etc-PTS II Quick Start Instruction Sheet

Introduction:

The *etc-pts II* is a portable secondary injection test set that can be used in the field to verify the functionality the *etc-12* trip unit as well as the *etc-11, etc-11r, etc-12E*, *etc-12G*, *etc-12S* and *etc-12Q* series direct replacement trip units. The test set is not compatible with *etc-11d* trip units with instantaneous enabled.

This unit works by injecting a single phase signal simulating the current transformer output. Under test conditions, the currents sensors are bypassed and this current is injected directly into the trip device under test.

The amplitude of this simulated secondary current can be adjusted between 0 and approximately 1300% of the long-time pickup setting. This permits test of all protection elements. The test set has a digital display that shows the test current expressed as a multiple of the sensor rating as well as elapsed time in 1ms increments.

The *etc-pts II* can also measure the DC resistance of current sensor on breakers equipped with *etc-11, etc-11r, etc-12, etc-12G, etc-12E,* and *etc-12S* series trip units. The test set can measure the resistance of the flux trip coil on breakers equipped with any series of the *etc-12.*

Secondary injection is a quick and useful test to verify the operation of the electronic trip unit, the flux trip device and the basic mechanical operation of the breaker. It should be noted that secondary injection is NOT capable of checking the following:

- Accuracy and functionality of the current transformers.
- Integrity of the cabling between the current transformers and the trip unit.
- Integrity of the electrical insulation between phases and between phases and ground.
- Contact resistance.
- Functionality of close coils, charging motors, shunt trips, UV or OV coils or other similar accessories.

Controls

Figure 1 is a front view of the *etc-pts2.* The device has a 4 button LCD keypad (A), a rotary switch with pre-set test currents (B) and a manual adjust potentiometer (C). When performing phase current tests, the last two positions in the clockwise direction on the rotary switch are manual current ranges. The second to the last positions allows test currents between .1L to approximately 3L to be manually adjusted. When the preset switch is in the full clockwise position, the manual adjust high range is selected. This allows currents between approximately 2.5 to 13L to be selected.

FIGURE 1, FRONT VIEW OF TEST SET

Setup

Whenever the test set is powered down, the default settings are restored.

In order to configure the test set for testing *etc-12 Q-series* trip units, the secondary (SEC) option must be changed to .1AMPS in the SETUP menu. When configured in this manner, the test current will be 100mA at 1X. This is equal to the secondary ratings of the OEM current transformer.

The test set can be configured in either “TIMER ONLY” mode (default) or “TRIP BREAKER”. Timer only mode injects current into the trip unit but interrupts its trip signal so that the breaker does not open. This mode can be used with the breaker open or closed and can also be used to test units not yet installed on breakers. When “TRIP BREAKER” is selected, the trip signal will be routed back to the flux trip device and will open the breaker.

The ø soft key directs the test current into either A, B, or C phase of the breaker. Selecting GF will scale output current to an appropriate level for testing ground fault.

Basic Tests

The *etc-ptsII* is designed to perform both pickup and delay tests. When testing, the *etc-12Q* series may be placed in *Test Mode* to temporarily defeat bands that interfere with a particular test. The *etc-12 Section II* manual provides detailed test instructions and tolerances.

Pickup tests are performed by applying a current slightly below the pickup tolerance to verify that the *etc-12 Q series* under test does not prematurely enter pickup. After this is verified, a signal slightly above the pickup point is applied to verify that the unit is properly responding to an over-current.

Delay tests are performed by applying a test current that is significantly higher than the pickup point and verifying that the unit times out and trip in accordance to specifications.