



ENGINEERING SPECIFICATION

SYMCOM MODEL 232-INSIDER PUMP MONITOR/PROTECTOR

PART 1 GENERAL

1.1 REFERENCES

- A. UL 508 Industrial Control Equipment – Underwriters Laboratories
- B. CSA C22.2 No. 14 Industrial Control Equipment – Canadian Standards Association

The 232-Insider shall be installed according to the latest version of the National Electrical code.

1.2 WARRANTY

- A. Manufacturer Warranty: The manufacturer shall guarantee the pump 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 Model 232-Insider, 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 CSA certified as class 3211-03—Industrial Control Equipment-Motor Controllers-Auxiliary Devices.
 - 4. The equipment shall be CSA certified as class 3211-83—Industrial Control Equipment-Motor Controllers-Auxiliary Devices-Certified to U.S. Standards.

2.3 PERFORMANCE/DESIGN CRITERIA: SINGLE PHASE PUMP MONITOR

- A. Protective Functions
 - 1. The pump monitor shall provide protection against the following conditions:
 - a. overload (125% of calibrated normal operating current)
 - b. dry run/dead head (approximately 80% of calibrated normal operating power)
 - 1) adjustable to approximately 87% of calibrated normal operating power in high sensitivity mode
 - c. undervoltage (fixed at 190 VAC)
 - d. overvoltage (fixed at 265 VAC)
 - e. rapid cycling (4 restarts allowed in a 60 second period)
- B. Capabilities and Features
 - 1. The pump monitor shall include:
 - a. a calibration method to determine normal operating current and power conditions
 - b. an adjustable restart delay after non-voltage faults of 2-225 minutes or manual restart
 - c. an adjustable dry run/dead head trip setting of approximately 80% or 87% of calibrated normal operating power
 - d. a fixed overload trip delay time of 5 seconds
 - e. a fixed dry-well drip delay time of 4 seconds
 - f. a fixed voltage fault restart delay of 2 seconds
 - 2. The pump monitor shall include a SPST output relay contacts pilot duty rated at 1hp at 240VAC.
 - 3. The pump monitor shall have two indicator lights. The light scheme shall have the capability to indicate whether the phase monitor is in run mode, calibrate mode, or fault mode. Fault modes shall be dry run/dead head, overload, high/low voltage, and rapid cycle.
 - 4. The pump monitor shall transmit calibration data, trip points, running points, and fault information via an infrared LED that can be processed by the SymCom Informer.
- C. Electromagnetic Compatibility
 - 1. The equipment shall be immune to electrostatic discharge per IEC 1000-4-2, Level 2, 4 kV contact discharge and 6 kV air discharge.
 - 2. The equipment shall be immune to electrical surges per IEC 1000-4-5, Level 4. Specified limits shall be 4kV line-to-line and line-to-ground.



D. Environmental Requirements

1. The equipment shall operate continuously without de-rating in ambient temperatures of -40° to 70°C (-40° to 158°F).

E. Mounting:

1. The equipment shall be mountable inside 1/3 to 1 hp, 230 VAC Grundfos™ control boxes.

F. Conformal coating:

1. The equipment shall contain harsh environment conformal coating to help extend product life and to protect from hostile environments including moisture, temperature variations, salt spray, organic attack (fungus), and aggressive chemicals and vapors.

End of Section