Prism

***with AS-Interface Communication VCT***

***(PM96_____)***

**Pub # 105121revC**

# Installation & Adjusting Instructions

## Prism™ Mounting

1. Thread the Trigger Shaft onto the actuation system stem.

2. Place provided o-ring in groove on the bottom of the Mounting Coupler and slide over the Trigger Shaft. Secure Mounting Coupler to the actuation system. Fastening of Mounting Coupler to the actuation system will be either flange mounted or threaded. (Dependent on manufacturer of valve assembly)

3. Remove the Prism's Cover.

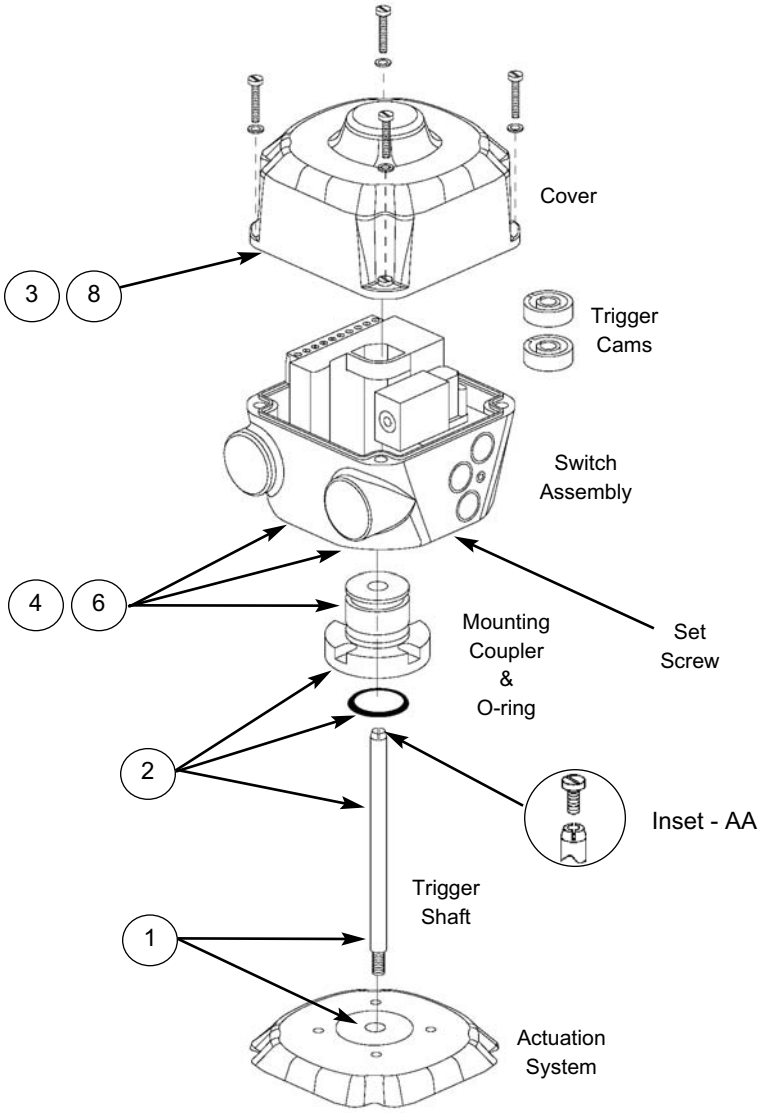
4. Slide the Prism Switch Assembly over the Trigger Shaft via the Mounting Coupler socket located on the bottom of the Switch Assembly. Do not seat the Switch Assembly onto the Mounting Coupler. The Trigger Shaft should now be approximately midway between upper and lower Cam Stops on the Dual Module. (See Detail A)

5. While supporting the Switch Assembly with one hand, place the two Trigger Cams onto the Trigger Shaft between the cam stops. (See Detail A)

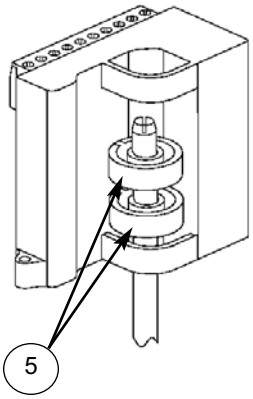
6. Fully seat the Switch Assembly onto the Mounting Coupler. Secure the Switch Assembly to the Mounting Coupler by tightening the set screw located on the bottom of the Switch Assembly, opposite of the conduit entries. **Some mounting systems for 2" and larger valves may have the Trigger Shaft threaded, in these cases thread the provided 6/32 screw into the top of the Trigger Shaft. (See Inset - AA)**

7. To set the Cam Triggers, slide the upper trigger until it touches the upper cam stop (or 6/32 screw) and push down the lower trigger until it touches the lower cam stop. Cycle the actuator and the triggers will automatically be set to the proper position. (See Detail B)

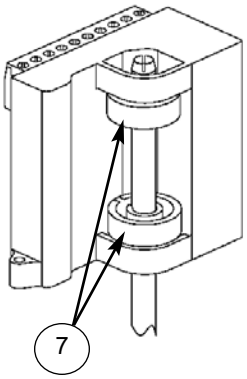
8. Perform applicable field wiring and replace Prism Cover. **(Applicable wiring diagrams and connector pin-out guides located on Page 4 of this document)**




Detail A




Detail B





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# PRISM Model Selector

| | Function | Pneumatic Valve | Conduit/Connectors | Visual Indicator | Valve Size |
|---|---|---|---|---|---|
| **PM** | **33** (2) SST N.O. Sensors<br>**34** (2) SST N.C. Sensors<br>**44** (2) NAMUR Sensors<br>**92** DeviceNet VCT**<br>**93** Foundation Fieldbus VCT*<br>(Bus Power Outputs; I.S.)<br>**94** Foundation Fieldbus VCT**<br>(Externally Powered Outputs)<br>**95** Modbus VCT**<br>**96** AS-Interface VCT**<br>**97** AS-Interface VCT (Ext Add)**<br>* For use with pneumatic valve option 11 or 1A only<br>** For use with pneumatic valve option 11, 1B or 1D only | **11** No Pneumatic Valve<br>**1A** 3-way/Piezo*<br>**1B** 3-way/24 VDC/1.8 W<br>**1C** 3-way/120 VAC/5.4 W<br>**1D** 3-way/24 VDC/0.5 W<br>**1E** 3-way/12 VDC (I.S.)**<br><br>* For use with Function 93 only<br>** For use with Function 44 only | **S02** (2) 1/2" NPT<br>**S05** (2) M20<br>**S09** (2) Cable Glands<br>**S11** (1) 5-Pin Mini-Connector<br>**S13** (1) 4-Pin Micro-Connector<br>**S14** (2) 4-Pin Micro-Connector<br>**S15** (1) 5-Pin Micro-Connector<br>**S16** (1) 5-Pin Micro-Connector & (1) 4-Pin Micro Connector | **R** Red Closed/ Green Open<br>**G** Green Closed/ Red Open | **S** Stroke less than 2"<br>**L** Stroke from 2" to 4" |

**Model Number Example: PM961BS2RS**

# General Specifications and Ratings

**Materials of Construction**

| | |
|---|---|
| Housing & Cover: | Polycarbonate |
| Fasteners: | Stainless Steel |
| Triggering Cams: | Stainless Steel Banded Polycarbonate |
| Mounting System: | Stainless Steel |
| O-Rings: | Buna-N |
| Valve Manifold: | Polysulfone with Stainless Steel Reinforced NPT Ports |

| | |
|---|---|
| Operating Life: | One Million Cycles |
| Temperature Range: | -40° C to 80° C (-40° F to 180° F) |

**Enclosure Protection**

| | |
|---|---|
| NEMA: | 4, 4X, 6; IP67 |

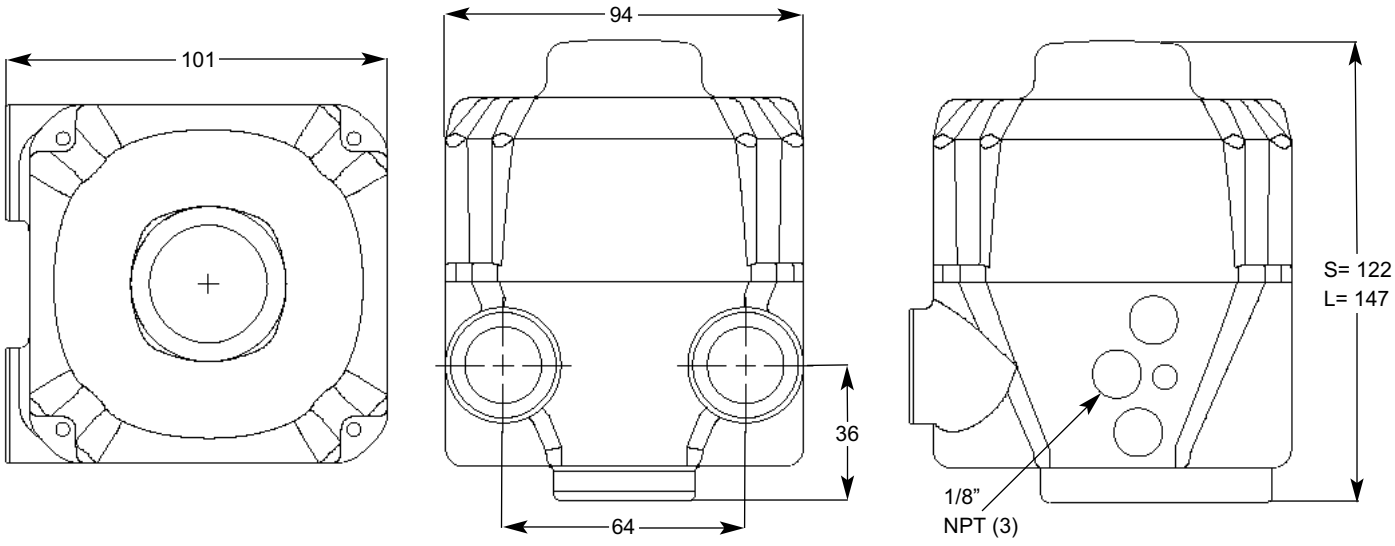
**Hazardous Location Ratings**

| | |
|---|---|
| Nonincendive: | Class I&II, Div 2, All Gas Groups |

**Warranty**

| | |
|---|---|
| Dual Modules/VCTs: | Five Years |
| Mechanical Components: | Two Years |

# Dimensions (mm)



# Pneumatic Valve Specifications

**General Pneumatic Specifications**

| | |
|---|---|
| Configuration: | 3-Way, 2-Position, Spring Return |
| Porting: | 1/8 NPT (all pressurized ports) |
| Rebreather Port: | 4-40 size |
| Operating Pressure: | 40 psi to 120 psi (2.6 to 8.0 bar) |
| Flow Rating: | 0.1 Cv (1.4 Kv) |
| Rebreather: | Standard on all models; Diverts air from exhausting cylinder into actuator spring side, Excess air exhausted to the atmosphere |
| Valve Cycle Time: | |
| 1/2" Stroke | To Open = < 1 sec. To Close = < 1 sec. |
| 1 1/8" Stroke | To Open = 3.4 sec. To Close = 3.1 sec. |
| Operating Life: | One Million Cycles |

**Solenoid Coil Specifications**

**120 VAC** (with burn-out proof coil)

| | |
|---|---|
| Power: | 5.4 Watts |
| Inrush Current: | 0.09 Amps @ 120 VAC |
| Holding Current: | 0.06 Amps @120 VAC |

**24 VDC**

| | |
|---|---|
| Power: | 1.8 Watts (1B); 0.5 Watts (1D) |
| Current Draw: | 0.075 Amps (1B); 0.02 Amps (1D) |
| Temperature Range: | -18° C to 50° C (0° F to 120° F) |
| Filtration Requirements: | 40 Microns |

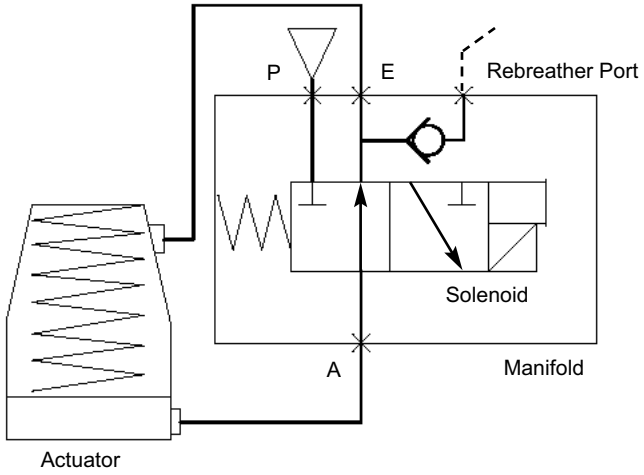
**12 VDC** (Intrinsically Safe)

| | |
|---|---|
| Power: | 0.5 Watts |
| Current Draw: | 0.04 Amps |
| Temperature Range: | -18° C to 50° C (0° F to 120° F) |
| Filtration Requirements: | 40 Microns |

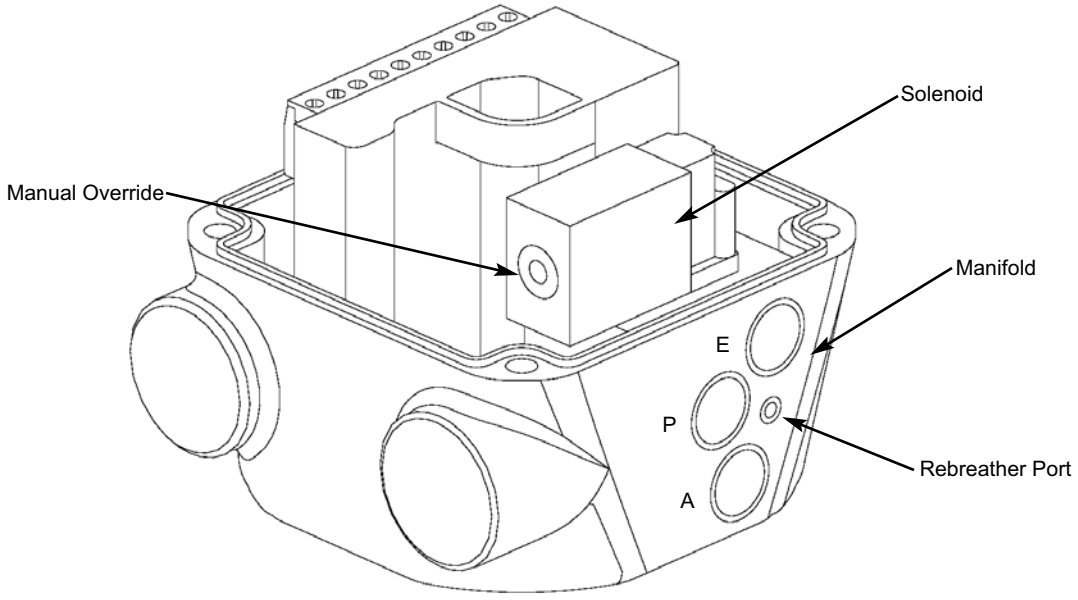
**Piezo**

| | |
|---|---|
| Operating Voltage: | 5.5 VDC to 9.0 VDC |
| Current Draw: | 2.0 mA @ 6.5 VDC |
| Temperature Range: | -10° C to 60° C (14° F to 140° F) |
| Filtration Requirements: | 30 Microns |
| Hazardous Ratings: | EEx ia IIC T6 |

# Pneumatic Valve Schematic




# Pneumatic Valve Component Locator



# PRISM with AS-Interface VCT

**AS-Interface VCT Specifications**

| | |
|---|---|
| Communication Protocol: | AS-Interface |
| Configuration: | (2) Discrete Inputs (Sensors)<br>(2) Auxiliary Discrete Inputs<br>(2) Discrete Outputs (Solenoids) |
| Voltage: | 24-30 VDC (AS-I Voltage) |
| Output Voltage: | 24 VDC |
| Max. Output Current: | 160mA, Both Outputs Combined |
| Max. Output Power: | 4 Watts, Both Outputs Combined |

| | | |
|---|---|---|
| ID/IO Codes: | ID = F; IO = 4; ID1 = F; ID2 = E | |
| Default Address: | 00 | |
| Bit Assignment: | Inputs | Outputs |
| | Bit 1 = Aux Input 1 | Bit 1 = Not Used |
| | Bit 2 = Aux input 2 | Bit 2 = Not Used |
| | Bit 3 = Green LED | Bit 3 = OUT 1* |
| | Bit 4 = Red LED | Bit 4 = OUT 2 |

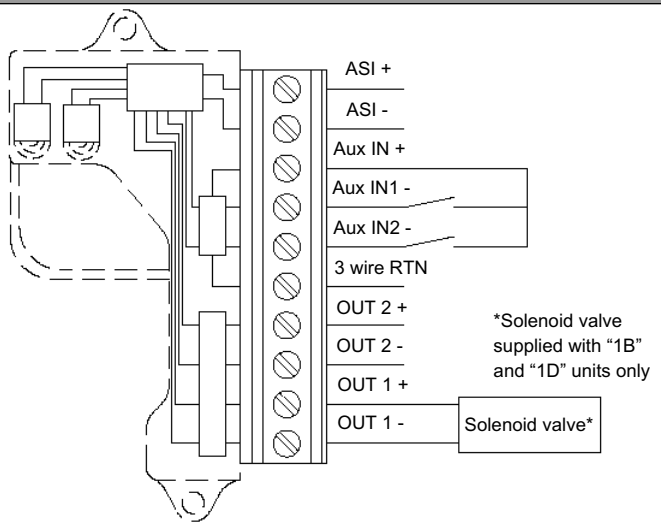
* Discrete Output 1 is used for units with integral solenoid

**To Bench Test AS-Interface VCT:** To test Sensors use 24 VDC power supply across ASI + and ASI -. No series resistor needed. A functioning AS-Interface network is required to test communications.

**WARNING:**

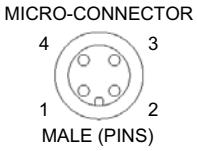
**DO NOT APPLY EXTERNAL POWER TO THE OUTPUT TERMINALS. THIS WILL RESULT IN PERMANENT DAMAGE TO THE UNIT.**

## Wiring Diagram/Connector Pin-Out

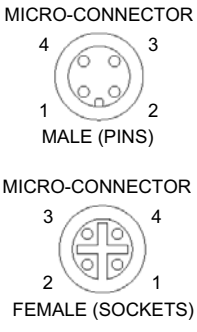



**Connector Option (S13)**

| PIN | PM9611S13XX | PM961BS13XX | PM961DS13XX |
|---|---|---|---|
| 1 | ASI + | ASI + | ASI + |
| 2 | NOT USED | NOT USED | NOT USED |
| 3 | ASI - | ASI - | ASI - |
| 4 | NOT USED | NOT USED | NOT USED |




**Connector Option (S14)**




| PIN | PM9611S14XX |
|---|---|
| 1 | ASI + |
| 2 | NOT USED |
| 3 | ASI - |
| 4 | NOT USED |
| XX | XXXXXXXXXX |
| 1 | NOT USED |
| 2 | NOT USED |
| 3 | OUT 1 - |
| 4 | OUT 1 + |

# Non-Incendive Field Wiring Apparatus Installation Drawing

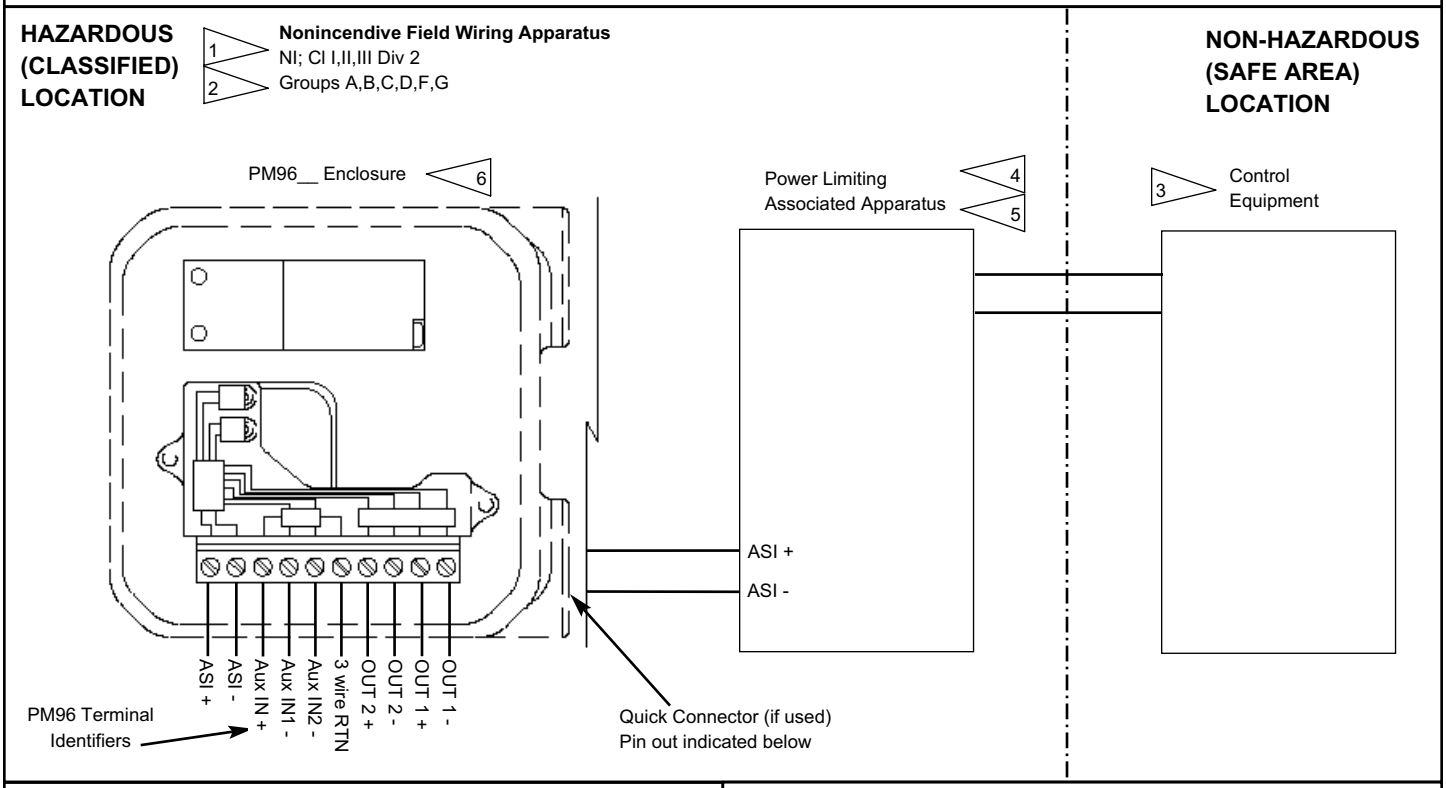
## Prism models approved as Non-Incendive Field Wiring Apparatus:

PM9611____†*; PM96__S02__‡*; PM96__S05__‡*; PM96__S09__‡*; PM96__S13__‡*; PM96__S15__‡*

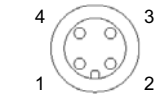
† Any Conduit/Connector option is approved for units with Pneumatic Valve Option 11 (no solenoid).

‡ Only Pneumatic Valve Option 1B or 1D is approved.

* Any Visual Indicator and Valve Size option is approved.



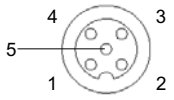

PM96__S13__ Pin Identifiers




MALE (PINS)

| MICRO-CONNECTOR Pins | Signal |
|---|---|
| 1 | ASI + |
| 2 | No Connection |
| 3 | ASI - |
| 4 | No Connection |

PM96__S15__ Pin Identifiers




MALE (PINS)

| MICRO-CONNECTOR Pins | Signal |
|---|---|
| 1 | ASI + |
| 2 | No Connection |
| 3 | ASI - |
| 4 | No Connection |
| 5 | No Connection |

**INSTALLATION NOTES:**

**Entity Parameters: PM96_____:** Ui = 37 Vdc; Ii = 150 mA ; Ci = 0.0 nF; Li = 0.0 mH; Pi = 3.0 W

1. Installation shall be in accordance with ANSI/ISA RPA12.6.01, ANSI/NFPA 70, and the National Electrical Code.
2. Dust-tight conduit seal must be used when installed in Class II and Class III environments or where Ingress Protection of IP67 is required.
3. Control equipment must be FM approved to supply power in Class I, Division 2 Areas.
4. Power Limiting Associated Apparatus must satisfy the conditions: Voc or Vt $\leq$ Vi, Isc or It $\leq$ Ii, Ca $\geq$ Ci + Ccable, La $\geq$ Li + Lcable of the PM96_____ Entity Parameters
5. Manufacturer's associated non-incendive field wiring apparatus installation drawing must be followed when installing this equipment.
6. Parts of the enclosure are non-conducting and may generate an ignition-capable level of electrostatic charge under certain extreme conditions. The user should ensure that the equipment is not installed in location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charge on non-conducting surfaces. Additionally, cleaning of the equipment should only be done with a damp cloth.
7. Substitution of components may impair hazardous location safety.