

INSTRUCTIONS

FOR

AC VOLTAGE RELAYS

BE3-27, BE3-59, and BE3-27/59

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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 relays operate when the externally adjustable trip point is reached. An external 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.

ELECTRICAL SPECIFICATIONS

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

INPUT

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

Frequency

50 / 60 Hz or 400 Hz

Burden

Less than 2.5 VA per phase on single units. Less than 3 VA per phase on combined units.

Overload

1.5 times nominal continuously. 2 times nominal for 3 seconds.

SETPOINT

Range Undervoltage	Adjustable 75% to 100% of nominal
Range Overvoltage	Adjustable 100% to 125% of nominal
Repeatability	Better than 0.5% of full span
Reset	Adjustable 1 to 15%
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 watts
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 Function	0.88 lbs. (0.4 kg)
Multiple Function	1.32 lbs. (0.6 kg)
Size	
Single Function	2.17" wide (55 mm)
Multiple Function	3.93" wide (100 mm)
Case Material	Complies with UL 94V0

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: undervoltage SET, overvoltage SET, undervoltage RESET, and overvoltage 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% 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% 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} where 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 line-to-line input rating of 240 Vac has the following settings:

SET - 120%

RESET - 10%

A trip will occur when the sensing voltage rises above 288 Vac, line-to-line. The relay will reset when the voltage decreases below 264 Vac line-to-line (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 face plate 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

1. Adjust the SET and RESET controls fully clockwise.
2. Apply the desired trip voltage to the relay.
3. Slowly adjust the SET control counterclockwise until the relay trips.
4. Reduce the applied voltage to the desired reset level.
5. Slowly adjust the RESET control counterclockwise until the relay resets.

UNDervOLTAGE

1. Adjust the SET control fully counterclockwise and the RESET control fully clockwise.
2. Decrease the applied sensing voltage from the nominal value until the desired tripping voltage is reached.
3. Slowly adjust the SET control clockwise until the relay trips.
4. Increase the applied voltage to the desired reset level.
5. Slowly adjust the RESET control counterclockwise 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.

BE3 AC VOLTAGE RELAYS

Figure 3 shows the BE3 style numbers.

BE3-27-1	Single-Phase Undervoltage
BE3-59-1	Single-Phase Overvoltage
BE3-27/59-1	Single-Phase Over/Undervoltage
BE3-27-3	3-Phase, 3-Wire Undervoltage
BE3-59-3	3-Phase, 3-Wire Overvoltage
BE3-27/59-3	3-phase, 3-wire Over/Undervoltage
BE3-27-4	3-phase, 4-wire Undervoltage
BE3-59-4	3-phase, 4-wire Overvoltage
BE3-27/59-4	3-phase, 4-wire Over/Undervoltage

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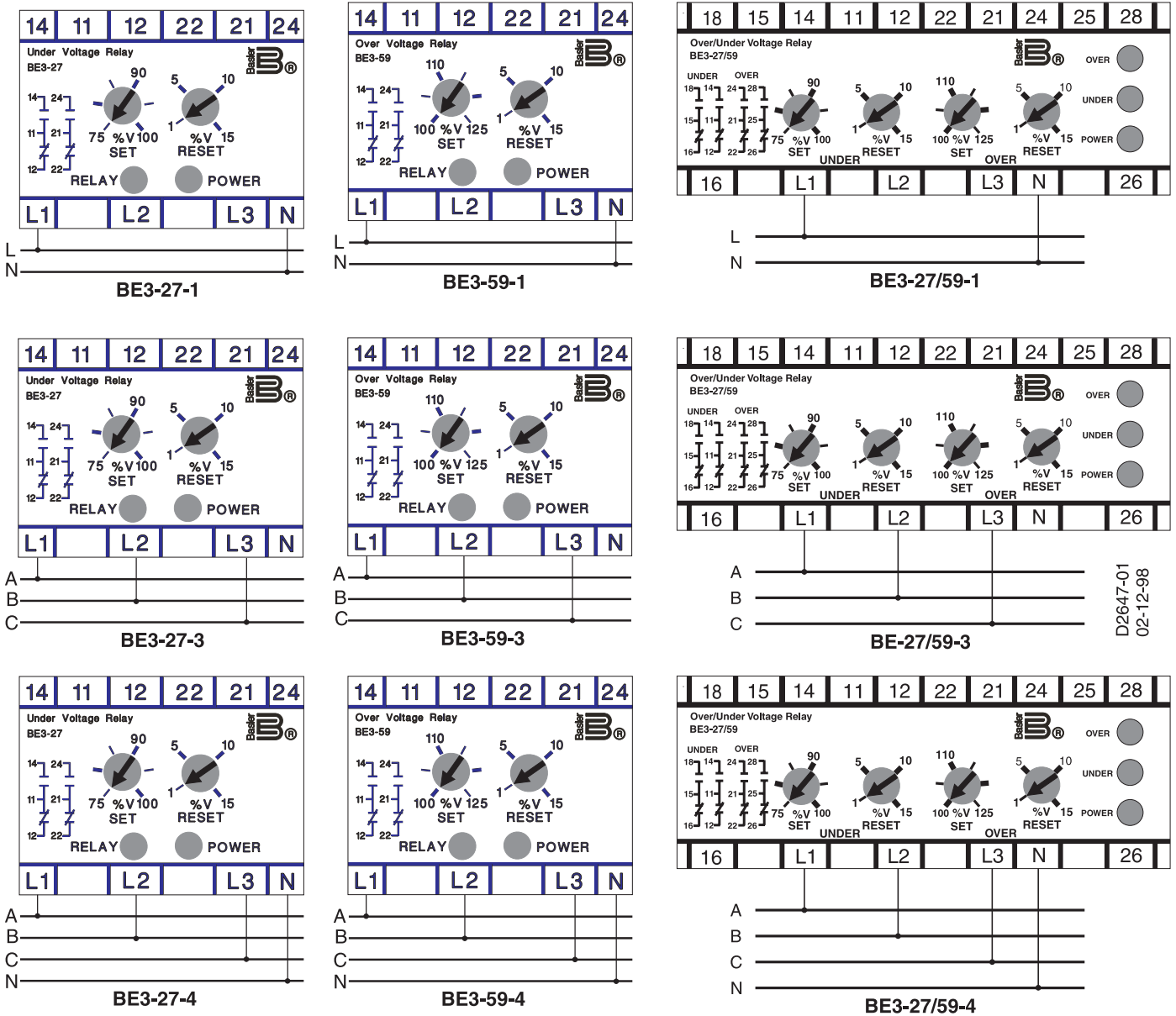
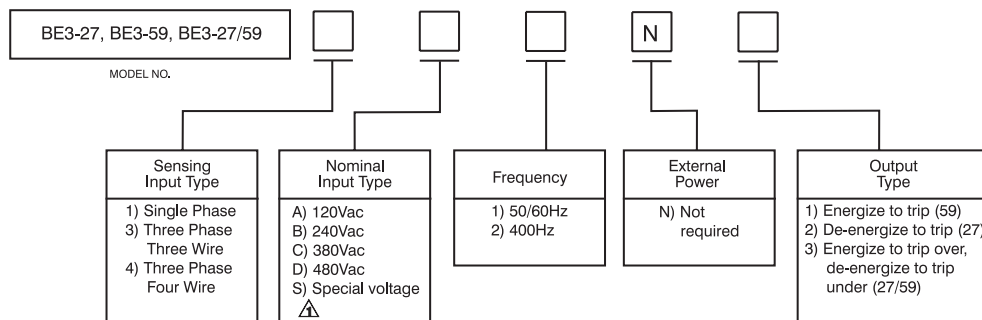


Figure 1. BE3-27, BE3-59, BE3-27/59 AC Voltage Connections



⚠ For other voltage applications, contact the factory.

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