

INTRODUCTION

BE3-25 sync-check relays are used to ensure that two ac circuits are synchronized. In order to be synchronized, the frequency, phase angle, and voltage of the two circuits must be within preset limits. When this occurs, the BE3-25 output relay energizes. The primary application of the BE3-25 is to enable additional generators to be brought on-line without machine damage or system disturbance. The BE3-25 can also be used to supervise reclosing or in any instance where the danger of paralleling two circuits out of synchronism exists.

SPECIFICATIONS

Inputs

All units are self-powered. Nominal voltage - 120 Vac, 240 Vac, 380 Vac, 480 Vac. For other nominal voltages, contact Basler Electric.

Frequency

50/60 Hz or 400 Hz

Burden

GEN terminals: Less than 4 VA

BUS terminals: Less than 2 VA

Overload

Voltage: 1.25 times nominal continuously.
2 times nominal for 3 seconds.

Setpoint

Range: Adjustable 10 to 30% ($\pm 3\%$) of nominal, of generator voltage (6 to 20 electrical degrees)

Repeatability: Better than 0.5% of full span

Hysteresis: Fixed at 5% of nominal

Operating Time: 500 ms, typical

Outputs

Relay Type: D.P.D.T.

AC Rating: 250 V, 5 A, non-resistive,
1200 VA

DC Rating: 125 V, 1 A, resistive, 120 W

Mechanical Life: 5 million operations

Temperature

Operating Temperature: 0°C (32°F) to 60°C (140°F)

Functional Temperature: -25°C (-13°F) to 70°C (158°F)

Storage Temperature: -40°C (-40°F) to 70°C (158°F)

Temperature Coefficient: 0.03% per °C (300 ppm/°C)

Humidity

Relative Humidity: 95% non-condensing

Physical

Mounting: DIN rail 1.38" by 0.29" (35 mm by 7.5 mm)

Case: Complies with IEC 529, DIN 40050, BS 5490

Case Material: Complies with UL 94V0

Weight: 1.32 lb (0.6 kg)

Size: 3.94" wide (100 mm)

Agency

cULus listed to UL 508 and CSA C22.2 No. 14

CE compliant

GOST-R certified per the relevant standards of Gosstandart of Russia

OPERATION

BE3-25 sync-check relays have one external, user-adjustable control marked SET. This control, adjustable over a range of 10 to 30% ($\pm 3\%$) of nominal, sets the acceptable differential voltage at which synchronization will occur. When the two inputs are within the acceptable range, the output relay energizes and the RELAY LED lights. A POWER LED indicates the condition of the power supply. BE3-25 relays with a style number of 1XXN5 energize for a synchronized condition or a live-generator, dead-bus condition. This feature allows the generator to energize a dead bus.

Setting Example

A BE3-25 relay with a nominal input rating of 120 Vac has a SET control setting of 20%. If the bus voltage is fixed at 120 Vac, the generator voltage must be between 96 Vac and 144 Vac for the relay to energize.

STYLE CHART

Figure 1 shows the BE3-25 style chart.

INSTALLATION

BE3 sync-check relays are designed for mounting on standard DIN rails that comply to DIN-EN 50022. Mounting involves hooking the top edge of the cutout on the base of the case over one edge of the DIN rail. The opposite side of the cutout containing the release clip is then pushed over the opposite side of the DIN rail. To remove or reposition the relay, lever the release clip and move the relay as required. BE3 relays should be installed in a dry, vibration-free location where the ambient temperature does not exceed the operating temperature range. Connections to the relay should be made using wire that meets applicable codes and is properly sized for the application. Figure 2 shows the terminal connections for the BE3-25 relay.

CALIBRATION

The calibration marks on the faceplate have a maximum error of 10% and are provided only as guides. Proper calibration requires using an accurate meter to monitor the voltage. Use the following procedure to calibrate your relay.

1. Adjust the SET control fully counterclockwise. Apply nominal voltage to the BUS terminals.
2. Apply the minimum or maximum desired synchronization voltage to the GEN terminals. This

voltage should be in phase with the BUS voltage and have the same frequency.

- Slowly adjust the SET control clockwise until the relay energizes.

MAINTENANCE

BE3 relays are solid-state devices that require no maintenance. In the event that your relay requires repair, contact Basler Electric, Highland, IL, USA for return authorization.

FIGURES

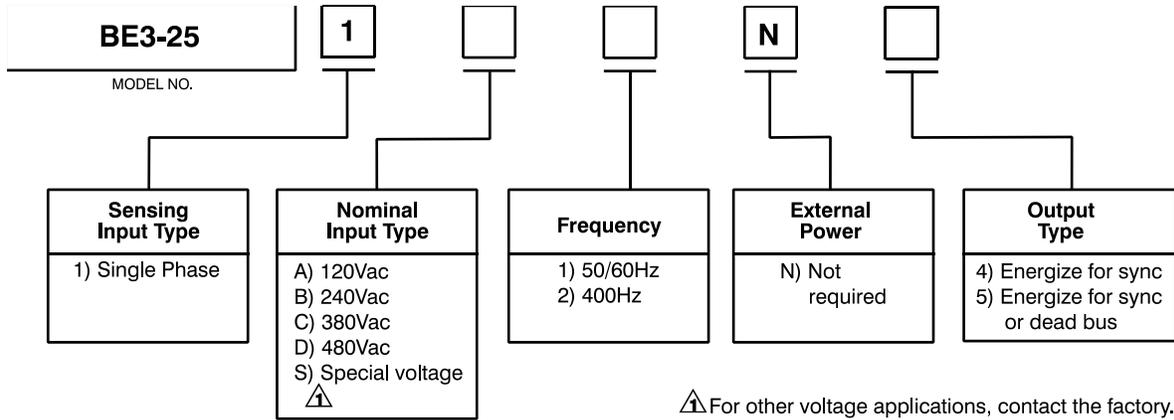


Figure 1. BE3-25 Style Number Identification Chart

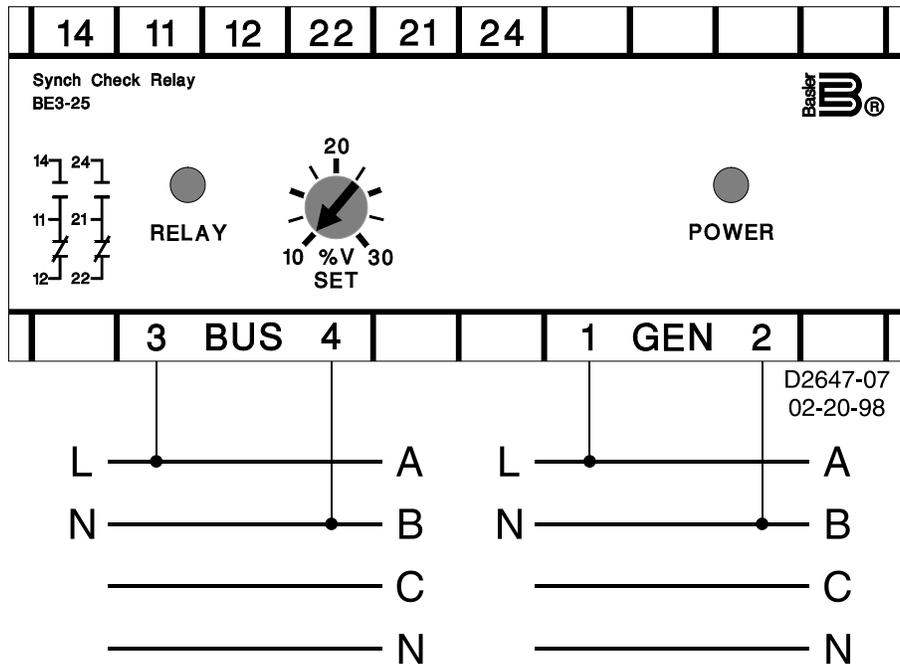


Figure 2. BE3-25 Sync-Check Relay Connections