

INTRODUCTION

Three-input BE3 temperature relays use resistance temperature detectors (RTDs) to monitor remote temperatures. When any of three monitored temperatures exceeds a preset limit, the corresponding relay output operates. A dc metering output indicates the highest temperature of the three RTDs. BE3 temperature relays are available for use with 10 Ω copper or 100 Ω platinum RTDs.

SPECIFICATIONS

Operating Power

All units require external operating power.

Nominal Voltage: 120 Vac, $\pm 25\%$, 45 to 65 Hz, 2 VA
240 Vac, $\pm 25\%$, 45 to 65 Hz, 2 VA
24 Vdc, $\pm 20\%$, galvanically isolated, < 3 W

RTD Inputs

The RTD inputs accommodate two- or three-wire RTDs. Depending on the style number of the relay, the RTD inputs accept either 10 Ω copper or 100 Ω platinum RTDs.

Style 5H5X1: 10 Ω copper RTDs

Style 5I5X1: 100 Ω platinum RTDs

The temperature measurement range of each input is 0 to 200°C.

Metering Output

Range: 0 to 1 mAdc
Burden: 5 k Ω maximum

Setpoints

Range: 50 to 100% ($\pm 3\%$) of input temperature range
Repeatability: Greater than 0.5% of full span
Differential: Fixed at 2%

Outputs

Relay Type: S.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 85°C (185°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 (0.59 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

Three temperatures are monitored through RTDs connected at the nine-position front panel connector. RTD connections are labeled A, B, and C. Three user-adjustable controls are located on the front panel: SET 1, SET 2, and SET 3. Each setpoint is adjustable from 50 to 100% ($\pm 3\%$) of the RTD temperature range. When a setpoint is exceeded, the corresponding TRIP LED lights and the relay output energizes. Each RTD has a corresponding LED to identify which RTD has exceeded the temperature setpoint. For example, if the temperature of RTDs B and C exceeds the trip level, the B and C TRIP LEDs light and the relay output energizes. A green LED labeled AUX indicates the power supply status. Figure 1 illustrates the BE3-49R controls, indicators, and terminals.

INSTALLATION

BE3 temperature relays are designed for mounting on standard DIN rails that comply with 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 illustrates the terminal connections for the BE3-49R temperature relay.

A burden resistor must be installed across all unused RTD inputs that are not connected to an actual RTD. For units with style number 5HXXX, it is suggested that a 10 Ω resistor be connected across any unused RTD inputs. For units with style number 5IXXX, it is suggested that a 100 Ω resistor be connected across any unused RTD inputs. The minimum power rating for the burden resistors is $\frac{1}{4}$ W.

CALIBRATION

Proper calibration requires a precision decade resistance box with 1% accuracy or better. While calibrating the relay, burden resistors must be connected across the remaining, open RTD inputs. A temperature and resistance cross-reference table for your RTDs is also needed. Use the following procedure to calibrate your relay.

1. Adjust the SET control fully counterclockwise.
2. Connect the decade resistance box to RTD input A and connect a 10 Ω (style 5HXXX) or 100 Ω (style 5IXXX) burden resistor across the remaining RTD inputs. The burden resistor power rating should be ¼ W or greater. Apply nominal external operating power to the relay.
3. Set the decade resistance box at the value that corresponds to the desired temperature setpoint.

4. Slowly adjust the SET control clockwise until the A and TRIP LEDs light and the output relay energizes.
5. Repeat Steps 2 through 4 for SET 2 and SET 3.

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.

ORDERING INFORMATION

Figure 3 shows the BE3 temperature relay style chart.

FIGURES

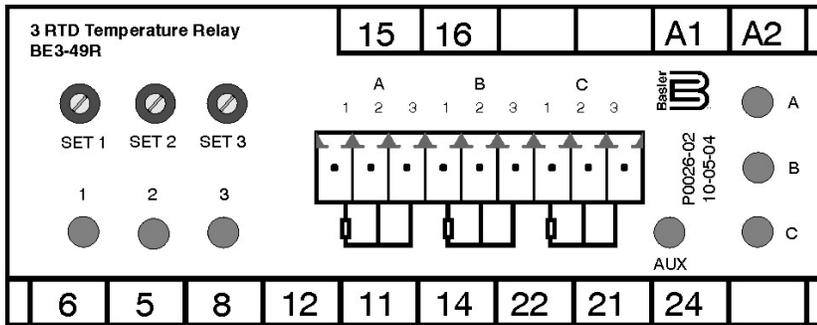


Figure 1. BE3-49R Controls, Indicators, and Terminals

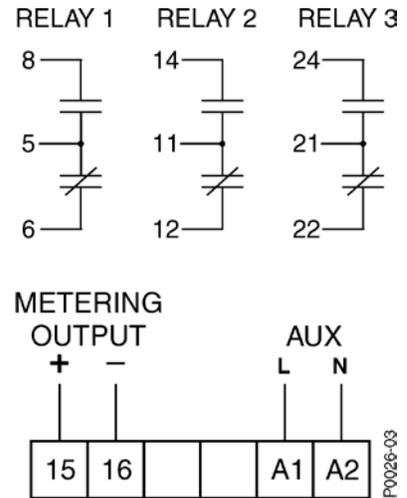


Figure 2. BE3-49R Auxiliary Power, Metering Output, and Output Contact Connections

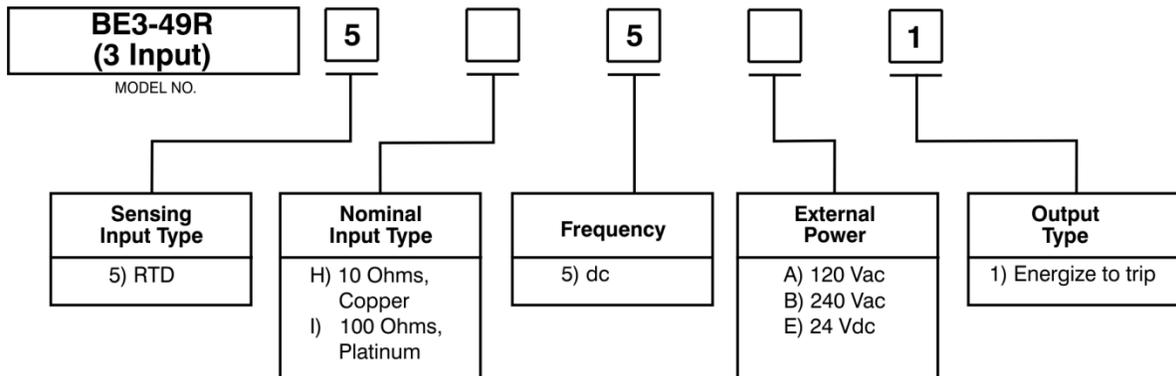


Figure 3. BE3-49R Style Number Identification Chart