



## CLASS 300 EQUIPMENT VR63-4C/UL VOLTAGE REGULATOR

Using enhanced technology, the VR63-4C/UL full wave voltage regulator is designed for use on 50/60 Hz brushless generators. This potted regulator is small in size, ruggedly constructed, and incorporates solid state technology with frequency compensation, automatic voltage build-up, and overexcitation shutdown as standard.

### FEATURES:

- Integrated circuitry for compact size, simplicity, high reliability.
- Extremely rugged.
- Exciter field current 4A continuous, 7A forcing.
- Regulation accuracy better than  $\pm 1.0\%$  no load to full load.
- Fast response.
- Frequency compensation.
- Overexcitation shutdown.
- EMI suppression.
- Available from stock.
- CSA certified/UL recognized.

### ADDITIONAL INFORMATION

#### INSTRUCTION MANUAL

Request Publication 9253700990

#### FEATURES and APPLICATIONS

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#### DESCRIPTION and SPECIFICATIONS

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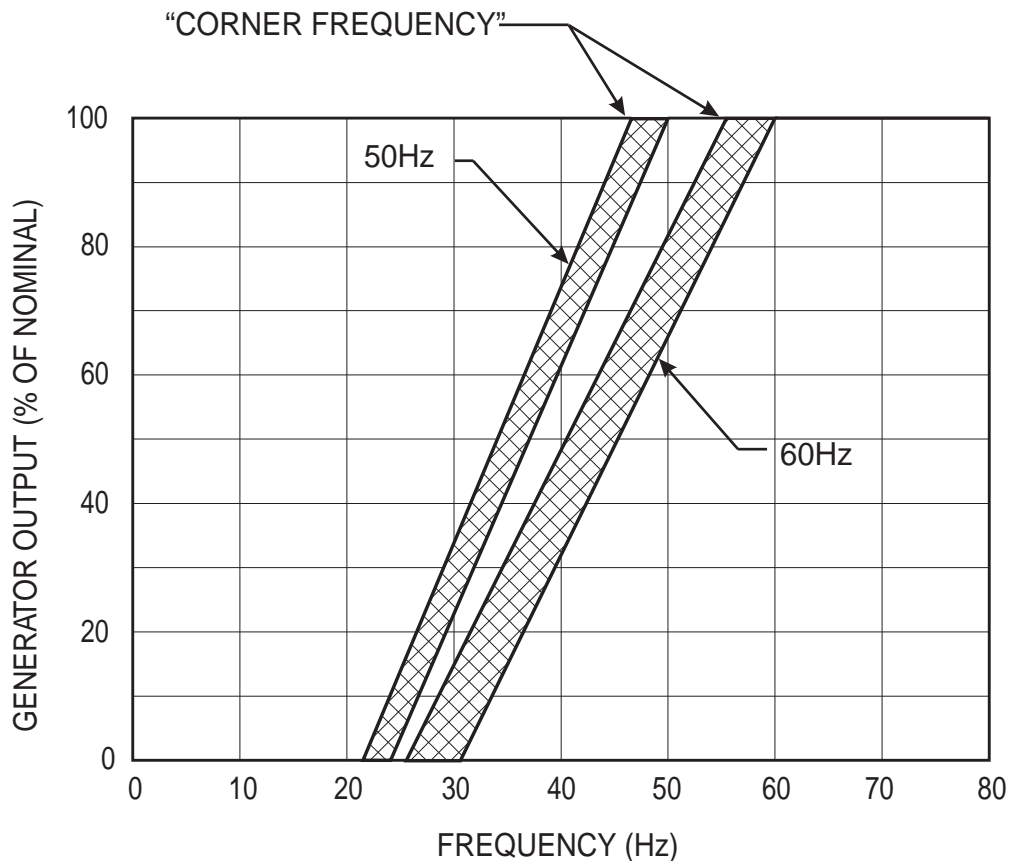


## DESCRIPTION:

The VR63-4C/UL model of voltage regulator maintains generator line voltage on brushless generators from 5 kW to greater than 100 kW in size. The voltage regulator senses generator average voltage to maintain a precise regulation band within  $\pm 1$  percent. This is accomplished by converting a 120 VAC single phase power input to a controlled fullwave DC signal to the generator's exciter field. The solid-state voltage build-up circuit will enable automatic generator line voltage build-up with a voltage input to the regulator of at least 6 VAC. Customer accessible stability and range adjusts enable fine tuning of the voltage regulator to the generator in use.

The overexcitation feature assists in protecting the voltage regulator during an over-excitation fault condition. During this mode, a shutdown signal is sent to the power stage, turning the regulator off. This feature will reset when the voltage input is removed (less than 6 VAC for a minimum of 2 seconds) to the regulator.

Figure 1 demonstrates the underfrequency characteristics of the voltage regulator during prime mover low speed conditions. Customer curve selection matches the voltage regulator to 50 or 60 Hz systems.



**FIGURE 1 - FREQUENCY COMPENSATION CHARACTERISTIC**

## SPECIFICATIONS

DC OUTPUT				EXCITER FIELD RESISTANCE		POWER INPUT		SENSING INPUT
MAX. CONT.		MAX FORCING 1 MIN (120 Vac INPUT)		MIN. OHMS @ 25°C	MAX. OHMS	SINGLE PHASE VOLTAGE RANGE	BURDEN	VOLTAGE ADJUST RANGE
AMP	VOL	AMP	VOLT					
4	63	7	100	15	100	85-139 VAC	450VA	85-139 VAC

Sensing and power for the voltage regulator is derived from the same lead input.

**DC OUTPUT POWER:** 4 Adc at 63 Vdc maximum continuous, 7 Adc at 100 Vdc one minute forcing. (Forcing with 120 Vac nominal input).

**EXCITER FIELD DC RESISTANCE:** 15 ohms minimum; 100 ohms maximum.

**AC POWER INPUT:** Operating range: 85-139 Vac single phase, 50/60 Hz  $\pm 5\%$ . Burden 450VA.

**SENSING INPUT:** 85-139 Vac single phase, 50/60 Hz  $\pm 5\%$ . Sensing and power is same input for regulator.

**VOLTAGE ADJUST RANGE:** 85-139 Vac.

**REGULATION ACCURACY:** Better than  $\pm 1.0\%$  no load to full load.

**RESPONSE TIME:** Less than 1.5 cycles for  $\pm 5\%$  change in sensing voltage.

**EMI SUPPRESSION:** Internal electromagnetic interference filtering.

**OVEREXCITATION SHUTDOWN:** Field voltage shuts down after time delay if exciter field voltage exceeds

95 Vdc,  $\pm 5\%$ . The time delay is inversely proportional to the magnitude of the detected overvoltage condition up to the 140 Vdc point, thus allowing nominal forcing for approximately 1 minute. Beyond 140 Vdc, the field voltage is removed within 2.0 seconds.

**VOLTAGE BUILDUP:** Internal provisions for automatic voltage buildup from generator residual voltages as low as 6 Vac.

**POWER DISSIPATION:** 12 Watts maximum.

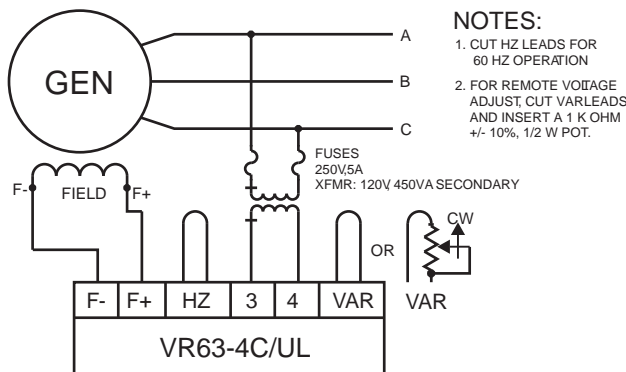
**OPERATING TEMPERATURE:**  $-25^{\circ}\text{C}$  ( $-13^{\circ}\text{F}$ ) to  $+60^{\circ}\text{C}$  ( $+140^{\circ}\text{F}$ ).

**STORAGE TEMPERATURE:**  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) to  $+85^{\circ}\text{C}$  ( $+185^{\circ}\text{F}$ ).

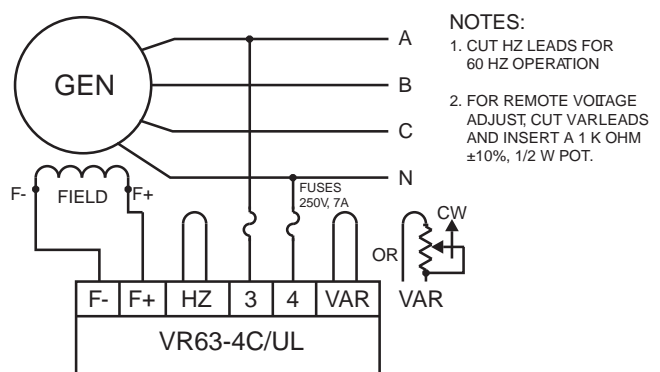
**VIBRATION:** Withstands 1.2Gs at 5 to 26 Hz; 0.036" double amplitude at 27 to 52 Hz; and 5 Gs at 53 to 1000 Hz.

**SHOCK:** Withstands up to 20 Gs in each of three mutually perpendicular axes.

**WEIGHT:** 10 oz. (0.28 kg) Net.

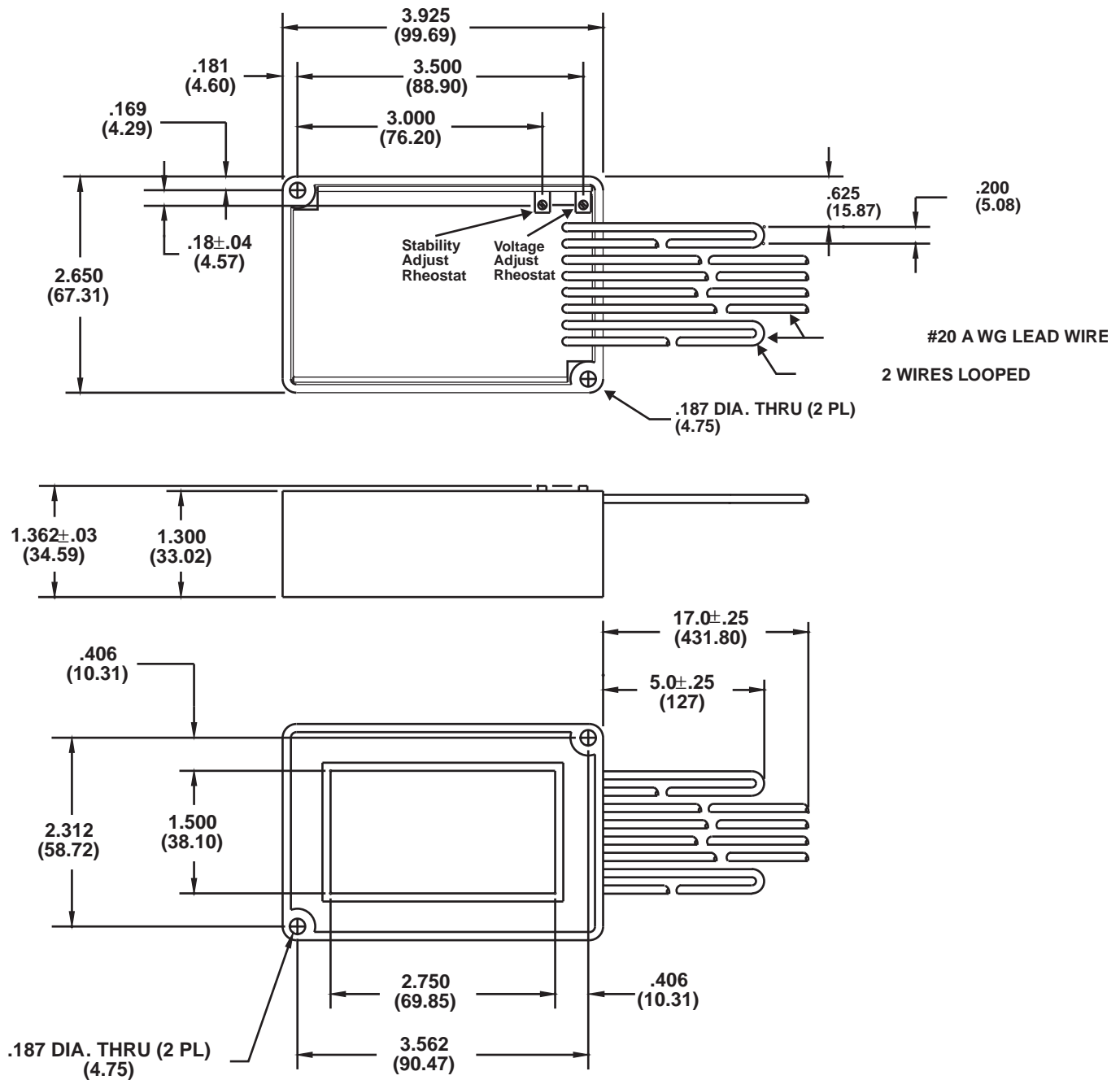


Interconnection Diagram for 240V, 3 phase system. Transformer output of 120V.



Interconnection Diagram for 208V L-L/120V L-N 3 phase, 4 wire system.

**FIGURE 2 - Typical Interconnection Diagram**



**FIGURE 3 - Outline Drawing**

- NOTES: 1. Dimensions in parentheses are in millimeters.  
 2. All drawings and data subject to change without notice.



PA.E. Les Pins, 67319 Wasselonne Cedex FRANCE  
 Tel +33 3.88.87.1010 Fax +33 3.88.87.0808  
 e-mail: beifrance@basler.com

Route 143, Box 269, Highland, Illinois U.S.A. 62249  
 Tel +1 618.654.2341 Fax +1 618.654.2351  
 e-mail: info@basler.com

1300 North Zhongshan Road, Wujiang Economic Development Zone  
 Suzhou, Jiangsu Province, P.R. China 215200  
 Tel +86(0)512 6346 1730 Fax +86(0)512 6346 1760  
 e-mail: beichina@basler.com

[www.basler.com](http://www.basler.com)