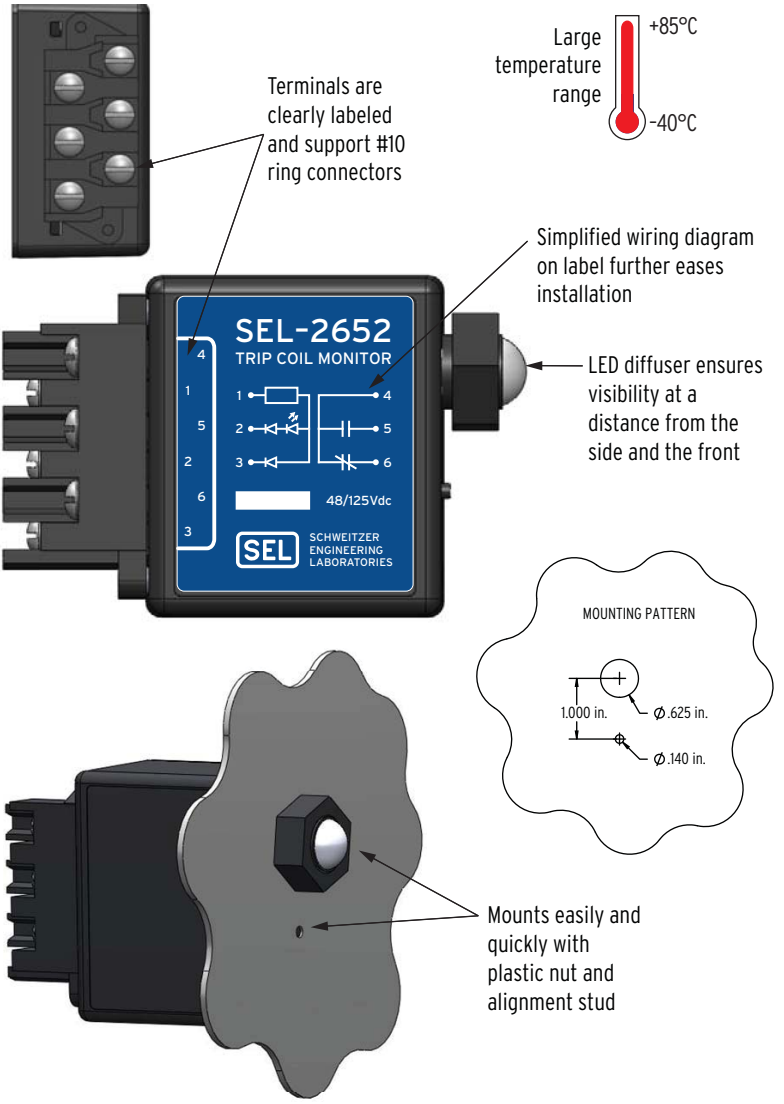
SEL-2652 Trip Coil Monitor

Features, Benefits, and Applications

Apply the SEL-2652 Trip Coil Monitor to verify circuit breaker or lockout relay trip coil and trip circuit connections continuity. The SEL-2652 is self-powered, displays circuit breaker status or continuity status with an external LED, and reports status to SCADA with a Form C contact.

- Eliminate the need to stock different trip coil monitors to accommodate a wide range of opening voltages (48 to 125 Vdc).
- Quickly detect circuit breaker status (SEL-2652A) or continuity status (SEL-2652B) using the highly visible LED, available in red and blue.
- Use convenient remote indication to easily monitor trip circuit health without nuisance alarms during normal circuit breaker operations.
- Reduce maintenance using this rugged device, designed and tested for substation environments.
- Install in minutes with panel-mount design and Connectorized® terminal block.

Product Overview



Application

There are two variations of this product: the SEL-2652A and the SEL-2652B. The SEL-2652A LED indicates breaker status and the SEL-2652B LED indicates continuity alarm status. Otherwise the two products are identical.

SEL-2652A Applications

Positive DC Trip Bus

The diagram in *Figure 1* corresponds to a positive dc trip bus application. The SEL-2652A LED, as shown in *Figure 1*, stays illuminated if the circuit breaker is closed, the trip coil is healthy, and the 52a contact is working properly. The LED turns off when the circuit breaker opens. The 52b contact keeps the SEL-2652A internal relay energized to prevent unnecessary alarms. During normal breaker operation, there may be a short period when both 52a and 52b contacts are open. A capacitor across the SEL-2652A relay coil delays dropout for at least 200 ms to prevent nuisance alarms during this period. In the event of a trip coil circuit problem, such as an open trip circuit condition or a misoperating 52a or 52b contact, the SEL-2652A coil de-energizes, closing the normally closed contact and opening the normally open contact.

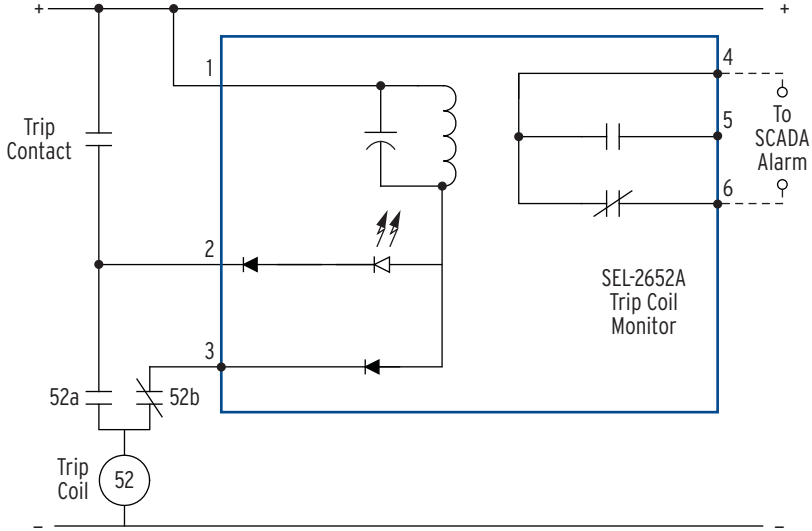


Figure 1 Wiring Diagram for Monitoring the Trip Circuit Fed From the Positive DC Trip Bus

Negative DC Trip Bus

While the SEL-2652A was originally designed for positive dc trip bus applications, it is also possible to apply it to negative dc trip bus applications. However, the user must be aware of certain limitations of such an application. *Figure 2* displays a recommended wiring diagram for a negative dc trip bus application. In this application, the SEL-2652A performs in a similar manner to the positive trip bus design in *Figure 1*. The LED turns off when the circuit breaker opens. The 52b contact keeps the SEL-2652A internal relay energized to prevent unnecessary alarms. However, three important points must be observed in this application. The first point is that the application requires two 52a contacts for correct operation. Using two 52a contacts could cause an operation miscue if the two 52a contacts do not match. For example, with the breaker closed, it may be possible for the 52a contact in series with the trip coil to fail (become an open circuit), but, because the SEL-2652A only monitors the second 52a contact, the SEL-2652A does not alarm for that condition. Secondly, both a 52a and a 52b contact status are required inside the control house, requiring additional wiring. Finally, when the circuit breaker is closed, the SEL-2652A cannot monitor the wiring between the 52a contact and the relay trip coil. This loss of coverage could prevent the SEL-2652A from alarming if the wire in the yard becomes disconnected.

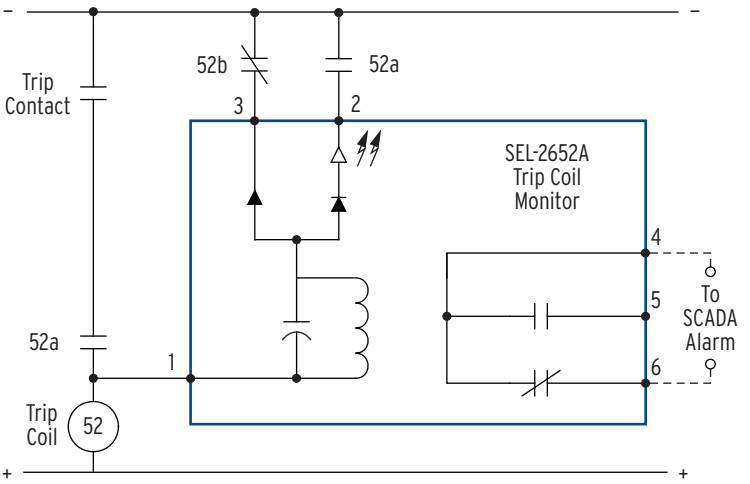


Figure 2 Wiring Diagram for Monitoring the Trip Circuit Fed From the Negative DC Trip Bus

The alternative wiring diagram for a negative dc trip bus scheme is shown in *Figure 3*. It removes the need for 52a and 52b contacts inside the control house and recovers the lost coverage just described, but it limits the functionality of the SEL-2652A. The alternative diagram still maintains correct LED operation when the breaker is closed. However, the SEL-2652A alarms when the breaker opens.

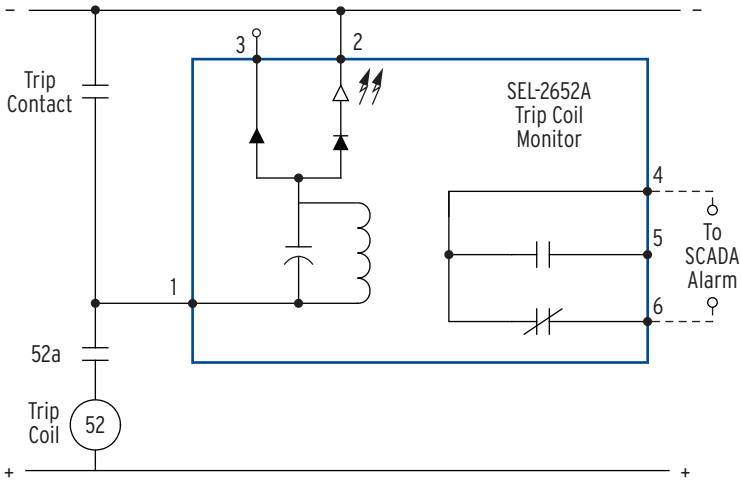


Figure 3 Alternative Wiring Diagram for Monitoring the Trip Circuit Fed From the Negative DC Trip Bus

SEL-2652B Application

Positive DC Trip Bus

The SEL-2652B LED, as shown in *Figure 4*, is set up for a positive dc trip bus application where the LED stays illuminated if the circuit breaker is either closed or open, the trip coil is healthy, and the 52a and 52b contacts are working properly. When the breaker is open, the 52b contact keeps the SEL-2652B internal relay in an energized state to prevent unnecessary alarms. During normal breaker operation, there may be a short period when both 52a and 52b contacts are open. A capacitor across the SEL-2652B control coil delays dropout for at least 200 ms to prevent nuisance alarms during this period. In the event of a trip coil circuit problem, such as an open trip circuit condition or a misoperating 52a or 52b contact, the SEL-2652B coil de-energizes, closing the normally closed contact and opening the normally open contact.

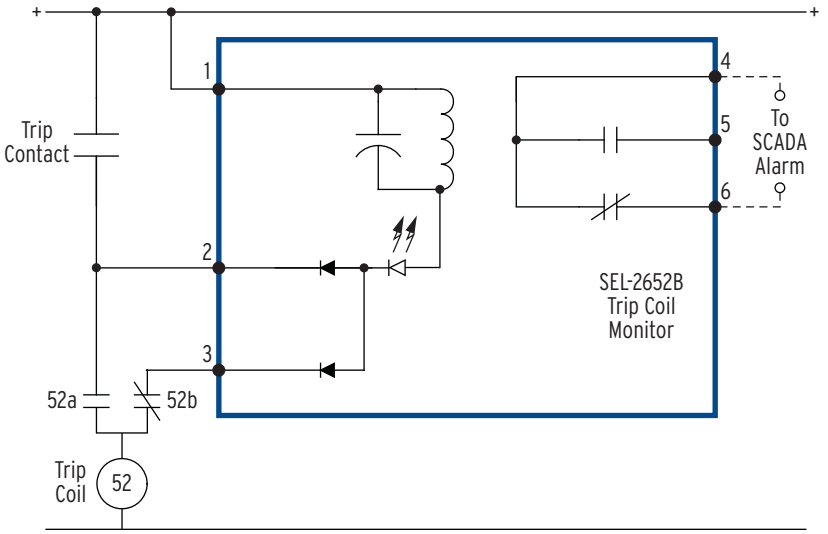


Figure 4 Wiring Diagram for Monitoring the Trip Circuit Fed From the Positive DC Trip Bus

Installation

Step 1. Mount the SEL-2652 using the threaded plastic nut and alignment stud to hold the monitor in place.

Step 2. Wire the SEL-2652 using the terminal numbering on the label for reference, then plug in the terminal block. Wire with the terminal block in place if more convenient.

NOTE: The terminal block is reversible, allowing wires to be trained left or right from the product. Ensure that the terminal block orientation is correct for wiring and the configurable key tab is in the proper location before inserting into the base.

Step 3. Energize the unit.

Step 4. Inspect and test the unit for proper indication of the LED and proper contact operation.

Specifications

Compliance

Designed and manufactured under an ISO 9001 certified quality management system

UL recognized to US and Canadian safety standards (File E202915; NKCR2, NKCR8)

Input Power

Self powered from 48 Vdc to 125 Vdc systems

Range:	30–150 Vdc
Current Draw:	<10 mA dc
Let-Through (Maximum Transient Current Draw):	200 mA peak decays to 10 mA in < 2 ms

Contacts

Capable of switching up to 0.5 µF

Make/Break/Carry:	1 A resistive up to 150 Vdc
Drop-Out Delay:	> 200 ms
MOV Protection:	175 Vdc continuous

Connections

Six terminal connections support #10 ring terminals

Operating Temperature Range

–40° to +85°C (–40° to +185°F)
(Maximum ambient temperature for UL is +40°C)

Type Tests

IEC 60255-5:2000 Hipot and Impulse Isolation Between Input and Output Terminals

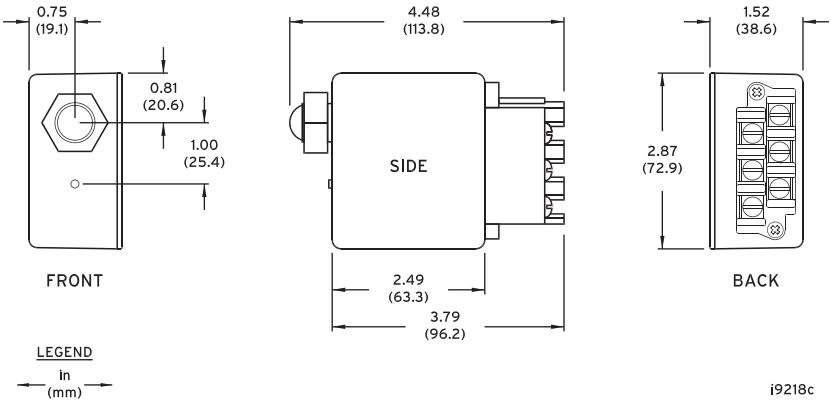
IEC 60255-22-1 and IEEE C37.90.1 Surge Withstand Capability

IEC 60255-22-4:2008 and IEC 61000-4-4:2004 Electrical Fast Transient Burst Immunity

IEEE C37.90.2-2004, IEC 61000-4-3 and IEC 60255-22-3 Radiated RF Immunity

Dimensions

DIMENSION DRAWING



Notes

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