

ZERO-HERTZ

DC TRIP UNIT

MICRO-CONTROLLER BASED

*The Premier Multifunction
DC Protective Relay***Standard Trip Unit Functions**

- Long-Time
- Short-Time
- Instantaneous
- Ground Fault
- Reverse Current

All functions, except for Long Time, are selectable ON/OFF during programming.

Rate-of-Rise Trip

This function is available as an option for transit application. Additional setpoints include an adjustable Delta I, Rate-of-Rise (dI/dT), and Delay.

Programming

Settings are programmed using the ▲, ▼, and **SAVE** buttons on the front of the trip unit. All settings and last trip data are stored in non-volatile memory.

Security is provided by a **SECURITY KEY**, which must be plugged in to the top of the trip unit before any trip settings can be changed.

16-Character LCD

The large backlit display provides continuous current metering when the trip unit is in service. Last Trip Data and trip settings can be reviewed at any time by pressing the **REVIEW** key.

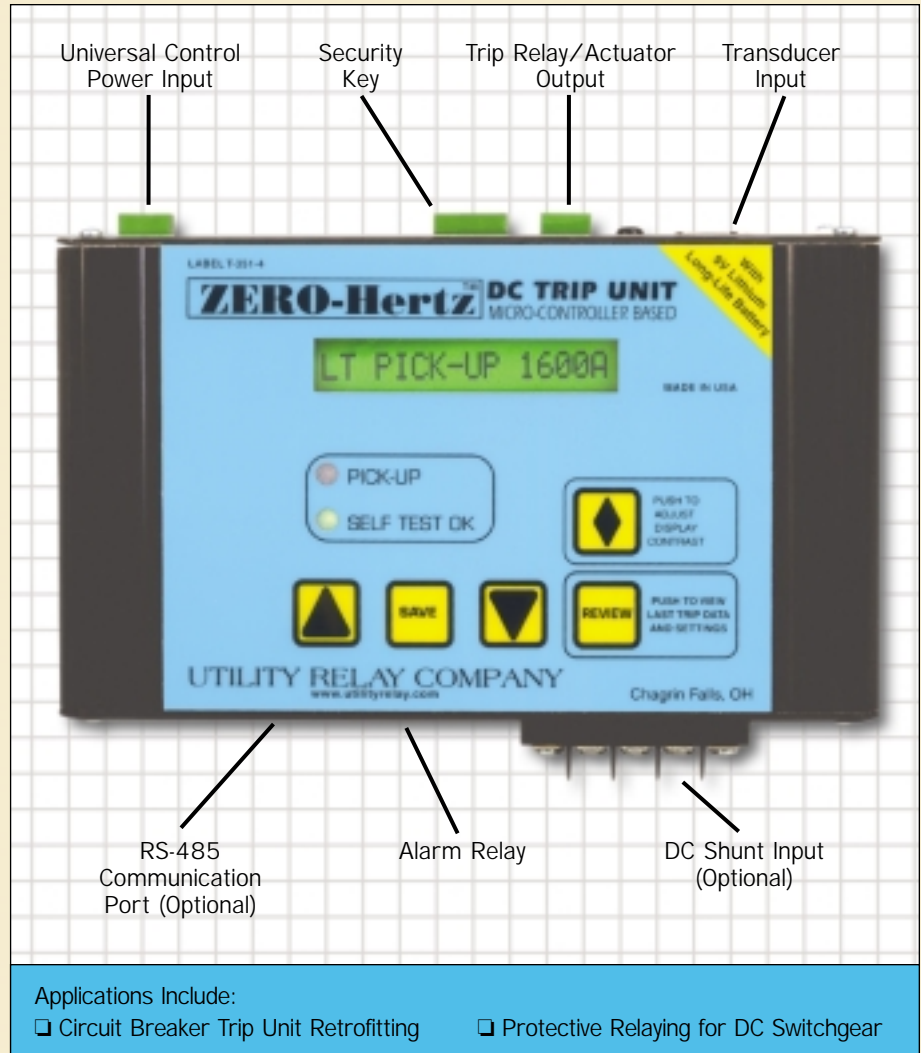
The ◆ button on the front of the trip unit is provided to adjust the LCD's contrast.

Last Trip Data

The trip unit retains the data from the most recent trip in EEPROM memory. This information includes the type of trip and current at the time of trip. This information can be reviewed at any time by pressing the **REVIEW** button.

Continually pressing the **REVIEW** button will display a trip counter, which indicates the number of times the trip unit has operated on each function. The present trip unit settings will also be displayed.

Last trip data and the trip counter can be cleared at any time.

**Applications Include:**

- Circuit Breaker Trip Unit Retrofitting
- Protective Relaying for DC Switchgear

SELF-TEST OK Feature

The green LED indicates that the trip unit is operating properly. This feature:

- Continuously monitors the trip unit.
- Verifies that an actuator or trip relay is connected.
- Verifies proper transducer connection when using transducers.
- Monitors software routines.
- Monitors micro-controller and A/D converter.

PICK-UP Indication

The red LED on the front of the trip unit illuminates when current reaches or exceeds the Long-Time pick-up value.

Flexible Control Power Input

Universal control power input accepts:
AC volts: 75-265
DC volts: 90-340

Alarm Relay

User Configurable
Form C relay
Rating: 5A 30VDC
5A 125VAC

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**Transducers**

The transducers provide the signal input for the ZERO-Hertz trip unit. They are mounted directly on the bus of the breaker and must be calibrated after installation.

The calibration procedure involves injecting a known test current in each individual pole of the breaker and adjusting the transducer's gain. Calibration is complete when the appropriate current is displayed on the trip unit's LCD ammeter.

Calibration can be performed using either a **DC or AC high-current test set**. (Note: If testing with an AC high-current test, specify 50-Hz or 60 Hz when ordering).

DC Shunt Input (Optional)

This allows signal input to the ZERO-Hertz directly from a DC shunt. The shunt input is used instead of the transducers.

Terminals are available for connection directly to either a 50mV or 100mV shunt mounted in the switchgear. In this application the trip unit is typically also mounted in the switchgear as a panel relay and the ZERO-Hertz trip output is wired in the breaker's trip circuit.

Maximum recommended operating system voltage: 1000VDC
DC bus isolation: 3750 VDC for 60 sec.

No calibration is required when using the optional Shunt Input.

Retrofit Kits

The ZERO-Hertz is provided as a complete retrofit kit, including all necessary mounting hardware and documentation. Complete kits are available from stock for the following breaker types:

General Electric

AK AKR AL
MC-5 MC-6

Westinghouse

DB DBL DMD
DR-150

I-T-E

K-line FB FBK
KA KB KC

Federal Pioneer

H2 H3

RS-485 Communications Port

The optional communications port uses the industry standard MODBUS RTU protocol. Multiple trip units can be daisy-chained together using a single twisted pair wire.

Information monitored includes:

- DC current
- Last trip data
- Trip counter
- Alarm conditions
- Trip unit settings

With the addition of an LCI (Local Communications Interface), multiple ZERO-Hertz trip units can communicate directly across a local area network.

The LCI Features:

- 4-line X 20-character display
- Rugged NEMA 4X enclosure
- RS-485 Input
- 10Base-T Ethernet port
- Programmable IP Address
- Embedded WEB Pages
- 2-Year Limited Warranty



ZERO-Hertz retrofit kit installed on a Westinghouse DB-25 breaker.

Secondary Injection Test Set

The Model B-290 test set is designed to test both the transducer input and shunt input version of the ZERO-Hertz.

The test set can quickly test Pick-Up settings and multiple test points and trip times on the time current curve.



Call Toll Free: 888.289.2864

For additional information visit our website:
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