APlus®
UPS SYSTEMS

PlusTriac 1LV Series

Solid State TRIAC Voltage Regulator(AVR)

3KVA – 10KVA (LV: 100/110/115/120Vac)

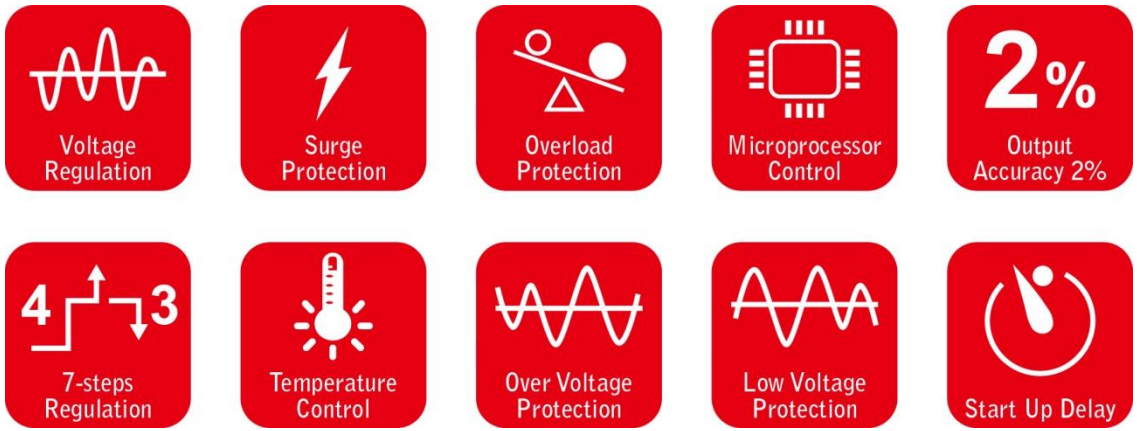
PlusTriac 1LV Series

3KVA & 5KVA

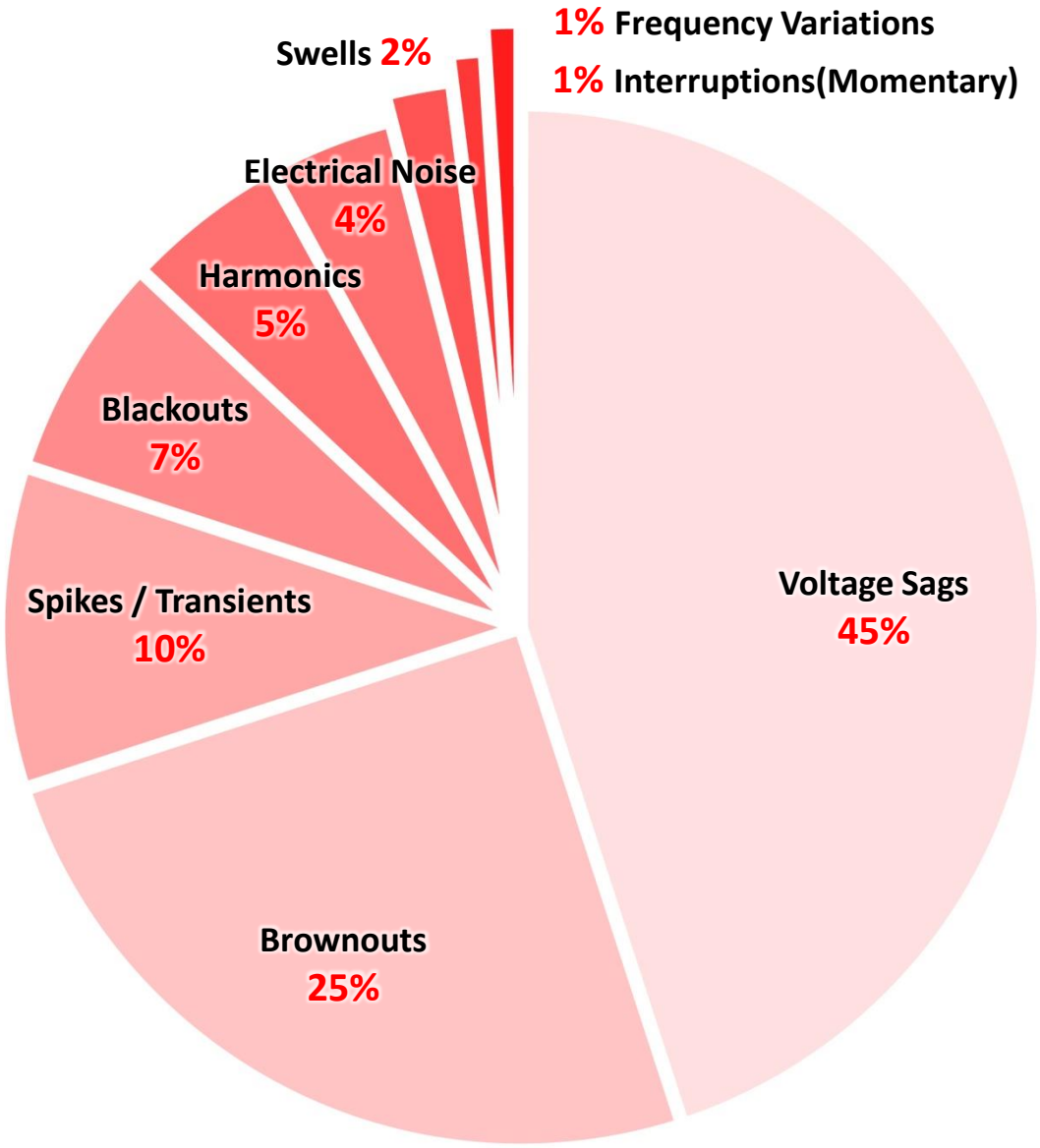
8KVA & 10KVA

Product Introduction

PlusTriac 1LV Series 3KVA to 10KVA is solid state voltage regulator TRIAC AVR with microprocessor-controlled design. Its electronic circuit design enables sparkle-free and noise-free voltage regulation with no transfer time, ensuring rapid response and longer life span. The model integrated with 7 steps regulation, 2/30/60/180/ 300 sec. delay reconnection, LCD status display in a compact unit. Compared to relay or servo motor type AVR models, TRIAC AVR has higher regulation accuracy and more fast response to voltage changes.

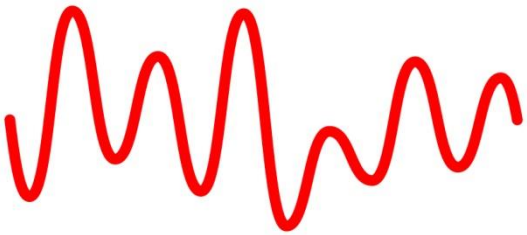


Typical Distribution of Power Quality Problems



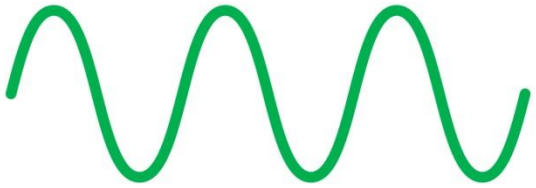
Basic Functional Module and Power Topology

INPUT



- Voltage Sags
- Electrical Noise
- Frequency Variations
- Harmonics
- Interruptions(Momentary)
- Swells
- Spikes / Transients
- Brownouts

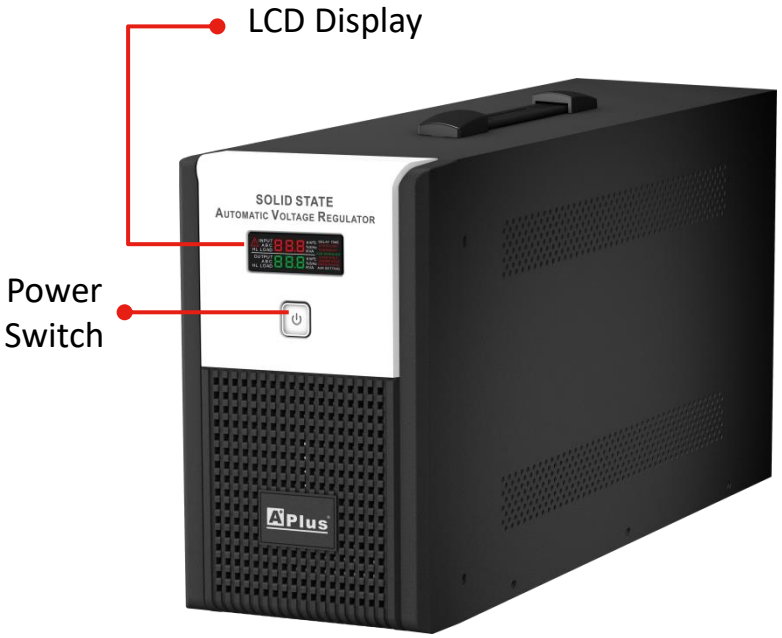
OUTPUT



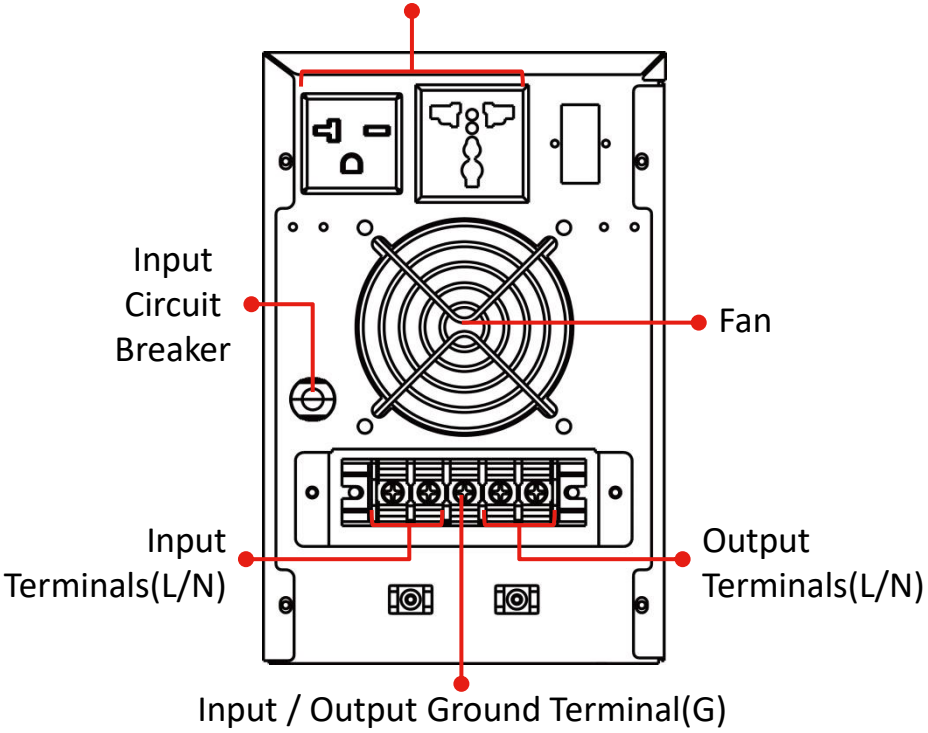
- Stable Power

Structural Diagram

3KVA & 5KVA



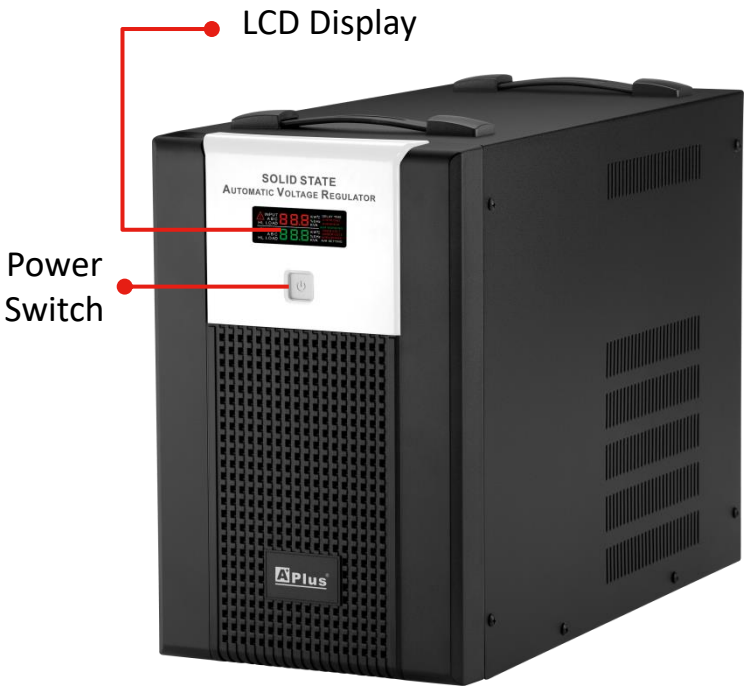
Front Panel



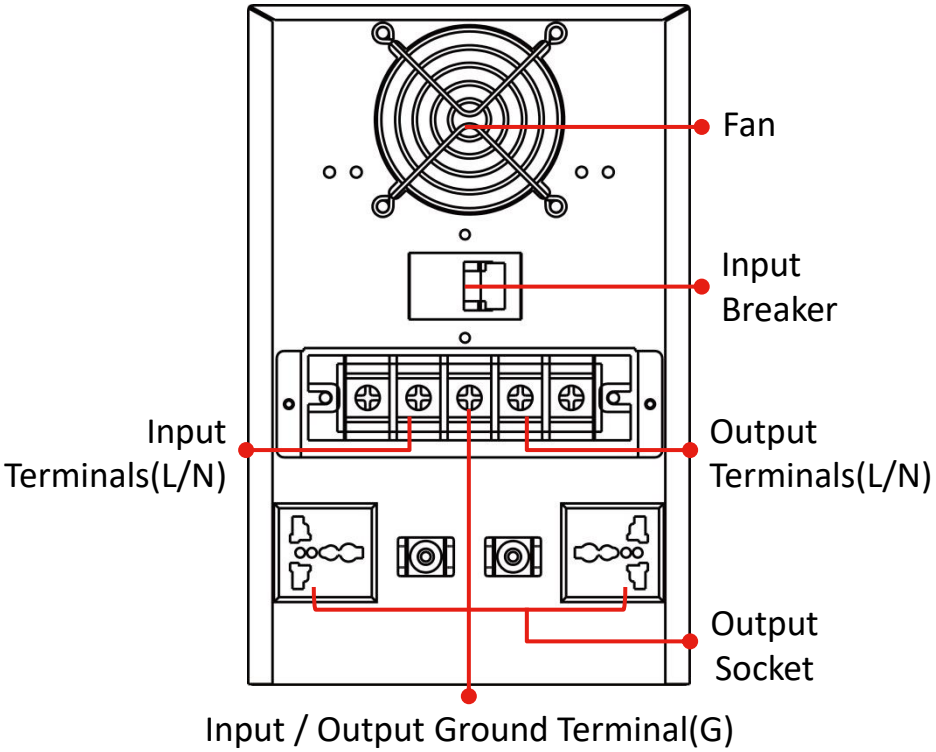
Rear Panel

Structural Diagram

8KVA & 10KVA

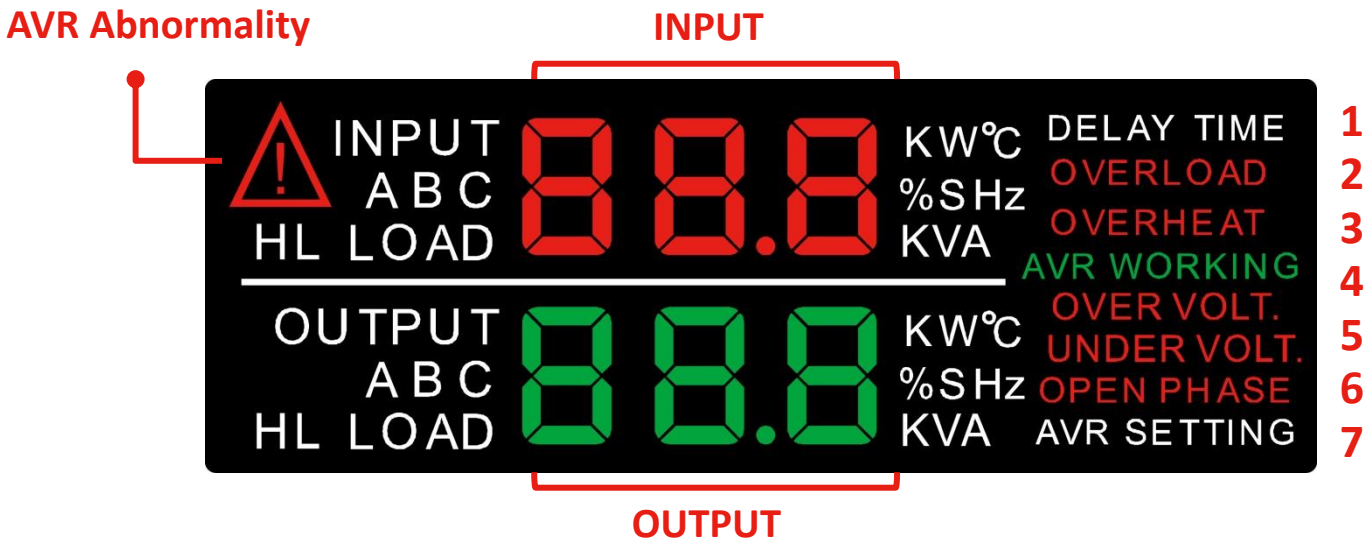


Front Panel



Rear Panel

LCD with Color Display



1. Delay Time for Startup
2. AVR is overloaded
3. AVR is overheated
4. Voltage regulation is in normal operation
5. Over Voltage
6. Only available for 2-phase and 3-phase models
7. In AVR setting mode

Features

- Microprocessor Controlled loop enables precise TRIAC switching operation, compatible with inductive, capacitive, and resistive loads.
- Built-in 4-steps boost and 3-steps buck regulation, achieving a voltage regulation rate of ±2% to ensure stable output voltage.
- Equipped with lightning and power surge protection to prevent equipment damage from electrical shocks.
- LCD interface allows configuration of rated voltage, delay time, voltage regulation rate, and input range.
- TRIAC components with low-frequency design regulate voltage without electromagnetic interference.
- Built-in delay time setting (2/30/60/180/300 seconds) can be configured through the LCD interface.
- Built-in environmental temperature monitoring ensures proper fan operation and protection.
- Electronic design ensures spark-free, noise-free, instant regulation and longer lifespan.
- Color LCD displays status and faults to support equipment maintenance.

Specifications

MODEL	PlusTriac 1LV-3K	PlusTriac 1LV-5K	PlusTriac 1LV-8K	PlusTriac 1LV-10K
Rated Capacity	3KVA/2.4KW	5KVA/4KW	8KVA/6.4KW	10KVA/8KW
Technology	Fully electronic TRIAC-controlled voltage regulator			
INPUT				
Rated Voltage	100/110/115/120Vac, 1P2W+G			
Voltage Range	± 25% (default) ; ± 20%, or ± 30%, or ± 35% (selected via LCD)			
Voltage Tolerance Range	± 15%			
Frequency	50/60Hz ± 5%			
Power Factor	More than 0.98 (with resistive load)			
OUTPUT				
Rated Voltage	100/110/115/120Vac, 1P2W+G			
Regulation Rate	± 2% (default) ; ± 3%, or ± 4%, or ± 5% (selected via LCD)			
Transfer Time	0ms			
Rated Distortion	No distortion (same as input waveform)			
Response Time	< 20ms			
Efficiency	More than 96% under full load			
Power Factor	More than 0.8			

*Product specifications are subject to change without further notice.

Specifications

MODEL	PlusTriac 1LV-3K	PlusTriac 1LV-5K	PlusTriac 1LV-8K	PlusTriac 1LV-10K
OUTPUT				
Overload Capability	105%-125%, buzzer beeps twice per second, AVR does not shut down			
	125%-150%, buzzer beeps four times per second, AVR shuts down 3 minutes later			
	150%-300%, buzzer beeps continuously, AVR shuts down 10 seconds later			
	Over 300%, buzzer beeps continuously, AVR shuts down in 1.5 seconds			
STATUS INDICATION				
Alarm	Over input voltage, under input voltage, high temperature, overload			
LCD Display	Input voltage, output voltage, load, temperature, fault...etc.			
FUNCTIONS				
Surge Protection	600 Joules ; Inrush current capacity 12000Amp(8/20us)			
Soft Start	Yes, enables automatic startup with configurable time			
Protection	Electronic circuit: Over input voltage, under input voltage, overload, high temperature, short circuit protection			
ENVIRONMENT				
Operating Temperature	0-40°C (32°F-104°F)			
Operating Humidity	0-95% (Non-condensing)			
Noise Level	< 40dB at 1M			
PHYSICAL				
Dimension	430*145*220mm(D*W*H)		390*182*285mm(D*W*H)	

*Product specifications are subject to change without further notice.

Key points to compare Solid State TRIAC AVR v.s. Servo AVR

DUST

TRIAC AVR

It is designed without mechanical parts, allowing it to perform steadily and reliably even in dust environment.

Servo AVR

It relies on a moving brush. It faces significant challenges in dusty environments, leading to increased contact noise and supply disruptions.

TECHNOLOGY

TRIAC AVR

It features microprocessor control and utilizes solid-state switching devices that are capable of withstanding hundreds of times the running current during inrush periods.

Servo AVR

Servo motor technology is outdated. Choosing modern technology can help protect your investments.

DURABILITY

TRIAC AVR

It uses exclusively solid-state components, without any mechanical or moving parts. Under normal usage conditions, the product has a lifespan of over 10 years.

Servo AVR

As mechanical parts wear out over time and will demand maintenance, downtime resulting from these issues reduces the voltage regulator's effectiveness.

NOISE

TRIAC AVR

It is controlled by a microprocessor and designed for ultra-fast operation. It can switch at zero voltage within the mains cycle to eliminate any noise generation.

Servo AVR

In less clean environments, the motor brush's movement on the toroidal transformer creates noise from dirt, potentially causing malfunctions or incorrect data in control systems.

Key points to compare Solid State TRIAC AVR v.s. Servo AVR

SPEED

TRIAC AVR

With TRIACs and Thyristors, switching speeds can be achieved in microseconds, which helps make rapid corrections possible.

Servo AVR

Motors are slower than solid-state components, leading to delayed corrections. Faster responses are crucial to reduce exposure to harmful voltages, especially for electronics.

POWER BACK SURGE

TRIAC AVR

When mains power fails, the AVR will automatically reset and start up with a suitable output voltage.

Servo AVR

When mains power fails, the servo boosts voltage by winding the motor. If power is recovered suddenly, the servo may amplify the boost, risking damage to sensitive electronics.

OPERATING COST

TRIAC AVR

While the AVR is more expensive due to the use of sophisticated technology it incorporates, it has little operating costs.

Servo AVR

Although the servo AVR is more affordable, its mechanical nature demands constant maintenance and spare parts, raising operating costs.

NOISE

TRIAC AVR

The TRIAC AVR provides an output with 5% accuracy, which is sufficient for most electrical equipment.

Servo AVR

Servo AVR offers 0.5-1% accuracy, but this is not necessary since electrical equipment operates within a wider range. The constant operation of its mechanical parts can lead to faster wear and tear.

APLUS POWER CORP.

Aplus, Reliable Power Brand Deserve Your Trust