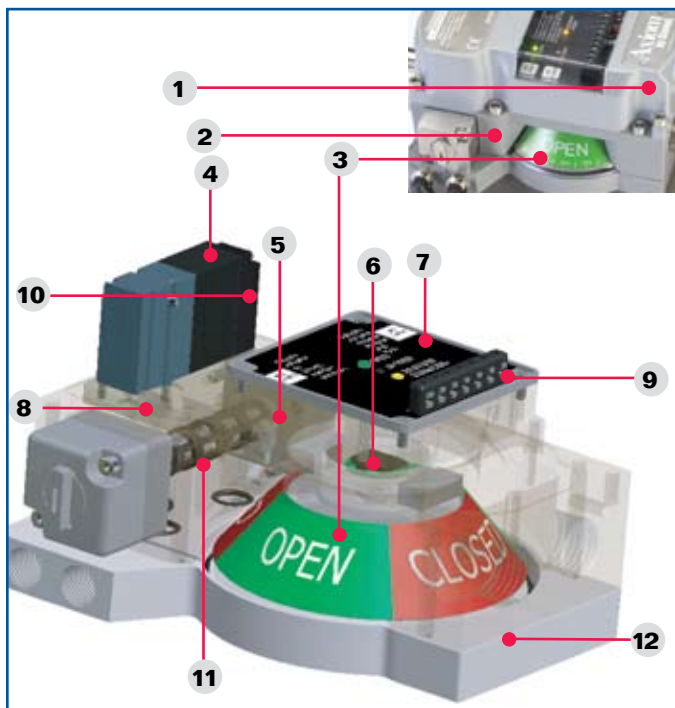


The Axiom is a discrete valve communication and control device for quarter-turn automated valves (patent pending.) Its advanced position sensor offers reliable long-life performance with push-button settings that may be made quickly and conveniently.

The integral pneumatic pilot valve offers contemporary features which further enhance the operating performance of your automated valve system. And, the Axiom's rugged construction will withstand your most challenging plant environments.

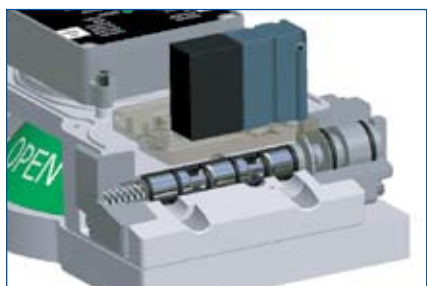


- 1. The Axiom is corrosion proof, temporarily submersible and suitable for use in Hazardous areas.** Designed for NEMA 4, 4X & 6; (IP67) Class I & II Div 2 Nonincendive (Ex nA, Zone 2) and Class I & II Div 1 and 2 (Ex ia, Zones 0,1, & 2) Intrinsically Safe.
- 2. High strength durable enclosure and pneumatic manifold** are constructed of anodized aluminum and epoxy coated. Impact resistant cover is made of high strength Lexan polycarbonate. All fasteners are stainless steel.

- 3. High visibility mechanical and electronic indication** confirm OPEN/CLOSED position and solenoid status for greater safety and convenience.
- 4. Universal burn out proof solenoid** operates on less than 0.6 watts of power and standard version will accept either 24VDC or 120VAC, reducing stocking requirements.
- 5. Electronic sensing, switching and communication components are sealed** and potted inside function module to protect against residual moisture, vibration and corrosives.
- 6. High accuracy position sensor system** is solid state with no moving wear points for highly reliable and precise position feedback.
- 7. Push button set points** for Open & Closed accurately lock in position settings. Settings remain locked in when power is removed and reapplied.
- 8. Integral pneumatic valve** operates on standard plant air and will cycle most actuators in less than 2 seconds.
- 9. Wiring and maintenance access is quick** and convenient for easy set-up and installation.
- 10. Internal manual pneumatic valve override** is standard enabling local automated valve operation.
- 11. Standard five way, two position valve** operates both double and single-acting actuators and features a re-breather to feed instrument air into spring side of actuator to keep out corrosives.
- 12. Axiom directly attaches to VDI/VDE 3845 (Namur) sizes 1 & 2** actuator accessory patterns and may be readily adapted for other actuator applications.

Pneumatic Control

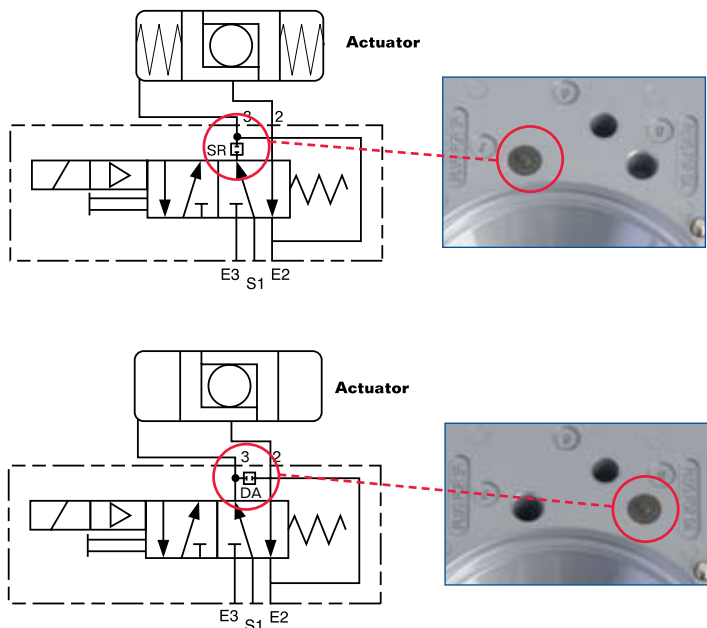
The Axiom's pneumatic valve system consists of a low power pilot that drives the main high flow spool valve. Pilots may be selected for conventional, intrinsically safe or bus networking applications. Both stages of the pneumatic valve system have been designed for long life, high tolerance to air line contaminants and ease of maintenance should components become fouled.



Special Features

- Pilot poppet and main spool design offer long life, exceptional tolerance to dirty air and tight shut-off.
- Spool and pilot valve may be conveniently removed and cleaned should large contaminants become lodged in the valve.
- Universal solenoid may be used for standard AC or DC applications.
- 5-way, 2 position spring return configuration may be used for either single or double-acting actuators. Dual coil shuttle piston versions are also available for fail in last position.
- Low power consumption of solenoid reduces current flow on bus networks enabling more units and longer distances on a single segment.
- Rebreather channels exhausted air from pressurized side of actuator into spring side preventing ingestion of contaminated air from the environment that may corrode springs or actuator internals.
- Standard internal manual override enables convenient setup.

Spring Return Actuator



Pneumatic Valve Specifications

Valve Design	Pilot operated spool valve
Pilot Operator Options	Solenoid Coil or Piezo ¹
Configuration	
Single Pilot	5-way, 2 position spring return
Dual Pilot	Shuttle piston, 5-way, 2 position
Flow Rating	0.75 Cv (Kv=0.64 based on flow unit m ³ /h)
Porting	1/4" NPT
Operating Pressure	40 to 120 psi (2.7 to 7.5 bar)
Filtration Requirements	40 micron (Piezo, 30 micron)
Operating Temperature ²	See pilot specifications below
Operating Life	1 million cycles
Manual Override	Internal momentary
Material of Construction	
Spool	Nickel Plated Aluminum
Body	Epoxy coated anodized aluminum
O-Ring Spacers	Polysulphone
End Caps & Fasteners	Stainless Steel
O-Rings	Nitrile Compound

Piezo Pilot¹

Filtration Requirements	Dried/30 micron
Operating Temperature	-10° to 60° C (14° to 140° F)
DC Power	2 mA @ 6.5 VDC

Solenoid Pilot²

Electrical Ratings	
H option	0.6 watt @ 22 VDC min., up to 130 VAC max.
E (I.S.) option	0.5 watt
Operating Voltage Range	12-15 VDC
D option	0.5 watt @ 24 VDC
B option	1.8 watt @ 24 VDC
AC Current Consumption	18 mA (1H or 2H)
Operating Temperature ²	-20° to 65° C (-4° to 150° F) ²
IS Entity Parameters	U _i = 28 VDC
	I _i = 120 mA
	C _i = 0
	L _i = 0
	P _i = 1.0 watt

1 Piezo used for bus powered Foundation Fieldbus applications only.
 2 Extended temperature option (-40° to 80°C) available. Specify -T at end of model number.

Dual pilot options may be selected for special applications such as shuttle piston for fail in last position. External manual override options are also readily available. For special valve configurations with non-standard manual override features please consult StoneL.



Sensing & Communication Module

Open and Closed Settings

Switches correspond to a particular valve position and are set using the push button panel on the module's sealed membrane pad. Simply operate the actuator to the open position (using standard internal manual override) and push the "Set Open" button. Operate the actuator to the closed position and push the "Set Closed" button. Position settings remain locked in when power is removed and reapplied. (See pages 28 to 37 for more information.)



DeviceNet VCT (92)

Configuration	(2) Discrete Inputs (Open & Closed) (1) 4-20 mA Auxiliary Input (2) Discrete Outputs (Drive Solenoids) ⁵
Other Features	Stores number of actuations Stores date of last service Predetermined output fail state

FOUNDATION Fieldbus VCT, Bus Powered (93)

Configuration	(2) Discrete Inputs (Open & Closed) (2) Discrete Outputs (Drive Piezo) ³
Current Input	16 mA quiescent
Voltage Range	9 to 32 VDC
Other Features	Stores number of actuations Stores date of last service Predetermined output fail state

FOUNDATION Fieldbus VCT, Bus Powered (94)

Configuration	(2) Discrete Inputs (Open & Closed) (2) Externally Powered Discrete Outputs (Drive Solenoids) ⁵
Signal Current Input	16 mA quiescent
Signal Voltage Range	9 to 32 VDC
External Voltage Input	24 VDC
External Current Input	Solenoid dependent
Other Features	Stores number of actuations Stores date of last service Predetermined output fail state

Modbus VCT (95)

Configuration	(2) Discrete Inputs (Open & Closed) (1) 4-20 mA Auxiliary Input (2) Discrete Outputs (Drive Solenoids) ⁵
External Voltage	24 VDC
Devices per Network	32
Other Features	Predetermined output fail state

1. Specify Solenoid Option "_ H"
2. Specify IS Solenoid Option "_ E"

3. Specify Piezo Option "_ A"
4. Specify Solenoid Option "_ D"
5. Specify Solenoid Option "_ B"



SST Switching Sensors (33)

Configuration	(2) Two wire solid state Switching outputs (1) or (2) Solenoid Power Input(s) ¹
Output	Normally Open (SPST)
Maximum Current	
Inrush	2.0 Amps
Continuous	0.25 Amps
Min. On Current	2.0 mA
Max. Leakage Current	0.5 mA
Voltage Range	20 to 125VDC/125VAC
Max. Voltage Drop	7.0 Volts @ 100 mA
Short Circuit	Protected from Direct Application of up to 125 VDC/VAC

Namur Sensors (44)

Configuration	(2) Namur Outputs (1) or (2) Solenoid Power Input(s) ²
Output	Conforms to DIN 19234
Current Ratings	Target On I < 1.0 mA Target Off I > 2.1 mA
Voltage Range	7 to 24 VDC

AS-Interface VCT (96)

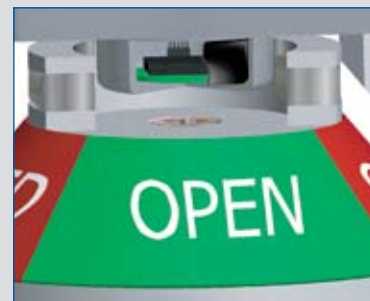
Configuration	(2) Discrete Inputs (Open & Closed) (2) Auxiliary Discrete Inputs (2) Discrete Outputs (Drive Solenoids) ^{4,5}
AS-I Version	2.1
Input Voltage	26.5 to 31 VDC
Devices per Network	31

AS-Interface VCT (97) with Extended Addressing

Configuration	(2) Discrete Inputs (Open & Closed) (2) Auxiliary Discrete Inputs (1) Discrete Output (Drive Solenoid) ⁴
AS-I Version	2.1
Input Voltage	26.5 to 31 VDC
Devices per Network	62

Position Sensor System

The Axiom utilizes a magnetic resistive (Mag Res) sensor system that monitors exact valve position. The Mag Res sensor system is also tolerant of lateral and vertical shaft movement which may be experienced in high cycle worn actuators without affecting rotational measurement. No cams, shafts and other mechanical apparatus are required that are prone to wear and binding.



Diagnostic Systems

Reduce plant down time and cut maintenance costs with AS-Interface diagnostics.

The AMI96 model features optional on-board diagnostic systems which may predict potential automated valve malfunctions. As a result, plant down time may be reduced by repairing discrete automated valves which, when called upon to operate, would have failed to do so. And, should problems occur during normal operation, maintenance personnel will be aided in rapidly locating failure causes thus reducing maintenance time and speeding valve repair and operation renewal.



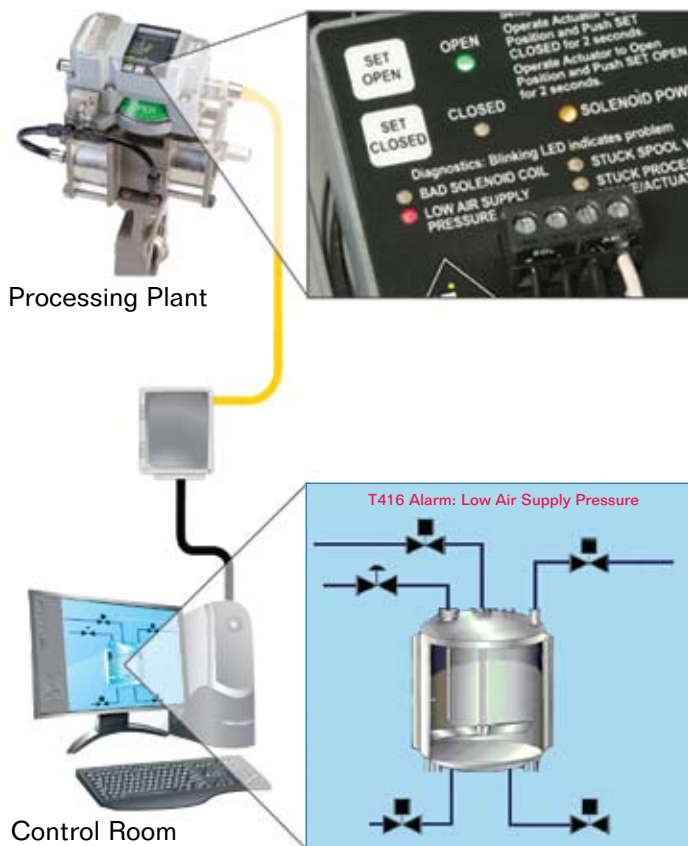
Diagnostic Alerts & Capabilities

- Low pneumatic supply pressure**
 Should supply pressure drop below operational threshold level a local and remote alert will be activated.
- Malfunctioning solenoid**
 A shorted or opened solenoid circuit will be identified during operation with a local and remote alert.
- Stuck pneumatic spool or pilot valve**
 Should either the pilot poppet or main spool be stuck for any reason (air line contamination, freezing etc.) a local and remote alert will be energized.
- Stuck process valve/actuator**
 If the Axiom stalls in mid stroke and no on-board problem sources are identified an alert will be energized locally and remotely that the problem source is located in the valve/actuator assembly.
- Remote switch setting**
 Open and Closed limit switch settings may be made with on-board push buttons or remotely through the control system.
- Identification "winking"**
 To positively confirm the field device identity the control room may initiate the "wink" function which flashes both open and closed LEDs without affecting valve operational status.

 Alerts are cleared automatically when normal operating conditions are restored.

Control System Interface

AS-Interface 2.1 or greater level protocol may be used to interface up to 31 Axiom units into the control system. Communication bits may be mapped into standard DCS or PLC as desired. No special software is required. See StoneL FieldLink program for information about the cost saving benefits and easy installation of the AS-Interface protocol.



Diagnostic Specifications

Protocol	AS-Interface (AMI96) Version 2.1 or greater
Input Voltage	26.5 to 31.6 VDC (AS-i power supply)
Devices per Network	31
Input Configuration	(1) Open & (1) Closed (1) Low Supply Pressure (1) Bad Solenoid Coil or Stuck Spool/Pilot Valve*
Output Configuration	(1) Stuck Process Valve/Actuator (1) Solenoid Power 0.5 W @ 24VDC (1) Wink Operation (1) Remote Set Open (1) Remote Set Closed
Pressure Accuracy	± 2 psi (0.13 bar)
Supply Pres. Default	40 psi (2.7 bar) minimum
System Interface	AS-i 2.1 master or greater required

* Local display identifies specific problem.

Manifold and Mounting System

The Axiom manifold system directly attaches the communication and control module to the actuator and ports air from the pneumatic valve to the actuator. Included in the manifold system are:

1. Stainless steel actuator shaft adaptor and fastener.
2. Epoxy coated anodized aluminum actuator adaptor and pneumatic manifold with o-rings and stainless steel fasteners.

The manifold system readily adapts to VDI/VDE 3845 Namur sizes 1 and 2. Special variations may be made for sizes 3, 4 and non-standardized quarter-turn actuator mounting patterns.

The manifold and mounting system are specified and **sold separately** from the Axiom communication and control module.

Mounting system kits are specific to actuator manufacturer. For kit numbers visit: www.stonel.com



Other Specifications and Ratings

Materials of Construction

Housing & Mounting Manifold	Epoxy coated anodized aluminum
Cover & Visual Indicator	Lexan® polycarbonate
Fasteners & Mounting Adaptors	Stainless Steel
Pneumatic Valve	See Pneumatic Valve Specifications on page 5

Temperature Ratings (pneumatic valve dependent)

Piezo Pilots	-10° to 60° C (14° to 140° F)
Solenoid Pilots	-20° to 65° C (-4° to 150° F) Special solenoid pilot -40° to 80°C (-40° to 176°F) available. Please consult factory.

Position Sensor System

Accuracy	Within 1°
Repeatability	Within 1°
Setting Buffer	2° from set point (Rotational distance from original set point where switch will energize on return stroke.)
Dead Band	3° from set point (Rotational distance from original set point where switch will de-energize.)
Maximum Rotational Range	120°

Operating Life

Pneumatic Valve	1 Million Cycles
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Warranty

Mechanical Components	2 Years
Electronic Components	5 Years

Nonincendive Ratings

NEC/CEC	Class I, Groups A, B, C & D, Div. 2
IEC/ATEX	Class II, Groups F & G, Div. 2 EEx nA IIC T5, Zone 2

Intrinsically Safe Ratings

Models AMI44 & AMI93 Only

NEC/CEC	Class I, Groups A, B, C & D, Div. 1 & 2
IEC/ATEX	Class II, Groups E, F & G, Div. 1 & 2 EEx ia IIC T5, Zones 0, 1, & 2

Enclosure Protection

NEC/CEC	4, 4X & 6
IEC/ATEX	IP67

For approval information visit www.stonel.com/approvals



Model Selector

AMI	Function	Pneumatic Valve			Enclosure	Conduit/Connectors	Capabilities	Visual Indicator	
		No Ext. Override	External Override	Latching Ext. Over.					
AMI	Sensor Modules 33 (2) SST Sensors	Single Solenoid Spring Return 24 VDC or 120VAC Universal (Use with Function 33) 24 VDC (0.5 watt) (Use with Function 96 and 97) 24 VDC (1.8 watt) (Use with Function 92, 94, 95, and 96)				A North America (NEC/CEC) V International (IEC/ATEX)	02 (2) 1/2" NPT 05 (2) M20 10 (1) 4-Pin Mini-Connector 11 (1) 5-Pin Mini-Connector 13 (1) 4-Pin Micro-Connector 15 (1) 5-Pin Micro-Connector 17 (1) 6-Pin Micro-Connector 18 (1) 8-Pin Micro-Connector 19 (1) 6-Pin Mini-Connector 20 (1) 7-Pin Mini-Connector 21 (1) 8-Pin Mini-Connector	S Standard D Diagnostics (Use with Function 96 and 0.5 watt pneumatic valve 1D, 3D, or 5D)	RA Red Closed/ Green Open
	44 (2) Namur Sensors Intrinsically Safe (I.S.; DIN 19234)		1H	3H	5H				
	Valve Communication Terminals (VCT) 92 DeviceNet		1D	3D	5D				
	93 FOUNDATION Fieldbus (Bus Powered; I.S.)	1B	3B	5B					
	94 FOUNDATION Fieldbus (Externally Powered)	1E	3E	5E					
	95 Modbus	Dual Solenoid Shuttle Piston (not available with Function 97) 24 VDC or 120VAC Universal (Use with Function 33) 24 VDC (1.8 watt) (Use with Function 92, 94, 95, and 96) 12 VDC Intrinsically Safe (Use with Function 44)							
	96 AS-Interface		2H	4H					
	97 AS-Interface (with Extended Addressing)		2B	4B					
			2E	4E					
		Single Piezo Spring Return Intrinsically Safe or Standard (Use with Function 93)	1A	3A	5A				
	Dual Piezo Shuttle Piston Intrinsically Safe or Standard (Use with Function 93)	2A	4A						

Model Examples: AMI961DA02DRA

AMI331HV05SRA

AMI971DA02SRA-T

(Note: Specify -T suffix for extended temperature.)

Manifold and Mounting System required for all and sold separately.

Dimensions
Inches [mm]

