

## Specifications

### Electrical

**Supply Voltage:** 24, 120 & 240VAC ±10%

**Power:** 2VA

**Inputs:** Switch Closure  
or Probe (Conductivity)

**Input Sensitivity:** 3K - 1.5MΩ

**Pick-up & Drop-out Delays:** 1 second

**Max. Open Circuit Voltage:** 5 volts AC

**Max. Source Current:** 0.1 milliamp AC

**Output Rating @ 25°C:**

5 Amps or 100VA per contact

10 Amps total

250VAC maximum contact rating

10,000,000 Mechanical Cycles

### Physical

**Mounting:** Din Rail mount

**Termination:** Touch safe screw terminals,  
with lift mechanism, #12 AWG max. for  
supply and relay contacts, #16 AWG  
max. for intrinsically safe inputs.

**Weight:** 10 Oz.

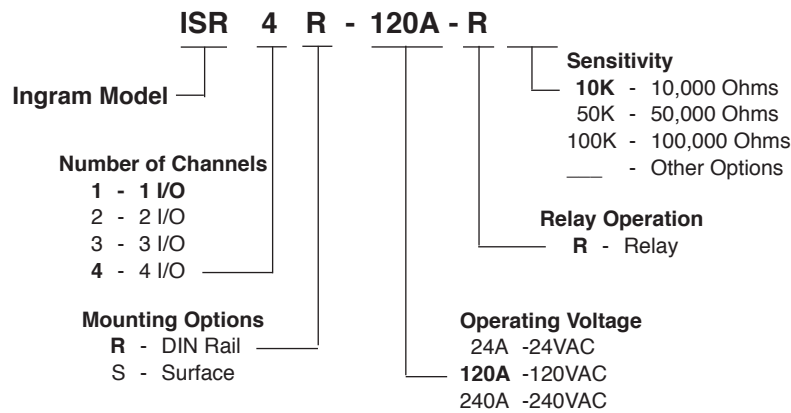
### Ambient Temperatures

**Operating:** 0°C to 50°C

**Storage:** -40°C to 85°C

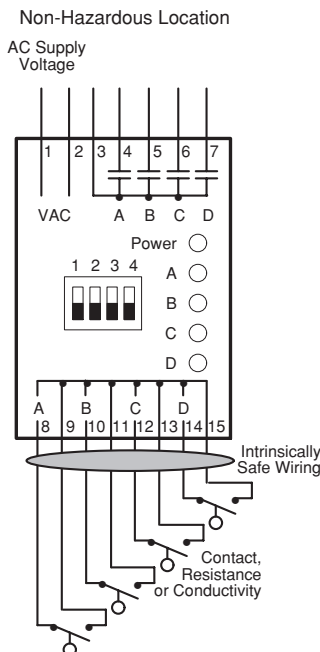


## Ordering Information

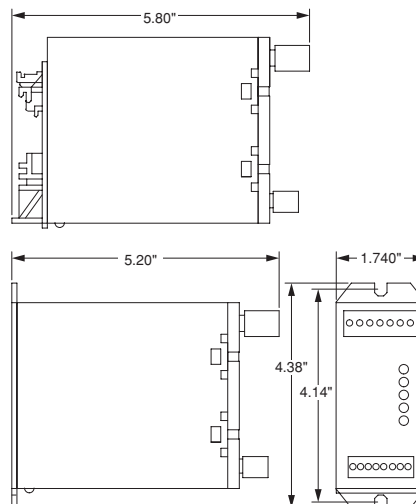


- 1, 2, 3, or 4 Channels
- Shorted Input Sensing
- Open Input Sensing
- Outputs Isolated from Supply
- Contact or Probe Inputs
- Conductivity or Resistance Inputs
- Output and Input LED Indication
- Independent Operation
- Pluggable Terminal Blocks
- Din or Surface Mount
- 24 to 240VAC Supply

## Connections



## Dimensions



UL913  
Class I, Division 1  
Groups A, B, C & D

## Operation

### Independent Channel Relay

Supply voltage must be applied to the ISR\_-R relay during operation. The ISR\_-R can have 1, 2, 3 or 4 channels. When IS input  $\overline{C}$  closes its LED changes and  $\overline{C}$ A output contact closes. When IS input  $\overline{C}$ A opens  $\overline{C}$ A output contact opens. Each channel operates independent of the other channels. LED indicators are:

Red - When the IS input is open or high  
Green - When both the IS input & output contact are closed

Flashes - During transition delay  
A green power LED indicates when supply voltage has been applied to the ISR\_-R.

# Installation of Relays with Intrinsically Safe Inputs 12



Installation of Relay Module with Intrinsically Safe Inputs  
 Installation of these relays should only be performed by personnel experienced with intrinsically safe devices. Proper wiring practices must be strictly adhered to in order to prevent injury to personnel and property damage due to explosion or fire.  
**IMPORTANT: BEFORE PROCEEDING TO INSTALL THE DEVICE, READ AND THOROUGHLY UNDERSTAND THESE INSTRUCTIONS.**  
 When installed according to the following instructions the Relay Module provide circuits for use in Class I, Division 1, Groups A, B, C, and D. The device must be mounted in a suitable enclosure which is tool accessible and is situated in a non hazardous area where an explosive atmosphere will not exist at any time.

**WIRING:**

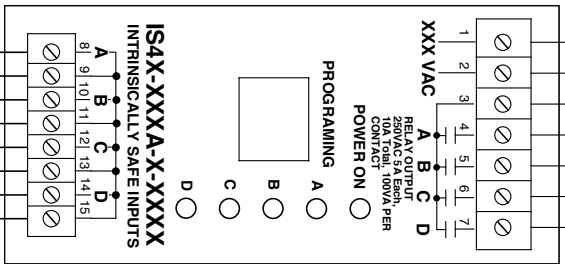
1. Associated apparatus must be installed in an enclosure suitable for the application in accordance with the National Electrical Code (ANSI/NFPA 70) for installation in the United States, the Canadian Electrical Code for installations in Canada, or other local codes, as applicable.
2. Where multiple circuits extend from the same piece of associated apparatus, they must be installed in separate cables or in one cable having suitable insulation. Refer to Article 504.30(B) of the National Electrical Code (ANSI/NFPA 70) and Instrument Society of America Recommended Practice ISA R1P-12.6 for installing intrinsically safe equipment.
3. Intrinsically safe circuits must be wired and separated in accordance with Article 504.20 of the National Electrical Code (ANSI/NFPA 70) or other local codes, as applicable.
4. Electrical equipment connected to the non intrinsically safe side should not use or be capable of generating more than 250 volts with respect to earth.
5. Intrinsically safe wiring connecting to the relay must be kept separate from non-intrinsically safe wiring by means of physical barriers and wiring the down devices to insure no contact.
6. Cable capacitance plus intrinsically safe equipment capacitance must be less than the marked capacitance (Ca) shown on any barrier used. The same applies for inductance. We recommend the use of type THHN wire without splices. In no case should the capacitance or inductance exceed the specified limits. If the characteristics of your wire are unknown the following values may be used:  
 CAPACITANCE: 60 pF / ft  
 INDUCTANCE: 0.20 µH / ft
7. Selected intrinsically safe equipment must be third party listed as intrinsically safe for the application, and have intrinsically safe entry parameters conforming with Table 1 below. The entry parameters have been assigned based on the worse case combination of all intrinsically safe circuits.

**Table 1:**

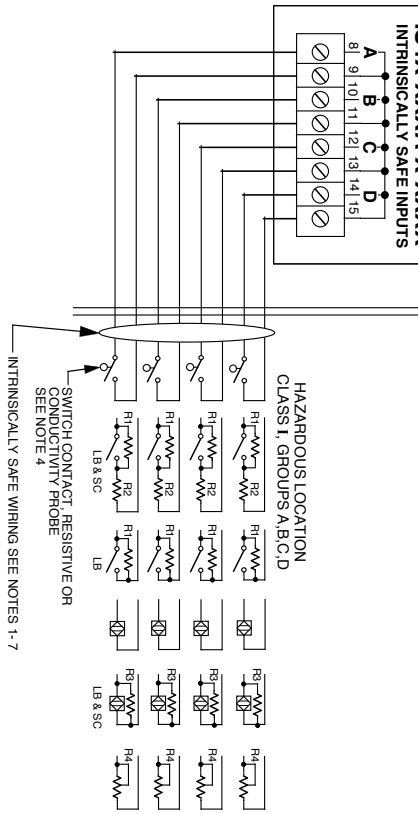
IS Equipment	Associated Apparatus
V max (or Uj)	≥ Voc or Vt (or Uo)
I max (or Ii)	≥ Isc or It (or Io)
P max, Pi	≥ Po
Ca + Ccable	≤ Ca (or Co)
Li + Lcable	≤ La (or Lo)

Entry parameters:  
 Voc = 16.8 Volts  
 Isc = 3.3 mA  
 Ca = 0.312 µF  
 La = 100 mH  
 Voc ≤ Vmax  
 Isc ≤ Imax  
 Ca ≥ Ci + Ccable  
 La ≥ Li + Lcable

NON-HAZARDOUS LOCATION  
 250V MAX  
 5 AMPS PER CONTACT  
 10 AMP TOTAL  
 100 VA PER CONTACT  
 AC SUPPLY VOLTAGE



**NOTE:**  
 LB = LEAD BREAKAGE MONITORING  
 SC = SHORT CIRCUIT MONITORING  
 R1 = 10K  
 R2 = 400 OHM TO 2K OHM  
 R3 = 3 MEG. OHM  
 R4 = 1 MEG. MAX



## CONTROL DRAWING

REF. DRAWING(S)	REV.	DATE	CAR/PROJECT #	DESCRIPTION
SCALE:	NONE			
SIMILAR TO:	DRAWN BY O.S.			
QUOTE #:	DESIGNED BY D.P.			
DRAWING DATE:	01/23/06			
<b>A-6888-4</b> SHEET 1 OF 1				

# DIP SWITCH FUNCTIONS

2/14/10

IS \_ \_ - \_ \_ A-**R**- \_ \_ \_ K

There are 4 dip switches on the top of all of the new quad IS "**R**" relays. The functions that are related to the dip switches are:

- Dip #1          Shorted and Open circuit sensing
- Dip #2          Alarm output for Open or Shorted on Output #1
- Dip #3          Reverse operation of outputs A and C, Dual Seal Failure
- Dip #4          Reverse operation of outputs B and D

**Dip #1** - With the Shorted and Open sensing the IS relay monitors the IS inputs for a shorted condition or an open circuit. To do this a 10K $\Omega$  resistor in place in parallel (Open Circuit) with the float switch and a 1K $\Omega$  resistor is placed in series (Short Circuit) with the float switch. The resistors should be place as close to the float switches as possible.

**Dip #2** - If you want to sense a Shorted or open condition, how you are you going to know? Flip #2 On and output contact A activates if you have a Shorted or Open input. We will do something funky with the LEDs to let you know which one has issues. By doing this on Output A, it means that your 2 channel relay just became a 1 channel relay with output A as the alarm. With a 3 or 4 channel, output A would still the alarm output.

Yes, if you turn on the alarm output function, you lose the function of Input A.

**Dip #3** - Need reverse operation? Flip this Dip On and Outputs A and C reverse their operation. For example: with Input A open, output A will be closed. With Input A closed, Output A will be open.

**Dip #4** - Need more reverse operation contacts? Flip this Dip On and Outputs B and D reverse their operation.

Need the whole IS relay reverse operation? Flip On Dips #3 & #4.

If you have Dip #1 On and have reversed the operation of any output, if a shorted or open circuit condition occurs, the output effected will remain Open.