



ENGINEERING SPECIFICATION

SYMCOM MODEL ISS-102ACI-MC Intrinsically Safe Pump Control

PART 1 GENERAL

1.1 REFERENCES

- A. UL 913 Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division I, Hazardous (Classified) locations, Sixth Edition – Underwriters Laboratories
- B. ANSI/IEEE C62.41 – American National Standards Institute/Institute of Electrical & Electronics Engineers

Equipment 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 control 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 ISS-102ACI-MC, manufactured by SymCom, Inc.

2.2 DESCRIPTION

- A. Regulatory Requirements:
 - 1. The equipment shall be UL Listed as type QUZW—Process Control Equipment for Use in Hazardous Locations, Sixth Edition.

2.3 PERFORMANCE/DESIGN CRITERIA

- A. General I/O Capability:
 - 1. Outputs:
 - a. The equipment shall include one SPST and one SPDT output relay contact pilot duty rated at 180VA @ 120VAC, 5 amps @ 120VAC general purpose.
 - 2. Inputs:
 - a. The equipment shall provide two control inputs to the hazardous area.
 - b. The equipment shall accept single-phase input voltage rated 120 VAC.
- B. Functions:
 - 1. The equipment shall provide single-channel switch mode.
 - a. The equipment shall energize both output relays upon activation of input channel #1.
 - b. The equipment shall illuminate two LEDs upon activation of the output relays.
 - 2. The equipment shall provide dual-channel switch mode.
 - a. The equipment shall energize an output relay upon activation of its associated input channel.
 - b. The equipment shall illuminate an LED upon activation of its associated output relay.
 - 3. The equipment shall provide dual-channel differential/latching mode.
 - a. The equipment shall energize both output relays upon activation of input channel #2.
 - b. The equipment shall de-energize the output relays upon deactivation of both input channels.
 - c. The equipment shall illuminate both LEDs upon activation of the output relays.
- C. Human Interface Features:
 - 1. The equipment shall provide the following functions controlled from a DIP switch:
 - a. Mode selection: single-channel switch, dual-channel switch, dual-channel differential/latching.
 - b. Input logic selection: direct, inverted.
 - c. Debounce delay selection: ½, 2 seconds.
 - 2. The equipment shall include a dial adjustment to set the input sensitivity from 4.7k to 100k ohms.
 - 3. The equipment shall have two indicator LEDs capable of indicating the status of the output relays.



D. Intrinsically Safe Requirements:

1. The equipment shall have the following entity parameters:
 - a. $V_{oc}=16.8V$
 - b. $I_{sc}=1.2mA$
 - c. $L_a=100mH$
 - d. $C_a=0.39\mu F$
 - e. $P_o= \frac{V_{oc} * I_{sc}}{4}$
2. The equipment shall provide intrinsically safe circuit into the following locations:
 - a. Class I, Divisions I & II, Groups A, B, C, & D
 - b. Class II, Divisions I & II, Groups E, F & G
 - c. Class III
3. The equipment shall provide two inputs to the hazardous area.

E. 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 per IEC 61000-4-4, Level 4, 4 kV power supply port, 2 kV input/output ports.
3. The equipment's power supply port shall be immune to electrical surges per IEC 61000-4-5, Level 4. Specified limits shall be 4kV line-to-line and line-to-ground.
4. The equipment shall be immune to radiated radio frequency emissions. Specified limits shall be 10V/m at 150 MHz.

F. Dielectric Isolation: The equipment shall provide 2000VAC dielectric withstand between the AC mains and the relay contacts and between the AC mains and enclosure for one minute.

G. Enclosure Class of Protection: The equipment shall provide IEC IP20 (finger safe) protection.

H. Environmental Requirements:

1. The equipment shall operate continuously without derating in ambient temperatures of -20° to $55^{\circ}C$ (-4° to $131^{\circ}F$).
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 $80^{\circ}C$ (-40° to $176^{\circ}F$).

I. Dimensions: The equipment dimensions shall not exceed 2.1" in width x 3.5" in length x 2.5" in height.

J. Mounting:

1. The equipment shall be mountable on standard 35 mm DIN rail.
2. The equipment shall be surface mountable on a backplane using two screws, bolts or similar mounting hardware.

End of Section