



Automatic Voltage Regulation

TRIAC1-I821 series

8KVA to 20KVA

- Solid State TRIAC AVR -

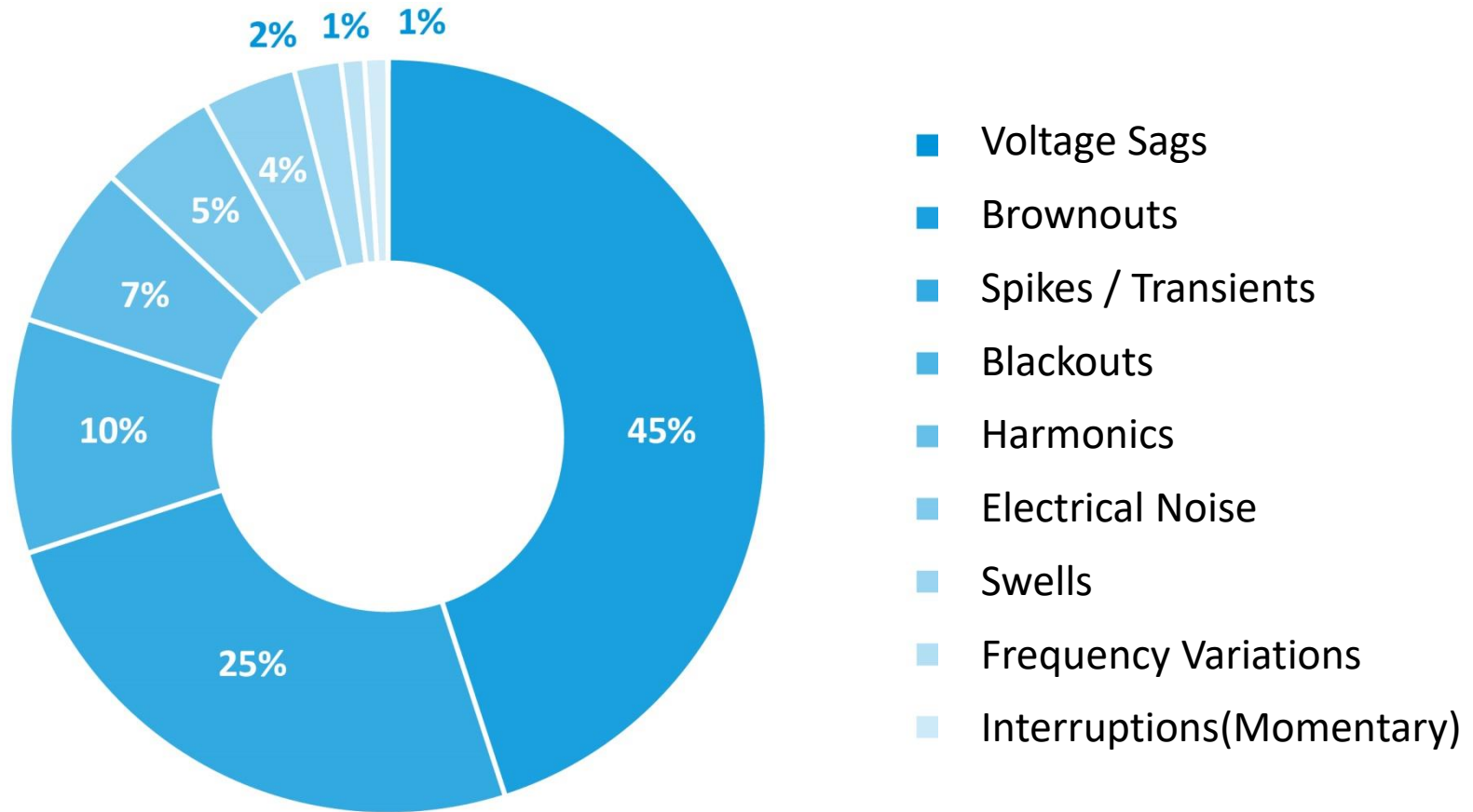
Embedded with Isolation Transformer

TRIAC1-I821 Series: 8KVA to 20KVA

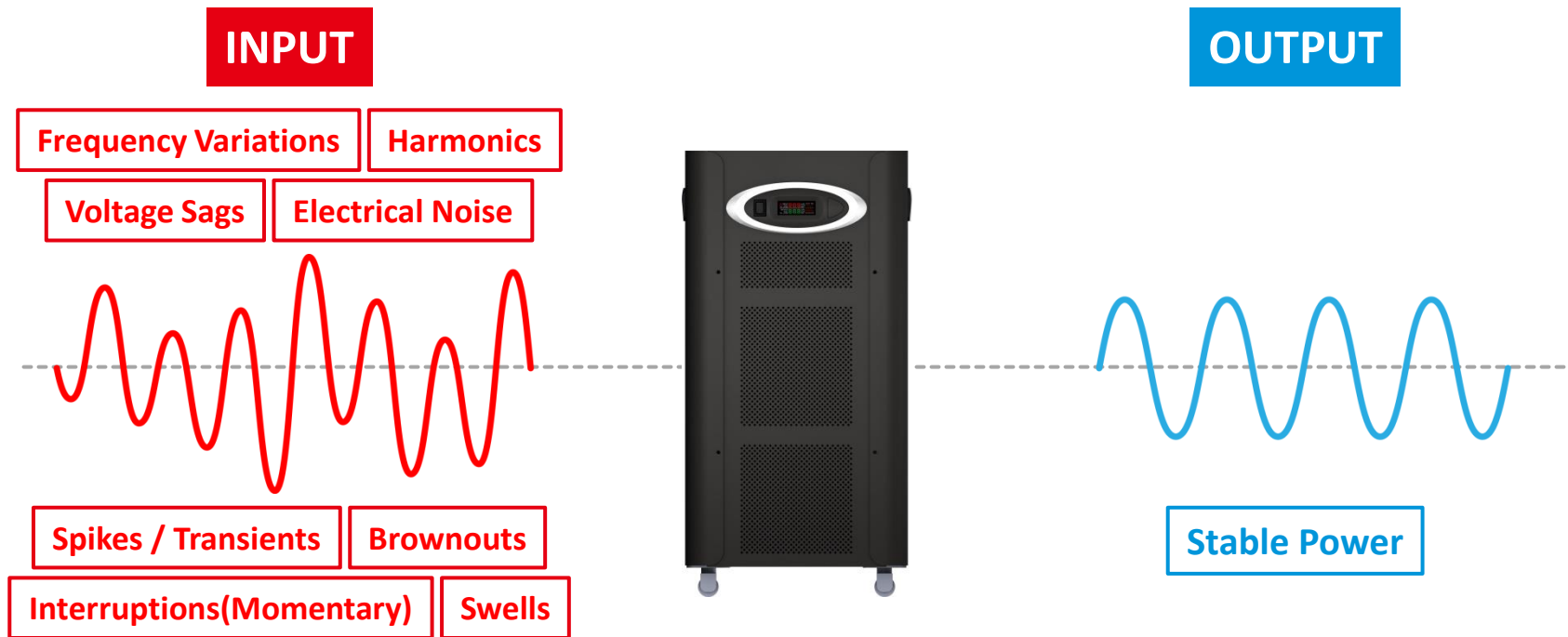


TRIAC1-I821 Series
8KVA / 10KVA / 12KVA / 15KVA / 20KVA

Typical Distribution of Power Quality Problems



Basic Functional Module and Power Topology



Why Isolation Matters?



Electrical Safety

1. Shock Protection: The primary and secondary windings are isolated, so the secondary isn't directly grounded, reducing shock risk.
2. Equipment Protection: Protects sensitive equipment from surges and spikes caused by power disruptions.



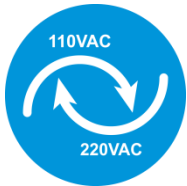
Noise & EMI Reduction

1. Effectively suppresses high-frequency noise and surges from the power source.
2. Reduce EMI noise from external sources.



Ground Loop Elimination

Isolation eliminates ground loops that create humming or noise.



Voltage Conversion

Besides isolation, it also adjusts the voltage to match the equipment's needs.

Structural Diagram



Front Panel

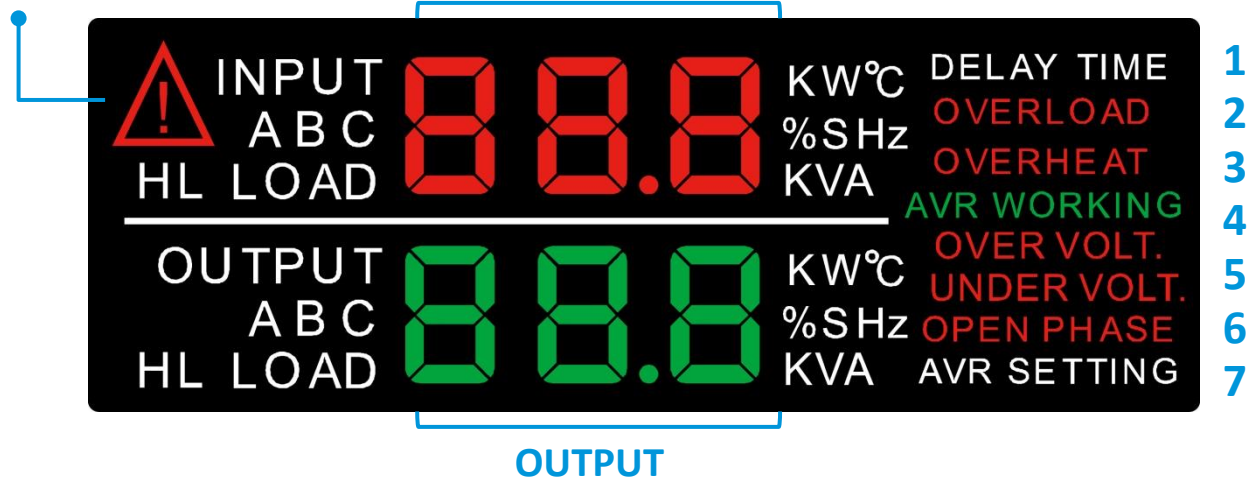


Rear Panel

LCD with Color Display

AVR Abnormality

INPUT



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 $\pm 2\%$ 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.
- Isolation Transformer: Effectively isolates harmonic issues and power quality problems.

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



DUST



TRIAC AVR

With no mechanical elements, it maintains reliable operation even when exposed to dust.



Servo AVR

Dust accumulation affects the moving brush mechanism, causing increased electrical noise and interruptions in voltage regulation.



ACCURACY



TRIAC AVR

The TRIAC AVR delivers output voltage accuracy within $\pm 5\%$, meeting the requirements of most electrical devices.



Servo AVR

Servo AVRs offer 0.5-1% accuracy, but most equipment doesn't need such tight control. Their mechanical parts also wear out faster due to constant use.



NOISE



TRIAC AVR

The system utilizes microprocessor control to achieve rapid switching at zero voltage, thereby eliminating transient noise.



Servo AVR

In environments with dust or debris, the brush movement over the toroidal transformer may introduce noise, increasing the risk of operational faults or incorrect data in control systems.



POWER BACK SURGE



TRIAC AVR

The AVR is designed to automatically reset and restore a suitable output voltage when mains power is interrupted.



Servo AVR

When mains power fails, the servo boosts voltage by spinning the motor. If power comes back suddenly, it might over-boost and damage sensitive electronics.

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



DURABILITY



TRIAC AVR

The design is entirely solid-state, incorporating no mechanical or moving components. Under normal usage conditions, the product has a lifespan of over 10 years.



Servo AVR

Mechanical components are subject to wear over time, requiring maintenance and leading to downtime that diminishes the performance of the voltage regulator.



SPEED



TRIAC AVR

The use of triacs and thyristors allows ultra-fast switching, typically within microseconds, which supports immediate voltage adjustment when needed.



Servo AVR

Because motors respond more slowly than solid-state components, corrections are delayed. Fast reaction times are critical to safeguard electronics from voltage damage.



TECHNOLOGY



TRIAC AVR

It uses a microprocessor and strong solid-state switches that can handle inrush currents hundreds of times higher than normal.



Servo AVR

As servo motor systems become increasingly outdated, transitioning to modern technology provides greater protection for your investment.



OPERATING COST



TRIAC AVR

The use of sophisticated technology increases the AVR's initial cost; however, it requires minimal maintenance and operating costs.



Servo AVR

While the servo AVR has a lower initial cost, its mechanical components require frequent maintenance and replacement parts, which increase operating expenses.



IDEAL UPS FOR IDEAL CHOICE