



SEL-749M Relay Guideform Specification

Motor protection shall be provided by a microprocessor-based relay equipped with the following protection functions:

- Motor Thermal Overload Model (49)
 - Use phase- and negative-sequence current heating to calculate motor temperature during starting and running states
 - Settable motor-stopped cooling time constant
- Phase, neutral, and residual overcurrent elements (50P/50N/50G)
- Imbalance current (46)
- Over- and underfrequency (81)
- Phase reversal (47)
- Load-loss (undercurrent) (37)
- Load-jam/incomplete sequence
- Starts-per-hour (66)
- Minimum-time-between-starts (66)

When voltage inputs are specified, the relay shall provide the following protection elements:

- Over- and undervoltage (59, 27)
- Underpower (37)
- Reactive power (VAR)
- Power factor (55)
- Voltage-based over- and underfrequency (81)
- Loss of potential (60)

External temperature capabilities shall offer the following:

- Availability of as many as 12 RTD inputs in an external module, which, when included, shall have the following features:
 - Optical fiber transmission of RTD temperatures to relay: range > 400 m
 - Separately field-selected RTD types: Pt100, Ni100, Ni120, or Cu10
 - Noise immunity $\geq 1.0 \text{ Vac}_{\text{peak}}$ at $f \leq 50 \text{ Hz}$
 - One contact input
- RTD inputs to the motor relay shall support the following:
 - Thermal overload model biasing
 - Temperature alarms and trips (49T)
 - RTD open- or short-circuit indication
- Capability of one PTC (positive temperature coefficient) thermistor input (49T)



Monitoring and reporting functions shall include the following:

- Motor start reports: currents and thermal calculation at a programmable rate for as much as the first 60 seconds of the motor start
- Motor start trends: starts, time running, peak/average, and counters
- Fault summaries: fault type and trip data
- Event reports: 15 or 64 cycles of data with 16-samples/cycle resolution
- Sequential Events Recorder (SER): 512 inputs, outputs, and element transitions
- Data stored in nonvolatile, flash memory.

Communications/integration support shall include the following:

- ASCII, Modbus[®] RTU, and DeviceNet protocols
- One front-panel and one rear-panel EIA-232 port
- Capability for an additional rear-panel EIA-232 or EIA-485 port
- Windows[®]-based PC software for settings, retrieving reports, and HMI for metering and control
- Programmable front-panel target indicators with configurable labels
- Multiple level security passwords with as many as 12 characters

Hardware features shall offer the following:

- Operating temperature range of -40° to $+85^{\circ}\text{C}$ (-40° to $+185^{\circ}\text{F}$)
- Power supply input operating voltage range of 24–48 Vdc, 110–250 Vdc, or 110–240 Vac
- Demodulated IRIG-B time synchronization input capability or PTC input capability
- 4–20 mA analog output capability with power factor, load current, active power, thermal capacity, or RTD temperature
- Optional optoisolated inputs and electromechanical output contacts capability
- 300 V maximum, three ac voltage inputs
- 5 A or 1 A, ac current inputs: I_A , I_B , I_C , and I_N
- Optional 12 external RTD inputs capability
- Relay front panel shall meet the requirements of NEMA 12/IP65
- Relay shall comply with UL 1604, CSA 22-2 No. 213, and EN 60079-15 (hazardous locations approval)

