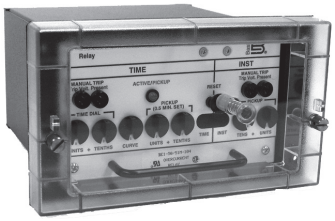
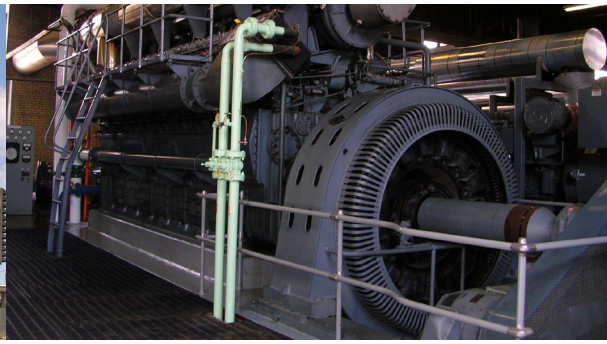
BE1-50/51M Self-Powered Time Overcurrent Relay





Overview

A single-phase, self-powered, microprocessor-based time/instantaneous overcurrent relay that provides cost-saving overload and fault protection for generators, transformers, feeders, and motors. Available in multiple-rack, panel, and retrofit mounting options.

Features

- Self powered from 50/60 Hz systems, available for 5-ampere or 1-ampere CT secondaries.
- Patented integrating reset characteristic, even when current goes to zero. Replicates electromechanical reset for all applications.
- Fifteen field-selectable, inverse, fixed time and British Standard (BS142) time overcurrent curves on 200 series relays (10 on 100 series).
- Wide setting ranges:
  - Time Overcurrent: 0.5 to 15.9 (5-ampere Unit)
    0.1 to 3.18 (1-ampere Unit)
  - Inst. Overcurrent: 1 to 99 (5-ampere Unit)
    0.2 to 19.8 (1-ampere Unit)
- Current pickup accuracy ± 2%.
- Timing accuracy ± 2%.
- Less than 10% transient overreach.
- 5 VA burden (at nominal) self powered from 50/60 Hz systems, utilizes standard 5-ampere or 1-ampere CT secondaries.

Benefits

- Accurate, repeatable, and reliable operation.
- No additional power source required because relays are self-powered from 50/60 Hz systems. Available in 5-ampere or 1-ampere CT secondary models.
- Timings can be tailored to the application with multiple field-selectable curves.
- Flexible pickup is continuously adjustable over a wide range.
- Instantaneous protection can be set lower to provide more complete protection with a design that minimizes transient overreach.
- Models available to replicate decaying reset of electromechanical relay disks when current drops to zero.
- Reduce CT costs with low sensing and supply burdens.
- Reduce maintenance labor by eliminating the need for recalibration.
- Testing is easy with drawout construction.

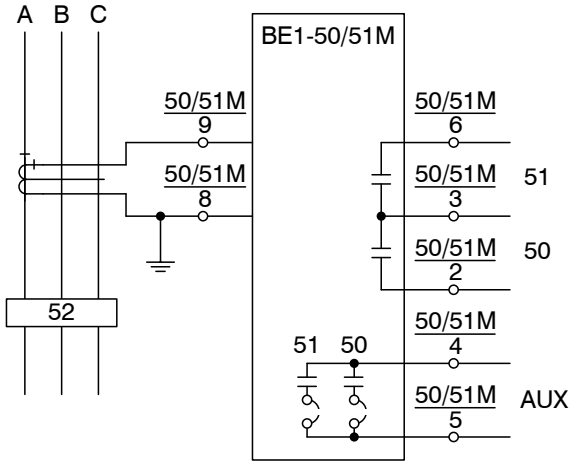


Figure 1 - BE1-50/51M Connection Diagram for a Typical Application

BE1-50/51M Self-Powered Time Overcurrent Relay

Specifications

Current Sensing

5 A Unit: 14 A continuous, 400 A 1-second
1 A Unit: 2.8 A continuous, 80 A 1-second

Time Overcurrent (51) Element

Pickup:
- 5 A Unit: 0.5 to 15.9 A in 0.1 A steps
- 1 A Unit: 0.1 to 3.18 A in 0.02 A steps
- Accuracy: ±2%

Dropout: 95% of pickup value

Timing:
- Range: 0.0 to 9.9 s in 0.1 s steps
- Accuracy: Sum of ±1 cycle, ±2%

Curve Characteristics:

15 field selectable, inverse, fixed time and British Standard (BS142) time overcurrent curves on 200 series relays (10 on 100 series) can be selected by the front panel Curve switch.

Integrating Reset:

An instantaneous or integrating reset characteristic can be selected by the front panel SW3-4 switch.

Instantaneous Overcurrent (50) Element

Pickup:
- 5 A Unit: 1 to 99 A in 1 A steps
- 1 A Unit: 0.2 to 19.8 A in 0.2 A steps
- Accuracy: ±2%

Dropout: 95% of pickup value

Curve Characteristics:

To avoid nuisance trips, the time to trip for ground applications is slightly longer. Otherwise, instantaneous characteristic curves are similar to electromechanical instantaneous units.

Frequency Response

<0.5% change in required pickup current with a ±5 Hz change from nominal 50/60 Hz current.

Transient Response

<10% overreach with system time constants up to 40 ms.

Harmonic Response

A relay set for 1 A pickup picks up at 0.96 A with a current containing 40% seventh harmonic. This corresponds to a 10:1 rejection ratio. Other conditions may be evaluated in the same manner.

Outputs

Resistive:
- 120/240 Vac: Make and carry 30 A for 0.2 s, carry 7 A for 120 s, 3 A continuous, 5 A break
- 125/250 Vdc: Make and carry 30 A for 0.2 s, carry 7 A for 120 s, 3 A continuous, 0.3 A break

Inductive:
- 120/240 Vac, 125/250 Vdc: Make and carry 30 A for 0.2 s, carry 7 A for 120 s, 3 A continuous, 0.3 A break (L/R=0.04)

Environmental

Operating Temp:	-40°C to 70°C (-40°F to 158°F)
Storage Temp:	-50°C to 70°C (-58°F to 158°F)
Isolation:	IEEE C37.90
Transient Surge:	IEEE C37.90.1
RFI:	IEEE C37.90.2
ESD:	IEEE C37.90.3
Vibration:	IEC 255-21-1
Shock:	IEC 255-21-2

Agency/Certifications

UL (cURus) recognized for the USA and Canada. China RoHS compliant.

Physical

Weight: 2.4 kg (5.2 lb)

Dimensions (WxHxD):
- C1 Case: 6.88 x 4.00 x 7.00 inches (174.6 x 101.6 x 177.8 mm)

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

Ordering

How to Order: Designate the Model Number from the table below to define the desired configuration.

	Model Number	Case Style	SW3-3 Selects	Sensing Input Range (Amps)	
				TIME	INST
5 A System CT Secondaries	BE1-50/51M-104	C1 (horizontal mount)	0.2 second delay	0.5 to 15.9	1.0 to 99.0
	BE1-50/51M-204	C1 (horizontal mount)	Curve set	0.5 to 15.9	1.0 to 99.0
	BE1-50/51M-109	C1 (vertical mount)	0.2 second delay	0.5 to 15.9	1.0 to 99.0
	BE1-50/51M-209	C1 (vertical mount)	Curve set	0.5 to 15.9	1.0 to 99.0
1 A System CT Secondaries	BE1-50/51M-100	C1 (horizontal mount)	0.2 second delay	0.1 to 3.18	0.2 to 19.8
	BE1-50/51M-200	C1 (horizontal mount)	Curve set	0.1 to 3.18	0.2 to 19.8
	BE1-50/51M-108	C1 (vertical mount)	0.2 second delay	0.1 to 3.18	0.2 to 19.8
	BE1-50/51M-208	C1 (vertical mount)	Curve set	0.1 to 3.18	0.2 to 19.8

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.

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