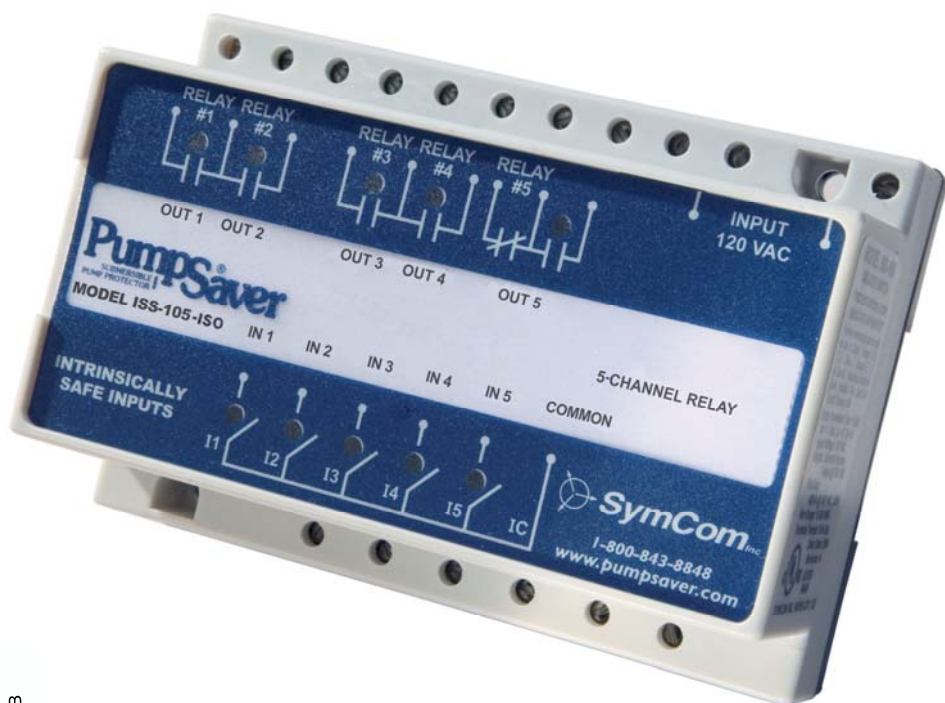


# INSTALLATION INSTRUCTIONS

Revision B1  
Rapid City, SD, USA, 05/2009

**PumpSaver®**  
ELECTRONIC PUMP  
CONTROL & PROTECTION

## MODEL ISS-105-ISO-3 MODEL ISS-105-ISO-4 MODEL ISS-105-ISO



II-ISS-105-ISO-B



[www.SymCom.com](http://www.SymCom.com)

...your electronic control & protection specialists

222 Disk Drive, Rapid City, SD 57701  
(800) 843-8848 [www.symcom.com](http://www.symcom.com)

## ⚡ DANGER! ⚡



HAZARDOUS VOLTAGES MAY BE PRESENT DURING INSTALLATION.

Electrical shock can cause death or serious injury.

Installation should be done by qualified personnel following all national, state and local electrical codes.

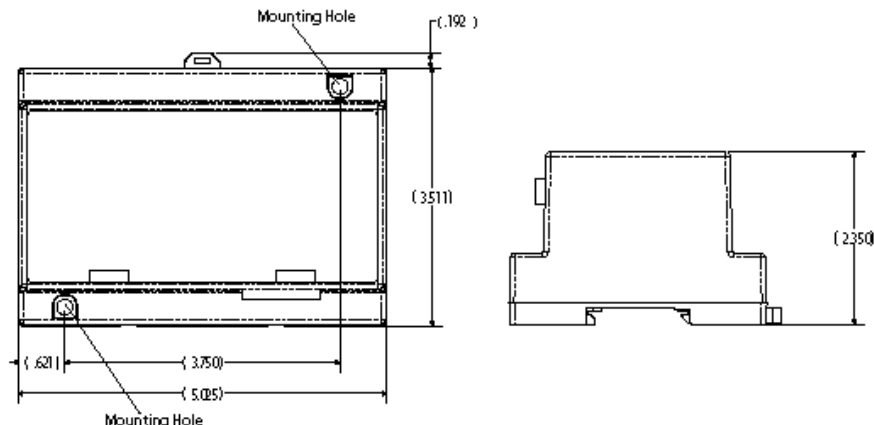


**TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTIBLE ATMOSPHERES,  
DISCONNECT POWER FROM SYSTEM PRIOR TO INSTALLATION OR SERVICE!  
READ THESE INSTRUCTIONS ENTIRELY BEFORE INSTALLATION.**

**CAUTION:** Only personnel trained in intrinsically safe systems should install this equipment. Improper installation may result in serious injury or damage. Before proceeding with installation, read and understand these instructions completely. The ISS-105-ISO Isolated Switch is UL913 listed as an associated apparatus for interfacing between hazardous and non-hazardous areas. The ISS-105-ISO must be installed in a non-hazardous area. Follow SymCom's Control Drawing ISS-105 on the last page of this bulletin for proper installation. All wiring connected to a hazardous location must be separated from all non-intrinsically safe wiring. Description of special wiring methods can be found in the National Electrical Code ANSI/NFPA 70, Article 504 Intrinsically Safe Systems. Check your state and local codes for additional requirements.

### INSTALLATION:

1. Mount the ISS-105-ISO in a non-hazardous location on a DIN-rail, or by installing two #6-#8 screws into the mounting holes shown in Figure 1.
2. Connect wiring per SymCom's Control Drawing ISS-105. Follow all hazardous code requirements when installing wiring to the input terminals.



**Figure 1: Mounting Diagram**

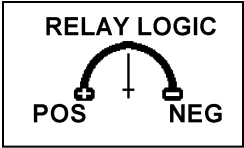
### OPERATION:

The ISS-105-ISO relays are 120VAC powered isolated switches suitable for transferring switch states from hazardous locations to non-hazardous locations. Each input controls the corresponding output. The green LEDs illuminate when the corresponding input is closed. The red LEDs illuminate when the corresponding relay is energized.

**CHANNEL INVERT:**

The inversion adjustment allows all channels to have either positive or negative logic. Channels cannot be inverted independently.

- Positive Logic: Relay closes when input closes.  
Invert adjustment is fully counter clockwise.
- Negative Logic: Relay opens when the input closes.  
Invert adjustment is fully clockwise.



**ISS-105-ISO-3 & ISS-105-ISO-4:**

Inputs and Outputs 3 and 4 are not present on the ISS-105-ISO-3.  
Input and Output 4 is not present on the ISS-105-ISO-4.

**SPECIFICATIONS**

Control Voltage	108-132VAC
Frequency	50/60 Hz
Maximum Input Power	4 W
Operating Temperature	-20 to 55°C (-4 to 131°F)
Storage Temperature	-40 to 80°C (-40 to 176°F)
Relative Humidity	Up to 95% non-condensing
Terminals	
Wire AWG	12-20 AWG
Torque	6 in.-lbs.
Relay Contacts	
Pilot Duty	B300 or 480VA @ 240VAC
General Purpose	7A @ 240VAC
Entity Parameters	
	Voc=16.8 V
	Isc=1.2 mA
	La=100mH
	Ca=0.39uF
	Po= $\frac{Voc * Isc}{4}$
Provides Intrinsically Safe Circuits in the Following Locations:	
	Class I, Div 1 & 2, Groups A, B, C, D
	Class II, Div 1 & 2, Groups E, F, G
	Class III
Standards Passed	
Safety	UL 913 6th Edition
Electrostatic Discharge (ESD)	IEC 61000-4-2, Level 3, 6 kV contact, 8 kV air
Radio Frequency Immunity (RFI)	10V/m @ 150 MHz
Fast Transients	IEC 61000-4-4, Level 3, 4 kV input power
	2 kV inputs/outputs
Class of Protection	IP20 (finger-safe)
Mechanical Dimensions	3.703" W x 5.025" L x 2.350" D

For warranty information, please see **Terms and Conditions** at [www.symcom.com](http://www.symcom.com)

# CONTROL DRAWING ISS-105

## ASSOCIATED APPARATUS / APPAREILLAGE CONNEXE

### Non-Hazardous Location

#### Supply Voltage

120VAC

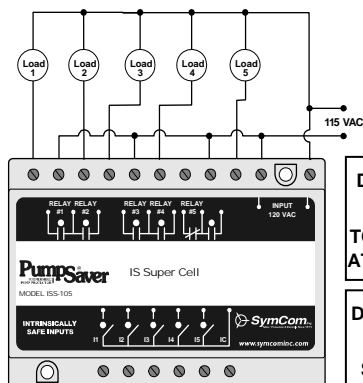
#### Relay Output Rating

7 A @ 240VAC General Purpose

Pilot Duty 480VA @ 240VAC, B300

#### Maximum Ambient Temperature Rating

55°C



DEVICE MUST BE INSTALLED IN A SUITABLE ENCLOSURE

### WARNING!

TO PREVENT IGNITION OF FLAMMABLE OR COMBUSTABLE ATMOSPHERES, DISCONNECT POWER BEFORE SERVICING.

DEVICE MAY ONLY BE REPAIRED BY THE MANUFACTURER

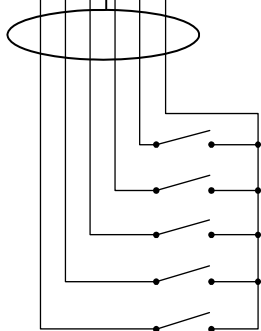
### WARNING!

SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

### AVERTISSEMENT!

LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SÉCURITÉ INTRINSÈQUE.

See Notes 1 & 2



See Note 3

### Hazardous Location

Class I, Divisions I & II, Groups A, B, C & D;  
Class II, Divisions I & II, Groups E, F & G; and  
Class III locations

#### NOTES:

- Maximum distance between unit and switch contact is 10,000 feet.
- All non-intrinsically safe wiring shall be separated from intrinsically safe wiring. Description of special wiring methods can be found in the National Electrical Code ANSI/NFPA 70, Article 504 Intrinsically Safe Systems. Check your state and local codes for additional requirements.
- All switch contacts shall be non-energy storing, containing no inductance or capacitance.
- Entity Parameters:  
 $V_{oc} = 16.8V$   
 $I_{sc} = 1.2mA$   
 $La = 100mH$   
 $Ca = 0.39\mu F$   
 $P_o = \frac{V_{oc} \cdot I_{sc}}{4}$
- Entity Parameter Relationships:

#### IS Equipment

$V_{max}$ (or $U_i$ )	$\geq$	$V_{oc}$ or $V_t$ (or $U_o$ )
$I_{max}$ (or $I_i$ )	$\geq$	$I_{sc}$ or $I_t$ (or $I_o$ )
$P_{max}$ , $P_i$	$\geq$	$P_o$
$C_i + C_{cable}$	$\leq$	$C_a$ (or $C_o$ )
$L_i + L_{cable}$	$\leq$	$L_a$ (or $L_o$ )

#### Associated Apparatus

Capacitance and inductance of the field wiring from the intrinsically safe equipment to the associated apparatus shall be calculated and must be included in the system calculations as shown in the table above. Cable capacitance,  $C_{cable}$ , plus intrinsically safe equipment capacitance,  $C_i$ , must be less than the marked capacitance,  $C_a$  (or  $C_o$ ), shown on any associated apparatus used. The same applies for inductance ( $L_{cable}$ ,  $L_i$  and  $L_a$  or  $L_o$ , respectively). Where the cable capacitance and inductance per foot are not known, the following values shall be used:  $C_{cable} = 60pF/ft.$ ,  $L_{cable} = 0.2\mu H/ft.$