

FREQUENCY RELAYS

BE4-81 U
BE4-81 O
BE4-81 O/U

APPLICATION

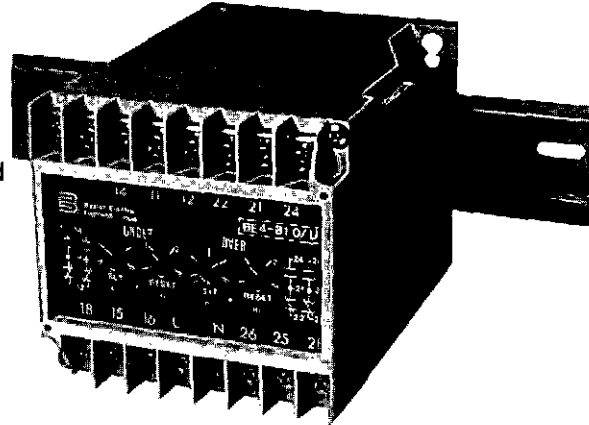
The BE4 Frequency Relays function on a predetermined value of frequency, either under (U) or over (O); the normal system frequency.

The BE4-81 U Underfrequency Relay guards against underfrequency conditions which adversely affect connected machines and system stability.

The BE4-81 O Overfrequency Relay is used in speed control schemes to protect against generator runaway.

The BE4-81 O/U Over/Under Frequency Relay combines both under (U) and over (O) frequency functions in one compact case.

The BE4 Series Relays are back-of-panel mounted. They install in seconds with standard hardware, or snap onto standard DIN rail.



HOW TO ORDER:

Designate the Model Number followed by the complete Style Number:

BE4-81 U Style Number

BE4-81 O Style Number

BE4-81 O/U Style Number

Complete the Style Number by selecting one feature from each column of the Style Identification Chart and entering its designation, letter or number, in the appropriate square.

Note: The description of a complete relay must include both Model Number and Style Number. For UL and CSA on selected styles, see bulletin UFX.

STYLE IDENTIFICATION CHART

<input type="checkbox"/> 1	<input type="checkbox"/> A	<input type="checkbox"/> 4	<input type="checkbox"/> N	<input type="checkbox"/> 1
SENSING TYPE	NOMINAL INPUT	FREQUENCY	EXT. PWR.	OUTPUT TYPE
1 - Single Phase	A - 120V B - 240V C - 380V D - 480V	2 - 400 Hz 3 - 50 Hz 4 - 60 Hz	N - None	1 - Energize to trip

*S - Special Voltage

*For other voltage applications, contact the factory.

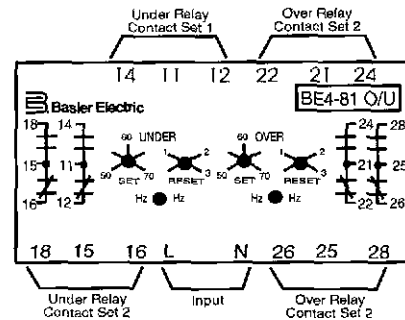
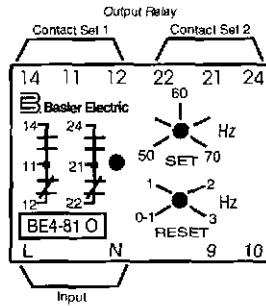
EXAMPLES

Style Number 1A4N1 would have the following characteristics: It would sense single phase (1) 120 volts (A) at 60 Hertz (4) and energize the output relay to trip (1).

BE4-25 Sync-Check
BE4-27 BE4-59 BE4-27/59 Voltage
BE4-27T BE4-59T Voltage with Time Delay
BE4-32 Reverse Power
BE4-37 BE4-51 BE4-37/51 Current
BE4-47 Phase Sequence
BE4-47N BE4-47N/27 Phase Balance
BE4-49R Temperature (3 RTD)
BE4-49R Temperature (6 RTD)
BE4-49T Thermocouple Temperature
BE4-74S Millivolt Sensing Alarm
BE4-74T Milliamp Sensing Alarm
BE4-81U BE4-81O BE4-81O/U Frequency

FREQUENCY RELAYS RELAY CASE CONNECTIONS

BE4-81 U
BE4-81 O
BE4-81 O/U



Note: Relay contacts are shown in the de-energized state.

SPECIFICATIONS

Input

Nominal Frequency: 50, 60 or 400 Hz
System Voltage: 120V, 240V, 380V, or 480V
Voltage Withstand: 1.2 times continuous
1.5 times for 10 seconds

Setpoint

Range: 50 Hz: Adjustable 40-60 Hz
60 Hz: Adjustable 50-70 Hz
400 Hz: Adjustable 360 - 440 Hz
Operating Time: 400 m seconds with 25%
nominal change beyond trip setting.
Repeatability: Better than 0.5%
Reset Frequency: Adjustable 0.1 - 3 Hz from
pickup frequency for 50/60 Hz
applications.
Adjustable 10 - 30 Hz from pickup
frequency for 400 Hz applications.

Output Relay

Type: D.P.D.T.
Rating: ac 240V, 5 A non-inductive
Mechanical Life: One million operations
Reset: Automatic

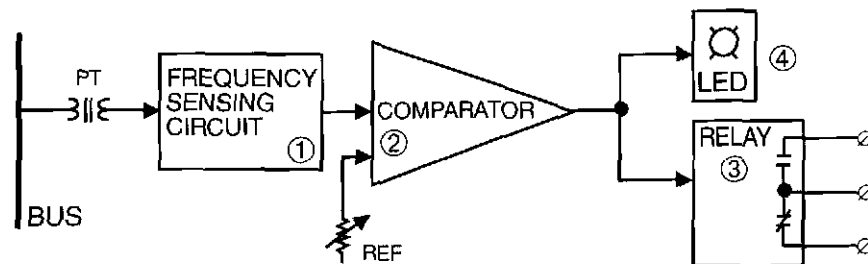
General

Dielectric Test: 2 KV RMS for 1 min.
Surge Withstand: IEEE 472-1974
Operating Temperature: 0°C to +40°C*
Storage Temperature: -20°C to +70°C
Case Size: 81 U - TM2
81 O - TM2
81 O/U - TM3
(See Bulletin UFX for dimensions)
Weight: 0.88 lbs. (0.4 kg) for TM2
1.32 lbs. (0.6 kg) for TM3

* 0° to +60°C operating temperature is available on standard product without UL and CSA.

THEORY OF OPERATION

The Basler BE4 Series Frequency Relays will provide a contact transition when the sensed frequency exceeds the relay setting. The following functional block diagram illustrates the relay operation.



- ① The frequency sensing circuit provides a dc voltage proportional to the input frequency to the comparator. ② The proportional voltage is compared to a reference level. ③ When the frequency signal exceeds the reference level, the comparator output will energize the output relay. ④ The front panel LED indicates the output relay is energized.