry to restore output for 3 times, if overload is still not removed during this period, the AVR will stop retrying to restore output, at this time a letter "***P***" will be flashing in the display and AVR will give rapid beeping for once (last for 3s) every 2 minutes.
• When letter "P" is flashing, even if the overload is removed, the output won't be restored. In this case, please conduct below steps:

（a）Put the "***POWER SWITCH***" to "***OFF***" position to disconnect mains power
（b）Switch off all the connected appliances, and remove the exceeding load
（c）Switch on AVR and then switch on the appliance.

6.8. Out of Frequency Protection

• Once input frequency is out of range, the output will be cut off automatically and letter "***F***" will be flashing in the display.
• When input frequency returns to normal range, the AVR will restore the output automatically.

7. MAINTENACE

This AVR is basically maintenance free! But regular maintenance can extend the life span of the AVR by the following steps:

Regular inspection

- Disconnect the AVR from the mains power completely.
- Use cotton cloth and detergent to clean the body and ventilation holes.
- Check all the terminals, replace the abnormal one with that of the same specification.

Extraordinary inspection

- When malfunction occurs, or the AVR is abnormal, please measure and check the parameters, refer to the authorized dealer if needed.
- In thunder and lightning or rainy season, Extraordinary Inspection should be executed to prevent malfunction.
- Maintenance should not be operated when AVR is working.

8. TROUBLE SHOOTING

Code	*Code Status*	*AVR Status*	*What to do*
 OUTPUT VOLTAGE	*Steady*	*Input under voltage protection*	*Wait till input voltage increases to normal range*
 OUTPUT VOLTAGE	*Steady*	*Input over voltage protection*	*Wait till input voltage decreases to normal range*
 OUTPUT VOLTAGE	*Flashing*	*Over temperature protection for Triac*	*Wait till the temperature of Triac decreases to normal range*
 OUTPUT VOLTAGE	*Flashing*	*Over temperature protection for transformer*	*Wait till the temperature of transformer decreases to normal range*
 OUTPUT VOLTAGE	*Steady*	*Output voltage is out of range while input voltage is within normal range*	*Contact the dealer*
 OUTPUT VOLTAGE	*Flashing*	*AVR is heavily overloaded like 4-5 times*	*Remove unnecessary appliances connected; if still not solved, contact the dealer*
 OUTPUT VOLTAGE	*Steady*	*Countdown time in minute for a retry to restart AVR once an overload happened*	*Wait till the countdown is finished*
 OUTPUT VOLTAGE	*Flashing*	*Overload protection*	*Remove unnecessary appliances*
 OUTPUT VOLTAGE	*Flashing*	*Protection of out of frequency*	*Wait till input frequency backs to normal range 45-65Hz*

Extraordinary inspection

When malfunction occurs, or the AVR is abnormal, please measure and check the parameters, refer to the authorized dealer if needed.

In thunder and lightning or rainy season, Extraordinary Inspection should be executed to prevent malfunction.

Maintenance should not be operated when AVR is working.

5. Other

This AVR is designed and made by strict standards and quality control system for common use, but if apply to purposes may cause any dangerous to human or other lives, include but not limited to the following case, not suitable for use with the following appliances.

a. Apply to traffic system;

b. Apply to medical purpose;

c. Apply to nuclear, power system;

d. Apply to aviation and aerospace;

e. Apply to all kinds of safety devices;

f. Other special usages.

Waste electrical and electronic equipment are a special waste category, collection , storage, transport, treatment and recycling are important because they can avoid environmental pollution and are harmful to health
Submitting waste electrical and electronic equipment to special collection centers makes the waste to be recycled properly and protecting the environment. Do not forget ! Each electric appliance that arrive at the landfill, the field , pollute the environment!

Symbol for the marking of electrical and electronic equipment

Importer & distributor:

CE