

BE1-810/U Digital Frequency Relay



Overview

BE1-810/U relays provide accurate and secure protection for underfrequency or overfrequency system conditions.

Features

- Reliable solid-state digital circuitry.
- Up to four independent frequency set points.
- Over or underfrequency sensing selectable for each set point.
- Convenient, precise selection of the set point frequency over the nominal range of 40 to 70 Hz.
- Individually adjustable time delays and LED indicators for each frequency set point.
- Optional definite time delay characteristic.
- Undervoltage inhibit prevents undesired relay operation and provides an indication of the inhibiting condition over the adjustable range of 40 to 120 Vac.
- Excellent timing accuracy and repeatability.
- Low sensing and supply burdens.

Benefits

- Provides accurate frequency protection for a distribution system or generator operating at 50 or 60 Hz.
- Accurate, repeatable, and reliable operation.
- Incrementally-staged load shedding possible with up to four independent frequency set points.
- Flexible protection options with selectable overfrequency or underfrequency sensing for each set point.
- Clear settings indication from individually adjustable time delays and LED indicators for each frequency set point.
- Minimized PT (potential transformer) costs as a result of low sensing burden.
- Reduced battery load with low burden power supply.
- LED targets provide clear annunciation of status.
- Easily perform in-case system and device tests using test plugs.

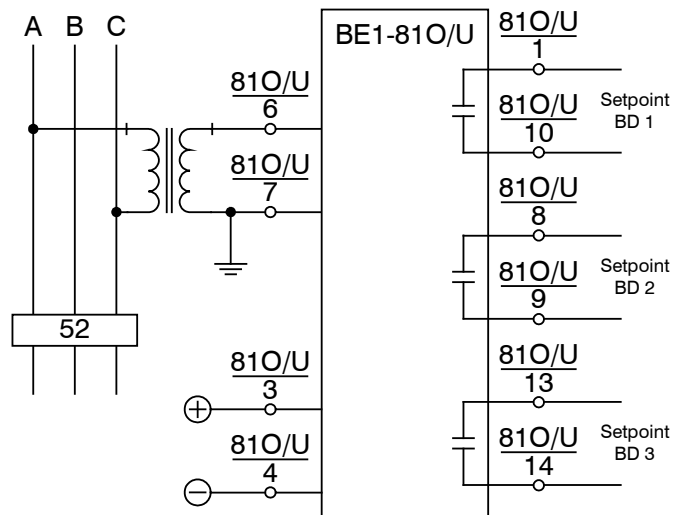


Figure 1 - BE1-810/U Connection Diagram for a Typical Application

Specifications

Power Supply (Nominal)

T3XEXJXXXXX:	125 Vdc/120 Vac (3.9 W/16.0 VA)
T3XEXKXXXXX:	48 Vdc (3.6 W)
T3XEXLXXXXX:	24 Vdc (3.7 W)
T3XEXYXXXXX:	48/125 Vdc (3.6 W/ 3.9 W)
T3XEXZXXXXX:	250 Vdc/240 Vac (3.9 W/24.6 VA)

Sensing Input (Single-Phase)

Voltage Range:	40 to 132 Vac
Frequency:	
Detection Range:	30 to 80 Hz
Computation Range:	40 to 70 Hz
Burden:	2 VA maximum

Output Contacts

Resistive:	
120/240 Vac:	Make, break, and carry 7 Aac continuously.
250 Vdc:	Make and carry 30 Adc for 0.2s, carry 7 Adc continuously, break 0.3 Adc.
500 Vdc:	Make and carry 15 Adc for 0.2s, carry 7 Adc continuously, break 0.3 Adc.
Inductive:	
120 Vac, 125 Vdc, 250 Vdc:	Break 0.3 A (L/R=0.04)

Frequency Set point

Range:	40 to 70 Hz
Increment:	0.01 Hz
Accuracy:	±0.01 Hz of the set point setting

Time Delay

Setting Range	
Cycles:	3 to 99 cycles, increment: 1 10 to 990 cycles, increment: 10 100 to 9,900 cycles, increment: 100
Seconds:	0.1 to 9.9 seconds, increment: 0.1 1.0 to 99 seconds, increment: 1 10 to 990 seconds, increment: 10

Accuracy

Cycles:	+2 cycles or -1 cycle for 0.02 Hz to 1 Hz variation from set point ±1 cycle for variation greater than 1 Hz from set point
Seconds:	±2% of the setting or ±50 ms, whichever is greater for 0.02 Hz to 1 Hz variation from set point ±2% of the setting or ±25 ms, whichever is greater for variation greater than 1 Hz from set point

Undervoltage Inhibit

Range:	40 to 120 Vac
Accuracy:	±5% of the setting at 25°C (77°F) for nominal frequency input

Environmental

Dielectric Strength:	IEC 255-5, IEEE C37.90
Radio Frequency Interference:	Qualified to IEEE C37.90
Surge Withstand:	Qualified to IEEE C37.90.1
Fast Transient:	Qualified to IEEE C37.90.1
Impulse Test:	Qualified to IEC 255-5
Operating Temp:	-40°C to 70°C (-40°F to 158°F)
Storage Temp:	-40°C to 85°C (-40°F to 185°F)
Shock:	15 G in three perpendicular planes
Vibration:	2 G in three perpendicular planes, 10 to 500 Hz for six sweeps, 15 minutes each sweep

Agency/Certifications

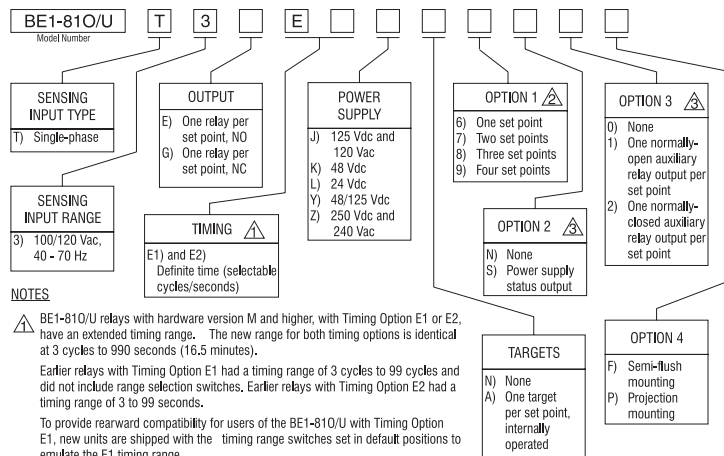
UL recognized

Physical

Weight:	13 lb (5.90 kg) S1 Case 18 lb (8.16 kg) M1 Case
S1 Case Dimensions (WxHxD):	5.56 x 8.68 x 6.94 inches (141.2 x 220.5 x 176.3 mm)
M1 Case Dimensions (WxHxD):	5.56 x 14.69 x 6.94 inches (141.2 x 220.5 x 176.3 mm)

For complete specifications, download the instruction manual at www.basler.com.

Style Chart



NOTES

⚠ BE1-810/U relays with hardware version M and higher, with Timing Option E1 or E2, have an extended timing range. The new range for both timing options is identical at 3 cycles to 990 seconds (16.5 minutes).

Earlier relays with Timing Option E1 had a timing range of 3 cycles to 99 cycles and did not include range selection switches. Earlier relays with Timing Option E2 had a timing range of 3 to 99 seconds.

To provide rearward compatibility for users of the BE1-810/U with Timing Option E1, new units are shipped with the timing range switches set in default positions to emulate the E1 timing range.

⚠ If Option 1 is 6 or 7, an S1 case is required. If Option 1 is 8 or 9, an M1 case is required.

⚠ If Option 1 is 9 and Option 2 is S, the auxiliary relay (Option 3 is 1 or 2) associated with setpoint 4 is omitted.

Related Products

BE1-FLEX Protection, Automation and Control System

Designed to be configurable for nearly any Power System Application.

Accessories

Cases, Covers, Connectors, Mounting, Misc.

Designed for adaptive customization with your protective device.

Test Plugs

To allow testing of the relay without removing system wiring. Basler ElectricP/N 10095 (order 2 plugs).