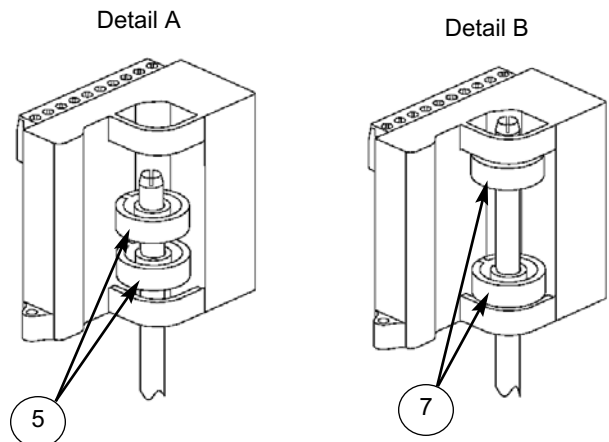
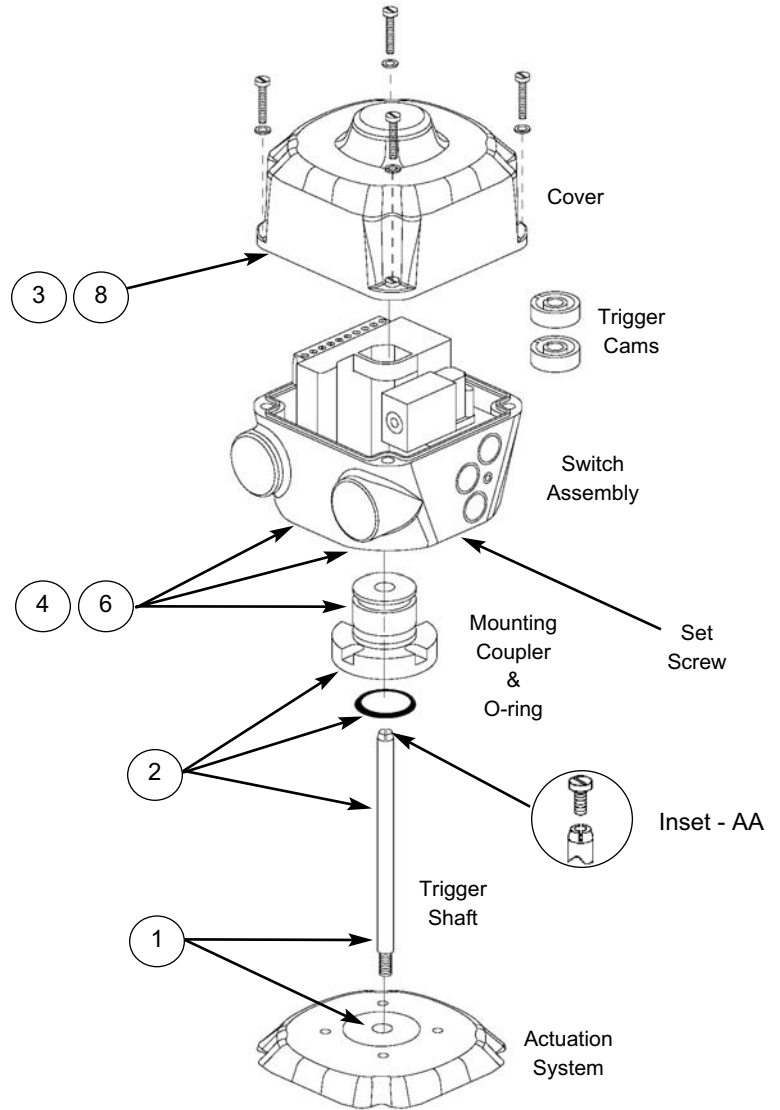


Installation & Adjusting Instructions

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 5 of this document)



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PRISM Model Selector

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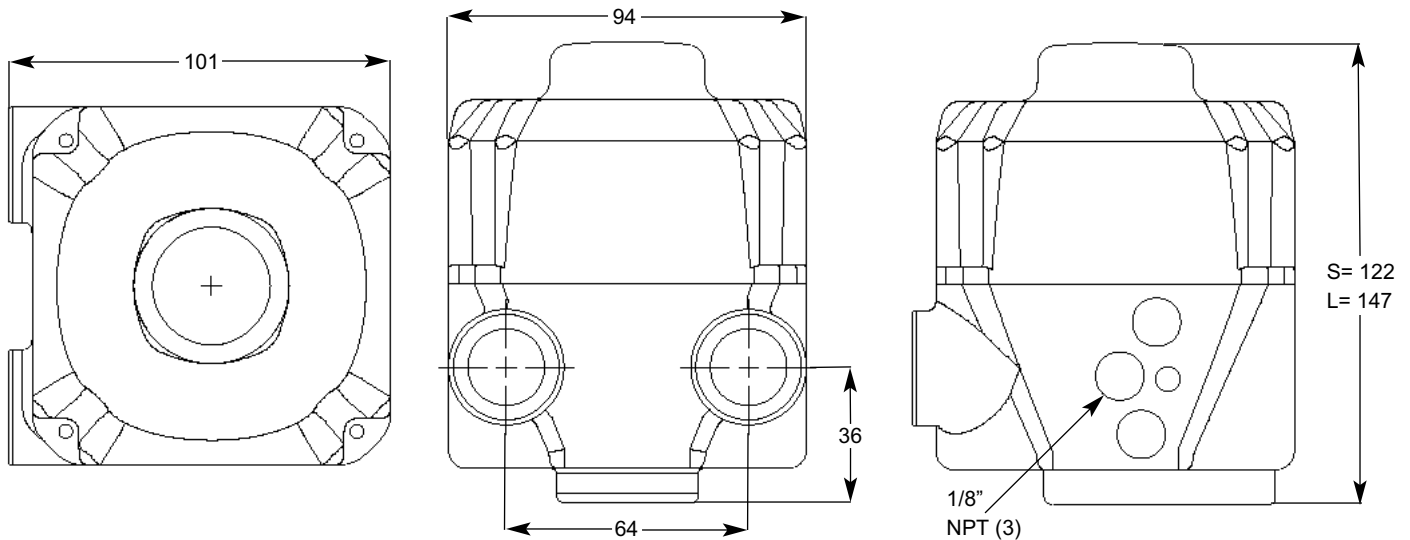
Hazardous Location Ratings

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

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

Dimensions (mm)



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

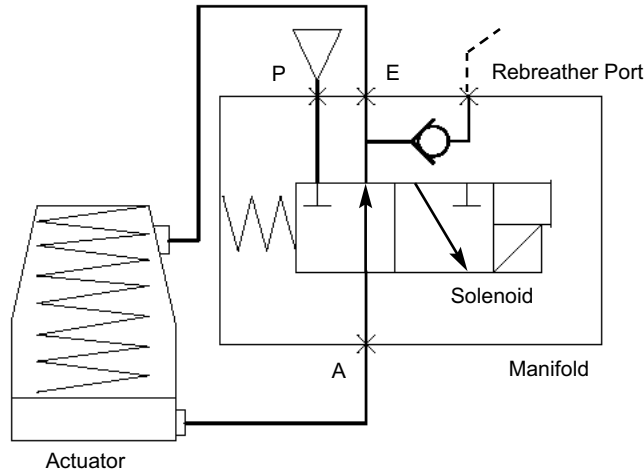
12 VDC (Intrinsically Safe)

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

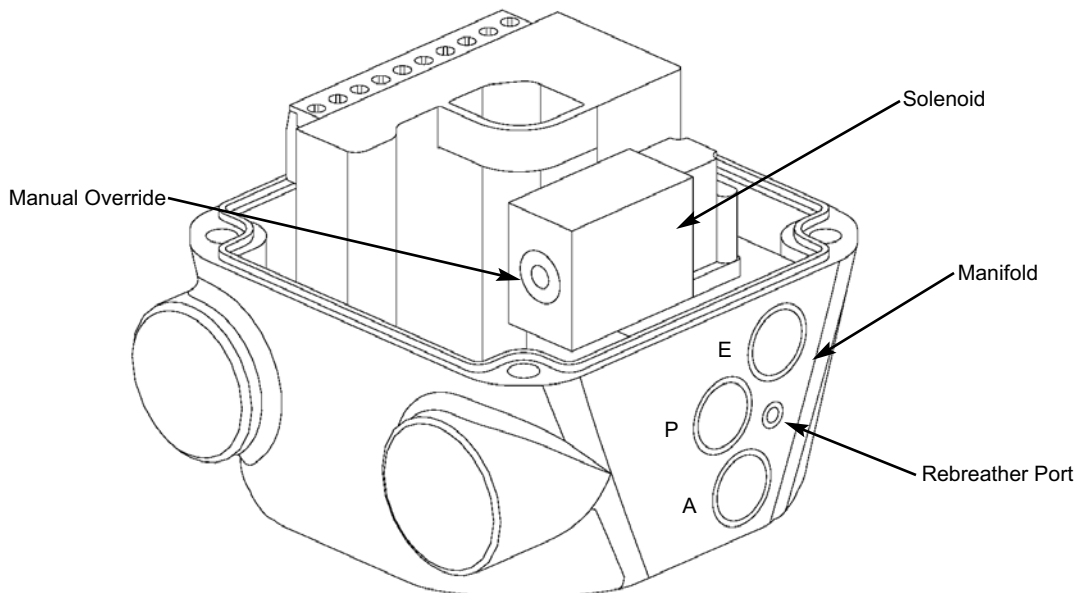
Piezo

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: Ex ia IIC T6

Pneumatic Valve Schematic



Pneumatic Valve Component Locator



Specifications

Communication Protocol: Foundation Fieldbus (H1)
Configuration: (2) Discrete Inputs (Sensors)
2) Discrete Outputs** for bus powered discrete devices that operate at ultra low power such as Piezo solenoid valves and relays. Limited to 2.0mA @ 6.5 VDC
(* Discrete Output 1 is used for units with integral solenoid)
Function Blocks 2 DI; 2 DO
Voltage: 9-32 VDC (Bus Voltage)
Output Voltage: 6.5 VDC
Max. Output Current: 2.0mA @ 6.5 VDC
Current Draw: 16mA

Standard Channel Assignments

Channel 1 (DI1) - Discrete Input 1 (Red LED);	1 = True; 0 = False
Channel 2 (DI2) - Discrete Input 2 (Green LED);	1 = True; 0 = False
Channel 3 (DO1) - Discrete Output 1 (OUT 1);	1 = True; 0 = False
Channel 4 (DO2) - Discrete Output 2 (OUT 2);	1 = True; 0 = False

Special Channel Assignments

Channel 8 (DO1) - Discrete Output 1 (OUT 1) with state report from Discrete Input 1 (READBACK_D)
Channel 9 (DO2) - Discrete Output 2 (OUT 2) with state report from Discrete Input 2 (READBACK_D)

Valve Control Single Block Mode

Channel 10 (DO1) - Discrete Output 1 (OUT 1) with state report Discrete Inputs 1&2 (READBACK_D):

READBACK_D Values:

0 = None

1 = Discrete Input 1 is True

2 = Discrete Input 2 is True

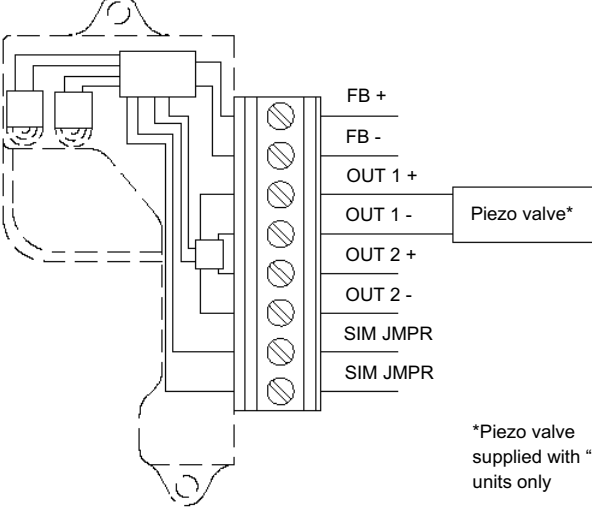
3 = Both Discrete Inputs 1&2 are True

To Bench Test Foundation Fieldbus Module Sensors

Warning

Do not apply external power to output terminals as this will damage module

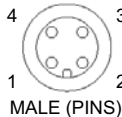
Use 9-32 VDC power supply across FB + and FB -. No series load resistor needed. To test communication, a functioning Foundation Fieldbus network is required.



*Piezo valve supplied with "1A" units only

Connector Option (S13)

MICRO-CONNECTOR

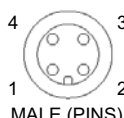


MALE (PINS)

PIN	PM9311S13XX	PM931AS13XX
1	FB -	FB -
2	FB +	FB +
3	NOT USED	NOT USED
4	NOT USED	NOT USED


Connector Option (S14)

MICRO-CONNECTOR



MALE (PINS)

MICRO-CONNECTOR



FEMALE (SOCKETS)

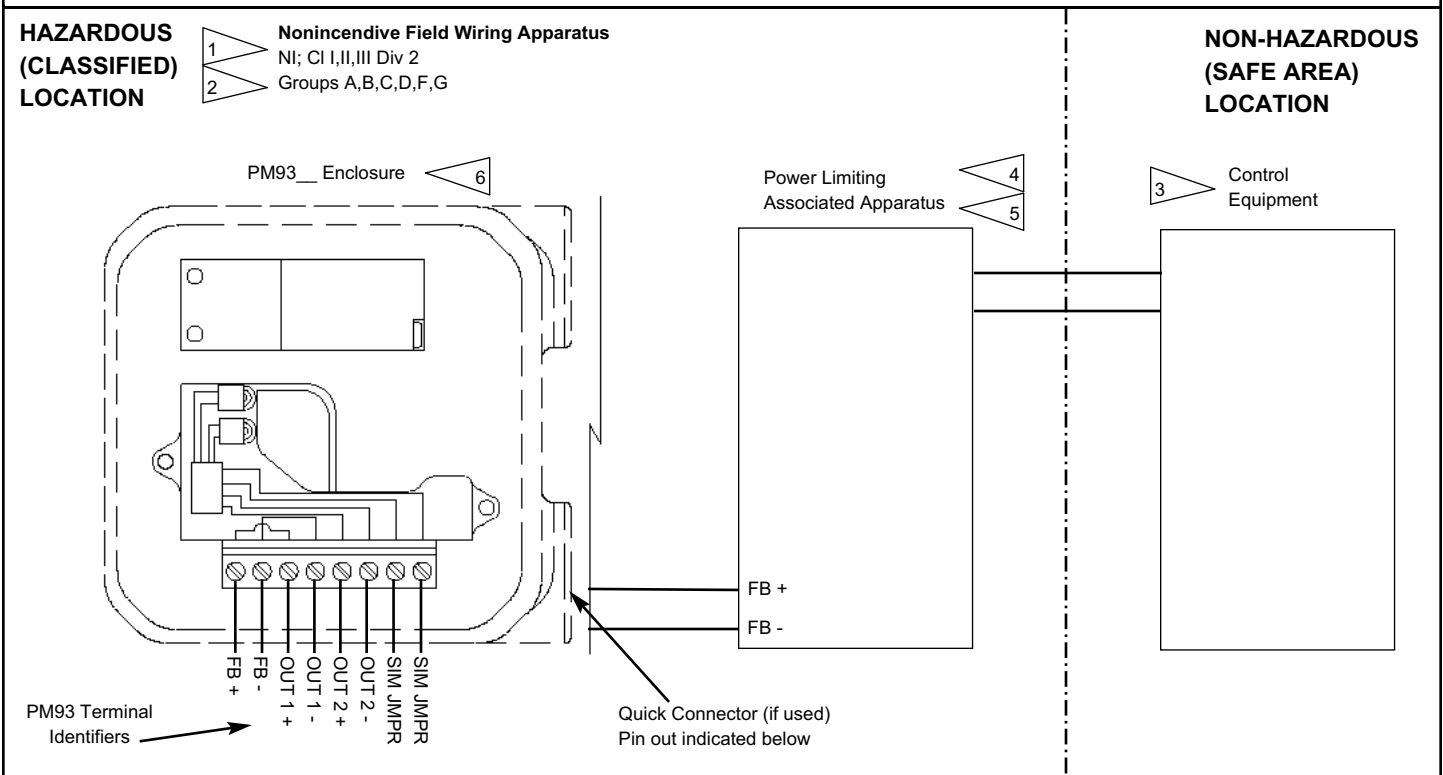
PIN	PM9311S14XX
1	FB -
2	FB +
3	NOT USED
4	NOT USED
XX	XXXXXXXXXX
1	SIM JMPR
2	SIM JMPR
3	OUT 1 -
4	OUT 1 +

Prism models approved as Non-Incendive Field Wiring Apparatus:

PM9311__†*; PM931AS02__*; PM931AS05__*; PM931AS09__*; PM931AS13__*; PM931AS15__*

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

* Any Visual Indicator and Valve Size option is approved.



	MICRO-CONNECTOR	Pins	Signal
PM93__S13__ Pin Identifiers		1	FB -
		2	FB +
		3	No Connection
		4	No Connection
MALE (PINS)			
	MICRO-CONNECTOR	Pins	Signal
PM93__S15__ Pin Identifiers		1	FB -
		2	FB +
		3	No Connection
		4	No Connection
		5	No Connection
MALE (PINS)			

INSTALLATION NOTES:

Entity Parameters: PM93____: $U_i = 30 \text{ Vdc}$; $I_i = 380 \text{ mA}$; $C_i = 0.0 \text{ nF}$; $L_i = 0.0 \text{ mH}$; $P_i = 5.32 \text{ W}$

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: $V_{oc} \text{ or } V_t \leq V_i$, $I_{sc} \text{ or } I_t \leq I_i$, $C_a \geq C_i + C_{cable}$, $L_a \geq L_i + L_{cable}$ of the PM93____ 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.

FISCO Concept

The FISCO Concept allows the interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination. The criterion for such interconnection is that voltage (V_{max}), the current (I_{max}), and the power (P_i), which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal to or greater than the voltage (U_o , V_{oc} , V_t), the current (I_o , I_{sc} , I_t), and the power (P_o) which can be provided by the associated apparatus (supply unit). In addition, the maximum unprotected residual capacitance (C_i) and inductance (L_i) of each apparatus (other than the terminators) connected to the Fieldbus must be less than or equal to 5nF and 10 μ H respectively.

In each I.S. Fieldbus segment only one active source, normally the associated apparatus, is allowed to provide the necessary power for the Fieldbus system. The allowed voltage (U_o , V_{oc} , V_t) of the associated apparatus used to supply the bus must be limited to the range of 14V d.c. to 24V d.c. All other equipment connected to the bus cable has to be passive, meaning that the apparatus is not allowed to provide energy to the system, except to a leakage current of 50 μ A for each connected device. Separately powered equipment needs a galvanic isolation to insure that the intrinsically safe Fieldbus circuit remains passive.

The cable used to interconnect the devices must comply with the following parameters:

Loop resistance R' : 15 - 150 ohm/KM

Inductance per unit length L' : 0.4 - 1mH/KM

Capacitance per unit length C' : 80 - 200nF/KM

$C' = C'$ line to line + $\frac{1}{2}$ C' line to shield, if both lines are floating with respect to shield
or

$C' = C'$ line to line + C' line to shield, if one line is connected to shield

Trunk Length: \leq 1000 meters

Spur Length: \leq 30 meters

Splice Length: \leq 1 meters

FM Approved line terminators must be used on each end of the trunk cable that have the following parameters:

$R = 90 - 100$ ohms

$C = 0.0 - 2.2\mu$ F

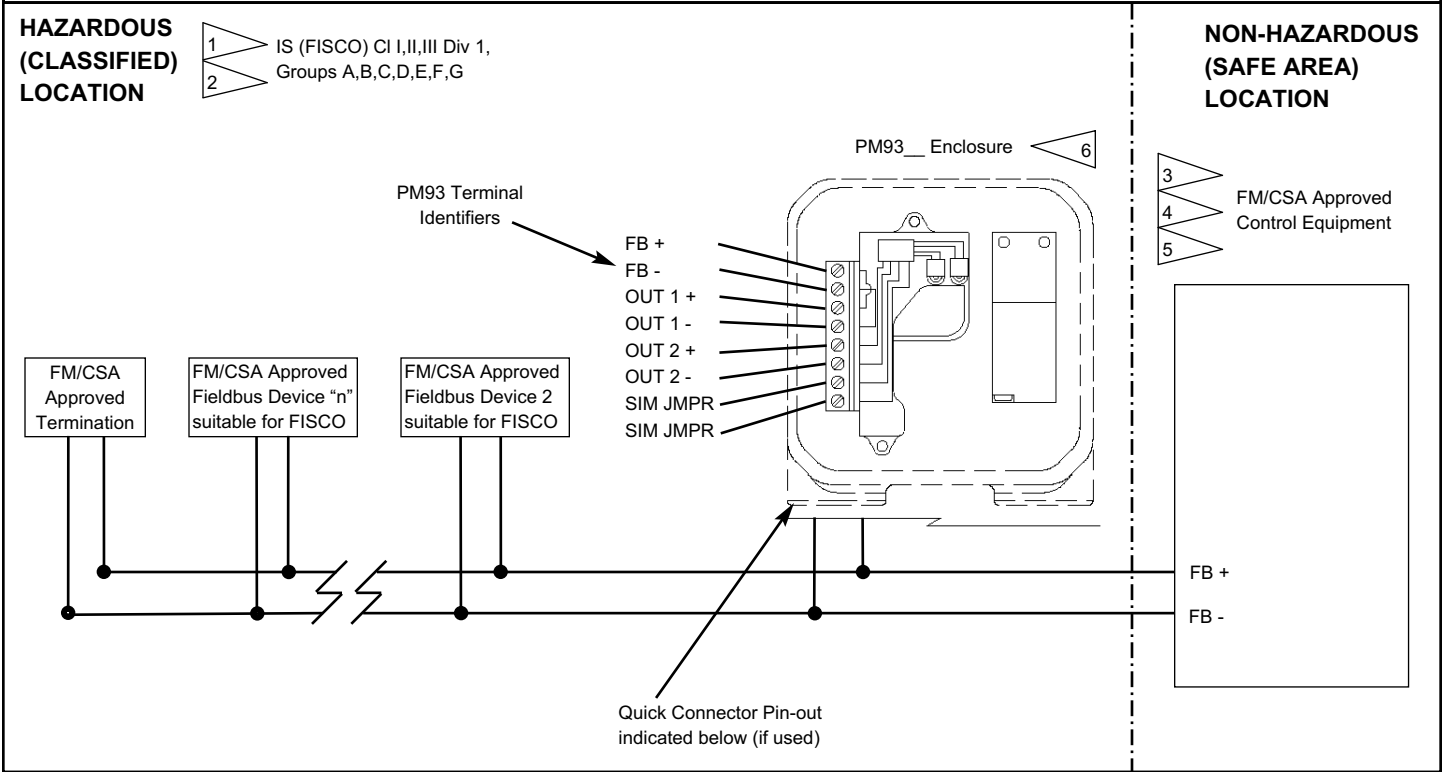
(See Page 8 for Installation Diagram and Notes)

Prism models approved for Intrinsically Safe (FISCO) installations:

PM9311__†*; PM931AS02__*; PM931AS05__*; PM931AS09__*; PM931AS13__*; PM931AS15__*

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

* Any Visual Indicator and Valve Size option is approved.



	MICRO-CONNECTOR	Pins	Signal
PM93__S13__ Pin Identifiers		1	FB -
		2	FB +
		3	No Connection
		4	No Connection
PM93__S15__ Pin Identifiers		1	FB -
		2	FB +
		3	No Connection
		4	No Connection
		5	No Connection

INSTALLATION NOTES:

PM93__ Entity Parameters (FISCO):

Ui (Vmax) = 30 Vdc; li (Imax) = 380 mA ; Ci = 0.0 nF; Li = 0.0 mH; Pi = 5.32 W

1. Installation shall be in accordance with ANSI/ISA RPA12.6.01, ANSI/NFPA 70, and the National Electrical Code or in accordance with the Canadian Electric 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 or CSA Approved Associated Apparatus suitable for FISCO.
4. Control equipment connected to FISCO barrier must not use or generate more than 250Vrms or Vdc.
5. Resistance between FISCO Intrinsically Safe Ground and earth ground must be less than 1.0 Ohm.
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.
8. Approval Agency controlled Installation Diagram. No revision to diagram allowed without prior Factory Mutual or Approval Agency authority.