

PlusTriac 1HV Series

Solid State TRIAC Voltage Regulator(AVR)

3KVA - 20KVA (HV: 200/220/230/240Vac)

PlusTriac 1HV Series



3KVA / 5KVA / 8KVA / 10KVA



12KVA / 15KVA / 20KVA

Product Introduction

PlusTriac 1HV Series 3KVA to 20KVA 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.













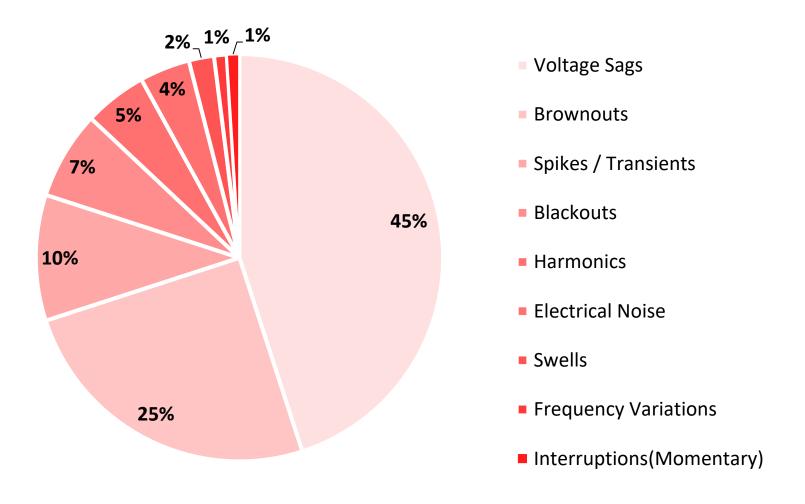




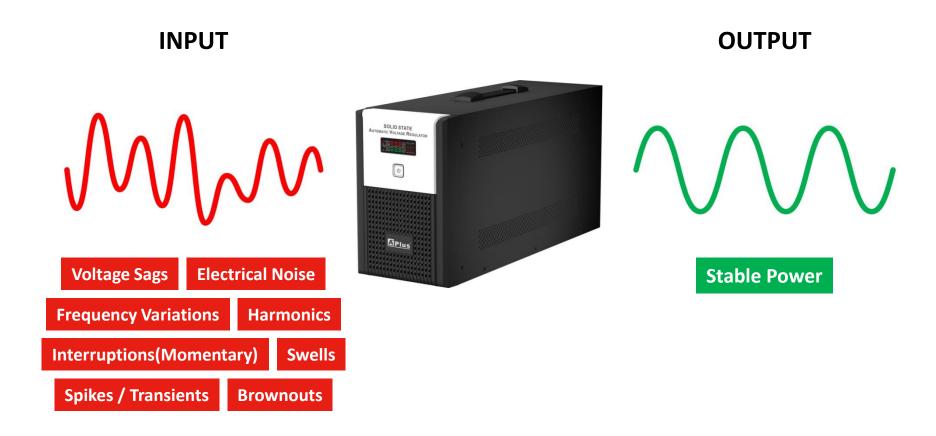




Typical Distribution of Power Quality Problems

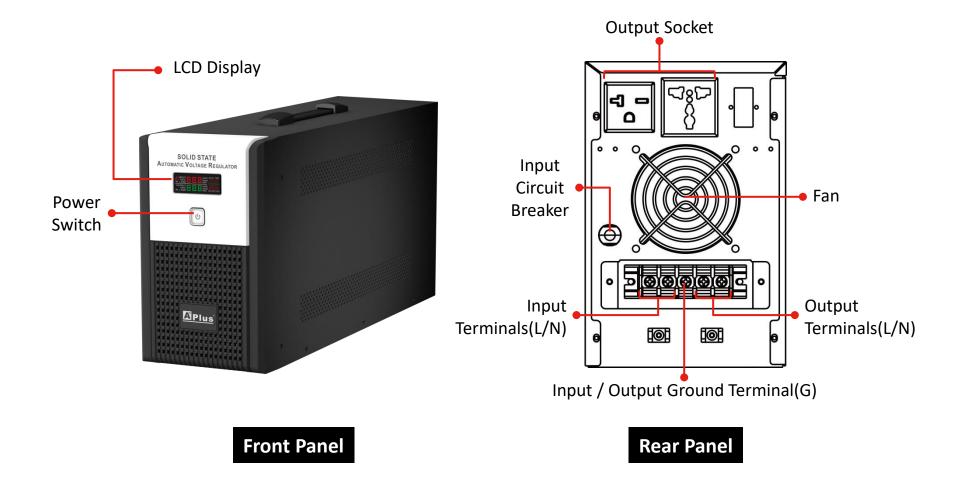


Basic Functional Module and Power Topology



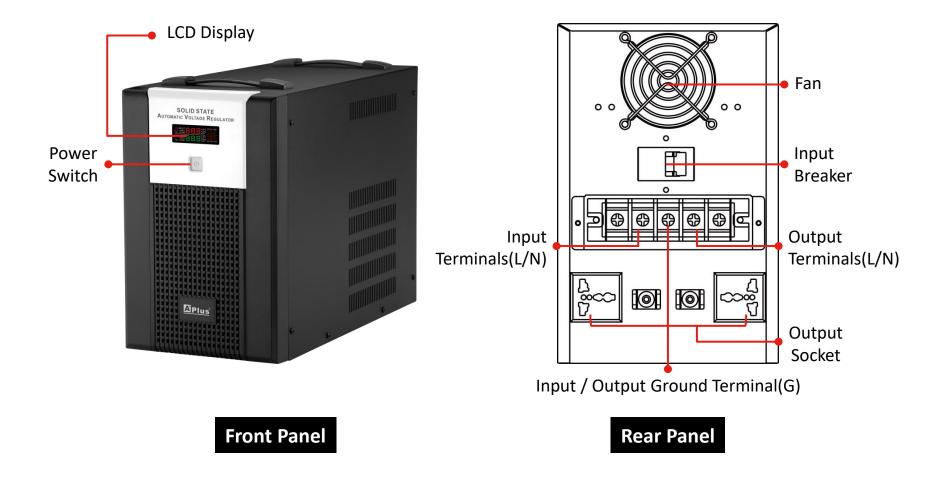
Structural Diagram

3KVA / 5KVA / 8KVA / 10KVA

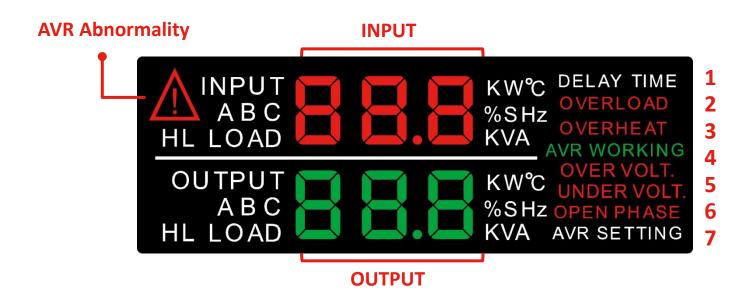


Structural Diagram

12KVA / 15KVA / 20KVA



LCD with Color Display



- 1. Delay Time for Startup
- 2. AVR is overloaded
- 3. AVR is overheated

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

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 $\pm 2\%$ 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

3KVA / 5KVA / 8KVA / 10KVA

MODEL	PlusTriac 1HV-3K	PlusTriac 1HV-5K	PlusTriac 1HV-8K	PlusTriac 1HV-10K	
Rated Capacity	3KVA/2.4KW	5KVA/4KW	8KVA/6.4KW	10KVA/8KW	
Technology	Fully electronic TRIAC-controlled voltage regulator				
INPUT	INPUT				
Rated Voltage	200/220/230/240Vac, 1P2W+G				
Voltage Range	\pm 25% (default) ; \pm 20%, or \pm 30%, or \pm 35% (selected via LCD)				
Voltage Tolerance Range	± 15%				
Frequency	50/60Hz ± 5%				
Power Factor	More than 0.98 (with resistive load)				
ОИТРИТ					
Rated Voltage	200/220/230/240Vac, 1P2W+G				
Regulation Rate	\pm 2% (default) ; \pm 3%, or \pm 4%, or \pm 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

3KVA / 5KVA / 8KVA / 10KVA

MODEL	PlusTriac 1HV-3K	PlusTriac 1HV-5K	PlusTriac 1HV-8K	PlusTriac 1HV-10K	
OUTPUT					
	105%-125%, buzzer beeps twice per second, AVR does not shut down				
Overload Capability	125%-150%, buzzer beeps four times per second, AVR shuts down 5 minutes later				
	150%-300%, buzzer beeps continuously, AVR shuts down 30 seconds later				
	Over 300%, buzzer beeps continuously, AVR shuts down in 5 seconds				
STATUS INDICATION					
Alarm	Over input voltage, under input voltage, high temperature, overload				
LCD Display	Input voltage, output voltage, load, temperature, faultetc.				
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	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)				

Specifications

12KVA / 15KVA / 20KVA

MODEL	PlusTriac 1HV-12K	PlusTriac 1HV-15K	PlusTriac 1HV-20K		
Rated Capacity	12KVA/9.6KW	15KVA/12KW	20KVA/16KW		
Technology	Fully electronic TRIAC-controlled voltage regulator				
INPUT	INPUT				
Rated Voltage	200/220/230/240Vac, 1P2W+G				
Voltage Range	\pm 25% (default) ; \pm 20%, or \pm 30%, or \pm 35% (selected via LCD)				
Voltage Tolerance Range	± 15%				
Frequency	50/60Hz ± 5%				
Power Factor	More than 0.98 (with resistive load)				
OUTPUT					
Rated Voltage	200/220/230/240Vac, 1P2W+G				
Regulation Rate	\pm 2% (default) ; \pm 3%, or \pm 4%, or \pm 5% (selected via LCD)				
Transfer Time	Oms				
Rated Distortion	No distortion (same as input waveform)				
Response Time	< 20ms				
Efficiency	More than 96% under full load				
Power Factor	More than 0.8				

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Specifications 12KVA / 15KVA / 20KVA

MODEL	PlusTriac 1HV-12K	PlusTriac 1HV-15K	PlusTriac 1HV-20K		
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 5 minutes later				
	150%-300%, buzzer beeps continuously, AVR shuts down 30 seconds later				
	Over 300%, buzzer beeps continuously, AVR shuts down in 5 seconds				
STATUS INDICATION					
Alarm	Over input voltage, under input voltage, high temperature, overload				
LCD Display	Input voltage, output voltage, load, temperature, faultetc.				
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	390*182*285mm(D*W*H)				

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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.





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



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.



TRIAC AVR



DURABILITY

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

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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

TRIAC 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



TRIAC AVR



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



TRIAC AVR



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

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.





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.



TRIAC AVR



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

NOISE

TRIAC AVR



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

Servo AVR



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

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.



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