ENGINEERING SPECIFICATION

SYMCOM MODEL 455 and 455-575

3-PHASE VOLTAGE MONITOR/PROTECTION RELAY

PART 1 GENERAL

1.1 REFERENCES

A. UL 508 Industrial Control Equipment – Underwriters Laboratories
B. IEC 60947 Low Voltage Switchgear and Controlgear – International Electrotechnical Commission
C. ANSI/IEEE C62.41 – American National Standards Institute/Institute of Electrical & Electronics Engineers
D. CSA C22.2 No. 14 Industrial Control Equipment – Canadian Standards Association

1.1 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 455
The equipment specified shall be the Model 455, manufactured by SymCom, Inc.

For Model 455-575
The equipment specified shall be the Model 455-575, 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. high voltage
      e. voltage unbalance
      f. contact failure
      g. rapid cycling

B. Capabilities and Features
   1. The equipment shall include:
      a. *For the 455 only*
         1) an adjustable voltage range of 190-480VAC
      b. *For the 455-575 only*
         1) an adjustable voltage range of 475-600VAC
      c. a low voltage trip (90% of nominal setting)
      d. a high voltage trip (110% of nominal setting)
      e. an adjustable trip delay of 2-30 seconds for low voltage, high voltage and unbalanced voltage
      f. a trip delay of 2 seconds (fixed) for single-phasing faults
      g. an adjustable restart and rapid cycling delay of 2-300 seconds or manual restart
      h. an adjustable unbalance trip from 2-8%.
      i. voltage accuracy ±1%
   2. The equipment shall include one isolated SPDT output relay contact pilot duty rated 480VA @ 240VAC
   3. The equipment shall include one isolated SPDT output relay contact general purpose rated 10A @ 240VAC.
   4. The equipment shall include three terminals for optional connection to load-side of contactor.
   5. The equipment shall have four indicator lights. The indicator lights have the capability to indicate whether the phase monitor is in run mode, manual restart mode, or whether the unit has encountered a faulty voltage condition.
      a. Fault modes shall include:
         1) high voltage, low voltage, unbalance/single-phase, contact failure, rapid cycling and phase reversal.
   6. The equipment shall have an infrared transmitter for communication with a diagnostic tool.

C. Electromagnetic Compatibility

1. The equipment shall be immune to electrostatic discharge per IEC 61000-4-2, Level 3, 6 kV contact discharge and 8 kV air discharge.
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 electrical surges per IEC 61000-4-5, Level 3. Specified limits shall be Level 3, 4kV line-to-line, and Level 4, 4kV line-to-ground.
4. The equipment shall be immune to electrical surges per ANSI/IEEE C62.41 Surge and Ring Wave. Specified limits shall be 6kV line-to-line.
5. The equipment shall be immune to radiated radio frequency emissions. Specified limits shall be 10V/m at 150 MHz.

D. Environmental Requirements
1. The equipment shall operate continuously without derating in surrounding air temperatures of -40° to 70°C (-40° to 158°F).
2. The equipment shall operate continuously without derating in relative humidity of 10% 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).

E. Dimensions: The equipment dimensions shall not exceed 2.9” H x 5.25” W x 2.913” D.

F. Mounting:
1. The equipment shall be surface mountable.

End of Section