

INTRODUCTION

BE3 milliamp sensing alarm relays monitor analog signals from transducers that measure current, voltage, watts, hertz, vars, or power factor. These transducers are used to indicate the status of a system or component. BE3-74T relays operate when the adjustable trip point is reached. An adjustable time delay is provided to avoid nuisance tripping due to transient changes in sensed current. All BE3 milliamp sensing alarm relays have a POWER LED to indicate the condition of the power supply. BE3-74TL and BE3-74TH relays have a RELAY LED to indicate the trip output status. The BE3-74TD relay has an OVER LED to indicate overcurrent trip and an UNDER LED to indicate an undercurrent trip.

SPECIFICATIONS

Operating Power

All units require external operating power.

Nominal Voltage: 120 Vac, 240 Vac, 380 Vac, 480 Vac, or 24 Vdc

Frequency: 45 to 65 Hz

Burden

Vac: 2 VA

Vdc: <3 W

Sensing Input

Nominal Current: 0 to 1 mA, 4 to 20 mA, or 0 to 20 mA (specify nominal range)

Burden: 10 k Ω /V

Overload: 2 times nominal continuously or 10 times nominal for 3 s

Setpoint

Overcurrent Range: Adjustable 40 to 120% (\pm 3%) of nominal

Undercurrent Range: Adjustable 0 to 80% (\pm 3%) of nominal

Time Delay: Adjustable 0 to 10 s

Repeatability: Greater than 0.5% of full span

Differential: Fixed at 5% of nominal

Operating Time: 200 ms typical

Output

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 94VO

Weight

Single Function: 0.88 lb (0.4 kg)

Multiple Function: 1.32 lb (0.6 kg)

Size

Single Function: 2.17" wide (55 mm)

Multiple Function: 3.93" 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

BE3-74TH and BE3-74TL relays have two user-adjustable controls marked SET and DELAY. The BE3-74TD relay has four controls: UNDER SET, UNDER DELAY, OVER SET, and OVER DELAY. The SET control adjusts the relay trip point. An overcurrent trip causes the relay output to energize when the current rises above the SET threshold. The overcurrent SET level is adjustable from 40 to 120% (\pm 3%) of nominal input (I_{nom}). An undercurrent trip causes the relay output to de-energize when the current decreases below the SET threshold. The undercurrent SET level is adjustable from 0 to 80% (\pm 3%) of I_{nom} . The DELAY control adjusts the time from when a fault is detected until the output contacts change state. The DELAY control is adjustable from 0 to 10 seconds (200 ms typical operating time).

Setting Example

A BE3-74TD with a nominal input type of M (4 to 20 mA) has the following settings:

- UNDER SET - 50%
- UNDER DELAY - 5 s
- OVER SET - 100%
- OVER DELAY - 5 s

An undercurrent condition is detected when the sensed current decreases to 10 mA. The UNDER output de-energizes 5 seconds after the undercurrent condition is detected. An overcurrent condition is detected when the sensed current increases to 20 mA. The OVER output energizes 5 seconds after the overcurrent condition is detected.

INSTALLATION

BE3 dc milliamp sensing alarm 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 1 shows the input connections for the BE3-74TD, BE3-74TH, and BE3-74TL relays.

CALIBRATION

The calibration marks on the faceplate have a maximum error of 10% and are provided only as guides. Proper calibration requires inserting an accurate milliammeter in series with the input signal. Use the following procedure to calibrate your relay.

Overcurrent Trip

1. Adjust the SET control fully clockwise and the DELAY control fully counterclockwise. Apply nominal external operating power to the relay.
2. Apply the desired trip current to the relay.
3. Slowly adjust the SET control counterclockwise until the relay trips.

Overcurrent Delay

1. Set the DELAY control at the desired time setting. Apply nominal external operating power to the relay.
2. Apply a value of current that is just above the trip setpoint. Measure the time from when the current is applied until the relay trips.
3. Compare the measured time to the desired time delay and adjust the DELAY control accordingly.

4. Repeat Steps 2 and 3 as required.

Undercurrent Trip

1. Adjust the SET control and DELAY control fully counterclockwise. Apply nominal external operating power to the relay.
2. Apply the desired trip current to the relay.
3. Slowly adjust the SET control clockwise until the relay trips.

Undercurrent Delay

1. Set the DELAY control at the desired time setting. Apply nominal external operating power to the relay.
2. Apply a value of current that is above the trip setpoint. Remove the applied current. Measure the time from when the current is removed until the relay trips.
3. Compare the measured time to the desired time delay and adjust the DELAY control accordingly.
4. Repeat Steps 2 and 3 as required.

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 2 shows the BE3 milliamp sensing alarm relay style number identification chart.

FIGURES

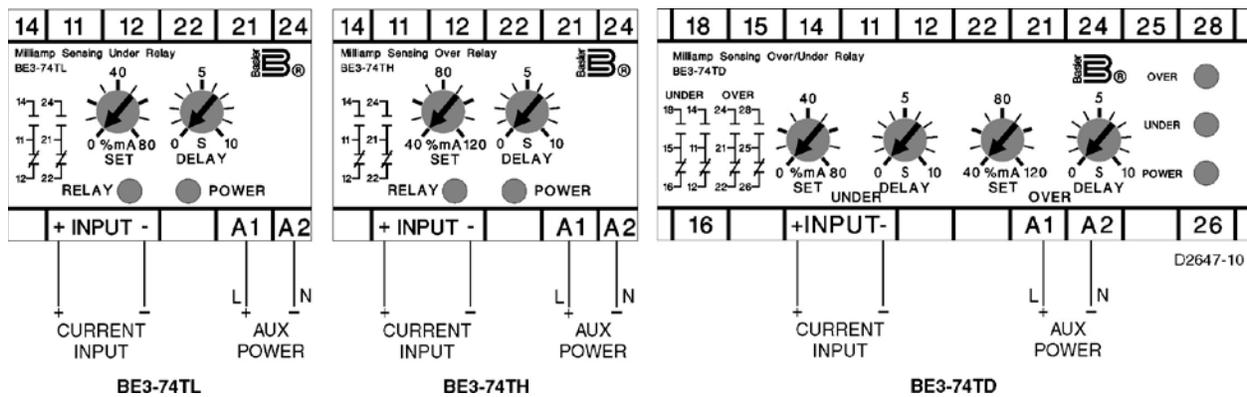


Figure 1. BE3-74TD, BE3-74TH, and BE3-74TL Input Connections

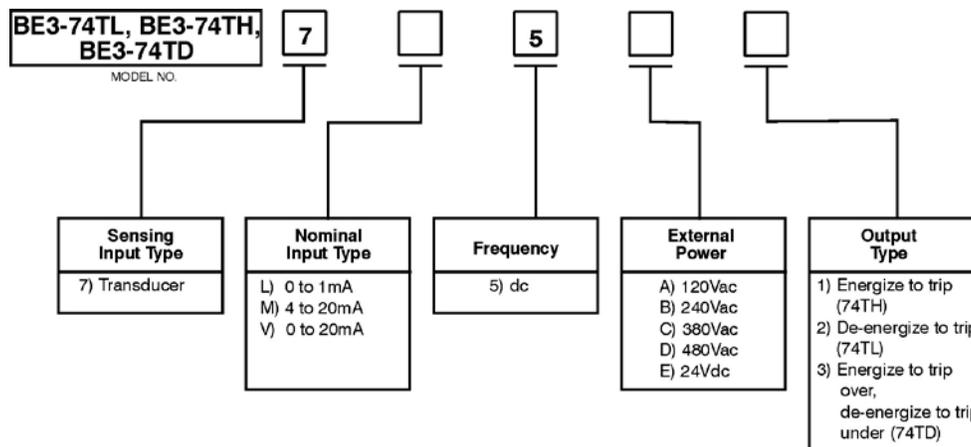


Figure 2. BE3-74TD, BE3-74TH, and BE3-74TL Style Number Identification Chart