



701 Motor Protection Relay Guideform Specification

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

- Motor thermal model accounting for phase and negative-sequence current heating during starting and running states; settable motor-stopped cooling time constant shall be provided.
- Phase, neutral, and negative-sequence overcurrent elements for short circuit fault detection.
- Unbalance current, phase reversal, load-loss, and load-jam detection.
- Starts-per-hour and minimum time between starts limit protection.

When voltage inputs are specified, the relay shall provide the following protection elements: over/undervoltage, over/underfrequency, underpower reactive power, and power factor.

The relay shall be available with 11 internal RTD inputs or with 12 RTD inputs in an external module. When included, the external module shall send RTD temperatures and one contact input status to the relay using an optical fiber with a range not less than 400 m. The RTD types shall be individually field selected from four supported types. RTD inputs shall provide the following:

- Thermal model biasing.
- Temperature alarm and trip.
- RTD open or short indication.

The relay shall provide the following monitoring and reporting functions:

- Fault summaries showing faulted motor type and conditions.
- Event reports containing 15 cycles of oscillographic data with 16 samples/cycle resolution.
- Sequential Events Recorder report showing the last 512 input, output, and element transitions.
- Motor start reports showing the currents and thermal estimate every 5 cycles during the first 60 seconds of the motor start.
- Motor start trending showing acceleration time, maximum current, and maximum thermal estimate averages for each of the past eighteen 30-day periods.
- Load profiling that records up to 17 values every 15 minutes for 34 or 48 days.
- Motor Operating Statistics report.

These data shall be available from front- and rear-panel serial ports using a PC, terminal emulation software, and a serial cable. For integration purposes, Modbus™ protocol shall be supported at the relay rear-panel port.

The relay shall have an operating temperature range of -40°C to +85°C and a power supply input operating voltage range of 95–240 ±10% Vac or 20–250 ±20% Vdc. The relay front panel shall meet the requirements of NEMA12/IP54.