

Class 200 Equipment SCP250 VAR/Power Factor Controller

The SCP 250 senses generator output voltage and current, provides an output signal that is electronically injected into the voltage regulator. When VARs are controlled, the voltage regulator (or static exciter) changes its output until the programmed reactive load current is attained. When power factor is controlled, the regulator changes the excitation until the selected power factor is obtained. The unit is designed so that the voltage regulator is in total control of generator excitation until the generator breaker is closed. At breaker closure the SCP 250 assumes excitation control.

The SCP 250 also contains a voltage limiting feature so that in the event utility power is lost and the peaking generator main breaker remains closed, the voltage regulator will not go to full or no excitation. Voltage limiting is adjustable between $\pm 10\%$ and $\pm 30\%$. Because the unit is designed for behind-the-panel mounting, provisions are included for remotely locating the VAR/PF switch and VAR/PF adjust potentiometer.

FEATURES

- Specifically designed to operate with the standard Basler SR, KR, selected AVCs, and SSR regulator series and with Basler SSE static exciter-regulators.
- Front Panel Selection of either VAR or power factor control.
- With P.F. control, reactive load changes automatically when KW load is changed.
- Models suitable for use in generator or synchronous motor applications.
- Solid-state design.
- Does not require use of motor operated control.
- Responds rapidly to system changes.
- Provides system control over wide range of loading conditions.
- Easily calibrated on-site
- Accommodates standard voltage sensing inputs.
- Provisions for remote operation.
- Mechanically rugged and compact.
- UL recognized and CSA certified.

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ADDITIONAL INFORMATION

INSTRUCTION MANUAL

Request publication 911000099Y

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APPLICATION

GENERATOR PEAKING

On peaking generator applications, the paralleling circuit of a voltage regulator presents large changes in reactive current when the bus voltage changes by a relatively small amount. However, the regulator's ability to compensate for large changes in bus voltage can be exceeded. Two examples serve to illustrate typical problem areas:

- (1) A generator equipped with a voltage regulator adjusted for 4% droop can have a variation in VAR (volt amperes reactive) load from 0 to 100% with a 4% decrease in bus voltage. Further decreases in bus voltage would overload the generator.
- (2) An increase in bus voltage can cause leading power factor conditions with the associated danger of the machine pulling out of synchronization.

To minimize the possibility of either (1) or (2) above occurring, the voltage regulator is often adjusted for operation in a "safe" region rather than a region that utilizes the full KVA capability of the generator.

The SCP 250 VAR/Power Factor Controller regulates VAR flow or power factor when operating in parallel with another power system. The excitation is adjusted automatically to compensate for bus voltage changes. A typical peaking application is illustrated in Figure 1.

The SCP 250 is not for use on single or multiple paralleled generators except when paralleled to an infinite grid source. When not paralleled to a utility bus, use Basler regulators with reactive compensation provisions for droop and cross current.

SYNCHRONOUS MOTORS

On synchronous motor applications the SCP 250 can be programmed to the desired power factor so that the motor power factor is maintained during normal loading conditions. Also, during transient loading conditions, the power factor controller makes corrective motor field excitation adjustments and thereby minimizes the possibility of pole slip. A typical motor application is shown in Figure 2.

HOW TO ORDER:

Refer to the following chart to determine your requirements.

When the SCP 250 is to be used in	in a 60 Hertz power system, order	in a 50 Hertz power system, order
A generator application	SCP250 G-60	SCP250 G-50
A motor application	SCP250 M-60	SCP250 M-50

SPECIFICATIONS

- **INPUT POWER:**
Voltage Sensing and Power
Voltage:
120-139,208-240,416-480, 520-600 VAC, $\pm 10\%$, 60Hz
100-120, 190-208,380-415,440-500 VAC, 10%, 50Hz
Phase : Single
Burden: 25 VA
Current Sensing
Current:
3-5 Amperes, withstands up to 30 amps for 15 sec. without failure.
Phase : Single
Burden: 3VA
- **OUTPUT:** Normal $\pm 1\text{VDC}$ to $\pm 3\text{VDC}$
High $\pm 1\text{VDC}$ to $\pm 9\text{VDC}$
- **OUTPUT VOLTAGE LIMITING:** Adjusts range of output voltage over range shown above.
- **ACCURACY OF CONTROL:**
Power Factor: Reactive component of current is proportional to real component within $\pm 5\%$ of maximum rated current.
VAR: Reactive component of current maintained at programmed level within 25% of maximum rated current.
- **TEMPERATURE:** Operates within temperature range of -40°C (-40°F) to $+70^{\circ}\text{C}$ ($+158^{\circ}\text{F}$).
- **VIBRATION:** Withstands 1.3 Gs from 5 to 26Hz, .036 D.A. from 26 to 51Hz, and 5 Gs from 52 to 260Hz without damage or degradation of performance.
- **SHOCK:** Withstands 15 Gs in each of three mutually perpendicular axes.
- **MOUNTING:** Behind-the-panel.
- **FINISH:** Dark brown, lusterless, textured, baked enamel.
- **WEIGHT:** 5.75 pounds net, 8 pounds shipping.
- **APPLICABLE TO:**
AVC63-12, AVC125-10
SRA, SSR, SR-F, SR-H, and SR-E.
KR, -FF, and -FFM.
SSE.

Refer to the SCP 250 Instruction Manual 911000099Y for specific interconnection data.

SAMPLE SPECIFICATION:

The VAR/Power Factor controller shall be a static device. It shall provide a choice of VAR or Power Factor control. It shall control VAR or Power Factor within $\pm 5\%$ of maximum rated current. Provisions shall be available for field connection at the basic sensing voltages: 120-139,208-240,416-480, 520-600 VAC $+5\%$, -10% . It shall operate over a temperature range of -40°C to $+70^{\circ}\text{C}$. It shall contain a voltage limiting feature adjustable between $\pm 10\%$ and $\pm 30\%$ of rated voltage. The VAR/P.F. controller shall be a Basler Model SCP 250.

OUTLINE DRAWING

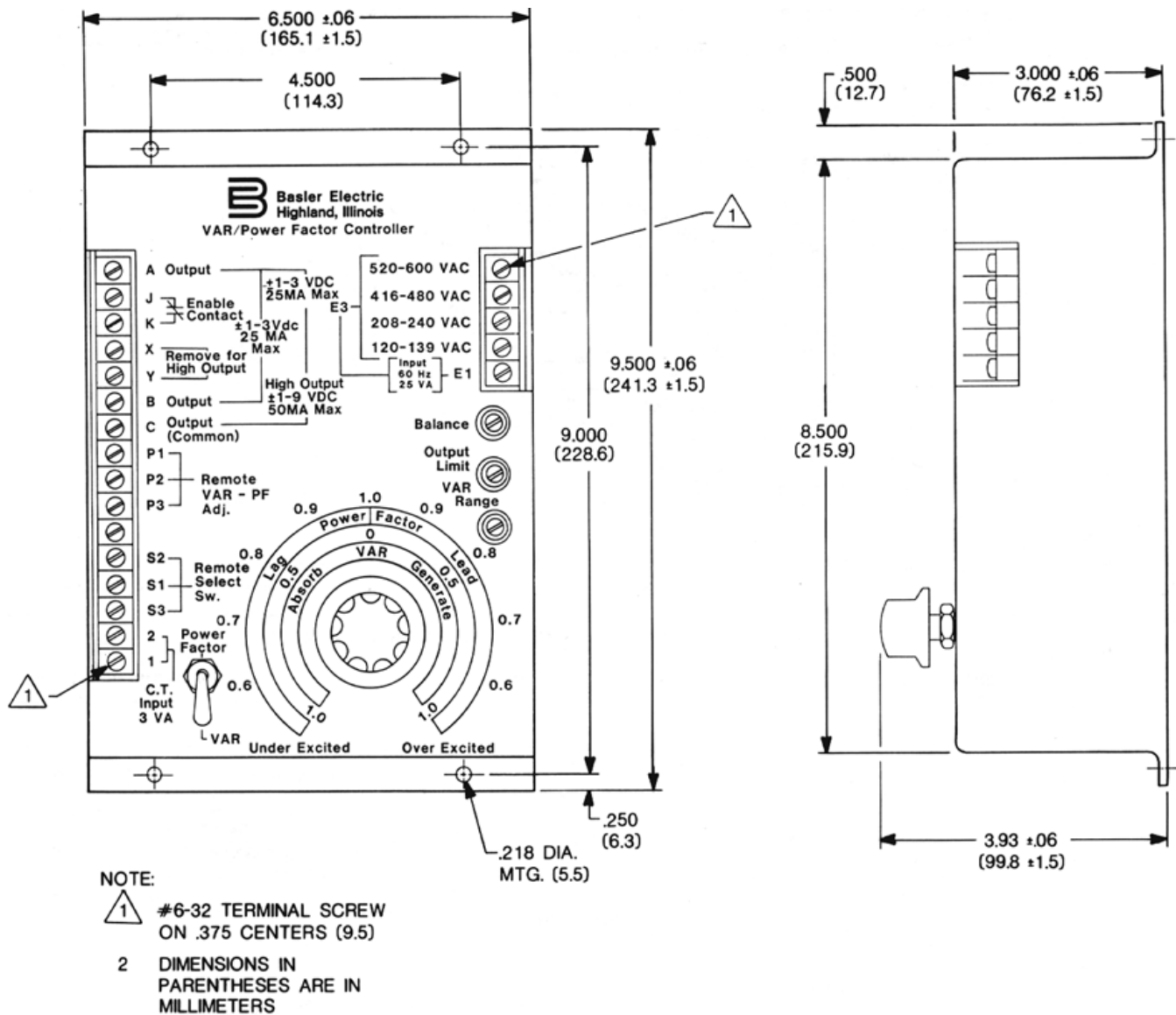


Figure 3- Outline Drawing

Note: These drawings are NOT intended for installation purposes.
 Refer to Instruction Manual received with equipment for proper installation drawings.
 All drawings and data subject to change without notice.
 All dimensions in inches (millimeters)



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