



# Latching Relay with Intrinsically Safe Inputs

# IS4-L

## 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 outputs.

**Weight:** 10 Oz.

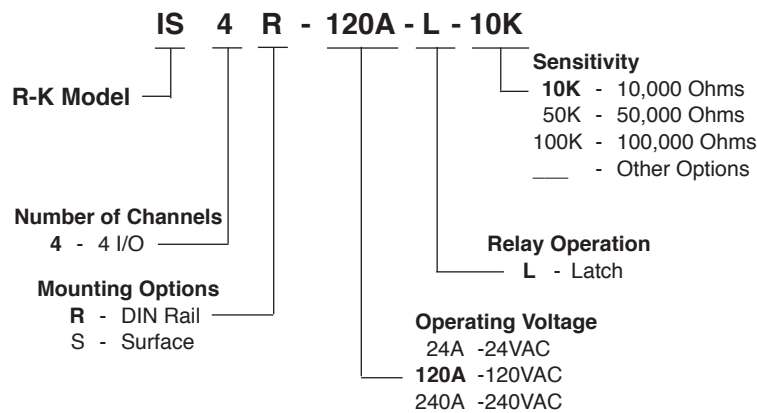
### Ambient Temperatures

**Operating:** 0°C to 50°C

**Storage:** -40°C to 85°C



## Ordering Information



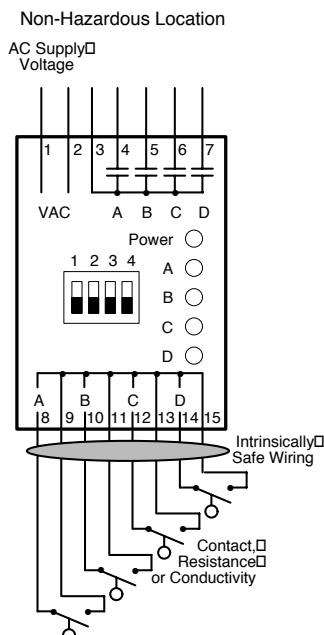
- Latching Logic
- Pump Down or Pump Up
- 4 Channels
- Shorted Input Sensing
- Open Input Sensing
- Contact or Probe Inputs
- Output and Input LED Indication



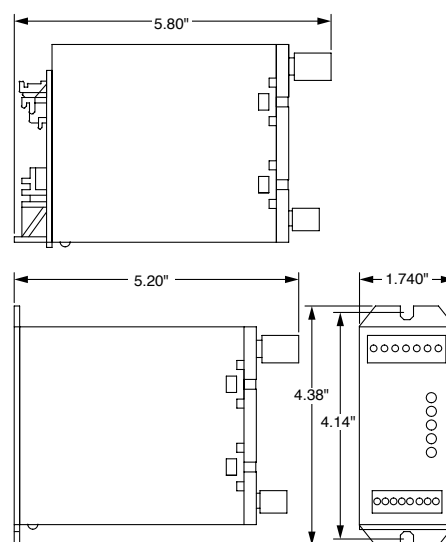
UL913  
Class I, Division 1  
Groups A, B, C & D

19BM

## Connections



## Dimensions



## Operation

### Four Channel Latching Relay

Supply voltage must be applied to the IS4-L relay during operation. The latching logic is set up for a pump down operation. (Pump up is available too.) When IS input #1 closes its LED changes and #1 output contact closes. When IS input #2 closes, output contact #2 closes, latches in and starts the first pump. When IS inputs #3 and #4 close, Output contacts #3 and #4 latch closed, respectively. All output contacts remain closed, even if their inputs open, until input #1 opens, and all output contacts open, indicating that the system has pumped down.

LED indicators will be:

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

Amber - Latch Logic - IS input open & Output closed

Flashes - During transition delay

A green LED indicates when supply voltage has been applied to the IS4-L.



# Installation of Relays with Intrinsically Safe Inputs

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:**

- 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.
- 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 RP-12.6 for installing intrinsically safe equipment.
- 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.
- 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.
- 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.
- 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.  
 CAPACTANCE: 60 pF / ft INDUCTANCE: 0.20 μH / ft
- Selected intrinsically safe equipment must be third party listed as intrinsically safe for the application, and have intrinsically safe 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:

I.S. Equipment	Associated Apparatus
$V_{max}$ (or $U_i$ )	$\geq V_{oc}$ or $V_i$ (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 $L_o$ )

**Entry parameters:**

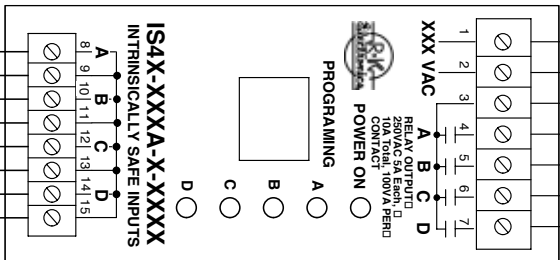
- $V_{oc} = 16.8$  Volts
- $I_{sc} = 3.3$  mA
- $C_a = 0.312$  μF
- $L_a = 100$  mH
- $V_{oc} \leq V_{max}$
- $I_{sc} \leq I_{max}$
- $C_a \geq C_i + C_{cable}$
- $L_a \geq L_i + L_{cable}$

REF. DRAWING(S)	REV.	DATE	CAR/PROJECT #	DESCRIPTION

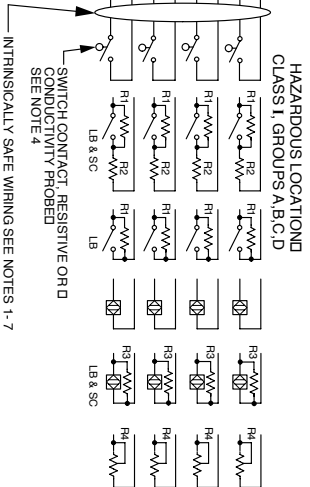
**R-K Electronics, Inc.** CINCINNATI, OHIO 45249

**NON-HAZARDOUS LOCATION**

250V MAXD  
 5 AMPS PER CONTACT  
 10 AMP TOTALD  
 100 VA PER CONTACT  
 AC SUPPLY V  
 VOLTAGE



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



**CONTROL DRAWING**

SCALE: NONE	UPDATED BY	REDESIGNED BY	<b>A-6888-4</b>
SIMILAR TO:	DRAWN BY O.S.	DESIGNED BY D.P.	
QUOTE #:			
DRAWING DATE: 01/17/06			