

AVR models ( $\pm 12\%$ )

VRp- 100000-9339-120

100KVA

410V  $\pm 3\%$ 

Three phase

VRp- 150000-9339-120

150KVA

410V  $\pm 3\%$ 

Three phase

VRp- 200000-9339-120

200KVA

410V  $\pm 3\%$ 

Three phase

## Static voltage regulator with automatic bypass

### Precision fast-PWM ac mains voltage correction

TSi Elecpower's VRp is manufactured in a joint venture under license & technology transfer from TSi Power Corporation, USA. This automatic precision voltage regulator allows trouble-free operation of electronic equipment over a very wide mains ac voltage fluctuation range of 180 - 280 V found in many developing countries.

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

### Typical applications

Designed for applications needing absolutely safe and precisely regulated ac power, such as

- Residential & Commercial applications
- Process Industries
- Industrial process controller (PLC)
- Computer Controlled (CNC) Machines
- Medical (MRI, CT) and diagnostics
- Analytical measurement equipment
- Mobile communications (BTS sites)
- Radio / TV broadcasting/Transmission sites

### Key VRp Series 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 insulated gate bi-polar transistor (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 230 vac output.

The automatic bypass will be activated when there is a fault condition. Green LEDs are used to indicate Normal (regulating mode) operation.



### Key features of the VRp Series precision voltage regulator

- Outstanding voltage regulation: under standard design voltage range, output regulation will be within  $\pm 3\%$ , but still higher voltage fluctuation can be covered to achieve liberal regulation within usable output voltage range of 200-250 vac, P-N.
- No switching of active power path
- Fail-safe: automatic bypass
- Instantaneous Correction: boon for CNC Machines & hi-tech electronic gadgets
- Low impedance
- Low weight
- Quiet operation
- Soft switch-on
- Energy efficient



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CATEGORY	VRp series AVR's designed for $\pm 12\%$ fluctuation		
FEATURE	STANDARD THREE PHASE MODELS		
	VRp-100000-9339-120	VRp-150000-9339-120	VRp-200000-9339-120
ELECTRICAL			
Capacity in KVA (KW)	100 KVA	150 KVA	200 KVA
Regulator engine	High frequency 20 kHz GBT driven voltage regulation converter		
INPUT			
*Nominal voltage	410 volts ac, three phase		
*Normal operating voltage (typical output regulation within +/- 3% of nominal)	360 - 460 volts ac ( $\pm 12\%$ ) for full regulation		
Relaxed operating voltage (relaxed output regulation within functional range of 200-250V P-N)	305 - 485 volts ac (+18% -25%) within maximum rated input current capacity		
Maximum rated input current	160A	240A	320A
Nominal frequency	47 - 63 Hz		
Input circuit breaker rating	160 A X 3 phase MCCB	suitably rated MCCB to be provided by client on his incoming connections to VRp	
Input wire size	2x16 mm <sup>2</sup> (AWG 6)	2x25 mm <sup>2</sup> (AWG 4)	2x35 mm <sup>2</sup> (AWG 2)
Ac connection	Terminal block ( L1in , L2in, L3in, neutral and ground wires) provided	3 meter extra incoming wires with lugs provided for connecting to incoming MCCB on client's panel	
OUTPUT			
*Nominal voltage	410 volts ac, three phase		
Power efficiency	typically over 97 % (with 20 - 100% load conditions)		
Voltage regulation (typical)	+/- 3%		
Maximum rated output current	141 A	211 A	282 A
System status indicator	Green LED (ON) indicates Normal ( regulating mode) operation		
Ac connection	Terminal block ( L1in , L2in, L3in, neutral and ground wires) provided	3 meter extra outgoing wires with lugs provided for connecting to outgoing connectors on client's panel	
PHYSICAL			
Dimensions (IN MM) (approx.)	660 Wx 570 H x 660 D	813 Wx 813 H x 813 D	813 Wx 813 H x 813 D
Weight (approx.)	160 Kgs	300 Kgs	325 Kgs
Annunciation	LED display for Regulation mode, Bypass mode & Fault conditions		
Mounting	4 High Quality Castor wheels, 2 with brakes		
ENVIRONMENTAL			
Ambient temperature	0° to + 45° Centigrade (32° to + 113° Farhenite). 10 to 90% RH non-condensing.		
Cooling method	Fan Cooled		
PROTECTIVE FEATURES			
Standards & Safety	Designed to meet UL 60950-I standards. Protection class IP 20.		
Overload & Short Circuit Protection	Through suitably rated input circuit breaker	Through suitably rated input circuit breaker to be provided by client on his incomer panel	
Soft Switch-On	This feature ensure that output voltage is never higher than input voltage upon switch-on, before it commences full stabilization.		
Automatic bypass	Automatic bypass will be activated when there is a fault condition		
Surge Test Conditions	Per Class 2 Surge ( combination wave)		
Surge let-through voltages	1.2 X 50μs, 6kV, 8 X 20 μs, 3 kA waveform. L-N < 300V		
All * marked voltage regulation ranges are based on 415V nominal output voltage. They would proportionately change in case nominal output voltage is required to be preset at any other value between 380-415V.			



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## VRp system architecture

