

# ZERO-Hertz®

## MICRO-CONTROLLER BASED DC TRIP UNIT

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

### 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** button.

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

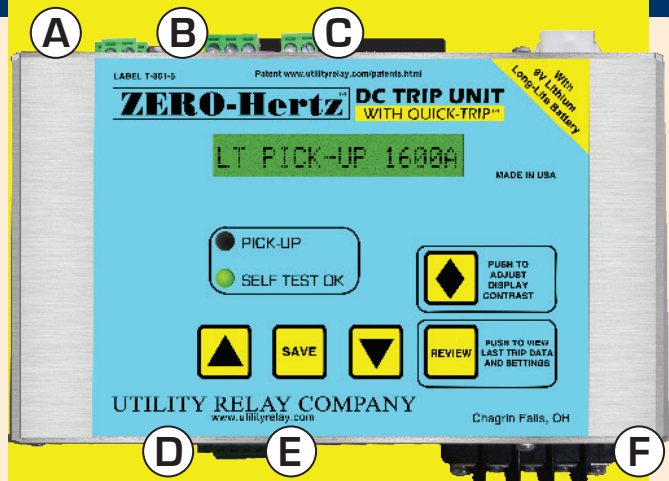
### Last Trip Data

The trip unit retains the data from the most recent trip in non-volatile memory. This information includes the type of trip and current at the time of the 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.

### “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.



- A** UNIVERSAL CONTROL POWER INPUT
- B** TRIP RELAY/ACTUATOR OUTPUT
- C** SECURITY KEY
- D** RS485 COMMUNICATIONS PORT (OPTIONAL)
- E** ALARM RELAY
- F** DC SHUNT INPUT (OPTIONAL)



### QUICK-TRIP®

The QUICK-TRIP® system can help reduce the arc flash hazard on downstream equipment for times when personnel must work on energized equipment. The QUICK-TRIP® system can be turned on and off without opening the cubicle door and adds the following features:

- QT-Instantaneous setting
- QT-Ground fault setting
- Door mounted switch with lockable clover

### “SELF-TEST OK” LED

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

### 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

REV 7.24.18



## DC Shunt Input (Optional)

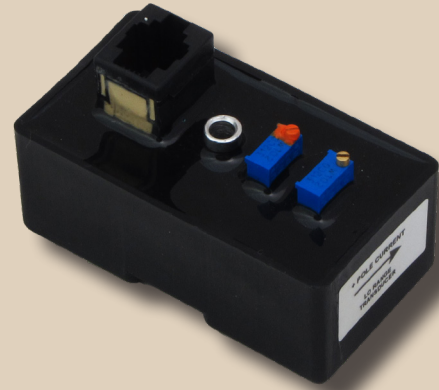
This allows signal input to the ZERO-Hertz® directly from a DC metering shunt. The shunt input is used instead of the transducers. Terminals are available for connection directly to either a 50mV or 100mV shunt mounted in the switchgear. In this application the trip unit is typically also mounted in 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 is 1000 VDC. DC bus isolation is 3750 VDC for 60 seconds. No calibration is required when using the optional shunt input.

## 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).



## RS485 Communications Port

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

**Information monitored over communications includes:** (K-Line, FB, FBK,KA,KB,KC), and **Federal Pioneer** (H2, H3)

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

## Retrofit Kits

ZERO-Hertz® is provided as a complete retrofit kit, including all necessary mounting hardware and documentation.

Complete kits are available from stock for **GE** (AK, AKR, AL, MC-5, MC-6), **Westinghouse** (DB, DBL, DMD, DR-150), **I-T-E**

## Secondary Injection Test Set

The model B-290 test set is designed to test both the transducer input and the 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 current curve.



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