INSTRUCTIONS
FOR
AC CURRENT RELAYS
BE3-37, BE3-51, and BE3-37/51

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INTRODUCTION

BE3 ac current relays provide current monitoring and protection in both single-phase and three-phase systems. They are used in applications such as motor protection, load detection, and generator control. Undercurrent, overcurrent and combined over/undercurrent units are available. BE3 ac current relays operate when the externally adjustable trip point is reached. An external time delay control is provided with an adjustment of 0 to 10 seconds (relay operating time is typically 200 milliseconds). This time delay may be used to prevent false tripping when there are slight variations in the sensed current. On overcurrent units, the output relay energizes when the input signal exceeds the trip point. On undercurrent units, the output relay de-energizes when the input signal goes below the trip point. A red LED indicates the state of the relay. A green LED indicates the condition of the power supply.

ELECTRICAL SPECIFICATIONS

U.L. Listed, CSA Certified, C.E. Compliant

INPUT

Five ampere CT nominal sensing input current or 0.2 to 10 amperes direct. All units require external operating power. Nominal external operating power - 120 Vac, 240 Vac, 380 Vac, 480 Vac, and 24 Vdc.

Frequency

50 / 60 Hz or 400 Hz

Burden

Less than 0.5 VA per phase.

Overload

Two times nominal continuously. Ten times nominal for three seconds.

SETPOINT

Range Undercurrent	Adjustable 0% to 80% of nominal
Range Overcurrent	Adjustable 40% to 120% of nominal
Repeatability	Better than 0.5% of full span
Time Delay	Adjustable 1 to 10 sec
Operating Time	200 ms Typical
Differential	Fixed 5% of nominal

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

PHYSICAL SPECIFICATIONS

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(200 ppm/°C)
Relative Humidity	95% noncondensing
Mounting	DIN rail 1.38“ by 0.29" (35 mm by 7.5 mm)
Case	Complies with IEC 529, DIN 40050, BS 5490
Weight	
Single Unit	0.88 lbs. (0.4 kg)
Combined Unit	1.32 lbs. (0.6 kg)
Size	
Single Unit	2.17" wide (55 mm)
Combined Unit	3.93" wide (100 mm)
Case Material	Complies with UL 94VO

OPERATION

BE3-37 and BE3-51 ac current relays have two external, user adjustable controls marked SET and DELAY. The BE3-37/51 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% of nominal input (V_{nom}). An undercurrent trip causes the relay output to de-energize when the voltage decreases below the SET threshold. The undercurrent SET level is adjustable from 0% to 80% of nominal input. Time delay is the amount of time that elapses after the trip point is reached and when the output relay operates.

Setting Example

A BE3-51 relay has the following settings:

SET - 120%

DELAY - 4 sec

A trip occurs when the sensing current rises above six amperes for four seconds. Reset occurs when the current decreases below 5.75 amperes (5% of nominal below trip setting).

INSTALLATION

BE3 ac current sensing 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 terminal connections for the BE3-37, BE3-51, and BE3-37/51 ac current relays.

CALIBRATION

The calibration marks on the face plate have a maximum error of 10% and are provided only as guides. Proper calibration requires using an accurate ammeter in series with the current source. Use the following procedure to calibrate your relay.

OVERCURRENT

1. Adjust the SET control fully clockwise (CW) and the DELAY control fully counter-clockwise (CCW).
2. Apply the desired trip current to the relay.
3. Slowly (allow for the 200 ms operating time) adjust the SET control CCW until the relay trips.
4. Remove the applied current (do not change the current level) and set the DELAY control to the desired time delay.
5. Apply the trip current to the relay and measure the time to trip.
6. Adjust the DELAY and repeat steps 4 and 5 until you have the desired time delay.

UNDERCURRENT

1. Adjust the SET control fully CCW and the DELAY control fully CCW.
2. Decrease the applied sensing current from the nominal value until the desired tripping current is reached.
3. Slowly adjust the SET control CW until relay trips (allow for the 200 ms operating time).
4. Set the DELAY control to the desired time delay and apply nominal current to the relay.
5. Step down the applied current from nominal to a level just below the trip level set in Step 3.
6. Adjust the DELAY and repeat steps 4 and 5 until you have the desired time delay.

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.

BE3 AC VOLTAGE RELAYS

Figure 2 shows the BE3 style number identification chart.

Publication:	Rev		First Printing 02/98	Copyright
9 3199 00 990	A	Basler Electric	Revised 04/98	1998

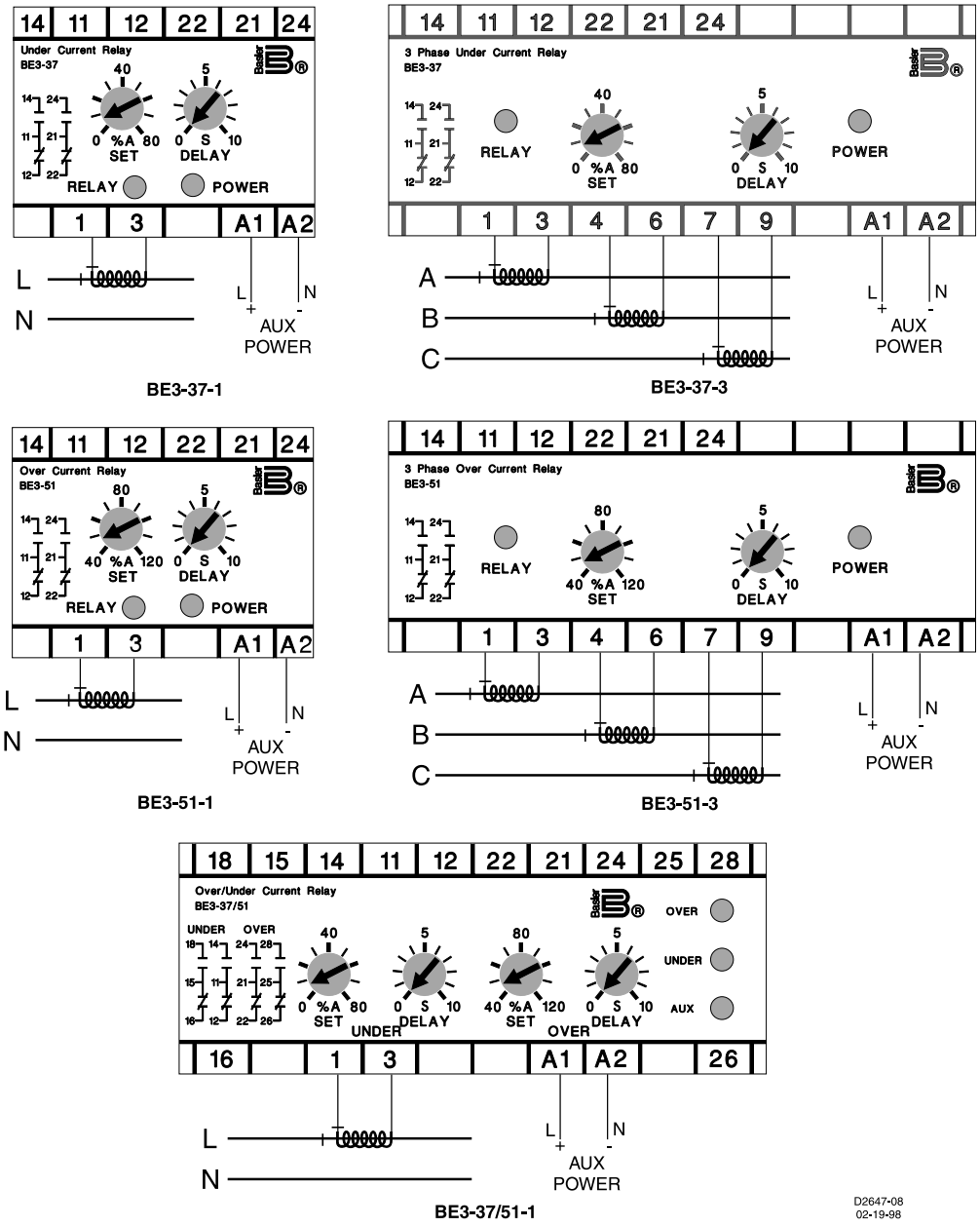

Figure 1. BE3-37, BE3-51, And BE3-37/51 AC Current Connections

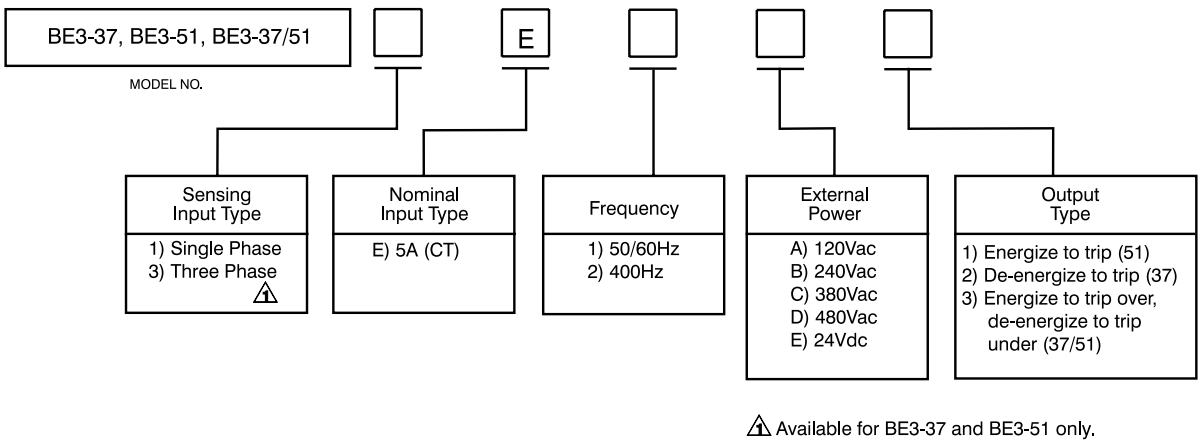

Figure 2. BE3-37, BE3-51, And BE3-37/51 Style Number Identification Chart