

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:

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 ± 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.

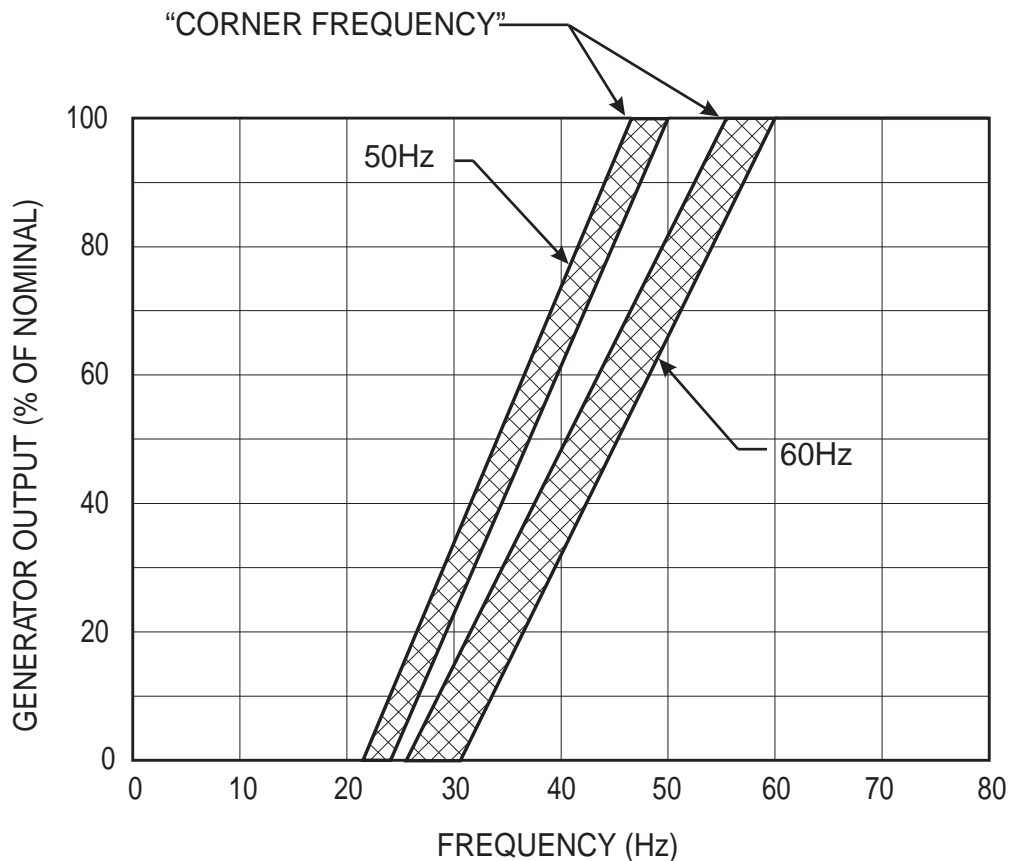


FIGURE 1 - FREQUENCY COMPENSATION CHARACTERISTIC

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.

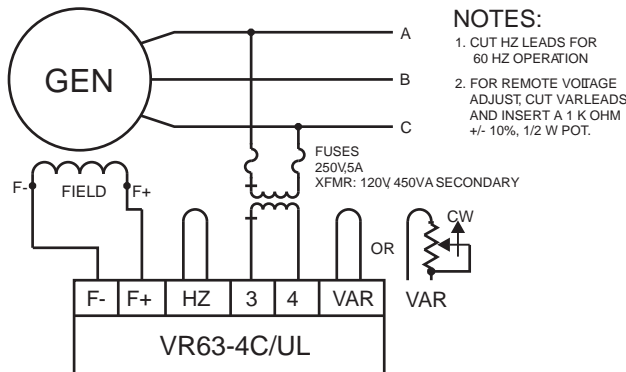
OPERATING TEMPERATURE: -25°C (-13°F) to $+60^{\circ}\text{C}$ ($+140^{\circ}\text{F}$).

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

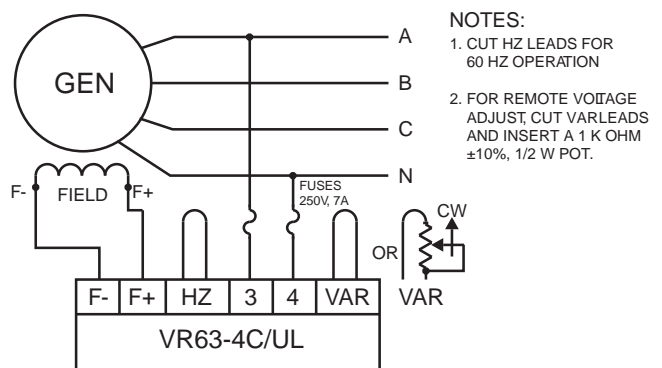
VIBRATION: Withstands 1.2Gs at 5 to 26 Hz; 0.036" double amplitude at 27 to 52 Hz; and 5 Gs at 53 to 1000 Hz.

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

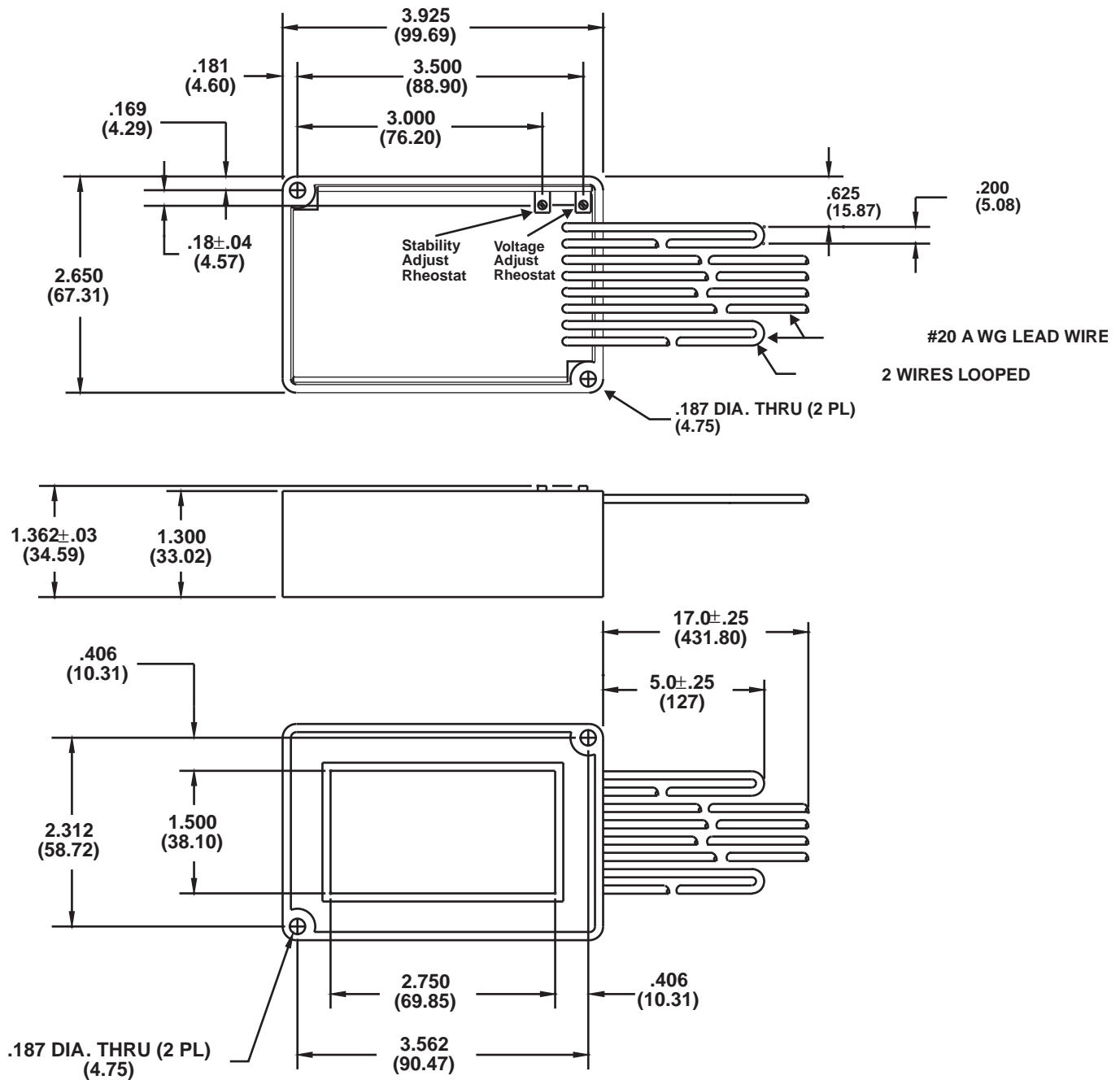


FIGURE 3 - Outline Drawing

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



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