

INTRODUCTION

BE3 ac voltage relays provide voltage monitoring and protection in both single-phase and three-phase systems. They are used in applications such as utility mains failure, regulation of power supplies, and to protect voltage sensitive equipment. Undervoltage, overvoltage, and combined over/undervoltage units are available. BE3 ac voltage relays operate when the externally adjustable trip point is reached. A reset control is provided with an adjustment of 1 to 15%. Reset ensures that the parameter being measured returns to the percent set above or below the trip point before the relay returns to the original state. On overvoltage units, the output relay energizes when the input signal exceeds the trip point. On undervoltage 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.

SPECIFICATIONS

Inputs

All units are self-powered.

Nominal Voltage:	120 Vac, 240 Vac, 380 Vac, 480 Vac
Overload Withstand:	1.25 times nominal continuously. 2 times nominal for 3 s.
Frequency:	50, 60, or 400 Hz
Burden:	<2.5 VA per phase on single units. <3 VA per phase on combined units.

Setpoint

Undervoltage Range:	Adjustable 75 to 100% ($\pm 3\%$) of nominal
Overvoltage Range:	Adjustable 100 to 125% ($\pm 3\%$) of nominal
Repeatability:	Better than 0.5% of full span
Reset:	Adjustable 1 to 15%
Operating Time:	200 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
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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
<u>Weight</u>	
Single Function:	0.88 lb (0.4 kg)
Multiple Function:	1.32 lb (0.6 kg)
<u>Size</u>	
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

BE3-27 and BE3-59 ac voltage relays have two external, user-adjustable controls marked SET and RESET. The BE3-27/59 has four controls: UNDER SET, OVER SET, UNDER RESET, and OVER RESET. The SET control adjusts the relay trip point. An overvoltage trip causes the relay output to energize when the voltage rises above the SET threshold. The overvoltage SET level is adjustable from 100 to 125% ($\pm 3\%$) of nominal input (V_{nom}). An undervoltage trip causes the relay output to de-energize when the voltage decreases below the SET threshold. The undervoltage SET level is adjustable from 75 to 100% ($\pm 3\%$) of nominal input. The RESET control adjusts the difference between the nominal input voltage and the reset voltage. An undervoltage reset occurs when the voltage increases above the RESET setting. The undervoltage RESET setting is set as the percentage below V_{nom} when the relay will reset. An overvoltage reset occurs when the voltage decreases below the RESET setting. The overvoltage RESET setting is set as the percentage above V_{nom} where the relay will reset. The undervoltage and overvoltage RESET setting range is 1 to 15%.

Setting Example: a BE3-59 relay with a nominal input rating of 240 Vac has the following settings:

SET - 120%

RESET - 10%

A trip occurs when the sensing voltage rises above 288 Vac, line-to-line. Reset occurs when the voltage decreases below 264 Vac (10% of nominal below the setpoint).

INSTALLATION

BE3 ac voltage 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 BE3-27, BE3-59, and BE3-27/59 relays.

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 voltmeter in parallel with the input signal. Use the following procedure to calibrate your relay.

Overvoltage

Adjust the SET and RESET controls fully clockwise (CW).

Apply the desired trip voltage to the relay.

Slowly adjust the SET control counterclockwise (CCW) until the relay trips.

Reduce the applied voltage to the desired reset level.

Slowly adjust the RESET control CCW until the relay resets.

Undervoltage

Adjust the SET control fully CCW and the RESET control fully CW. Decrease the applied sensing voltage from the nominal value until the desired tripping voltage is reached. Slowly adjust the SET control CW until the relay trips. Increase the applied voltage to the desired reset level. Slowly adjust the RESET control CCW until the relay resets.

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 style number identification chart.

FIGURES

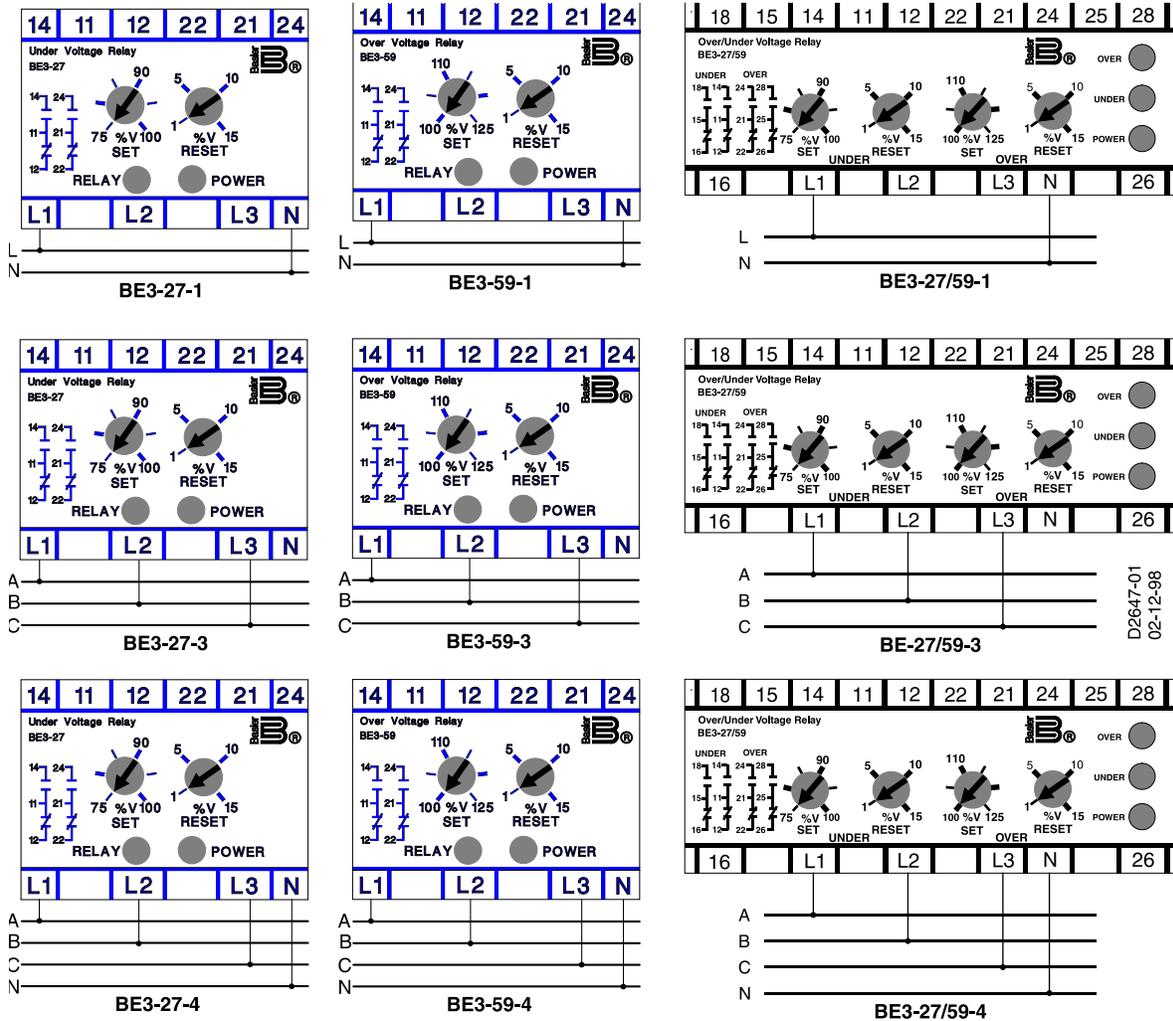


Figure 1. BE3-27, BE3-59, BE3-27/59 AC Voltage Connections

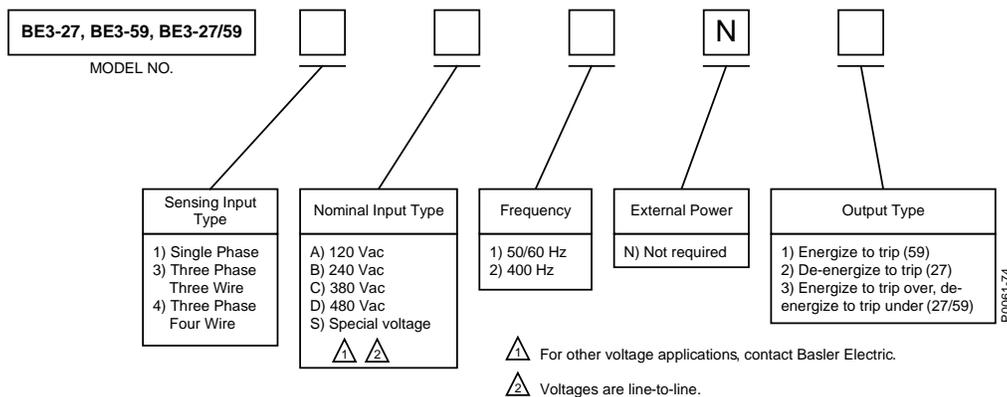


Figure 2. BE3-27, BE3-59, BE3-27/59 Style Number Identification Chart

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