ENGINEERING SPECIFICATION

SYMCOM MODEL RM-1000 REMOTE MONITOR FOR SYMCOM 777 / 77C / 601 PRODUCTS

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. CSA C22.2 No. 14 Industrial Control Equipment – Canadian Standards Association
D. ANSI/IEEE C62.41 – American National Standards Institute/Institute of Electrical & Electronics Engineers

Remote monitors shall be installed according to the latest version of the National Electrical code.

1.1 WARRANTY

A. Manufacturer Warranty: The manufacturer shall guarantee the voltage monitor 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 RM-1000, 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 cUL Listed as type NKCR7—Industrial Control Equipment-Motor Controllers-Auxiliary Devices Certified for Canada.
3. The equipment shall be CE marked for use in the European Union and evaluated against IEC 60947 Low Voltage Switchgear and Controlgear.
4. The equipment shall be CSA certified as class 3211-03—Industrial Control Equipment-Motor Controllers-Auxiliary Devices.

2.3 PERFORMANCE/DESIGN CRITERIA: RM-1000 REMOTE MONITOR FOR SYMCOM 777 / 77C / 601 PRODUCTS

A. Capabilities and Features
1. The remote monitor shall be able to discover via Modbus up to 99 SymCom 777 / 77C / 601 devices on a network.
2. The remote monitor shall be able to lock/unlock network programming on connected devices.
3. The remote monitor shall be able to display the following real-time parameters for the product specified:
   a. Model 777 real-time parameters:
      1) average voltage
      2) average current
      3) individual phase currents
      4) current unbalance
      5) individual line-to-line voltages
      6) voltage unbalance
      7) ground fault current
      8) run hours
      9) power factor
      10) power reading (in KW)
      11) rapid cycle time remaining
      12) restart delay after undercurrent trip
      13) restart delay after any fault excluding undercurrent
      14) fault status of the device
      15) last four fault names
   b. Model 77C real-time parameters:
      1) average voltage
      2) average current
      3) run hours
      4) rapid cycle time remaining
      5) restart delay after undercurrent trip
      6) restart delay after any fault excluding undercurrent
      7) fault status of the device
      8) last four fault names
   c. Model 601 real-time parameters:
      1) average voltage
      2) individual line-to-line voltages
      3) voltage unbalance
      4) rapid cycle time remaining

5) restart delay after faults
6) last four fault names
7) frequency

4. The remote monitor shall provide the ability to view/modify the following set points for the product specified:
   a. Model 777 set points:
      1) low voltage trip point
      2) high voltage trip point
      3) voltage unbalance trip point
      4) current multiplier
      5) overcurrent trip point
      6) undercurrent trip point (except for 777-KW/HP models)
      7) current unbalance trip point
      8) overcurrent trip class
      9) rapid cycle time
      10) restart delay after any fault excluding undercurrent
      11) restart delay after undercurrent trip
      12) number of restart attempts after an undercurrent trip
      13) number of restart attempts after any fault excluding undercurrent trip
      14) undercurrent trip delay time (except for 777-KW/HP models)
      15) ground fault trip point
      16) low power trip point (777-KW/HP models only)
   b. Model 77C set points:
      1) low voltage trip point
      2) high voltage trip point
      3) current multiplier
      4) overcurrent trip point
      5) undercurrent trip point (except for 77C-KW/HP models)
      6) overcurrent trip class
      7) rapid cycle time
      8) restart delay after any fault excluding undercurrent
      9) restart delay after undercurrent trip
      10) number of restart attempts after an undercurrent trip
      11) number of restart attempts after any fault excluding undercurrent trip
      12) undercurrent trip delay time
      13) low power trip point (77C-KW models only)
   c. Model 601 set points
      1) low voltage trip point
      2) high voltage trip point
      3) rapid cycle time
      4) restart delay after a fault
      5) number of restart attempts after a fault
      6) high frequency trip point
      7) low frequency trip point
5. The remote monitor shall be capable of sending the following commands to an attached 777 / 77C / 601:
   a. turn motor/pump off
   b. turn motor/pump on (reset)
   c. clear last fault
   d. clearing run hours
6. The remote monitor shall have a programmable auto scroll setting which shall determine the interval at which real-time screens are automatically displayed.
7. The remote monitor shall have a programmable delay which determines the amount of time auto scroll is disabled after a key press.
8. The remote monitor shall be capable of displaying its firmware revision number.
9. The remote monitor shall be able to communicate via Modbus with upstream hosts and downstream slaves using the following programmable communications settings:
   a. baud rate (1200, 2400, 9600, 1440, 19200, or 28800)
   b. parity (even, odd, or none)
   c. stop bits (0, 1, or 2)

B. Power Requirements

1. The remote monitor shall require 12-24V DC (supplied by RS485MS-2W).
2. The remote monitor shall consume no more than 100 mA.

C. Electromagnetic Compatibility

1. The equipment shall be immune to electrostatic discharge per IEC 1000-4-2, Level 3, 6 kV contact discharge and 8 kV air discharge.
2. The equipment shall be immune to electrostatic discharge per IEC 1000-4-3, Level 3, 10 V/m.
3. The equipment shall be immune to electrical fast transient bursts exceeding IEC 1000-4-4, Level 4+, 4 kV power supply port and 2 kV inputs/output ports”.

4. The equipment's 24V supply shall be immune to electrical surges per IEC 1000-4-5, Level 1. Specified limits shall be 500V line-to-line and line-to-ground.
5. The equipment's RS-485 and reset lines shall be immune to electrical surges per IEC 1000-4-5, Level 2. Specified limits shall be 1kV line-to-line and line-to-ground.
6. The equipment shall be immune to radiated radio frequency emissions per IEC 1000-4-6, Level3+. Specified limits shall be 10 V/m at 150 MHz.

D. Enclosure Class of Protection: The equipment shall provide NEMA 3R, IP44 protection.

E. Environmental Requirements
1. The equipment shall operate continuously without de-rating in ambient temperatures of -40° to 70°C (-40° to 158°F).
2. The equipment shall operate continuously without de-rating in relative humidity of up to 85% non-condensing.
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 3.619" high X 4.544" wide X 0.9" deep.

G. Mounting:
1. The equipment shall be surface mountable on a backplane using 4 screws, bolts or similar mounting hardware.

End of Section