Prism PM
Compact and modular with integral pneumatic control

The Prism series, designed for corrosive process environments, attaches directly to sanitary diaphragm and angle valves. This rugged, feature-rich platform offers a full array of communication and switching options, as well as discrete integral pneumatic control for single-acting valve actuator operation.

Ideally suited for process environments
The Prism features a durable polycarbonate enclosure suitable for both general purpose and hazardous process environments. The integral pneumatic control is completely isolated within the enclosure on a stainless steel reinforced polysulfone manifold so standard tube fittings may be reliably attached. And the Prism is rated for nonincendive or intrinsically safe applications.

Readily adaptable to linear valves
Stainless steel mounting systems are available for adapting the Prism to sanitary and industrial diaphragm, as well as angle valve applications. Stroke lengths from as low as ¼" to as long as 2" may be readily accommodated.

Wide variety of switching and communication options
The Prism features a full range of feedback options in the fully sealed, solid state dual module. Select the SST sensors for conventional switching, NAMUR sensors for intrinsically safe applications or communication options including AS-Interface, DeviceNet™ and Foundation Fieldbus. All switching sensor and communication modules are fully solid state and sealed for high reliability.

Features

1. **The Prism may be washed down and temporarily submersed** with no adverse affects. It is rated NEMA 4, 4x, and 6. It may be used in Div. 2 (nonincendive) or Div. 1 (intrinsically safe) hazardous applications.

2. **Enclosure features high strength polycarbonate** with excellent corrosion-resistance and exceptional temperature stability.

3. **Visual electronic and mechanical position indication** confirm valve and switch status for added safety.

4. **Solid state proximity sensors** monitor open and closed discrete valve position with precision and reliability.

5. **Integral pneumatic valve** is isolated from environmental contamination, offers high tolerance to dirty air and enables rapid valve operation.

6. **Solenoid options** available for 120 VAC and 24 VDC. Select piezo option for bus powered Foundation Fieldbus applications.

7. **Self-adjusting triggering system** provides consistent open and closed indication even with diaphragm compression. No resetting is required.

8. **Manual override** enables valve operation without electrically energizing.

9. **Dual module system** seals all position sensing, communication and control electronics in a compact vibration proof package.

10. **NPT port connections are stainless steel reinforced** for long life sealing under high torque stress conditions.
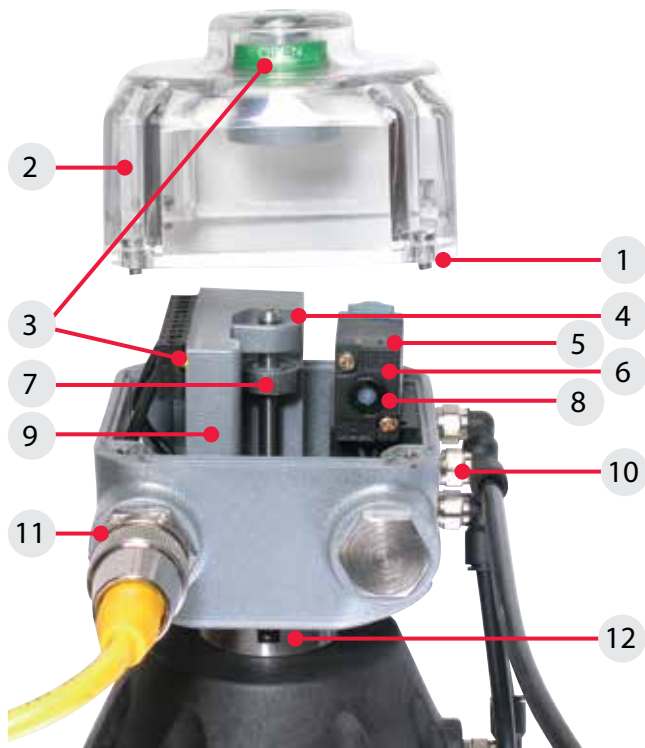
11. **Waterproof quick connectors, compression fittings or conduit connections** are available for convenient, reliable attachment to plant electrical systems.

12. **Stainless steel adaptor system** locks Prism securely to valve actuator and provides stability for shaft interface.

Self adjusting triggering system

Triggering cams adjust automatically over the valve diaphragm operating life. Cams are fitted snugly to the shaft assuring stability under high amplitude vibration at varying frequencies and temperatures.

Self adjustment sequence

1. **Installation**
   Cams are manually set to outer limits when fitted to actuation system. (Open at top; closed at bottom)

2. **Automatic initial setting**
   On operation, cams are automatically positioned to proper set points by module stops at top and bottom.

3. **Operational self adjustment**
   As diaphragm compresses over time, closed cam is automatically repositioned.
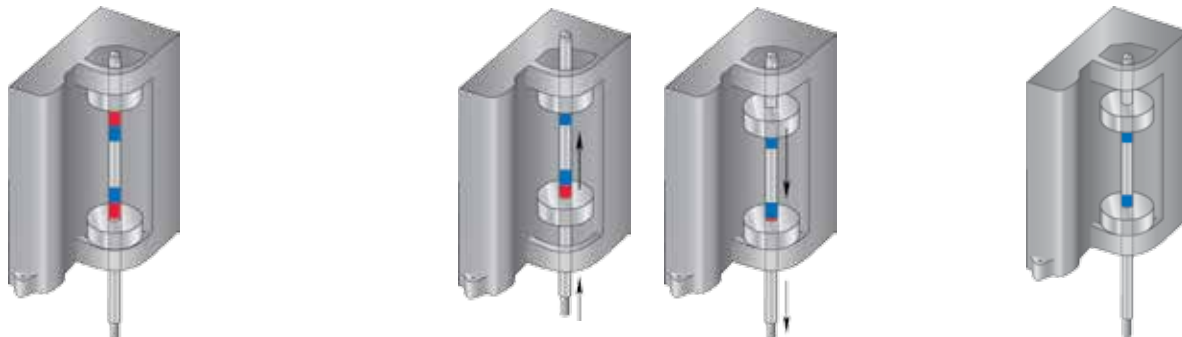
Sensing and communication module

The Prism features StoneL's dual module system with field proven reliability in all on/off applications. Outputs are available as NAMUR (intrinsically safe), SST (switching) and VCTs (valve communication terminals).

Dual modules have a **five year warranty.**

Switching and sensor specifications

SST switching sensors (33, 34)

Configuration	(2) SST solid state sensors (2) Wire terminations for one solenoid
Operation	Select either NO (33) or NC (34) models
Maximum current inrush	1.0 amps @ 125 VAC/VDC
Maximum current continuous	0.1 amps @ 125 VAC/VDC
Minimum on current	2.0 mA
Maximum leakage current	0.5 mA
Voltage range	24 - 125 VAC 8 - 125 VDC
Maximum voltage drop	6.5 volts @ 10 mA 7.5 volts @ 100 mA

Wiring diagram (33, 34)

SST

Solenoid Valve — Solenoid Output 1 2 — Solenoid Power 1 2 — Valve Open / Common / Valve Closed / Common

NAMUR sensors (44)

Configuration	(2) NAMUR sensors (EN 60947-5-6; I.S.) (2) Wire terminations for one solenoid
Operation	Normally closed NAMUR sensors (solid state)
Voltage range	5 - 25 VDC
Current ratings	Target on I<1 mA Target off I>3 mA

Wiring diagram (44)

NAMUR

Solenoid Valve — Solenoid Output 1 2 — Solenoid Power 1 2 — Valve open + − — Valve closed + −

Valve Communication Terminal (VCT) specifications

AS-Interface (96)

Configuration	(2) Discrete sensor inputs (2) Auxiliary discrete inputs (2) Power outputs (solenoids)
Maximum current	160 mA, both outputs combined
Auxiliary inputs	24 VDC @ 2 mA (self-powered)
Output	4 watts @ 24 VDC both outputs combined
Outputs, voltage	21 - 26 VDC
Configuration code	ID=F, IO=4; user defined (4DI/2DO)
AS-i version	3.0
Devices per network	31

Wiring diagram (96)

AS-i +
AS-i -
AUX IN +
AUX IN1 -
AUX IN2 -
3 WIRE RTN
OUT2 +
Solenoid Valve — OUT2 -
OUT1 +
Solenoid Valve — OUT1 -

AS-Interface VCT with extended addressing (97)

Configuration	(2) Discrete sensor inputs (2) Auxiliary discrete inputs (1) Power output (solenoid)
Maximum current	100 mA
Auxiliary inputs	24 VDC @ 2 mA (self-powered)
Output	2 watts @ 24 VDC
Output, voltage	21 - 26 VDC
Configuration code	ID=A, IO=4; user defined (4DI/1DO)
AS-i version	3.0
Devices per network	62

Wiring diagram (97)

AS-i +
AS-i -
AUX IN +
AUX IN1 -
AUX IN2 -
3 WIRE RTN
NOT USED
NOT USED
OUT1 +
Solenoid Valve — OUT1 -
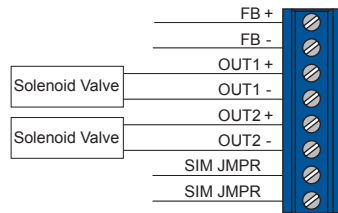
Sensing and communication module

Valve Communication Terminal (VCT) specifications

Foundation Fieldbus VCT, bus powered (93)

Configuration	(2) Discrete Inputs (2) Power outputs (solenoids) Multiple DI/DO blocks or modified output block
Outputs	2 mA @ 6.5 VDC each current limited to 2 mA (bus powered)
Devices per network	Max of 16 devices recommended

### Wiring diagram

(93)

Valve Communication Terminal (VCT) specifications

DeviceNet™ (92)

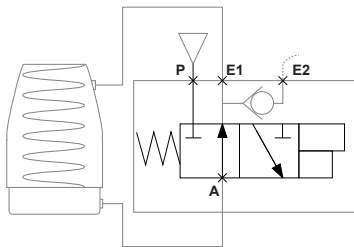| Configuration	(2) Discrete inputs (open and closed) (2) Power outputs (solenoids) (1) 4-20 mA auxiliary analog input, 10-bit resolution; no additional power source required
Transmission rate	Software selectable 125K, 250K or 500K baud
Messaging	Polling, cyclic and change of state
Outputs	4 watts @ 24 VDC outputs combined
Outputs, voltage	24 VDC (with input voltage ranging from 10 - 24 VDC)
Other features	Predetermined output fail state

Wiring diagram

(92)
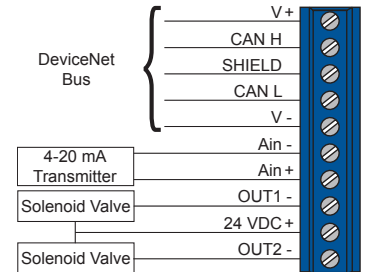
Pneumatic control and other specifications

The three-way, two-position spring return pneumatic valve is designed to operate single acting actuators. Working mechanisms on the valve are completely isolated from the environment enabling pneumatic control to be located in the field at the actuator with no threat of contamination. A standard rebreather enables exhaust air from the pressurized actuator cylinder to be channeled into the spring side actuator chamber preventing the ingestion of contaminated air from the outside environment. Select a solenoid valve for conventional or device bus applications or a piezo valve for Foundation Fieldbus bus powered applications.

Valve schematic

Specifications	
General pneumatic (solenoid & piezo)	
Configuration	3-way, 2-position, spring return
Porting	⅛" NPT all pressurized ports
Rebreather port	4-40 size
Flow ratings	0.1 Cv
Rebreather	Standard on all models; diverts air from exhausting cylinder into actuator spring side. Excess air exhausted into atmosphere.
Operating life	1 million cycles
Operating pressure	40 psi to 120 psi (2.6 to 8 bar)

Solenoid valve

A poppet style valve with exceptional tolerance to dirty air, the solenoid valve may be used for most conventional AC or DC applications. The DC (low power) version may be used on AS-Interface and DeviceNet™ bus powered applications and on Foundation Fieldbus (94) externally powered applications.

Piezo valve

The piezo valve is ideally suited for use with the Foundation Fieldbus (FF) bus powered output module (93). Each module output provides up to 2 mA @ 6.5 VDC which is sufficient to drive the piezo valve. Specifically designed for on/off discrete applications, the piezo valve may remain energized for extended periods of time with no memory effect.

Specifications	
Solenoid valve (1C, 1D, and 1E coil options)	
Filtration requirements	40 micron
Operating temperature	-18° C to 50° C (0° F to 120° F)
Power consumption	See model selector guide

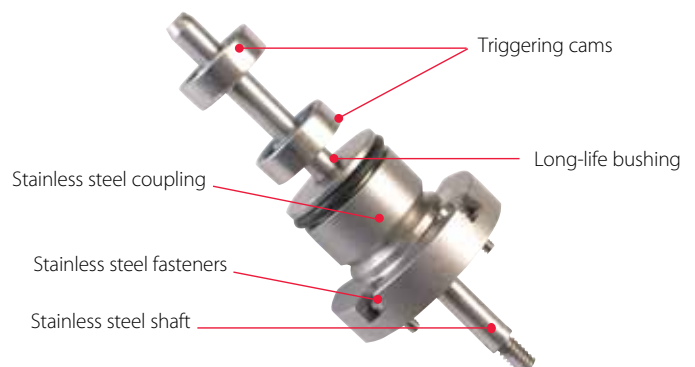| Specifications	
Piezo valve (1A, bus powered Foundation Fieldbus)	
Filtration requirements	30 micron
Operating temperature	-10° C to 60° C (14° F to 140° F)
DC power requirements	2 mA @ 6.5 VDC

Prism mounting system*

Prism adapting systems are designed specifically for each actuator manufacturer and model. The adaptor coupling, made of stainless steel, also integrates a corrosion proof, ultra long-life bushing. This system stabilizes the shaft from lateral motion and assures reliable, low friction movement over the actuator's life.

- Required for all
- Order kit separately
- For kit numbers, consult factory or visit StoneL.com

Note: Kit numbers are specific to valve size and manufacturer.

* Open travel stops recommended on diaphragm actuators to maintain consistent travel with varying process line pressures.

Triggering cams

Long-life bushing

Stainless steel coupling

Stainless steel fasteners

Stainless steel shaft

Other specifications

Materials of construction

Housing and cover	Polycarbonate
Fasteners	Stainless steel
Triggering cams	Stainless steel banded polycarbonate
Shaft	Stainless steel
Valve manifold	Polysufone with stainless steel reinforced NPT

Operating life

	1 million cycles

Temperature range

with solenoid	-40° C to 80° C (-40° F to 176° F) Maximum ambient 50° C (120° F)

Warranty

Dual module	Five years
Other mechanicals	Two years

Ratings

Nonincendive *(Ex n, Zone 2 or Class I and II, Div. 2)*	PM models*
Intrinsically safe *(Ex ia, Zone 0 or Class I and II, Div. 1)*	Functions 44 and 93*

Enclosure protection

NEMA 4, 4X and 6	All models
Ingress Protection 67	All models

Approvals*

	See StoneL.com/approvals

* Only models listed on StoneL's official website are approved per specific rating.

Dimensions Inches [mm]
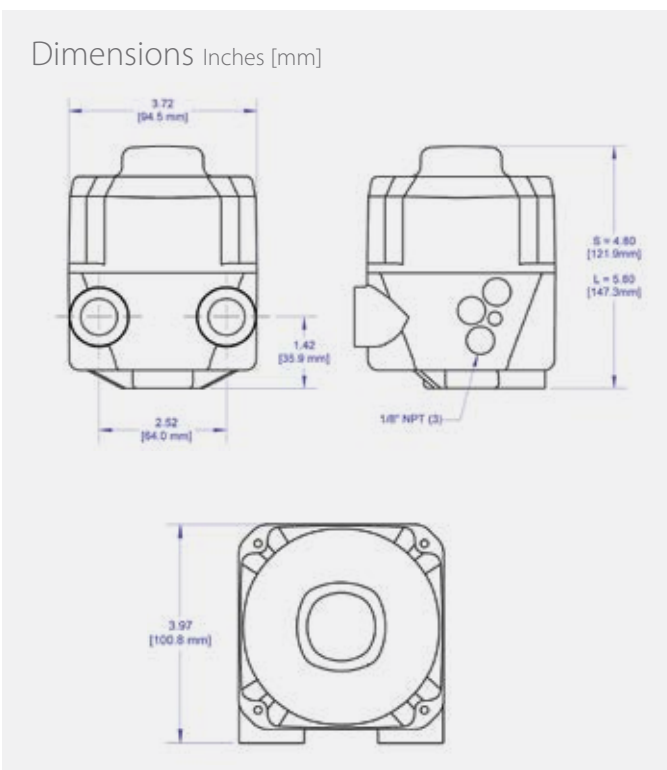
Model selector

SERIES

PM Nonincendive or intrinsically safe

FUNCTIONS

Sensor modules

33	(2) SST NO switching sensors *[select pneumatic valve option 1C, 1D or 11]*
44	(2) NAMUR sensors (EN 60947-5-6; I.S.) *[select pneumatic valve option 1E or 11]*

Valve Communication Terminals (VCTs)

92	DeviceNet™ *[select pneumatic valve option 1D or 11]*
93	Foundation Fieldbus (bus powered; I.S.) *[select pneumatic valve option 1A or 11]*
96	AS-Interface *[select pneumatic valve option 1D or 11]*
97	AS-Interface with extended addressing *[select pneumatic valve option 1D or 11]*

PNEUMATIC VALVE *[consult factory for extended temperature]*

11	No pneumatic valve
1A	Three-way piezo
1C	Three-way 120 VAC 5.4 watt
1D	Three-way 24 VDC 0.5 watt
1E	Three-way (I.S.) 12 VDC 0.5 watt

CONDUIT ENTRIES

S02	(2) ½" 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

VISUAL INDICATOR

R	Green open

VALVE SIZE

S	¼" to 2" (⅛" to 1 ³⁄₁₆" stroke)
L	2" to 4" (1 ³⁄₁₆" to 2 ¼" stroke)

Model number example

PM	33	11	S02	R	S	–	___	OPTIONAL

MODEL NUMBER	PARTNERSHIP ID
Mounting hardware required and sold separately.	Some models may include 5-digit identification suffix.