



# BE350 Automatic Voltage Regulator

Using enhanced technology, the BE350 voltage regulator is designed for use on 50/60Hz brushless generators. This potted regulator is economical, small in size, ruggedly constructed, and incorporates solid state technology with frequency compensation, automatic voltage build-up and EMI filtering as standard.

## FEATURES:

- Integrated circuitry for compact size, simplicity, high reliability.
- Extremely rugged.
- Exciter field current 3.5 A continuous, 5A forcing.
- Regulation accuracy better than  $\pm 1.0\%$  no load to full load.
- Fast response.
- Frequency compensation.
- Internal fuse protection.
- EMI suppression.
- CSA certified.
- UL recognized.

## ADDITIONAL INFORMATION

### INSTRUCTION MANUAL

Request Publication 9166800893

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## DESCRIPTION:

The BE350 voltage regulator maintains generator line voltage no load to full load on brushless generators from 5kW to over 100kW in size. This voltage regulator senses generator average voltage to sustain a precise regulation band within  $\pm 1\%$  throughout the operating temperature range. This is accomplished by converting a 240Vac single phase power input to a controlled DC output signal. The solid-state voltage build-up circuit allows automatic generator line voltage build-up with as low as 10 Vac residual voltage applied to the regulator's input power circuit.

Customer accessible adjustments for stability, under-frequency and the voltage regulation set point are pro-

vided to allow the controller to be tuned to the desired performance. The BE350 is intended to be mounted inside the generator's terminal box. The BE350 has adjustment potentiometers that are accessible from the bottom side (label side) of the controller. Holes drilled through the terminal box (per Fig. 6) allow the user to adjust the potentiometers as needed.

Figures 1a and 1b demonstrate 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.

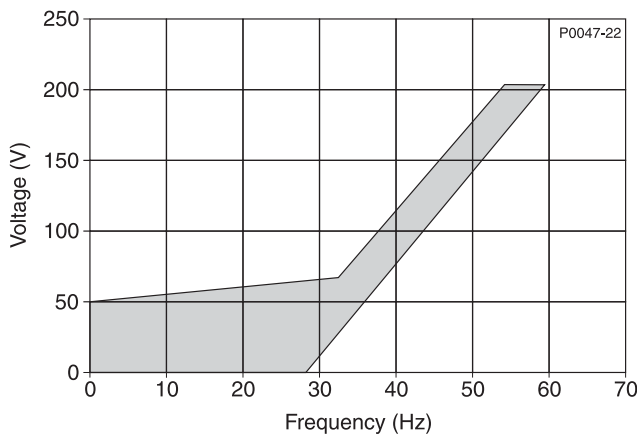


Figure 1a - Frequency Compensation Characteristic, 60Hz

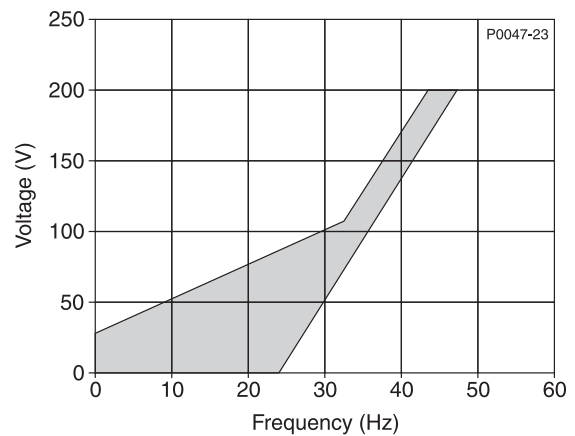


Figure 1b - Frequency Compensation Characteristic, 50Hz

## SPECIFICATIONS:

DC OUTPUT				EXCITER FIELD RESISTANCE		SENSING/POWER INPUT	
MAX. CONT.		MAX. FORCING 1 MIN (240 Vac INPUT)		MIN. OHMS @ 25°C	MAX. OHMS	SINGLE PHASE VOLTAGE RANGE	BURDEN
AMP	VOLT	AMP	VOLT				
3.5	73	5	105	21	100	171-264Vac	500VA

## SPECIFICATIONS (continued):

**DC OUTPUT POWER:** 3.5 Adc at 73 Vdc maximum continuous, 5 Adc at 105 Vdc one minute forcing. (Forcing with 240 Vac nominal input).

**EXCITER FIELD DC RESISTANCE:** 21 ohms minimum; 100 ohms maximum.

**AC SENSING/POWER INPUT:** Operating range: 190-240 Vac single phase  $\pm 10\%$ , 50/60 Hz  $\pm 10\%$ . Burden 500VA.

**VOLTAGE ADJUST RANGE:** 171-264 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 EMI filtering.

**VOLTAGE BUILDUP:** Internal provisions for automatic voltage buildup from generator residual voltages as low as 10 Vac.

**TERMINATIONS:** 1/4" "Fast-On" Terminals.

**POWER DISSIPATION:** 8 Watts maximum.

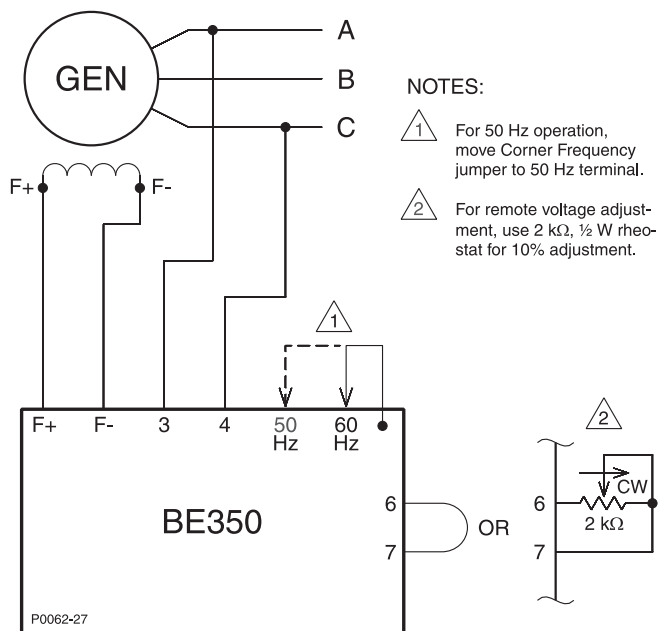
**OPERATING TEMPERATURE:**  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) to  $60^{\circ}\text{C}$  ( $140^{\circ}\text{F}$ ).

**STORAGE TEMPERATURE:**  $-65^{\circ}\text{C}$  ( $-85^{\circ}\text{F}$ ) to  $85^{\circ}\text{C}$  ( $185^{\circ}\text{F}$ ).

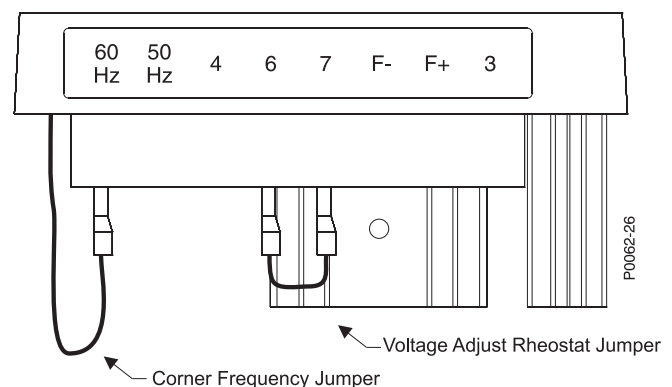
**VIBRATION:** Withstands 1.3 Gs at 2 to 27 Hz; 0.914" double amplitude at 27 to 52 Hz; and 5 Gs at 52 to 1000 Hz.

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

**WEIGHT:** 6.5 oz. (184 g) Net.



**Figure 2 - Typical Interconnection Diagram, 208/240Vac Nominal**



**Figure 3 - Jumper Locations**

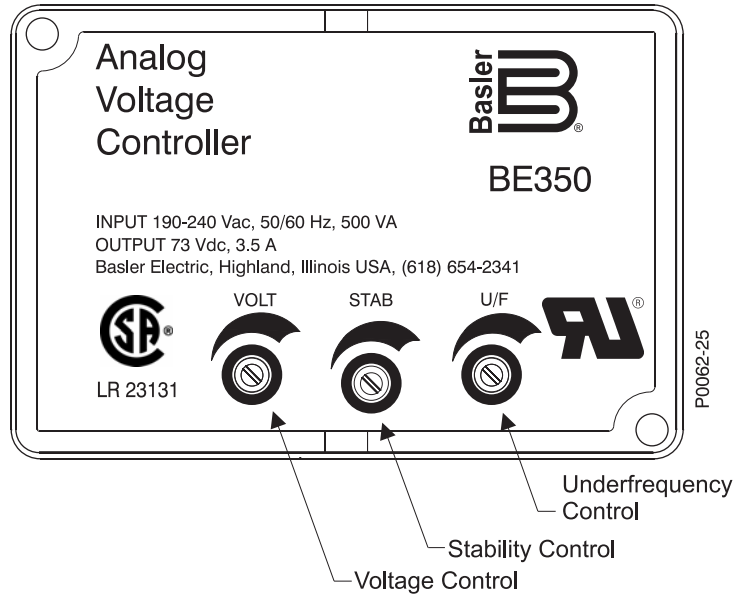


Figure 4 - BE350 Potentiometer Control Locations

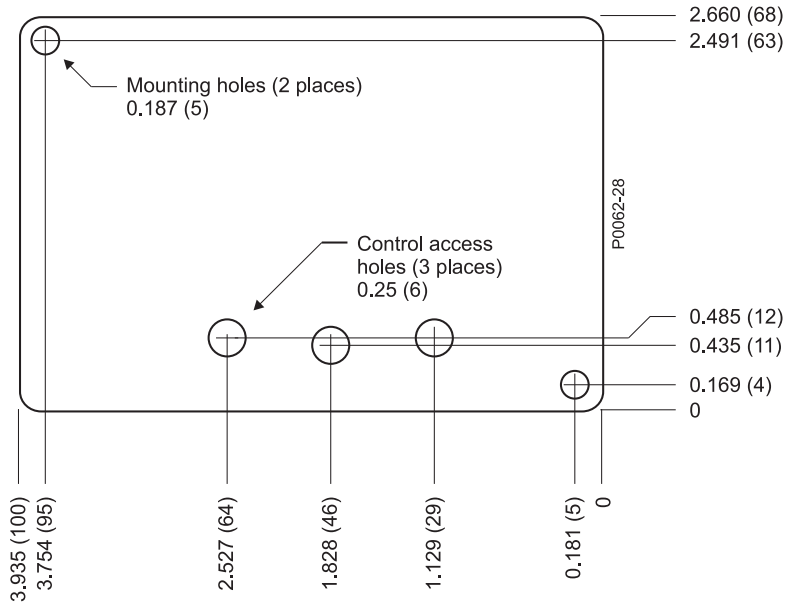


Figure 5 - Outline and Drilling Drawing