

## FP-03 : FPU-32 FEEDER PROTECTION UNIT GUIDEFORM SPECIFICATION

Feeder protection shall be provided by a Littelfuse Startco FPU-32 microprocessor-based relay with the following specifications.

Protective functions shall be password protected. Two independent set-point groups shall be available for overcurrent protective functions. Protective functions shall include:

- Overcurrent (inverse-time)
- Overcurrent (definite-time)
- Earth fault (inverse-time)
- Earth fault (definite-time)
- Thermal overload ( $I^2t$ )
- Unbalance (I)
- Phase reverse (I)
- Phase loss (I)
- Undercurrent
- RTD temperature
- PTC overtemperature

Metering shall be accessible both locally and through serial communications and shall include:

- Line currents
- Current unbalance
- Positive-sequence current
- Negative-sequence current
- Earth-leakage current (calculated and measured)
- Used thermal capacity
- Thermal trend
- Trip counters
- RTD temperature or PTC status
- Phase current above inverse pick-up
- Earth-leakage above inverse pick-up
- Running hours

Records shall be logged for the last 100 trip and emergency-thermal-reset events. Logged data shall include:

- Date and time of event
- Event type
- Line currents
- Current unbalance
- Earth-leakage current (calculated and measured)
- Used thermal capacity

The inputs and outputs of the system shall include:

- Three ac-phase-current inputs
- Earth-leakage-CT input
- Programmable digital input
- 24-Vdc source for digital input
- 4 – 20-mA analog output
- Temperature-sensor input, 100- $\Omega$ -Platinum RTD or PTC thermistor
- Three programmable output relays
- TIA-232 communications with PC-interface software
- Optional TIA-485, Modbus<sup>®</sup> TCP, or DeviceNet<sup>™</sup> communications
- Operator interface:
  - 4 line x 20 character backlit LCD display
  - Keypad for programming and display selection
  - 4 LED's; 1 user programmable
- Remote Current Input Module for CT connections

IEEE Device Numbers:

- 46, 49, 50, 50G, 50N, 51, 51G, 51N, 74, 86