

## MP-12 : MPS MOTOR PROTECTION SYSTEM GUIDEFORM SPECIFICATION

Motor protection shall be provided by a microprocessor-based relay that meets the following specifications.

Protective functions shall include set points for the following:

- Thermal overload (I2t)
- Overcurrent
- Jam
- Earth fault
- Unbalance (I)
- Phase loss (I)
- Phase reverse (I)
- Undercurrent
- Failure to Accelerate
- Underspeed
- Overvoltage
- Undervoltage
- Power factor
- Unbalance (V)
- Phase loss (V)
- Phase reverse (V)
- Overfrequency
- Underfrequency
- RTD temperature
- PTC overtemperature

Metering and logged data (64 events) shall be accessible locally and through serial communications and shall include:

- Line currents
- Current unbalance
- Positive-sequence current
- Negative-sequence current
- Earth-leakage current
- Line frequency
- Line-to-line voltages
- Voltage unbalance
- Positive-sequence voltage
- Negative-sequence voltage
- Power: kW, kVA, kVAR, pf
- Energy: kWh, kVAh, kVARh
- Used thermal capacity
- Thermal trend
- Motor speed
- RTD temperatures
- Maximum starting current
- Minimum starting voltage
- Thermal capacity used during start
- Trip counters
- Cause of trip
- Running hours

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The Inputs and Outputs of the system shall include:

- Three line-CT inputs
- Three line-voltage inputs (up to 600 V direct)
- Earth-leakage-CT input
- Seven programmable digital inputs
- 24 Vdc source for digital inputs
- Tachometer (high-speed pulse) input
- 4-20 mA analog input
- 4-20 mA analog output
- PTC thermistor input
- Five programmable output relays
- Network communications
- PC interface software
- IRIG-B time-code input

Up to three operator interface modules

- 4 x 20 character display
- Status LEDs
- Display control and programming keys
- Starter control keys
- Hazardous location certified

Up to three remote RTD modules

- 8 inputs per module
- Individually selectable RTD types
- Solid-state multiplexing
- Hazardous location certified

Motor-control functions shall include:

- Control of any starter type using up to four contactors
- Start / stop control from face-plate, digital inputs, and network
- Local start-signal isolation
- Current- or time-based start transitions
- Backspin protection
- Contactor-failure protection