

## ***Nishan Digital Servo Controlled Voltage Stabilizers.***

Unpredictable input voltage fluctuations or transients from connected loads on utility power grid lines can lead to premature equipment failures.

Ensure the safety of your equipment with Nishan Digital Servo Controlled Voltage Stabilizer—a fast-voltage-correcting solution in industries.

Ideal for protecting sensitive equipment in various applications such as,

- Laser Cutting Machines,
- compressors,
- medical diagnostic equipment,
- CNC machines, and
- security systems.

### **Introduction**

A decade ago, Nishan Power Converters revolutionized voltage stabilization with the introduction of the first Static Voltage Stabilizer employing IGBT PWM technology. Unyielding in our commitment to innovation, we are thrilled to present the latest advancement in this field: the Powermonk TrioStat, a Static Voltage Stabilizer featuring state-of-the-art IGBTs PWM technology.

The Powermonk TrioStat employs an IGBT-based PWM topology in the Nishan Digital Servo Controlled Voltage Stabilizer, catering to power requirements up to 250 KVA. The microchip DisPIC governs the duty cycle of the PWM, boasting a resolution of 1 nanosecond per step. This precision results in an unparalleled accuracy exceeding 1% in output regulation.

In essence, the Powermonk TrioStat stands as a swift and responsive SMPS-type AC-AC voltage stabilizer, ensuring stability without introducing any harmonic distortion. This streamlined design not only enhances efficiency but also elevates reliability.

The fully solid-state circuit eliminates the need for mechanical or moving parts, mitigating issues like brush wear and tear in servo stabilizers or relay degradation in relay-based stabilizers. This is particularly advantageous in applications where rapid correction speed, consistent output voltage, overload current limiting, short circuit protection, soft start, high and low voltage cut-offs, uninterrupted automatic bypass, and maintenance-free operation are paramount.

Achieving these feats is unattainable with conventional stabilizers such as servo-controlled motorized stabilizers. Choose Powermonk TrioStat for an unprecedented combination of speed, reliability, and maintenance-free performance.



## Highlights

- Key Features.
- Incorporates IGBT DSPiC technology.
- Achieves ultrafast voltage correction.
- Maintains a tight regulation with only 1% deviation.
- Boasts a correction speed of 20,000 V/s, leading its class.
- Exhibits a remarkably high crest factor, surpassing conventional Servo-controlled stabilizers.
- Eliminates the need for selecting higher KVA rating stabilizers.
- Experiences no wear and tear, distinguishing it from servo or relay-based stabilizers.
- Provides smooth voltage regulation, making it ideal for sensitive loads.
- Operates silently, requires no maintenance, and has a long lifespan.
- Equipped with output short circuit protection.
- Available in a range of capacities from 50 KVA to 250 KVA.

### How is Nishan Digital Servo Controlled Voltage Stabilizers is different from conventional stabilizers?

Conventional stabilizers correct voltages use motorised moving parts or mechanical tap changing relays. These stabilizers have awfully slow correction of voltages in the event of sudden voltage fluctuations. During voltage fluctuations conventional stabilizers cannot deliver instantaneous voltage stability.

Alternatively Nishan Digital Servo Controlled Voltage Stabilizers. have ultrafast correction speeds of over 20,000 volts/sec. So it will virtually eliminates common sags and surges to the connected equipments and loads.

### Voltage fluctuations are a leading cause of premature equipment failure.

Introducing the Powermonk Nishan Digital Servo Controlled Voltage Stabilizers, an advanced solution that serves as the perfect replacement for outdated slow servo-controlled stabilizers.

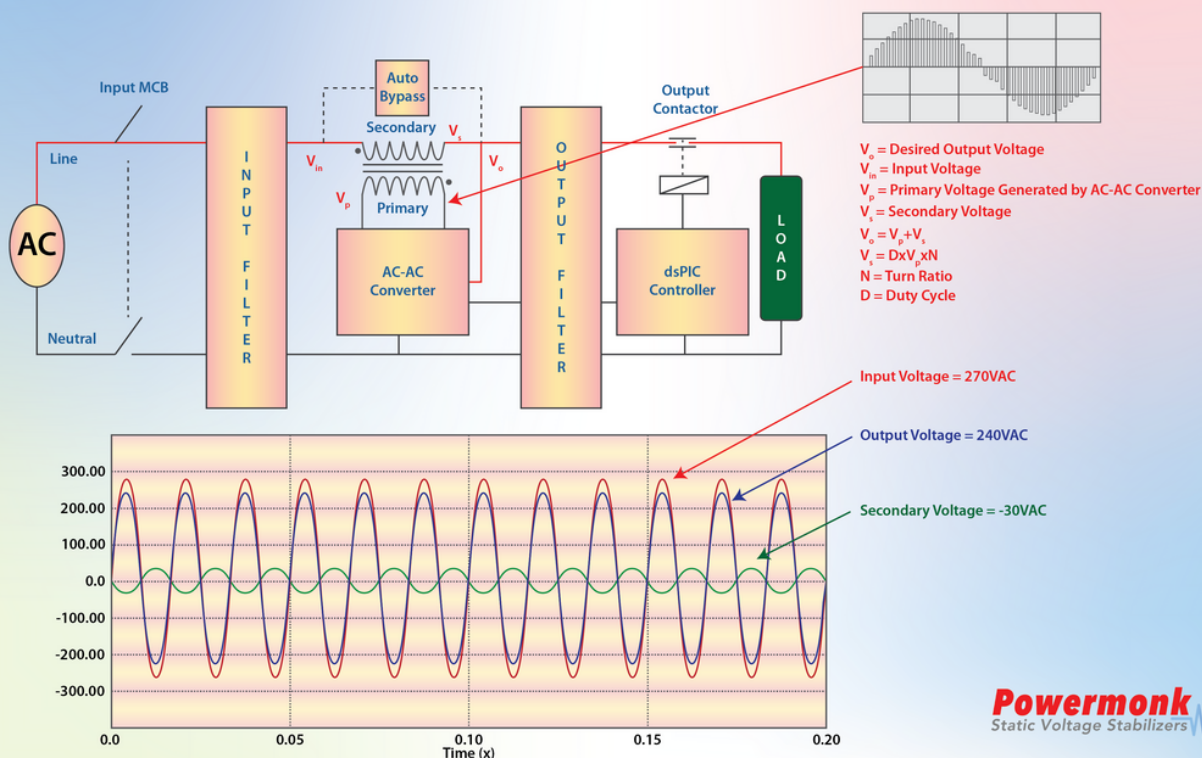
Unlike commonly available stabilizers that may pose risks to sensitive electronic equipment during fluctuations, Nishan Digital Servo Controlled Voltage Stabilizers are specifically engineered to safeguard delicate and critical equipment from erratic voltage variations.

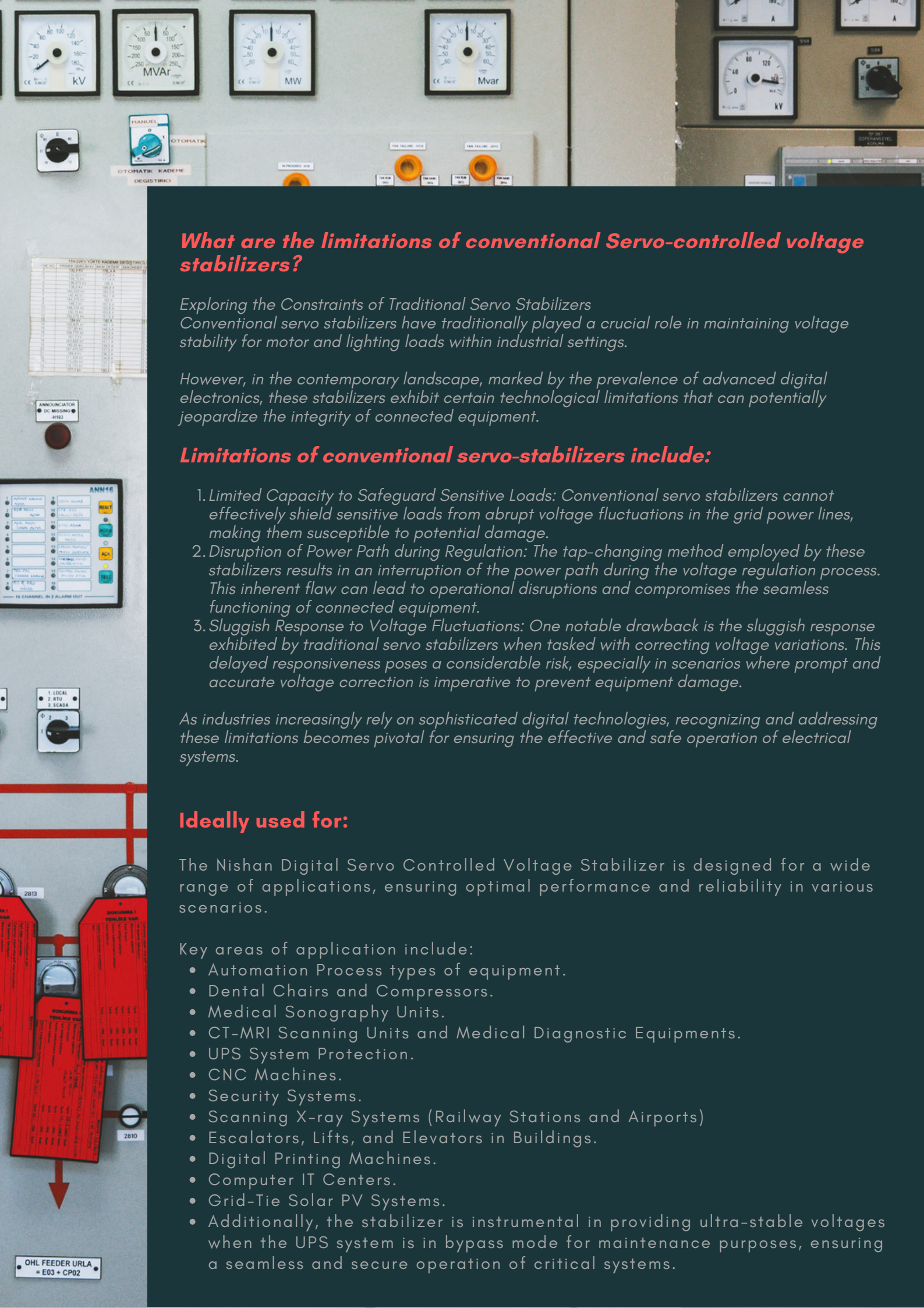
Designed and constructed with precision, Nishan Digital Servo Controlled Voltage Stabilizers provide unparalleled protection for your sensitive equipment, ensuring optimal performance and longevity.

Choose Nishan Digital Servo Controlled Voltage Stabilizers for the ultimate assurance of equipment safety.

## HOW NISHAN POWERMONK SVS WORKS

### Nishan Powermonk Static Voltage Stabilizer





## What are the limitations of conventional Servo-controlled voltage stabilizers?

Exploring the Constraints of Traditional Servo Stabilizers  
Conventional servo stabilizers have traditionally played a crucial role in maintaining voltage stability for motor and lighting loads within industrial settings.

However, in the contemporary landscape, marked by the prevalence of advanced digital electronics, these stabilizers exhibit certain technological limitations that can potentially jeopardize the integrity of connected equipment.

### Limitations of conventional servo-stabilizers include:

1. *Limited Capacity to Safeguard Sensitive Loads:* Conventional servo stabilizers cannot effectively shield sensitive loads from abrupt voltage fluctuations in the grid power lines, making them susceptible to potential damage.
2. *Disruption of Power Path during Regulation:* The tap-changing method employed by these stabilizers results in an interruption of the power path during the voltage regulation process. This inherent flaw can lead to operational disruptions and compromises the seamless functioning of connected equipment.
3. *Sluggish Response to Voltage Fluctuations:* One notable drawback is the sluggish response exhibited by traditional servo stabilizers when tasked with correcting voltage variations. This delayed responsiveness poses a considerable risk, especially in scenarios where prompt and accurate voltage correction is imperative to prevent equipment damage.

As industries increasingly rely on sophisticated digital technologies, recognizing and addressing these limitations becomes pivotal for ensuring the effective and safe operation of electrical systems.

### Ideally used for:

The Nishan Digital Servo Controlled Voltage Stabilizer is designed for a wide range of applications, ensuring optimal performance and reliability in various scenarios.

Key areas of application include:

- Automation Process types of equipment.
- Dental Chairs and Compressors.
- Medical Sonography Units.
- CT-MRI Scanning Units and Medical Diagnostic Equipments.
- UPS System Protection.
- CNC Machines.
- Security Systems.
- Scanning X-ray Systems (Railway Stations and Airports)
- Escalators, Lifts, and Elevators in Buildings.
- Digital Printing Machines.
- Computer IT Centers.
- Grid-Tie Solar PV Systems.
- Additionally, the stabilizer is instrumental in providing ultra-stable voltages when the UPS system is in bypass mode for maintenance purposes, ensuring a seamless and secure operation of critical systems.



## **Distinguishing Features of Nishan Digital Servo Controlled Voltage Stabilizers.**

- The PWM is done directly from Phase to Phase, not from neutral to phase. Output is regulated for phase-to-phase voltage and hence for existing neutral-to-phase voltage also. So Neutral is not required for the working of the unit. PWM-type voltage regulation results in a smooth variation of the voltage and no need for voltage tappings.
- Neutral quality or availability is not affecting the output regulation or working of the unit.
- An optional neutral creation circuit is provided for single-phase loads in case of neutral failure
- IGBT-based PWM-type voltage stabilizer has tight regulation and fast correction speed.
- Output regulation of  $\pm 1\%$  is unable to achieve with SCR tap changing/ servo stabilizers etc.
- Only three half-bridge IGBT modules are required for the power stage making the cost tremendously low compared to the conventional method of twelve half-bridge modules for a three-phase system
- Direct AC-AC conversion without rectifying to DC improves the efficiency, and reliability and reduces the components.
- Only the difference power is processed through the system resulting in a small-size buck-boost transformer and higher efficiency.
- 20KHz PWM control resulting in silent operation and no distortion in the output waveform.
- Automatic uninterruptable bypass in case of hazard
- Overload and short-circuit protection provided
- Technology up to 200KVA three-phase
- LCD to display all parameters
- Manual bypass is possible.
- The system has a built-in data logger (optional). All parameters are periodically saved to flash memory with date and time stamp.

### **About Us**

Established in 1992, Nishan Power is a leading provider of emergency backup power solutions for residential and commercial use. Our comprehensive offerings include power conditioning and emergency solutions, showcasing expertise in the field. Committed to customer satisfaction, we adapt to evolving technologies and diverse power conditions. Our customer support network ensures prompt assistance. In 2018, we expanded into sustainable energy with Nishan Energies, specializing in energy-saving options. Our product lines include Solar Sunny, Hercules Solar, Powermonk, Solar ALBS, Online UPS Systems, and Green Buildings Advisory. Nishan Power is dedicated to providing cutting-edge solutions for reliable emergency power and sustainable energy.

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