

# Instructions for Automatic Trip Relays used with Type SPB, Systems Pow-R Breakers



I.L. 15087-C  
File 29-800

## UL LISTED DEVICE

Automatic trip relays are listed by Underwriters Laboratories, Inc. as a circuit breaker accessory under File E64983.

## GENERAL DESCRIPTION/PURPOSE

An Automatic Trip Relay (ATR) is a remote mounted accessory designed to be used with Type SPB, Systems Pow-R Breakers to provide visual trip mode indication, alarm and lockout interlocking circuitry following a breaker automatic tripping operation. Supplementary control power rated 120 volts, 50/60 HZ (or 28 volts Dc) is required for relay operation.

## AVAILABLE TYPES AND FEATURES

Four design variations are available to satisfy various application requirements. Each type is provided with a long life, light emitting diode to indicate control power available. Other features vary with the type selected.

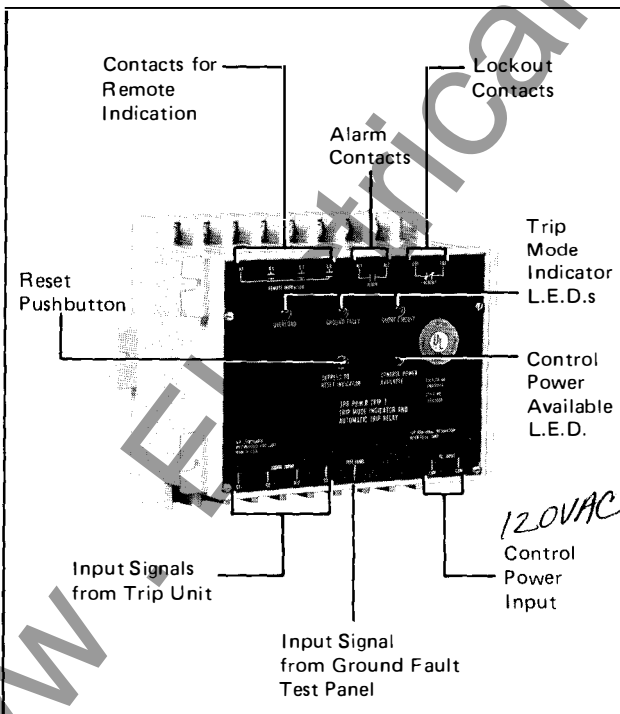


Fig. 1 Automatic Trip Relay with Individual Trip Mode Indicators, Lockout and Alarm Contacts (Catalog No. SPBATRO1A or SPBATRDC1)

## CATALOG NO. SPBATRO1A AND SPBATRDC1

This type, as illustrated in Fig. 1, is designed to be used with Type SPB Breakers equipped with a Pow-R-Trip 7, trip device only. An external connection diagram is illustrated in Fig. 4 for SPBATRO1A (Fig. 9 for SPBATRDC1) and a simplified block diagram is provided in Fig. 10 for SPBATRO1A (Fig. 14 for SPBATRDC1). Special features include the following:

### 1. Trip Mode Indication

Three individual light emitting diodes (LED's) provide remote visual indication of the cause of trip including: Overload, Short Circuit, and Ground Fault. Internally, three individual relays have contacts wired to terminals (OL, SC, GF and V1) that can be used with suitable control power to provide additional visual or audible alarm signals. Contact ratings are given in Table 1.

### 2. Lockout and Alarm Contacts

In addition to the above signal contacts, separate independent contacts are provided for remote alarm and lockout interlocking circuitry. These contacts are suitable for use in breaker sequencing applications and logic circuitry. Contact ratings are given in Table 1.

### 3. Momentary Loss of Control Power

Internal circuitry is provided in the ATR to override a momentary loss of 120 VAC control power for SPBATRO1A (28 VDC for SPBATRDC1) for a period of approximately one second.

### 4. Reset Provisions

With control power maintained, both the LED visual indicators and the relays will remain picked up thus signifying the tripping mode of the breaker. To insure that a correct indication of a future tripping operation is provided and to de-energize the internal relays, the automatic trip relay must be reset. This may be accomplished locally by depressing the pushbutton shown in Fig. 1 or by use of a remote pushbutton in the control power circuit. Because of the momentary loss of control power feature, the reset pushbutton must be held depressed slightly over one second to insure total reset of the ATR. Failure to reset the ATR by either method will not affect the proper operation of the related breaker unless the alarm or lockout contacts have been incorporated into the breaker's control circuitry.

## CATALOG NO. SPBATRO2A

This type, as illustrated in Fig. 2, is designed to be used with Type SPB Breakers equipped with either a Type Pow-R Trip or Pow-R Trip 7 trip device. An external connection diagram for use with a Pow-R Trip 7 trip device is illustrated in Fig. 5. A diagram for use with a Pow-R Trip device is illustrated in Fig. 7. A simplified block design is provided in Fig. 12. Special features include the following:

### 1. Trip Mode Indication

A single light emitting diode (LED) is supplied to provide remote visual indication of a breaker automatic tripping operation. No distinction is possible as to the exact cause of the fault.

### 2. Lockout and Alarm Contacts

A single internal relay provides two separate sets of independent contacts for remote alarm and lockout interlocking circuitry. These contacts are suitable for use in breaker sequencing applications, logic circuitry, as well as remote audio/visual alarm schemes. Contact ratings are given in Table 2.

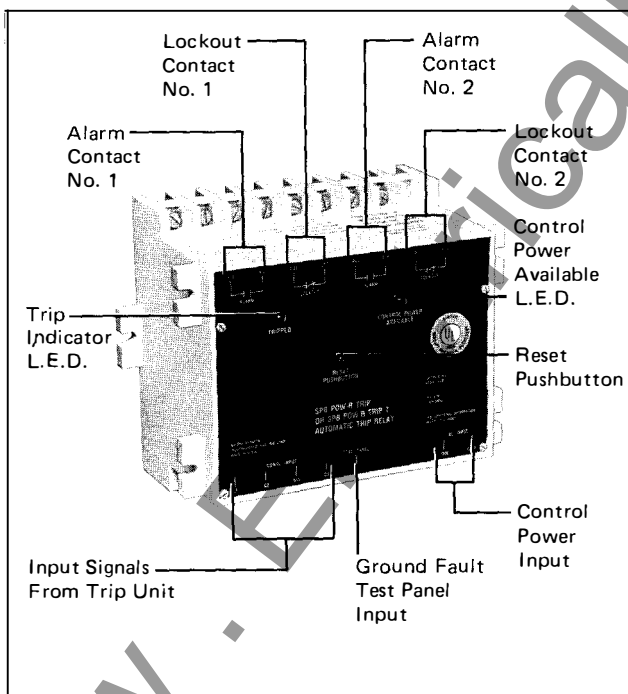


Fig. 2 Automatic Trip Relay, with Common Trip Indication, Lockout and Alarm Contacts (Catalog No. SPBATRO2B)<sup>®</sup>

### 3. Momentary Loss of Control Power

Same as for Cat. No. SPBATRO1A.

### 4. Reset Provisions

Same as for Cat. No. SPBATRO1A.

## CATALOG NO. SPBATLB<sup>®</sup>

The type is illustrated in Fig. 3 and is designed to be used with Type SPB Breakers equipped with either a Type Pow-R Trip or Pow-R Trip 7 trip device. An external connection diagram for use with a Pow-R Trip 7 trip device is illustrated in Fig. 6. A similar diagram for use with a Pow-R Trip, trip device is illustrated in Fig. 8. A simplified block diagram is provided in Fig. 13. Special features include the following:

### 1. Trip Mode Indication

A single light emitting diode (LED) is supplied to provide remote visual indication of a breaker automatic tripping operation. No distinction is possible as to the exact cause of the fault.

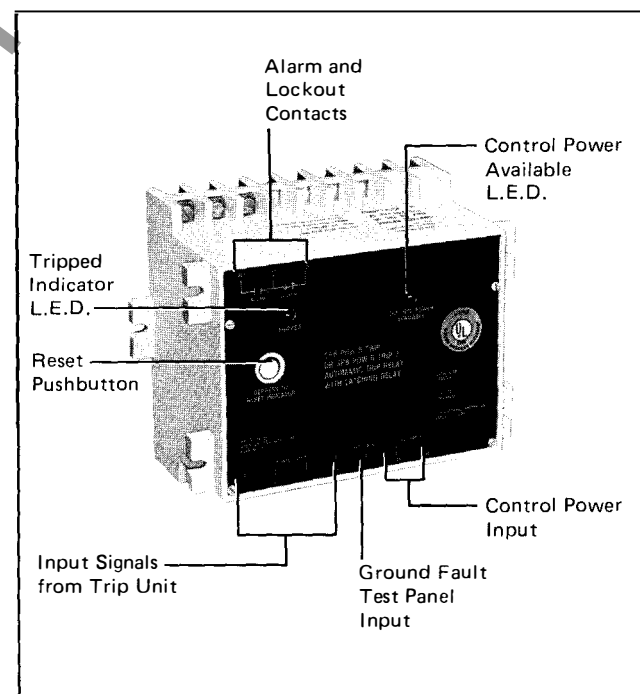


Fig. 3 Automatic Trip Relay with Common Trip Indication, Latched Lockout and Alarm Contacts (Catalog No. SPBATLB)<sup>®</sup>

## 2. Lockout and Alarm Contacts

A single internal relay provides a SPDT set of contacts for remote alarm and lockout interlocking circuitry. These contacts are suitable for use in breaker sequencing applications, logic circuitry, as well as remote audio/visual alarm schemes. Contact ratings are given in Table 2.

## 3. Momentary Loss of Control Power

Since the internal relay is a latching type, this type automatic trip relay is ideally suited for circuit applications where a loss of control power is possible and where the memory characteristic of the latching relay is desirable.

## 4. Reset Provisions

The internal relay provided is a latching type and local manual resetting is required. This is accomplished by depressing the pushbutton, illustrated in Fig. 3.

Failure to reset the latching relay will not affect the proper operation of the related breaker unless the alarm or lockout contacts have been incorporated into the breaker's control circuitry.

## ELECTRICAL DATA

The maximum burden of either type automatic trip relay is 5.0 VA @ 120 volts, 50/60 HZ.

## CONNECTION DIAGRAMS

Applicable connection diagrams for the type automatic trip relay selected are shown in Figs. 4 through 9. For user convenience, Type SPB Breaker control wire termination locations are illustrated in each figure. For field modification, SPB Breaker control wire termination hardware details, wiring tools, and diagram symbol identification are given in Fig. 10.

The terminals on the automatic trip relay are suitable for No. 14 or No. 12 AWG copper conductors. A maximum of two per terminal of the same size and type are permitted.

## MOUNTING ARRANGEMENTS

The automatic trip relays are supplied as standard in a surface mounted enclosure with outline and mounting dimensions as shown in Fig. 15. Panel cutout and mounting dimensions for the semi-flush cover mounting are illustrated in Fig. 16.

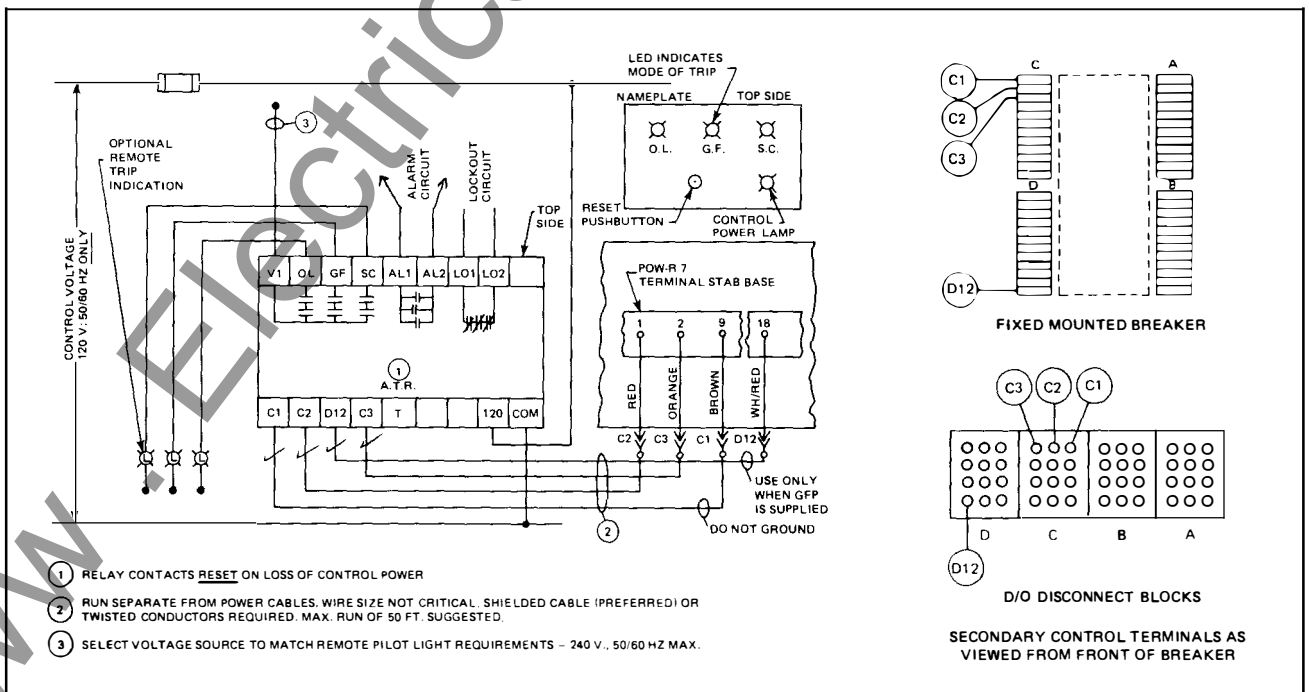


Fig. 4 Connection Diagram for Catalog No. SPBATRO1A Automatic Trip Relay (Use with Pow-R Trip 7 Unit Only)

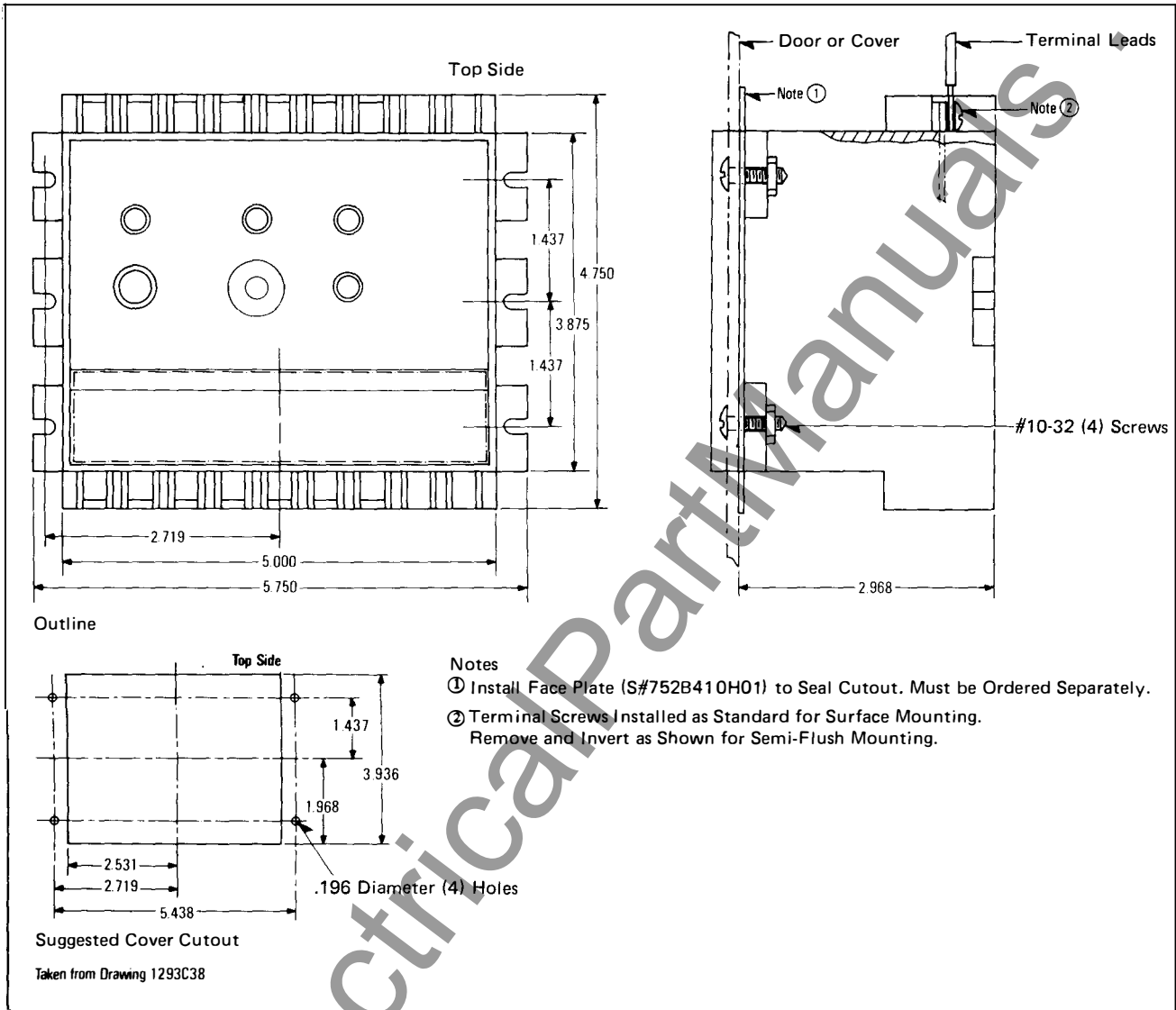


Fig. 16 Outline and Mounting Details for Semi-Flush Mounted Automatic Trip Relay

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