

NUMERIC VOLTSAFE PLUS 1-20 kVA Single Phase Air Cooled Servo Stabilizer




# NUMERIC VOLTSAFE PLUS 1-20 kVA Single Phase Air Cooled Servo Stabilizer Installation Guide

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# NUMERIC®

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**NUMERIC VOLTSAFE PLUS 1-20 kVA Single Phase Air Cooled Servo Stabilizer**



## Product Information

### Specifications

- Capacity (kVA): 1, 2, 3, 5, 7.5, 10, 15, 20
- Operation: Automatic
- Cooling: Natural / Forced air
- Ingress protection: IP 20
- Insulation resistance: > 5M at 500 VDC as per IS9815
- Dielectric test: Indoor use / Floor mounting
- Ambient temperature: < 50 dB at 1 meter distance
- Application: RAL 9005 Conforms to IS 9815 Front side / Rear side
- Acoustic noise level: < 50 dB at 1 meter distance
- Colour: RAL 9005
- Standards: Conforms to IS 9815
- IP/OP-Cable entry: Front side
- Door lock: Compatible
- Generator compatibility: Front side Compatible
- INPUT Voltage range: 230 VAC + 2%
- Frequency range: True reproduction of input; no waveform distortion introduced by stabilizer
- Correction speed: > 97%
- OUTPUT Voltage: Immune to load PF
- Waveform: Neutral failure Frequency cut off
- Efficiency: > 97%
- Power factor: Surge arrester Input: Low-High & Output: Low-High Overload (Electronic trip) / Short circuit

(MCB/MCCB)

- Protection: Carbon brush failure
- Dimensions (mm): 238x320x300, 285x585x325, 395x540x735, 460x605x855

## Product Usage Instructions

### Introduction

- **Features:** Servo stabilizer for single-phase operation.
- **Principle of operation:** Maintains stable output voltage.
- **Block diagram:** Refer to the provided diagram for visual representation.

### Important Safety Instructions

- **General Safety Precautions:** Avoid installation near flammable materials or sources of ignition.

### Installation

- **Installation Procedure:** Follow local electrical codes. Connect the unit to the designated output socket.
- **AC Safety Grounding:** Ensure proper connection of the earth wire to the chassis earth point terminal.

### Frequently Asked Questions (FAQ)

- **Q: Can the product be used outdoors?**  
A: The product is designed for indoor use. Avoid exposure to outdoor elements.
- **Q: What is the voltage range supported by the stabilizer?**  
A: The stabilizer supports a voltage range of 230 VAC  $\pm$  2%.
- **Q: How can I check if the stabilizer is functioning correctly?**  
A: Refer to the LED indications on the front panel for input and output status.

## USER AND INSTALLATION MANUAL



## **VOLTSAFE PLUS**

1-20 kVA

Single phase air cooled servo stabilizer

## **PREFACE**

- Congratulations, we are delighted to welcome you to our family of customers. Thank you for choosing Numeric as your reliable power solution partner; you now have access to our widest network of 250+ service centers in the country.
- Since 1984, Numeric has been enabling its clients to optimize their businesses with top-notch power solutions that promise seamless and clean power with controlled environmental footprints.
- We look forward to your continued patronage in the years to come!
- This manual provides general information regarding installation and operation of VOLTSAFE PLUS.

## **Disclaimer**

- The contents of this manual are bound to change without prior notice.
- We have exercised reasonable care to give you an error-free manual. Numeric disclaims liability for any inaccuracies or omissions that may have occurred. If you find information in this manual that is incorrect, misleading, or incomplete, we would appreciate your comments and suggestions.
- Before you begin the installation of the servo voltage stabilizer, please read this manual thoroughly. The warranty of this product is null and void, if the product is abused/misused.

## **Introduction**

Numeric VOLTSAFE PLUS is a servo-controlled voltage stabilizer with advanced microprocessor-based technology to stabilize line of AC power system. This stabilizer is an electronic equipment which gives a constant output voltage from fluctuating input AC voltage and varying load conditions. VOLTSAFE PLUS produces a constant output voltage with  $\pm 2\%$  accuracy of the set voltage.

## **Features**

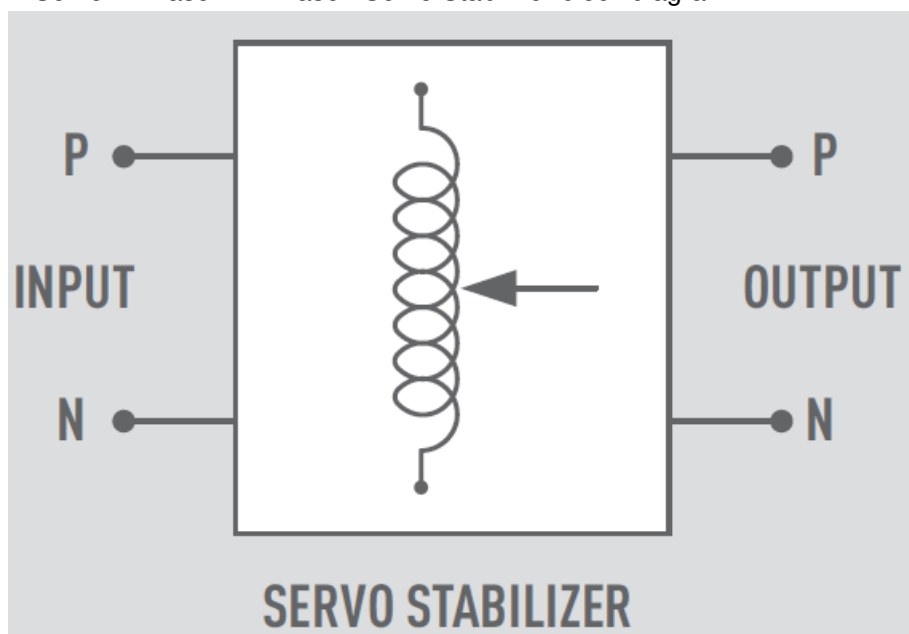
- Seven segment digital display
- Advanced MCU-based technology
- High efficiency and reliability
- Generator compatible
- In-built SMPS technology
- No waveform distortion
- Overload cut-off
- Power loss less than 4%
- Continuous duty cycle
- Provides audible buzzer warning for faulty / trip conditions
- Visual LED indication for trip indications & mains ON
- Durable lifespan
- High MTBF with low maintenance

### Principle of operation

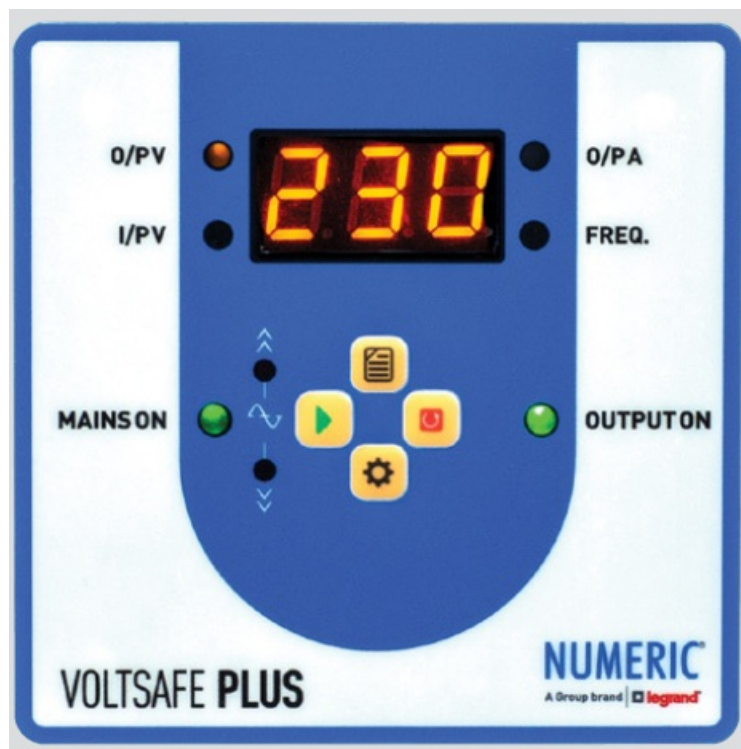
- VOLTSAFE PLUS uses a closed-loop feedback system to monitor the input and output voltages and to correct the varying input voltage. The constant output voltage is achieved by using a variable autotransformer (variac) with AC synchronous motor and an electronic circuit.
- Microcontroller-based electronic circuit senses the voltage, current and frequency and compares it with a reference. In case of any deviation in input, it generates a signal which energizes the motor to vary the voltage and correct the output voltage within the said tolerance. The stabilized voltage is supplied for the AC loads only.

### Block diagram

**VOLTSAFE PLUS** – Servo 1 Phase – 1 Phase : Servo Stabilizer block diagram.














### Front panel operation & LED indication



Digital meter selection indication	
<b>I/P V</b>	Display meter selection indication for input volts
<b>O/P V</b>	Display meter selection indication for output volts
<b>FREQ</b>	Display meter selection indication for output frequency
<b>O/P A</b>	Display meter selection indication for output load current

Menu switch			
<b>Input volts</b>	<b>Output volts</b>	<b>Output load current</b>	<b>Output frequency</b>

LED indication Input side			
 I/P Normal	 I/P High	 I/P Low	
LED indication Output side			
 O/P Normal	 O/P High	 O/P Low	 Overload
Switches			
 Start	 Menu	 Set	 Stop

## Dos and Don'ts – Operations

### • Dos

- For all single phase servo stabilizers, it is recommended to only connect the neutral and any one phase

only.

- Ensure that there is no loose connection.



- **Don'ts**

- Input line & Output line should not be interchanged in single phase connection.
- At the site, do not connect phase to phase at input side of the servo, under any circumstance. Only neutral to phase is to be connected.



## **Important safety instructions**

### **General safety precautions**

- Do not expose the stabilizer to rain, snow, spray, bilge or dust.
- To reduce the risk of hazard, do not cover or obstruct the ventilation openings.
- Do not install the stabilizer in a zero-clearance compartment which may result in overheating.
- To avoid the risk of fire and electronic shock, make sure that the existing wiring is in good condition and the wire is not under-sized.
- Do not operate the stabilizer with damaged wiring.
- This equipment contains electronic components which can produce arcs or sparks. To prevent fire or explosion, do not install it in compartments containing batteries or flammable materials or at locations that require ignition protected equipment. This includes any space containing gasoline-powered machinery, fuel tanks or joints, fittings, or other connections between components of the fuel system.

### **IMPORTANT SAFETY WARNING**

- As dangerous voltages are present within the servo-controlled voltage stabilizer, only Numeric technicians are permitted to open it. Failure to observe this could result in the risk of an electric shock and invalidation of any implied warranty.
- As servo stabilizer has got moving parts like variac arm and motor, please keep it in a dust-free environment.



## **Installation**

### **Installation procedure**

- Unpack the unit carefully without damage since the packaging of the equipment has a carton along with a foam packed enclosure, depending on the case. It is recommended to move the packed equipment till the installation

area and unpack it later.

- The unit must be placed at an adequate distance from the wall and proper ventilation needs to be ensured for continuous operation. The unit should be installed in a dust free environment and at a place where no heat waves are generated.
- If the servo unit has a 3-pin power input cable, connect it to a 3-pin [E, N & P] Indian plug or a 16A Indian socket to the 1-pole main breaker switch, in accordance with local electrical codes and standards.
- In other models, where the servo has a connector or terminal board, connect the marked input and output respectively from the terminal board.

**Note:** Do not interchange the single phase Input – L & N.

- Switch ON Main MCB

**Note:** Input & Output MCB is an optional accessory as per the customer's requirement for Air cooled – single phase servo stabilizers.

- Before connecting the load, check output voltage in the display meter provided in the front panel. It should be within the desired set voltage of  $\pm 2\%$ . Verify the output voltage displayed on the digital meter in the front panel. Ensure the servo stabilizer is working properly.
- Switch OFF Main MCB before connecting the load.
- Connect the single phase output to one end of the output rated electrical cable from the load, in accordance with local electrical codes and standards. Connect the other end of the electrical cable to the output Indian UNI socket or terminal block marked 'OUTPUT'.

### AC safety grounding

Earth wire should be connected with the chassis earth point terminal of the unit.

### WARNING!

Make sure all the AC connections are tight (torque of 9-10ft-lbs 11.7–13 Nm). Loose connections could result in overheating and a potential hazard.

## Specifications

Capacity (kVA)	1	2	3	5	7.5	10	15	20
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## GENERAL



Operation	Automatic
Cooling	Natural / Forced air
Ingress protection	IP 20
Insulation resistance	> 5M at 500 VDC as per IS9815
Dielectric test	2kV RMS for 1 minute
Ambient temperature	0 to 45 °C
Application	Indoor use / Floor mounting
Acoustic noise level	< 50 dB at 1 meter distance
Colour	RAL 9005
Standards	Conforms to IS 9815
IP/OP-Cable entry	Front side / Rear side
Door lock	Front side
Generator compatibility	Compatible

## INPUT

Voltage range	Normal – (170 V~270 V +1% AC); Wide – (140~280 V + 1% AC)
Frequency range	47 ~ 53 ± 0.5% Hz
Correction speed	27 V/sec (Ph-N)

## OUTPUT

**Voltage** 230 VAC + 2%

Waveform	True reproduction of input; no waveform distortion introduced by stabilizer					
Efficiency	> 97%					
Power factor	Immune to load PF					
Protection	Neutral failure					
	Frequency cut off					
	Surge arrester					
	Input: Low-High & Output: Low-High					
	Overload (Electronic trip) / Short circuit (MCB/MCCB)					
	Carbon brush failure					
PHYSICAL						
Dimensions (WxDxH) m m (±5mm)	238x320x300	285x585x 325	395x540x 735	460x605x855		
Weight (kgs)	13-16	36-60	70 – 80	60-100	100-110	130-150
LED digital display	TRUE RMS measurement					
	Input voltage					
	Output voltage					
	Output frequency					
	Load current					
Front panel indications	Mains ON, Output ON, Trip indications: Input low, Input high, Output low, Output high, Overload					

### **BYPASS Switch – Optional**

**Note :** Product specifications are subject to change purely on company's discretion without any prior notice.

### **Head Office**

- 10th Floor, Prestige Center Court, Office Block, Vijaya Forum Mall, 183, N.S.K Salai, Vadapalani,
- Chennai – 600 026.
- **Phone:** +91 44 4656 5555

### **Regional Offices**

#### **• New Delhi**

- B-225, Okhla Industrial Area,
- 4th Floor, Phase-1,
- New Delhi – 110 020.
- **Phone:** +91 11 2699 0028

#### **• Kolkata**

- Bhakta Tower, Plot No. KB22,

- 2nd & 3rd Floor, Salt Lake City, Sector – III, Kolkata – 700 098.
- **Phone** : +91 33 4021 3535 / 3536

- **Mumbai**

- C/203, Corporate Avenue, Atul Projects, Near Mirador Hotel, Chakala,
- Andheri Ghatkopar Link Road, Andheri (East), Mumbai – 400 099.
- **Phone** : +91 22 3385 6201

- **Chennai**

- 10th Floor, Prestige Center Court, Office Block, Vijaya Forum Mall,
- 183, N.S.K Salai, Vadapalani,
- Chennai – 600 026.
- **Phone** : +91 44 3024 7236 / 200

## Branch Offices

- **Chandigarh**

- SCO 4, First Floor, Sector 16, Panchkula, Chandigarh – 134 109.
- **Phone** : +91 93160 06215

- **Dehradun**

- Unit-1 and 2, Chakrata Road,
- Vijay Park Dehradun – 248001. Uttrakhand
- **Phone** : +91 135 661 6111

- **Jaipur**

- Plot No. J-6, Scheme-12B,
- Sharma Colony, Bais Godown,
- Jaipur – 302 019.
- **Phone** : +91 141 221 9082

- **Lucknow**

- 209/B, 2nd Floor, Cyber Heights,
- Vibhuti Khand, Gomti Nagar,
- Lucknow – 226 018.
- **Phone** : +91 93352 01364

- **Bhubaneswar**

- N-2/72 Ground Floor, IRC Village, Nayapally, Bhubaneswar – 751 015. Phone: +91 674 255 0760

- **Guwahati**

- House No 02,
- Rajgarh Girls High School Road
- (Behind Rajgarh Girls High School), Guwahati – 781 007.
- **Phone** : +91 361 245 0322/96000 87171

- **Patna**

- 405, Fraser Road, Hemplaza,
- 4th Floor, Patna – 800 001.
- **Phone** : +91 612 220 0657

- **Ranchi**

- 202 & 203, 2nd Floor, Sunrise Forum, Bardwan Compound, Lalpur, 2nd Floor, Ranchi – 834 001.

- **Phone** : + 91 98300 62078

- **Ahmedabad**

- A-101/102, Mondeal Heights,
- Beside Hotel Novotel, Near Iscon Circle, S G Highway, Ahmedabad – 380 015.
- **Phone** : +91 79 6134 0555

- **Bhopal**

- Plot No. 2, 221, 2nd Floor, Akansha Complex, Zone-1, M.P.Nagar, Bhopal– 462 011.
- **Phone** : +91 755 276 4202

- **Nagpur**

- Plot.No.174, H.No.4181/C/174, 1st Floor, Loksewa Housing Society, Near Dr. Umathe & Mokhare College, Bhamti Road,
- Lokseva Nagar, Nagpur – 440 022.
- **Phone** : +91 712 228 6991 / 228 9668

- **Pune**

- Pinnacle 664 park avenue, 8th floor,
- Plot no 102+103, CTS No. 66/4,
- Final, 4, Law College Rd, Erandwane,
- Pune, Maharashtra – 411 004.
- **Phone** : +91 98225 36680

- **Bengaluru**

- No-58, First Floor, Firoze White Manor, Bowring Hospital Road,
- Shivajinagar, Bangalore -560 001.
- Phone : +91 80 6822 0000

- **Coimbatore**

- No. B-15, Thirumalai Towers, No. 723,
- 1st Floor, Avinashi Road, Coimbatore – 641 018. Phone : +91 422 420 4018

- **Hyderabad**

- Prestige Phoenix Building,
- 1st Floor, Survey no. 199,
- No. 6-3-1219/J/101 & 102, Uma Nagar, Opposite to Begumpet Metro Station Begumpet 500016
- Phone: +91 40 4567 1717/2341 4398/2341 4367

- **Kochi**

- Door No. 50/1107A9, JB Manjooran Estate, 3rd Floor, Bypass Junction,
- Edappally, Kochi – 682 024.
- Phone : +91 484 6604 710

- **Madurai**


- 12/2, DSP Nagar,
- Dinamalar Avenue,
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- Phone : +91 452 260 4555

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## Documents / Resources

	<p><a href="#">NUMERIC VOLTSAFE PLUS 1-20 kVA Single Phase Air Cooled Servo Stabilizer</a> [pdf] Installation Guide</p> <p>VOLTSAFE PLUS, VOLTSAFE PLUS 1-20 kVA Single Phase Air Cooled Servo Stabilizer, 1-20 kVA Single Phase Air Cooled Servo Stabilizer, Single Phase Air Cooled Servo Stabilizer, Air Cooled Servo Stabilizer, Cooled Servo Stabilizer, Servo Stabilizer, Stabilizer</p>
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## References

- [N Home | Numeric UPS](#)
- [User Manual](#)

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