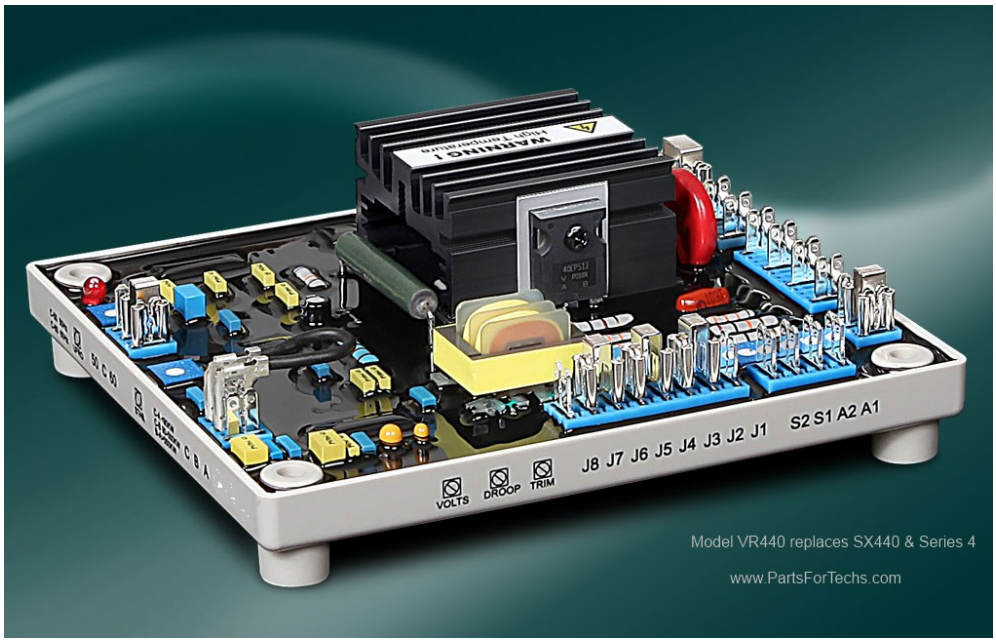
VR440

Generator Automatic Voltage Regulator
Operation Manual



Automatic Voltage Regulator Compatible
with Newage SX440*
*Use for reference purposes only - not a genuine Newage product.

1. INTRODUCTION

Sensing Input

Voltage	190 ~ 264 VAC, 1 phase 2 wire
Frequency	50 / 60 Hz, selectable

Output

Voltage	Max. 90 VDC @ 207 VAC
Current	Continuous 4A
	Intermittent 10A for 10 sec.
Resistance	Min. 15 ohms

Voltage Regulation

< ± 1% (with 4% engine governing)

Voltage Build-up

Residual voltage at AVR terminal > 5 VAC

Thermal Drift

0.05% per °C change in AVR ambient

External Volts Adjustment

±8% with 1K ohm 1 watt trimmer

Unit Power Dissipation

Max. 12 watts

Under Frequency Protection

Set point	95% Hz

(UFRO)

Slope	170% down to 30 Hz

Soft Start Ramp Time

2 sec.

Analogue Input

Max. Input	± 5 VDC
Sensitivity	1V for 5% generator volts
Input Resistance	1K ohm

Quadrature Droop Input

Burden	10 ohms
Max sensitivity	0.07 A for 5% droop (PF=0)
Max. input	0.33 A

Dimensions

150mm L * 135mm W * 40mm H

Weight

418g ± 2%

2. WIRING

1. K1, K2 : Field input external switch terminals. Linked for normal operation.
2. P2, P3 : External power input terminals.
3. 2, 3 : Sensing input terminals.
4. 1, 2 : External VR terminals. Link if not used.
5. X, XX: Xconnect to field (+), XX connect to field (-).
6. S1, S2 : Droop CT input terminal.
7. A1, A2 : VAR/PF controller input.
8. A,B,C : Link A,C for under 90KW.
   Link B,C for 90 ~ 550KW.
   Link A,B for over 550KW.
9. J1~J8 : Jump select terminals, 2-3, 4-5, 6-7.
   Please refer to Figure 2 and Figure 3.

3. ADJUSTMENT

3.1 Voltage adjustment

The generator output voltage can be altered by adjustment of the volts POT on the AVR, or by the external trimmer (1KΩ) if used.

1. The terminals 1&2 must be linked if no hand trimmer is used.
2. Before starting the generator, turn the volts POT on the AVR board fully counter- clockwise Turn the external trimmer to midway position.
3. Turn the stability trimmer on the AVR board to midway position.
4. Connect a voltmeter to generator output voltage terminals.
5. Start generator set and run with no load at nominal frequency 50 ~ 53Hz or 60 ~ 63Hz.
6. If the red LED is illuminated, refer to the under frequency roll off adjustment.
7. Carefully turn the volt trimmer clockwise until rated voltage is reached.

3.2 Stability adjustment

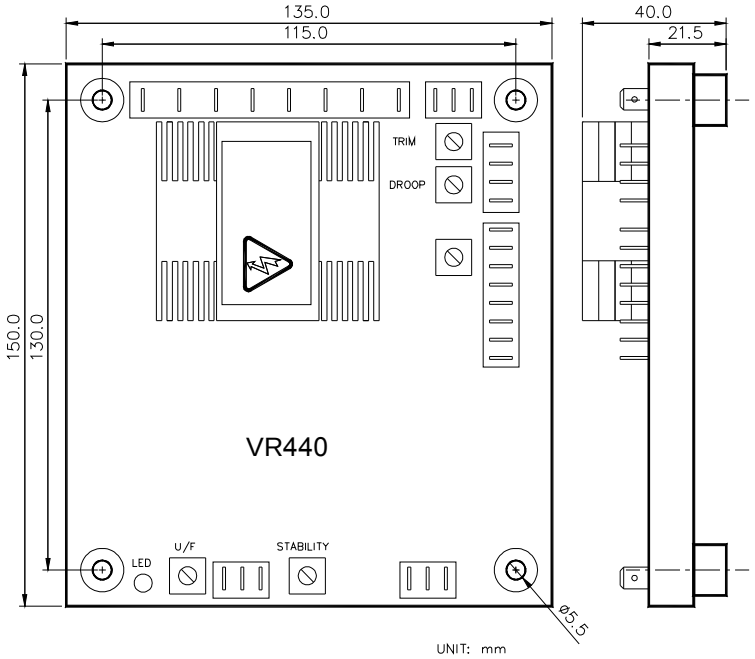
If a replacement AVR has been fitted or re-setting of the stability control is required, turn the stability trimmer slowly clockwise until the output voltage is steady, on or off load.

3.3 Droop adjustment

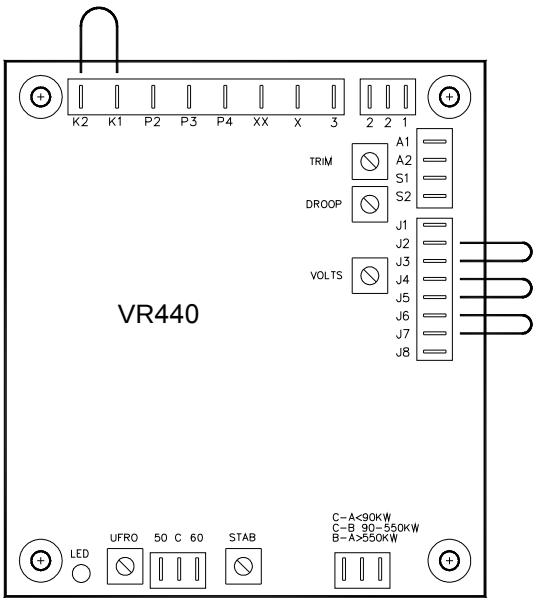
Generators intended for parallel are fitted with a quadrature droop CT with provides a power factor dependent signal for the AVR. The CT is connected to S1,S2 on the AVR. The Droop adjustment is normally present in the works to give 5% voltage droop at full load zero power factor. Clockwise increases the amount of CT signal injected into the AVR and increases the droop with lagging power factor. With the control fully counter clockwise there is no droop.

3.4 Trim adjustment

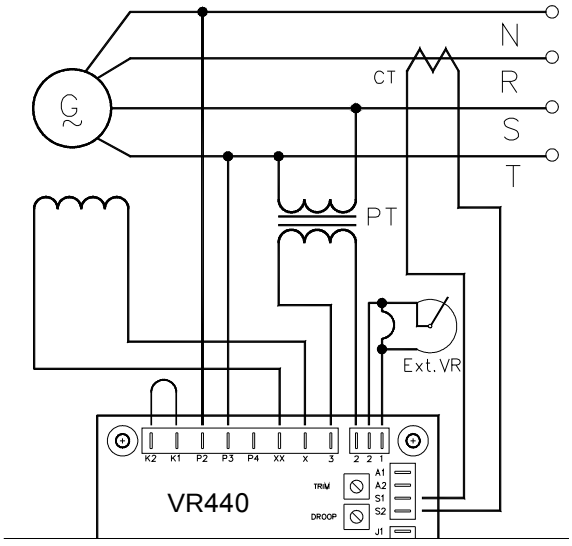
An auxiliary input is provided to connect to A1, A2. It is designed to accept DC ± 5V. Turning the TRIM fully counter clockwise has no effect, Clockwise adjustment has maximum effect.



Outline Drawing
Figure 1



Bypass Drawing
Figure 2



Wiring Drawing
Figure 3

4. TROUBLE SHOOTING

SYMPTOM	CAUSE	CORRECTION
Voltage does not build up	Engine speed is too low	Please refer to the Generator Manual
	Incorrect wiring	Please refer to Figure 2
	Defective Generator	Please refer to the Generator Manual
Out voltage low	External VR POT defective	Check wiring and test remote POT
	Terminal 1&2 not linked	Please link terminal 1&2
	Terminal 2 & 3 no sensing input	Please refer to Figure 2
	Under frequency	Please refer to the Generator Manual
	Defective Generator	Please refer to the Generator Manual
Output voltage high	AVR adjusted improperly	Please refer to voltage adjustment page
	Defective Generator	Please refer to the Generator Manual

P.S. Please use the original fuse or breaker if supplied.