



Failsafe

Automatic voltage regulator

with PWM precision

VRp model**9000-0338**

9 kVA
9 kW
230/400 volts
3 phase wye

16500-0338

16.5 kVA
16.5 kW
230/400 volts
3 phase wye

*Power with a
Precision Attitude™*

Precision PWM Automatic Voltage Regulator with Automatic Bypass

Precision fast-PWM ac mains voltage correction

TSi Power's VRp automatic precision regulator allows trouble-free operation of electronic equipment over a very wide mains ac voltage range of 160 to 300V found in many developing countries.

There is no switching of taps or otherwise a break in the power path thanks to continuous PWM switching of a buck-boost transformer.

Typical applications

Designed for applications where absolutely safe and precisely regulated ac power is required, such as mobile communication (GSM/satellite/wireless broadband), radio/TV broadcasting, industrial process controller (PLC), medical (mobile MRI, CT) and laboratory or analytical measurement equipment.

Key benefits

VRp is compatible with all loads as it does not switch any components in the power path. VRp's ultra-low impedance assures stability even with the most demanding loads. The automatic bypass assures that connected equipment will not shut down, even if VRp fails.

How the VRp Series works

The high frequency IGBT driven converter takes the incoming ac power, measures against the nominal voltage and adds or subtracts voltage, 20,000 times per second, to achieve precisely regulated 230vac output.

The automatic bypass will be activated when there is a fault condition. Green LED indicates Normal (regulating mode operation), Yellow LED indicates Bypass (non-regulated output), and the Red LED indicates a Fault condition.



Key features of the VRp Series precision voltage regulator

- Outstanding voltage regulation: under voltage input range of 172 to 276V (47 to 63Hz) per phase, output regulation will be: within +/- 1%.
- No switching of power path and unit always starts up on sinewave zero crossing.
- Over-under voltage cutoff, with automatic restart when mains voltage decreases back to below 275 vac, or above 160 vac.
- Failsafe: automatic bypass
- Low impedance
- Low weight
- Wall fixing kit is included
- Quiet operation
- Two year warranty



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Voltage regulator with precision



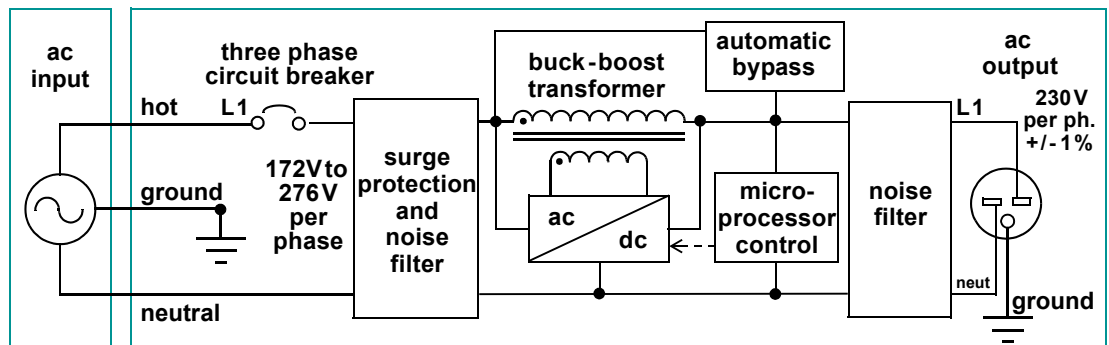
Left side - front view

Power with a Precision Attitude™

TSi's ongoing product improvement process makes specifications subject to change. Other companies product names herein are for identification purposes only, and may be trademarks of their respective companies.

Specification	VRp-9000-0338	VRp-16500-0338
Electrical		
Capacity in VA (watts)	9kVA (9kW)	16.5kVA (16.5kW)
Regulator engine	High frequency 20kHz IGBT driven voltage regulation converter	
Input		
Nominal voltage	230/400 volts ac, three phase wye	
Normal operating voltage	Range: 160 to 300 volts ac	
Maximum operating range	160 to 300 volts ac (with reduced output capacity and wider regulation)	
Nominal frequency	47 to 63Hz	
Overcurrent protection	Input circuit breaker and over-under voltage cutoff (>300vac or <160vac)	
Circuit breaker rating	3 x 20 amperes (ganged)	3 x 30 amperes (ganged)
Input wire size	AWG 10 (4 square mm)	AWG 8 (8 square mm)
Ac connection	Terminal block (L1, L2, L3, Neutral and ground wires) provided.	
Output		
Nominal voltage	230/400 volts ac, three phase wye	
Power efficiency	Better than 96% (with 20-100% load conditions)	
Voltage regulation	Factory set at 1%, long-term stability: <2%.	
Relaxed voltage regulation	192 to 240 volts ac over wider input range of 160 to 300 volts ac	
Automatic bypass	Automatic bypass will be activated when there is a fault condition.	
System status indicators	Status LED's provided as follows: Green LED (blinking) indicates Normal (regulating mode operation); Yellow LED (blinking) indicates Bypass (non-regulated output); Red LED indicates Overload (system may shut down).	
Surge test conditions	Per Class 2 and Class 3 simulated lightning surge (Combination wave)	
Surge let-through voltages	Class 2 and 3, 4000V, 3000A: L-N: 200V, L-G: 200V Note: For maximum protection of the VRp and connected load equipment, TSi Power recommends that a matching isolation power conditioner (ILc) be placed adjacent to the VRp.	
Matching ILc (mandatory)	ILc-9000-0338	ILc-16500-0338
Ac connection	Terminal block (L1, L2, L3, neutral and ground wires) provided.	
Physical		
Dimensions	610mm (24") wide x 610mm (24") high x 305mm (12") deep	
Weight	80 kg (176 lbs)	100 kg (220 lbs)
Safety		
Agency approvals	Designed to meet IEC 60950 standards. Protection class IP20.	
Environmental		
Ambient temperature	0° to +25°C (32° to +77°F). 10 to 90% RH non-condensing.	
Cooling method	Fan cooled.	
Warranty		
Warranty	Two year limited warranty, parts and labor.	

VRp system (per phase) architecture



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