



ENGINEERING SPECIFICATION

SYMCOM MODEL 250A-MET 3-PHASE VOLTAGE MONITOR/PROTECTION RELAY

PART 1 GENERAL

1.1 REFERENCES

- A. UL 508 Industrial Control Equipment – Underwriters Laboratories

1.2 WARRANTY

- A. Manufacturer Warranty: The manufacturer shall guarantee the equipment to be free from material and workmanship defects for a period of five years from the date of manufacture when installed and operated according to the manufacturer's requirements.

PART 2 PRODUCTS

2.1 MANUFACTURERS

The equipment specified shall be the Model 250A-MET manufactured by SymCom, Inc.

2.2 DESCRIPTION

- A. Regulatory Requirements:
 1. The equipment shall be UL Listed as type NKCR—Industrial Control Equipment-Motor Controllers-Auxiliary Devices.
 2. The equipment shall be ULC Listed as type NKCR7—Industrial Control Equipment-Motor Controllers-Auxiliary Devices Certified for Canada.

2.3 PERFORMANCE/DESIGN CRITERIA: 3-PHASE VOLTAGE MONITOR/PROTECTION RELAY

- A. Protective Relay Functions
 1. The equipment shall provide protection against the following conditions:
 - a. phase loss (single phasing)
 - b. phase reversal
 - c. low voltage
 - d. voltage unbalance
 - e. rapid cycling due to power faults*
- B. Capabilities and Features
 1. Inputs
 - a. The equipment shall accept 3-phase voltage range 190-480VAC, adjustable.
 - b. The equipment shall accept 3-phase input voltage 50/60 Hz.
 2. Outputs
 - a. The equipment shall include two Form C (SPDT) output relays.
 - 1) Contacts shall be pilot duty rated 480VA@240VAC. Contacts shall be general purpose rated 10A@240VAC.
 3. Functional Specifications
 - a. The equipment shall include:
 - 1) a low voltage trip of 85% of nominal voltage setting
 - 2) a phase unbalance trip point of 6%
 - 3) a trip delay of 4 seconds for low voltage
 - 4) a trip delay of 2 seconds for single phase and unbalance
 - 5) a trip delay of <1 second for reversed phase
 - 6) a manual reset and adjustable restart delay of 2–300 seconds
 - 7) voltage accuracy $\pm 1\%$
 - b. Relay 1 shall energize under normal conditions and de-energize after a low voltage or unbalance/single-phase fault.
 - c. Relay 2 shall energize under reverse-phase conditions only and de-energize under normal conditions.
 - d. The equipment shall have an indicator light.
 - 1) The light scheme shall have the capability to indicate whether the equipment is in run mode, restart delay mode, or fault mode. Fault mode shall include low voltage and unbalance/single phase (phase reversal shall not be indicated).
- C. Electromagnetic Compatibility
 1. The equipment shall be immune to electrical surges per IEC 61000-4-5. Specified limits shall be ± 6 kV line-to-line and line-to-ground.
 2. The equipment shall be immune to electrical fast transient bursts exceeding IEC 61000-4-4, Level 3. Specified limits shall be 4kV input power, 2kV inputs/outputs.
 3. The equipment shall be immune to electrostatic discharge per IEC 61000-4-2, Level 3, 6kV contact discharge and 8kV air discharge.
- D. The equipment shall withstand an alternating current potential of 1000V plus twice the rated voltage of the equipment for 1 minute without breakdown between uninsulated live parts and the enclosure with the contacts open and closed; between terminals of opposite polarity with the contacts closed; and between uninsulated live parts of different circuits.

*Using the adjustable restart delay to increase time before restart after a fault.



E. Environmental Requirements

1. The equipment shall operate continuously without derating in ambient temperatures of -40° to 70°C (-40° to 158°F).
2. The equipment shall operate continuously without derating in relative humidity of up to 95% non-condensing per IEC 68-2-3.
3. The equipment shall operate properly after storage in ambient temperatures of -40° to 80°C (-40° to 176°F).

F. Dimensions: The equipment dimensions shall not exceed 2.90" H X 5.25" W X 2.913" D.

G. Mounting:

1. The equipment shall be surface mountable.

End of Section