

# Motor and Pump Protection Relays

## MPU-32 Series

### Motor Protection Unit



## Description

The MPU-32 series Motor Protection Unit is used to provide current and temperature-based protection, metering, and data-logging for three-phase, low-voltage, medium-horsepower induction motors. This relay is ideal for retrofitting and upgrading obsolete or aging motor protection using existing CTs. The MPU-32 can be programmed using the front-panel operator interface, the TIA-232 port, or an optional communications network. See the PMA Family of Panel Mount Adapter Kits to replace common obsolete relays.

### 1 Motor Protection Unit

- Three ac-current inputs
- Earth-leakage-CT input
- Programmable digital input
- 24 V dc source for digital input
- Programmable 4–20-mA analog output
- Onboard temperature-sensor input
- 100-Ω-Platinum RTD or PTC
- Three programmable output relays

- Local RS-232 communications, optional network communications
- PC-interface software (SE-Comm-RIS)
- 4 line x 20 character backlit LCD display
- Keypad for programming and display selection
- 4 LEDs; 1 user programmable

### 2 Current Input Module (MPU-CIM)

The MPU-CIM Current Input Module is the interface between the MPU-32 relay and the 5-A-secondary, 1-A-secondary, and sensitive current transformers. The MPU-CIM is ordered separately from the MPU-32 and can be surface- or DIN-rail mounted. Wire-clamping terminals are standard, but the MPUCTI is available for those requiring ring-tongue terminals.

## Features & Benefits

| FEATURES                                                    | IEEE #       | BENEFITS                                                                                       |
|-------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------|
| <b>Overload</b>                                             | 49, 51       | Extends motor life and prevents insulation failures and fires                                  |
| <b>Dynamic thermal model</b>                                |              | Provides protection through starting, running, and cooling cycles                              |
| <b>Communications</b>                                       |              | Remotely view measured values and event records, reset trips, and access setpoints             |
| <b>Ground fault</b>                                         | 50G/N, 51G/N | Prevents catastrophic failures and fires                                                       |
| <b>Current unbalance/Phase loss/Phase reverse (current)</b> | 46           | Prevents overheating due to unbalanced phases                                                  |
| <b>RTD temperature</b>                                      | 38, 49       | RTD temperature protection (MPS-RTD module) for high-ambient or loss-of-ventilation protection |
| <b>Phase loss/Phase reverse (current)</b>                   | 46           | Detects unhealthy supply conditions                                                            |
| <b>Overcurrent</b>                                          | 50, 51       | Prevents catastrophic failures and fires and extends motor life                                |
| <b>Jam</b>                                                  |              | Prevents motor damage by detecting mechanical jams or excessive loading                        |
| <b>Undercurrent</b>                                         | 37           | Detects low level or no-load conditions                                                        |
| <b>PTC overtemperature</b>                                  | 49           | Overtemperature (PTC) protection for high-ambient or loss-of-ventilation detection             |
| <b>Starts per hour</b>                                      | 66           | Limits the motor starts per hour to prevent overheating                                        |
| <b>Differential</b>                                         | 87           | Optional MPS-DIF module for sensitive winding-fault protection                                 |

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### Applications

- Low and medium voltage motors

### Specifications

#### Protective Functions (IEEE Device Numbers)

Overload (49, 51), Phase reverse (current) (46), Overcurrent (50, 51), Jam, Ground fault (50G/N, 51G/N), PTC overtemperature (49), RTD temperature (38, 49), Unbalance (current) (46), Starts per hour (66), Differential (87), Phase loss (current) (46), Undercurrent (37)

#### Input Voltage

65-265 V ac, 25 VA; 80-275 V dc, 25 W

#### Power-Up Time

800 ms at 120 V ac

#### Ride-Through Time

100 ms minimum

#### 24-Vdc Source

100 mA maximum

#### AC Measurements

True RMS and DFT, Peak, 16 samples/cycle, and positive and negative sequence of fundamental

#### Frequency

50, 60 Hz or ASD

#### Output Contacts

Three Form C programmables

#### Communications

TIA-232 (standard); TIA-485, DeviceNet™, Ethernet (optional)

#### Analog Output

4-20 mA, programmable

#### Conformally Coated

Standard feature

#### Warranty

10 years

#### Control Unit Mounting

Panel (standard), Surface (with MPU-32-SMK converter kit)

#### Current Input Module Mounting

DIN, Surface

### Certification & Compliance

|            |                                                                                                                          |
|------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>CSA</b> | CSA, Canada and USA<br>(CSA C22.2 No. 14, CSA C22.2 No. 213-M1987 (RTD module only), CSA E60079-15:02 (RTD module only)) |
| <b>CE</b>  | EN 60255-26, IEC 61010-1                                                                                                 |
| <b>UL</b>  | UL Recognized<br>(UL 508, UL 1053, UL 60079-15 (RTD module only))                                                        |
| <b>RCM</b> | RCM                                                                                                                      |

### Accessories

#### A Phase Current Transformers

Phase CTs are required to detect phase currents. For upgrade applications, existing CTs can be used.

#### B Earth-Fault Current Transformer

Optional zero-sequence current transformer detects ground-fault current. Available with 5-A and 30-A primary ratings for low-level pickup.

#### C MPS-RTD Temperature Input Module

Optional module provides 8 inputs to connect Pt100, Ni100, Ni120, and Cu10 RTDs.

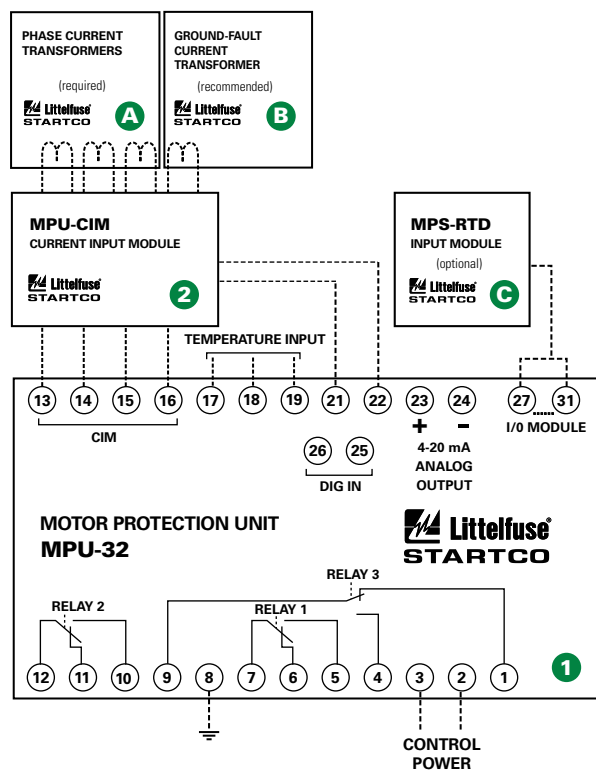
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### Ordering Information

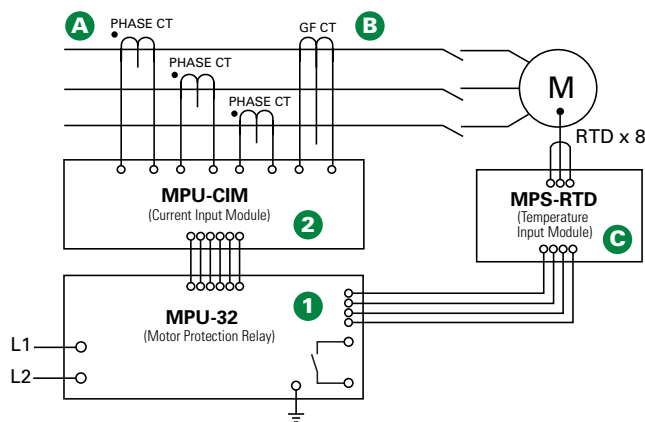
| ORDERING NUMBER  | COMMUNICATION                        | PHASE CURRENT TRANSFORMER INPUTS          |
|------------------|--------------------------------------|-------------------------------------------|
| MPU-32-00-00     | TIA-232                              | Using MPU-CIM-00-00, purchased separately |
| MPU-32-01-00     | TIA-232 & TIA-485                    |                                           |
| MPU-32-02-00     | TIA-232 & DeviceNet™                 |                                           |
| MPU-32-04-00     | TIA-232 & EtherNet/IP™ & Modbus® TCP |                                           |
| MPU-32-00-01     | TIA-232                              | Onboard inputs for 1-A phase CTs          |
| MPU-32-01-01     | TIA-232 & TIA-485                    |                                           |
| MPU-32-02-01     | TIA-232 & DeviceNet™                 |                                           |
| MPU-32-04-01     | TIA-232 & EtherNet/IP™ & Modbus® TCP |                                           |
| ACCESSORIES      |                                      | REQUIREMENT                               |
| Phase CTs        |                                      | Required                                  |
| Earth-Fault CTs  |                                      | Optional                                  |
| MPS-RTD-01-00    |                                      |                                           |
| MPU-32-SMK       |                                      |                                           |
| CA-945           |                                      |                                           |
| MPU-16A-Y92A-96N |                                      |                                           |

### Simplified Wiring Diagram



Note: Unit shown with MPU-CIM-00-00 for phase current transformer inputs

### Simplified Circuit Diagram



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