



## ENGINEERING SPECIFICATION

### SYMCOM MODEL 250A / 250-100 / 250-600 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

*For Model 250A*

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

*For Model 250-100*

The equipment specified shall be the Model 250-100, manufactured by SymCom, Inc.

*For Model 250-600*

The equipment specified shall be the Model 250-600, 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 voltage monitor shall provide protection against the following conditions:
    - a. phase loss (single phasing)
    - b. phase reversal
    - c. low voltage
    - d. high voltage
    - e. voltage unbalance
    - f. rapid cycling due to power faults\*
- B. Capabilities and Features
  - 1. Inputs
    - For Model 250A*
      - a. The equipment shall accept a 3-phase input voltage range 190-480VAC, adjustable.
    - For Model 250-100*
      - a. The equipment shall accept a 3-phase input voltage range 95-120VAC, adjustable.
    - For Model 250-600*
      - a. The equipment shall accept a 3-phase input voltage range 475-600VAC, adjustable.
    - For All Models*
      - b. The equipment shall accept 3-phase input voltage at 50/60 Hz.
  - 2. Outputs
    - a. The equipment shall include two Form C (DPDT) output relays. Contacts pilot duty rated 480VA@240VAC. Contacts general purpose rated 10A@240VAC.
  - 3. The equipment shall include:
    - a. a low voltage trip point of 90% of nominal voltage setting
    - b. a high voltage trip point of 110% of nominal voltage setting
    - c. a phase unbalance trip point of 6%
    - d. a trip delay of 4 seconds for high/low voltage; a trip delay of 2 seconds for unbalance & phasing faults
    - e. a manual reset, standard with adjustable restart delay of 2–300 seconds
    - f. voltage accuracy  $\pm 1\%$
  - 4. The equipment shall have an indicator light. The light scheme shall have the capability to indicate whether the phase monitor is in run mode, restart delay mode, or fault mode. Fault modes shall be high/low voltage, unbalance/single phase and phase reversal.
- C. Electromagnetic Compatibility
  - 1. The equipment shall be immune to electrical surges per IEC 61000-4-5. Specified limits shall be  $\pm 6$ kV line-to-line and line-to-ground.

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



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. Dielectric Isolation: Equipment withstands 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.
- 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" high X 5.25" wide X 2.913" deep.
- G. Mounting:
1. The equipment shall be surface mountable.

End of Section