

## Class 200 Equipment SSR SERIES VOLTAGE REGULATORS

### APPLICATION:

The SSR Series Voltage Regulators provide reliable, high performance voltage regulation for 50/60 and 400 Hz brushless generators requiring 12A of excitation at either 32, 63 or 125 Vdc. The SSR Voltage Regulator receives its power for precise voltage regulation from a PMG (Permanent Magnet Generator), self excitation from the generator line, or other AC sources. Supplied with each regulator is a spike suppression chassis for PMG and power isolation transformer applications.

### FEATURES:

- Regulation accuracy better than  $\pm 0.25\%$
- Adjustable frequency compensation
- Selectable single or three-phase sensing
- Built-in parallel droop or cross current compensation
- Overexcitation shutdown
- Solid state voltage buildup
- EMI suppression built-in
- Modular replaceable parts for ease of service
- Applicable for 50, 60 or 400 Hz systems
- Compatible with single phase PMG generator (50 to 240 Hz power input range)
- Spike suppression chassis
- Compatible with a wide range of accessory control and protective devices
- CSA approved – CSA File Number LR 23131

### ADDITIONAL INFORMATION

### INSTRUCTION MANUAL

Request Publication 9185900990

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DESCRIPTION

The SSR Voltage regulator is completely solid state and uses state-of-the-art circuitry to provide high performance with a wide range of standard features. Voltage is internally or remotely adjustable, with single-phase or three-phase customer selectable sensing over a wide range. The SSR has a variable frequency compensated operating characteristic (See Figures 1 and 2).

During start-up, the solid state voltage build-up circuit operates from generator output residual voltages as low as 5% of nominal. The built-in over-excitation limiting removes the output power if the exciter field voltage exceeds a predetermined level. After removing field power, the regulator maintains its shutdown state until the

generator has decreased below 5% of nominal.

The SSR may also be used with generator equipped with single-phase permanent magnet generators (PMG) for excitation power. With this application or applications where a power isolation transformer is incorporated, use suppression chassis P/N 9261500100 or P/N 9261500101, supplied with each regulator.

Maintenance of the SSR voltage regulator is simplified by the use of replaceable modules. Sensitive electronic equipment is protected from the effects of moisture, contaminants, vibration, and shock, by encapsulation.

SPECIFICATIONS

OUTPUT POWER:

| SSR Model  | Continuous Voltage* | Forcing Voltage* | Continuous Current | Forcing Current |
|------------|---------------------|------------------|--------------------|-----------------|
| SSR 32-12  | 32 Vdc              | 50Vdc            | 12Adc              | 20Adc           |
| SSR 63-12  | 63Vdc               | 100Vdc           | 12Adc              | 20Adc           |
| SSR 125-12 | 125Vdc              | 200Vdc           | 12Adc              | 20Adc           |

\*At 115V input on SSR 32-12 and SSR 63-12 and at 230V input on SSR125-12.

EXCITER MINIMUM FIELD DC RESISTANCE:

| SSR Model  | Field Resistance (Minimum) |
|------------|----------------------------|
| SSR 32-12  | 2.5 ohms                   |
| SSR 63-12  | 5.0 ohm                    |
| SSR 125-12 | 10.0 ohms                  |

POWER DISSIPATED: Less than 30 Watts

AC INPUT POWER: Designed for 50/60 Hz, self-excited, or 50-240 Hz separately-excited (PMG) applications.

| SSR Model  | Rated Voltage                              | Burden  |
|------------|--|---------|
| SSR 32-12  | 90 to 153 Vac, single phase, 50 to 240 Hz  | 700 VA  |
| SSR 63-12  | 90 to 153 Vac, single phase, 50 to 240 Hz  | 1200 VA |
| SSR 125-12 | 170 to 305 Vac, single phase, 50 to 240 Hz | 2400 VA |

AC INPUT SENSING: Designed to regulate generator voltage at any frequency from 50 to 400 Hz

| 50 Hz Voltage | 60/400 Hz Voltage |
|---------------|-------------------|
| 90-110 Vac    | 90-132 Vac        |
| 170-242 Vac   | 187-264 Vac       |
| 340-457 Vac   | 374-528 Vac       |
|               | 540-660 Vac       |

2 INPUT SENSING BURDEN: 3.5 VA per phase nominal.

PARALLELING COMPENSATION INPUT: 5A from Current Transformer with 10 VA maximum burden at 0.8 pf

REGULATION ACCURACY: ±0.25% from no-load to rated

THERMAL STABILITY: ±0.5% voltage variation for any 50°C (90°F) temperature change within operating temperature range.

FREQUENCY COMPENSATION: Refer to Figures 2 and 3. Select from 50 or 60 Hz and a V/Hz or 2V/Hz curve in the field.

VOLTAGE BUILD-UP: From 5% of nominal.

TRANSIENT RESPONSE TIME: 1.5 cycles @ 60 Hz.

VOLTAGE ADJUST RANGE: External adjustment — ±10% of nominal. Internal adjustment minimum — see below:

| Tap | Minimum Adjustment Range |
|-----|--------------------------|
| 120 | 90-132 Vac               |
| 240 | 170-264 Vac              |
| 480 | 340-528 Vac              |
| 600 | 540-660 Vac              |

STORAGE TEMPERATURE RANGE: - 40°C (- 40°F) to +85°C (+185°F).

OPERATING TEMPERATURE RANGE: - 40°C (- 40°F) to +70°C (+158°F).

SHOCK: Withstands 15 Gs in each of three mutually perpendicular planes.

VIBRATION: Withstands the following:

| Frequency  | Force                       |
|------------|-----------------------------|
| 5- 26 Hz   | 1.2 G                       |
| 27- 52 Hz  | 0.036 inch double amplitude |
| 53-1000 Hz | 5.0 G                       |

WEIGHT: 12 lbs (5.5 kg) net  
15 lbs. (7.0 kg) shipping

# ACCESSORIES

The SSR series voltage regulators are designed to be compatible with any of the following Basler accessories and equipment:

- a. Remote mounted Overexcitation Circuit Breaker. Part Number 9185900014.
- b. VAR/Power Factor Controller (SCP 250).
- c. Current Boost System (CBS 212).
- d. Current Transformers (CT2 through CT50).
- e. Exciter Diode Monitor (EDM 200).
- f. Minimum/Maximum Excitation Limiter (EL 200).
- g. Auto-Synchronizer (BE1-25A).
- h. Auto-Synchronizer (BE3-25A).
- i. Line Drop Compensator (LDC 300).
- j. Manual Voltage Control (Consult Factory).
- k. Suppression Chassis P/N 9261500100 for SSR32-12 and 63-12 or P/N 9261500101 for SSR 125-12.

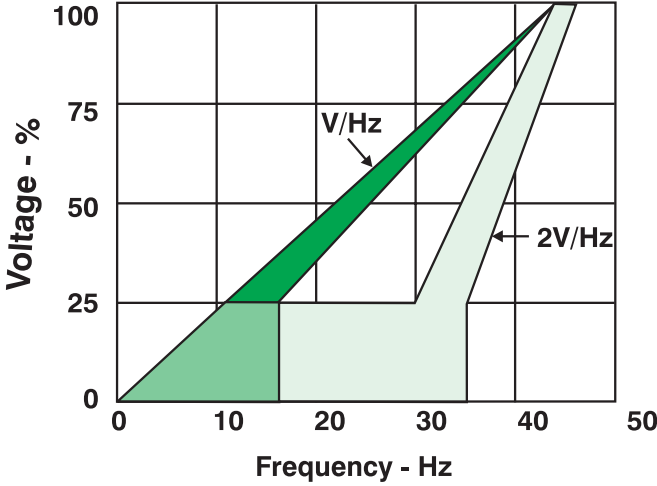


FIGURE 1 - 50 HZ FREQUENCY COMPENSATION

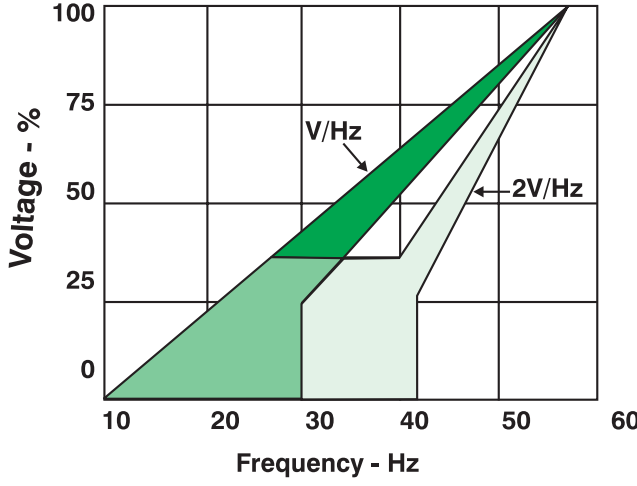


FIGURE 2 - 60 HZ FREQUENCY COMPENSATION

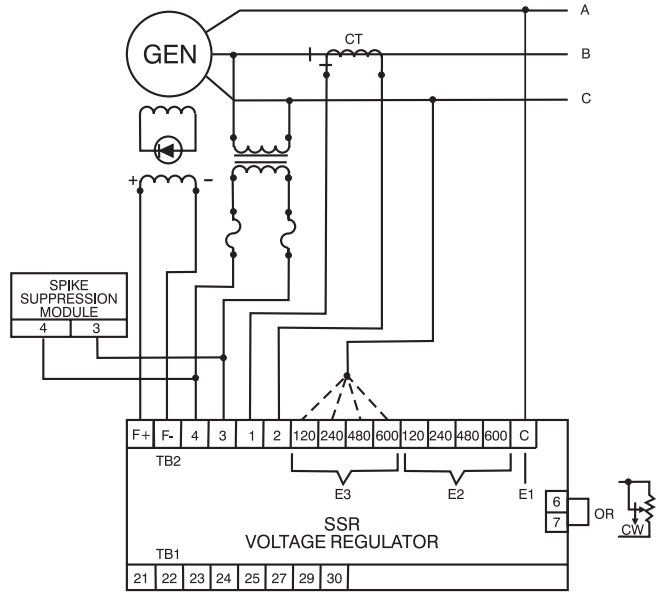


FIGURE 3 - TYPICAL INTERCONNECTION DIAGRAM  
(Consult Instruction Manual for detailed interconnection instructions.)

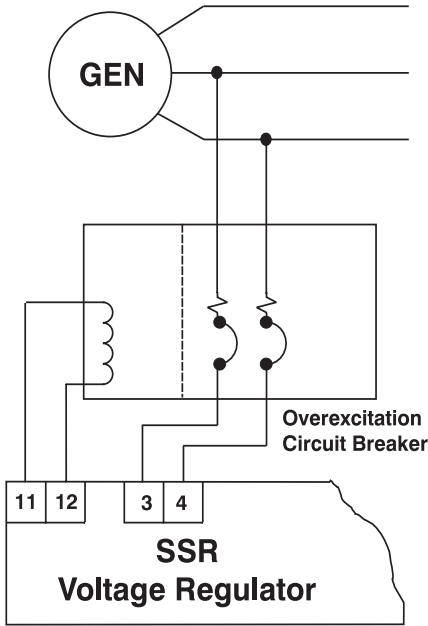


FIGURE 4 - TYPICAL OVEREXCITATION CIRCUIT  
BREAKER INTERCONNECTION

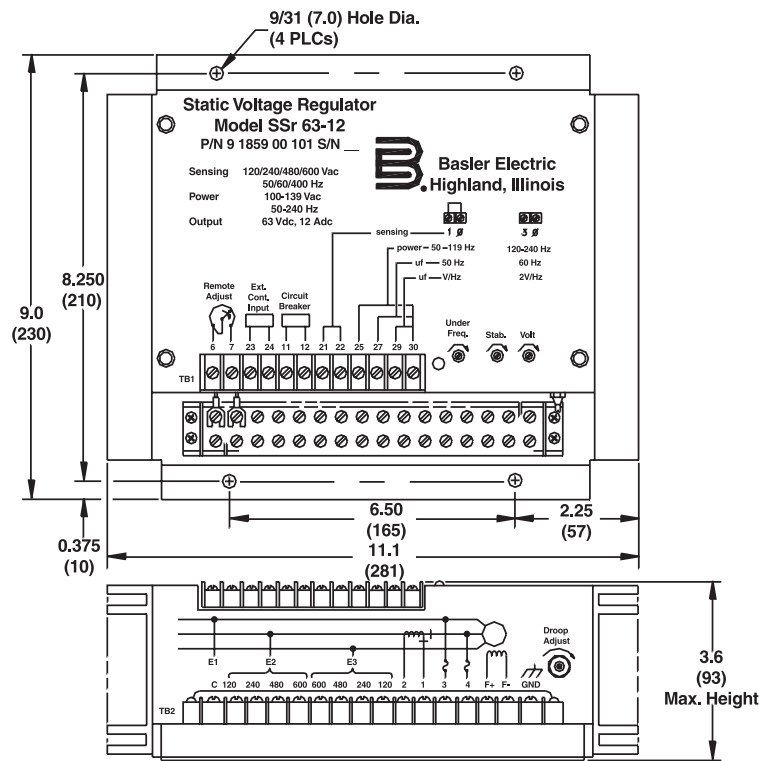


FIGURE 5 - TYPICAL OUTLINE DRAWING, SSR

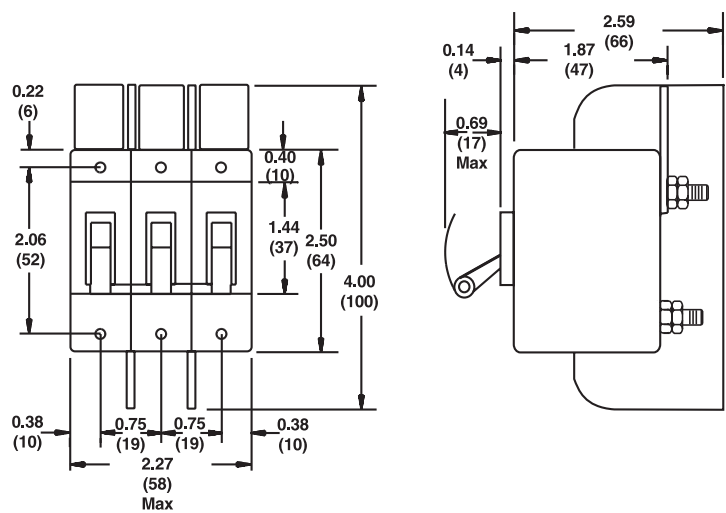


FIGURE 6 - OPTIONAL CIRCUIT BREAKER OUTLINE DRAWING

Note: All dimensions are in inches (millimeters)  
All drawings and data subject to change without notice.

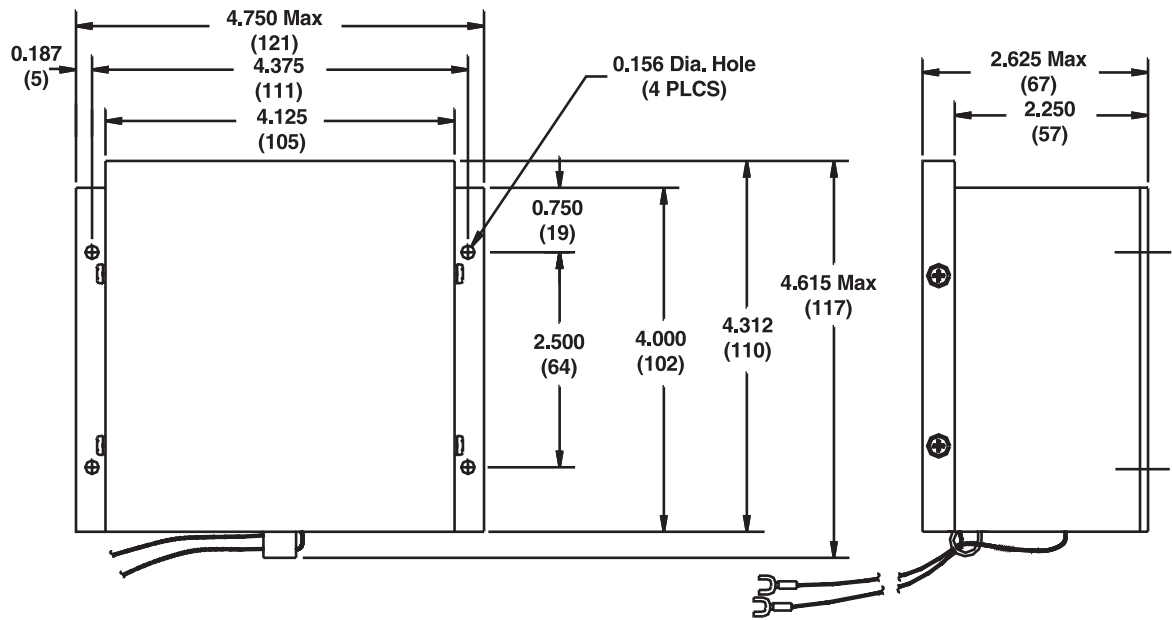


FIGURE 7 - DIMENSION DRAWING, Suppression Chassis 9261500100/101

