

AC-PRO Retrofit Guide Form Specification

- A.) The new trip system shall include a microcontroller-based trip unit that shall be three-phase true RMS sensing for every protective function, including Instantaneous. Tripping characteristics shall fall within published curves in an ambient of –20C to 65C. The trip unit shall be UL CLASSIFIED.
- B.) All components required for retrofitting the new trip system onto the circuit breaker shall be specifically designed to fit each individual breaker type and ampere frame rating and shall be supplied as a “Complete Retrofit Kit” from the manufacturer. No additional parts shall be needed to complete the installation of the retrofit kit on the circuit breaker. Each kit shall include an Installation Manual that details the installation of every component in the retrofit kit.
- C.) CTs shall provide both the current signal and power for the trip unit from a single winding. CTs with separate power-windings shall not be used in order to reduce the potential for CT and trip unit overheating.
- D.) The CT Tap Rating and all protective settings shall be user programmable on the trip unit so that any one trip unit can be easily programmed to operate on any breaker frame size without requiring additional components. The use of interchangeable rating plugs is not acceptable.
- E.) The trip unit shall include the following individually adjustable protective functions and settings:

CT Rating (CT RATING) adjustable from 50 amps to 6000 amps.

Long-Time Pick-Up (LT PICK-UP) adjustable from 20% to 100% of the CT Rating in 5 amp increments (50 amp increments when CT Rating is above 5000 amps).

Long-Time Delay (LT DELAY) adjustable from 2.0 sec to 30.0 sec with a minimum of 57 selectable time bands.

- * **Short-Time Pick-Up (ST PICK-UP)** adjustable from 1.5X to 12X the LT PICK-UP in 100 amp increments (1000 amp increments when CT Rating is above 5000 amps). Function can be defeated (turned OFF) provided that the Instantaneous function is turned ON.

Short-Time Delay (ST DELAY) a minimum of 6 selectable times bands shall be provided.

Short-Time I²t (ST I²t) selectable ON or OFF.

Instantaneous (INST) adjustable from 1.5X to 12X the LT PICK-UP in 100 amp increments (1000 amp increments when CT Rating is above 5000 amps). Function can be defeated (turned OFF) provided that the Short-Time function is turned ON.

Ground Fault Pick-Up (GF PICK-UP) adjustable from 20% to 200% the CT tap, with a maximum of 1200 amps, in 10 amp increments. Function is defeatable (selectable ON or OFF).

Ground Fault Delay (GF DELAY) at least 5 selectable times bands.

Ground Fault I²t (GF I2T) selectable ON or OFF.

Unbalance Pick-Up (U/B PICK-UP) adjustable from 20% to 50% current unbalance in 5% increments. Function is selectable ON or OFF.

Unbalance Delay (U/B DELAY) adjustable from 1 sec. to 60 sec. with a minimum of 60 selectable time bands.

- F.) The trip unit shall be continuously self-checking and provide a positive indication that the internal circuitry is being monitored and is operational and that the actuator is connected.
- G.) The trip unit shall include an integral 16-character display used for programming the protective settings. The display shall act as a 3-phase true RMS ammeter when the trip unit is in service and powered-up from the CTs. No additional control power wiring is required for the ammeter display function.
- H.) All settings and Last Trip Data shall be stored in non-volatile memory. The trip settings shall be protected by means of a removable security key. Last Trip Data and the settings can be review on the display at any time without the security key.
- I.) Last Trip Data shall include: 1.) The function used to operate the circuit breaker, 2.) The individual phase currents, and ground current if applicable, at the time of trip, 3.) A trip counter that will indicate how many times the trip unit operated on each function. All data shall be displayed in plain English so that no codes need to be referenced in order to quickly determine the cause and magnitude of the last trip, trip unit settings, or to use the ammeter feature.
- J.) The trip unit shall include an auxiliary output for connection to an optional remote display unit. For safety reasons, the remote display unit shall allow plant personnel to review all Last Trip Data and the Trip Counter without opening the cubicle door. The remote display unit shall also provide remote indication of overcurrent pick-up, the trip unit's self test, and a continuous ammeter display.