

**3Phase AVR models( $\pm 13\%$ )**
**VRp-6000-9339-130M**

6 KVA

**VRp-10000-9339-130M**

10 KVA

**VRp-15000-9339-130M**

15 KVA

**VRp-25000-9339-130M**

25 KVA

**VRp-40000-9339-130M**

40 KVA

**VRp-50000-9339-130M**

50 KVA

**VRp-60000-9339-130M**

60 KVA

**VRp-75000-9339-130M**

75 KVA

**VRp-110000-9339-130M**

110 KVA

**VRp-130000-9339-130M**

130 KVA

**VRp-150000-9339-130M**

150 KVA

**VRp-160000-9339-130M**

160 KVA

**3 Phase AVR models( $\pm 12\%$ )**
**VRp-100000-9339-120M**

100 KVA

**VRp-200000-9339-120M**

200 KVA

**3 Phase AVR models( $\pm 20\%$ )**
**VRp-15000-9339-200M**

15 KVA

**VRp-25000-9339-200M**

25 KVA

**VRp-30000-9339-200M**

30 KVA

**VRp-45000-9339-200M**

45 KVA

**VRp-70000-9339-200M**

70 KVA

**VRp-100000-9339-200M**

100 KVA

**3 Phase AVR models( $\pm 26\%$ )**
**VRp-10000-9339-260M**

10 KVA

**VRp-16000-9339-260M**

16 KVA

**VRp-21000-9339-260M**

21 KVA

**VRp-25000-9339-260M**

25 KVA

**VRp-32000-9339-260M**

32 KVA

**VRp-50000-9339-260M**

50 KVA

**VRp-75000-9339-260M**

75 KVA

# 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 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
- Textile Looms
- 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 the VRp regulation engine 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 tightly pre-set limits, 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

Specifications sheet : VRp Precision PWM Line Conditioners for Machinery, ± 13% series						
CATEGORY	STANDARD THREE PHASE MODELS					
FEATURE	VRp-6000-9339-130M	VRp- 10000-9339-130M	VRp- 15000-9339-130M	VRp- 25000-9339-130M	VRp- 40000-9339-130M	VRp- 50000-9339-130M
<b>ELECTRICAL</b>						
Capacity in KVA (KW)	6 KVA	10 KVA	15 KVA	25 KVA	40 KVA	50 KVA
Regulator engine	High frequency 20 KHz IGBT driven voltage regulation convertor					
Regulation time	Instantaneous, real-time regulation of any Fluctuation within 20 millise					
<b>INPUT</b>						
*Nominal voltage	415 volts ac, three phase					
*Normal operating voltage (typical output regulation within +/- 1% of nominal)	360 - 470 volts ac for full regulation					
Relaxed operating voltage (relaxed output regulation within functional range of 200-250V P-N)	300 - 490 volts ac within maximum rated input current capacity					
Maximum rated input current	10A	16A	24A	40A	63A	80A
Nominal frequency	47 - 63 Hz					
Input circuit breaker rating	10A X 3phase (ganged MCB)	16A X 3phase (ganged MCB)	25A X 3phase (ganged MCCB)	40A X 3phase (ganged MCCB)	63A X 3phase (ganged MCCB)	80A X 3phase MCCB
Input wire size	4mm <sup>2</sup> (AWG 12)	4mm <sup>2</sup> (AWG 12)	4mm <sup>2</sup> (AWG 12)	6mm <sup>2</sup> (AWG 10)	10mm <sup>2</sup> (AWG 8)	16mm <sup>2</sup> (AWG 6)
Ac connection	Terminal block ( L1in , L2in, L3in, neutral and ground wires) provided					
<b>OUTPUT</b>						
*Nominal voltage	415 volts ac, three phase					
Power efficiency	typically over 97 % (with 20 - 100% load conditions)					
Voltage regulation (typical, excluding meter error)	+/-1%					
Maximum rated output current	9A	14A	21A	35A	56A	70A
System status indicator	Green LED (ON) indicates Normal ( regulating mode) operation					
Ac connection	Terminal block ( L1op, L2op, L3op, neutral and ground wires) provided					
<b>PHYSICAL</b>						
Dimensions (IN MM) (approx.)	455D x 345W x 990H				610Dx610Wx570H	660Dx660Wx570H
Weight (approx.)	50 kgs	60 kgs	65 kgs	80 kgs	130 Kgs	150 Kgs
Display	Digital output voltage display thru selector switch					
Annunciation	LED display for Regulation mode, Bypass mode & Fault conditions					
Mounting	4 High Quality Castor wheels, 2 with brakes					
<b>ENVIRONMENTAL</b>						
Ambient temperature	0° to + 45° Centigrade (32° to + 113° Farhenite). 10 to 90% RH non-condensing.					
Cooling method	Fan Cooled					
<b>PROTECTIVE FEATURES</b>						
Standards & Safety	Designed to meet UL 60950-1 standards. Protection class IP 20.					
OV/UV cut off with SPP	Automatic trip in event of High/Low/Missing Voltage, Auto reset					
Overload & Short Circuit Protection	Through suitably rated input circuit breaker					
Soft Switch-On	This feature ensure that the output voltage is never higher than the 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					
NOTES	<p>[1] 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.</p> <p>[2] All models of VRp's are optionally available with 400 Volts to 220/200 Volts step down transformers.</p> <p>[3] Due to continuous product improvement, specification are subject to change without notice.</p> <p>[4] Above products are warranted in INDIA only, for products warranted in other countries, please enquire.</p>					

Specifications sheet : VRp Precision PWM Line Conditioners for Machinery, ± 13% series						
CATEGORY	STANDARD THREE PHASE MODELS					
FEATURE	VRp- 60000-9339-130M	VRp- 75000-9339-130M	VRp- 110000-9339-130M	VRp- 130000-9339-130M	VRp- 150000-9339-130M	VRp- 160000-9339-130M
<b>ELECTRICAL</b>						
Capacity in KVA (KW)	60 KVA	75 KVA	110 KVA	130 KVA	150 KVA	160 KVA
Regulator engine	High frequency 20 Khz IGBT driven voltage regulation convertor					
Regulation time	Instantaneous, real-time regulation of any Fluctuation within 20 millisecc					
<b>INPUT</b>						
*Nominal voltage	415 volts ac, three phase					
*Normal operating voltage (typical output regulation within +/- 1% of nominal)	360 - 470 volts ac for full regulation					
Relaxed operating voltage (relaxed output regulation within functional range of 200-250V P-N)	300 - 490 volts ac within maximum rated input current capacity					
Maximum rated input current	96A	120A	176A	209A	240A	256A
Nominal frequency	47 - 63 Hz					
Input circuit breaker rating	100A X 3phase MCCB	125A X 3phase MCCB	200A X 3phase MCCB	250A X 3phase MCCB	250 A X 3phase MCCB	320 A X 3phase MCCB
Input wire size	16mm <sup>2</sup> (AWG 6)	25mm <sup>2</sup> (AWG 4)	2x16mm <sup>2</sup> (AWG 6)	2x25mm <sup>2</sup> (AWG 4)	2x25mm <sup>2</sup> (AWG 4)	2x35mm <sup>2</sup> (AWG 2)
Ac connection	Terminal block ( L1in , L2in, L3in, neutral and ground wires) provided					
<b>OUTPUT</b>						
*Nominal voltage	415 volts ac, three phase					
Power efficiency	typically over 97 % (with 20 - 100% load conditions)					
Voltage regulation (typical, excluding meter error)	+/- 1%					
Maximum rated output current	84A	104A	153A	180A	208A	222A
System status indicator	Green LED (ON) indicates Normal ( regulating mode) operation					
Ac connection	Terminal block ( L1op, L2op, L3op, neutral and ground wires) provided					
<b>PHYSICAL</b>						
Dimensions (IN MM) (approx.)	660D x 660W x 715H		813D x 813W x 813H	888D x 888W x 813H		
Weight (approx.)	155 Kgs	170 Kgs	275 Kgs	280 Kgs	315 Kgs	320 Kgs
Display	Digital output voltage display thru selector switch					
Annunciation	LED display for Regulation mode, Bypass mode & Fault conditions					
Mounting	4 High Quality Castor wheels, 2 with brakes					
<b>ENVIRONMENTAL</b>						
Ambient temperature	0° to + 45° Centigrade (32° to + 113° Farhenite). 10 to 90% RH non-condensing.					
Cooling method	Fan Cooled					
<b>PROTECTIVE FEATURES</b>						
Standards & Safety	Designed to meet UL 60950-1 standards. Protection class IP 20.					
OV/UV cut off with SPP	Automatic trip in event of High/Low/Missing Voltage, Auto reset					
Overload & Short Circuit Protection	Through suitably rated input circuit breaker					
Soft Switch-On	This feature ensure that the output voltage is never higher than the 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					
NOTES	<p>[1] 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.</p> <p>[2] All models of VRp's are optionally available with 400 Volts to 220/200 Volts step down transformers.</p> <p>[3] Due to continuous product improvement, specification are subject to change without notice.</p> <p>[4] Above products are warranted in INDIA only, for products warranted in other countries, please enquire.</p>					

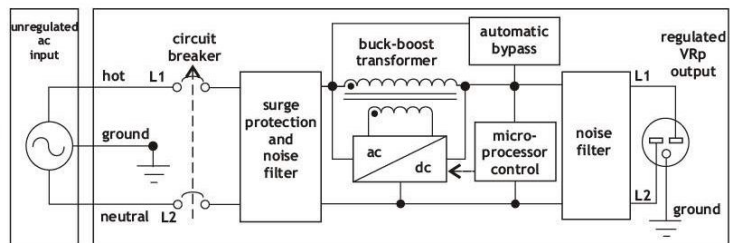
CATEGORY		Specifications sheet : VRp Precision PWM Line Conditioners for Machinery, ±12% series	
FEATURE	STANDARD THREE PHASE MODELS		
	VRp- 100000-9339-120M	VRp- 200000-9339-120M	
<b>ELECTRICAL</b>			
Capacity in KVA (KW)	100 KVA	200 KVA	
Regulator engine	High frequency 20 Khz IGBT driven voltage regulation convertor		
Regulation time	Instantaneous, real-time regulation of any Fluctuation within 20 millisec		
<b>INPUT</b>			
*Nominal voltage	410 volts ac, three phase		
*Normal operating voltage (typical output regulation within +/- 1% of nominal)	360 - 460 volts ac for full regulation		
Relaxed operating voltage (relaxed output regulation within functional range of 200-250V P-N)	305 - 485 volts ac within maximum rated input current capacity		
Maximum rated input current	160A	320A	
Nominal frequency	47 - 63 Hz		
Input circuit breaker rating	160 A X 3 phase MCCB	320 A X 3 phase MCCB	
Input wire size	2x16 mm <sup>2</sup> (AWG 6)	2x35 mm <sup>2</sup> (AWG 2)	
Ac connection	Terminal block (L1in, L2in, L3in, neutral and ground wires) provided		
<b>OUTPUT</b>			
*Nominal voltage	410 volts ac, three phase		
Power efficiency	typically over 97 % (with 20 - 100% load conditions)		
Voltage regulation (typical, excluding meter error)	+/-3%		
Maximum rated output current	140A	280A	
System status indicator	Green LED (ON) indicates Normal ( regulating mode) operation		
Ac connection	Terminal block (L1in, L2in, neutral and ground wires) provided		
<b>PHYSICAL</b>			
Dimensions (IN MM) (approx.)	660D x 660W x 715H	888D x 888W x 813H	
Weight (approx.)	170 Kgs	325 Kgs	
Display	Digital output voltage display thru selector switch		
Annunciation	LED display for Regulation mode, Bypass mode & Fault conditions		
Mounting	4 High Quality Castor wheels, 2 with brakes		
<b>ENVIRONMENTAL</b>			
Ambient temperature	0° to + 45° Centigrade (32° to + 113° Farhenite). 10 to 90% RH non-condensing.		
Cooling method	Fan Cooled		
<b>PROTECTIVE FEATURES</b>			
Standards & Safety	Designed to meet UL 60950-1 standards. Protection class IP 20.		
OV/UV cut off with SPP	Automatic trip in event of High/Low/Missing Voltage, Auto reset		
Overload & Short Circuit Protection	Through suitably rated input circuit breaker		
Soft Switch-On	This feature ensure that the output voltage is never higher than the 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		
NOTES	<p>[1] All * marked voltage regulation ranges are based on 410V nominal output voltage. They would proportionately change in case nominal output voltage is required to be preset at any other value between 380-415V.</p> <p>[2] All models of VRp's are optionally available with 400 Volts to 220/200 Volts step down transformers.</p> <p>[3] Due to continuous product improvement, specification are subject to change without notice.</p> <p>[4] Above products are warranted in INDIA only, for products warranted in other countries, please enquire.</p>		

Specifications sheet : VRp Precision PWM Line Conditioners for Machinery, ±20% series						
CATEGORY	STANDARD THREE PHASE MODELS					
FEATURE	VRp-15000-9339-200M	VRp-25000-9339-200M	VRp-30000-9339-200M	VRp-45000-9339-200M	VRp-70000-9339-200M	VRp-100000-9339-200M
<b>ELECTRICAL</b>						
Capacity in KVA (KW)	15 KVA	25 KVA	30 KVA	45 KVA	70 KVA	100 KVA
Regulator engine	High frequency 20 Khz IGBT driven voltage regulation convertor					
Regulation time	Instantaneous, real-time regulation of any Fluctuation within 20 millisec					
<b>INPUT</b>						
*Nominal voltage	400 volts ac, three phase					
*Normal operating voltage (typical output regulation within +/- 1% of nominal)	320 - 480 volts ac for full regulation					
Relaxed operating voltage (relaxed output regulation within functional range of 200-250V P-N)	277 - 520 volts ac within maximum rated input current capacity					
Maximum rated input current	27 A	45 A	54 A	80 A	125 A	180 A
Nominal frequency	47 - 63 Hz					
Input circuit breaker rating	32A X 3phase (ganged MCB)	50A X 3phase (ganged MCB)	63A X 3phase (ganged MCB)	80A X 3phase MCCB	125A X 3phase MCCB	200A X 3phase MCCB
Input wire size	4mm <sup>2</sup> (AWG 12)	6mm <sup>2</sup> (AWG 10)	10mm <sup>2</sup> (AWG 8)	16mm <sup>2</sup> (AWG 6)	25mm <sup>2</sup> (AWG 4)	2x16mm <sup>2</sup> (AWG 6)
Ac connection	Terminal block (L1in, L2in, L3in, neutral and ground wires) provided					
<b>OUTPUT</b>						
*Nominal voltage	400 volts ac, three phase					
Power efficiency	typically over 96 % (with 20 - 100% load conditions)					
Voltage regulation (typical, excluding meter error)	+/- 1%					
Maximum rated output current	22 A	36 A	43 A	65 A	101 A	144 A
System status indicator	Green LED (ON) indicates Normal ( regulating mode) operation					
Ac connection	Terminal block (L1in, L2in, neutral and ground wires) provided					
<b>PHYSICAL</b>						
Dimensions (IN MM) (approx.)	455Dx350Wx990H	610D x 610W x 570H		660Dx660Wx570H	813D x 813W x 813H	
Weight (approx.)	80 kgs	130 kgs	150 kgs	170 Kgs	275 Kgs	305 Kgs
Display	Digital output voltage display thru selector switch					
Annunciation	LED display for Regulation mode, Bypass mode & Fault conditions					
Mounting	4 High Quality Castor wheels, 2 with brakes					
<b>ENVIRONMENTAL</b>						
Ambient temperature	0° to + 45° Centigrade (32° to + 113° Farhenite). 10 to 90% RH non-condensing.					
Cooling method	Fan Cooled					
<b>PROTECTIVE FEATURES</b>						
Standards & Safety	Designed to meet UL 60950-1 standards. Protection class IP 20.					
OV/UV cut off with SPP	Automatic trip in event of High/Low/Missing Voltage, Auto reset					
Overload & Short Circuit Protection	Through suitably rated input circuit breaker					
Soft Switch-On	This feature ensure that the output voltage is never higher than the 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					
NOTES	<p>[1] All * marked voltage regulation ranges are based on 400V nominal output voltage. They would proportionately change in case nominal output voltage is required to be preset at any other value between 380-415V.</p> <p>[2] All models of VRp's are optionally available with 400 Volts to 220/200 Volts step down transformers.</p> <p>[3] Due to continuous product improvement, specification are subject to change without notice.</p> <p>[4] Above products are warranted in INDIA only, for products warranted in other countries, please enquire.</p>					

CATEGORY		Specifications sheet : VRp Precision PWM Line Conditioners for Machinery, ±26% series						
FEATURE	STANDARD THREE PHASE MODELS							
	VRp-10000-9339-260M	VRp-16000-9339-260M	VRp-21000-9339-260M	VRp-25000-9339-260M	VRp-32000-9339-260M	VRp-50000-9339-260M	VRp-75000-9339-260M	
<b>ELECTRICAL</b>								
Capacity in KVA (KW)	10 KVA	16 KVA	21 KVA	25 KVA	32 KVA	50 KVA	75 KVA	
Regulator engine	High frequency 20 Khz IGBT driven voltage regulation convertor							
Regulation time	Instantaneous, real-time regulation of any Fluctuation within 20 millisec							
<b>INPUT</b>								
*Nominal voltage	400 volts ac, three phase							
*Normal operating voltage (typical output regulation within +/- 1% of nominal)	295 - 505 volts ac (±26%) for full regulation							
Relaxed operating voltage (relaxed output regulation within functional range of 200-250V P-N)	256 - 545 volts ac within maximum rated input current capacity							
Maximum rated input current	20A	31A	40A	49A	62A	98A	146A	
Nominal frequency	47 - 63 Hz							
Input circuit breaker rating	20A X 3phase (ganged MCB)	32A X 3phase (ganged MCB)	40A X 3phase (ganged MCB)	50A X 3phase (ganged MCB)	63A X 3phase MCCB	100 X 3phase MCCB	160A X 3phase MCCB	
Input wire size	4 mm <sup>2</sup> (AWG 12)	4 mm <sup>2</sup> (AWG 12)	6 mm <sup>2</sup> (AWG 10)	6 mm <sup>2</sup> (AWG 10)	10 mm <sup>2</sup> (AWG 8)	16 mm <sup>2</sup> (AWG 6)	25 mm <sup>2</sup> (AWG 4)	
Ac connection	Terminal block ( L1in , L2in, L3in, neutral and ground wires) provided							
<b>OUTPUT</b>								
*Nominal voltage	400 volts ac, three phase							
Power efficiency	typically over 95 % (with 20 - 100% load conditions)							
Voltage regulation (typical, excluding meter error)	+/-1%							
Maximum rated output current	14A	23A	30A	36A	46A	72A	108A	
System status indicator	Green LED (ON) indicates Normal ( regulating mode) operation							
Ac connection	Terminal block ( L1op, L2op, L3op, neutral and ground wires) provided							
<b>PHYSICAL</b>								
Dimensions (IN MM) (approx.)	345W x 990H x455D	610W x 570H x 610D				813W x 813H x 813D		
Weight (approx.)	105 kgs	115 Kgs	140 Kgs	150 Kgs	160 Kgs	275 Kgs	300 Kgs	
Display	Digital output voltage display thru selector switch							
Annunciation	LED display for Regulation mode, Bypass mode & Fault conditions							
Mounting	4 caster wheels, 2 with brakes							
<b>ENVIRONMENTAL</b>								
Ambient temperature	0° to + 45° Centigrade (32° to + 113° Farhenite). 10 to 90% RH non-condensing.							
Cooling method	Fan Cooled							
<b>PROTECTIVE FEATURES</b>								
Standards & Safety	Designed to meet UL 60950-I standards. Protection class IP 20.							
OV/UV cut off with SPP	Automatic trip in event of High/ Low/ Missing Voltage, auto reset							
Overload & Short Circuit Protection	Through suitably rated input circuit breaker							
Soft Switch-On	This feature ensure that the output voltage is never higher than the 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							
Notes	<p>[1] All * marked voltage regulation ranges are based on 400V nominal output voltage. They would proportionately change in case nominal output voltage is required to be preset at any other value between 380-415V.</p> <p>[2] All models of VRp's are optionally available with 400 Volts to 220/200 Volts step down transformers.</p> <p>[3] Due to continuous product improvement, specifications are subject to change without notice.</p> <p>[4] Above products are warranted in INDIA only, for products warranted in other countries, please enquire.</p>							



**VRp**  
VRp system architecture



Due to continuous product improvement, above parameters are subject to change.