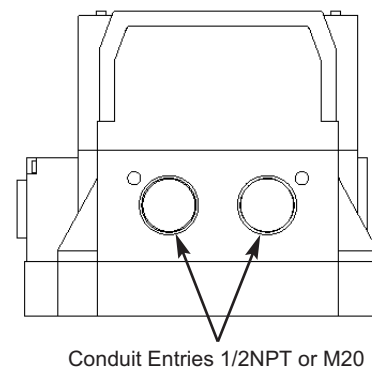
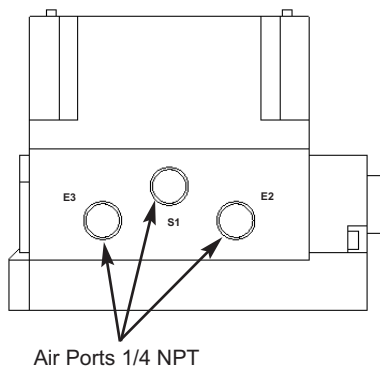
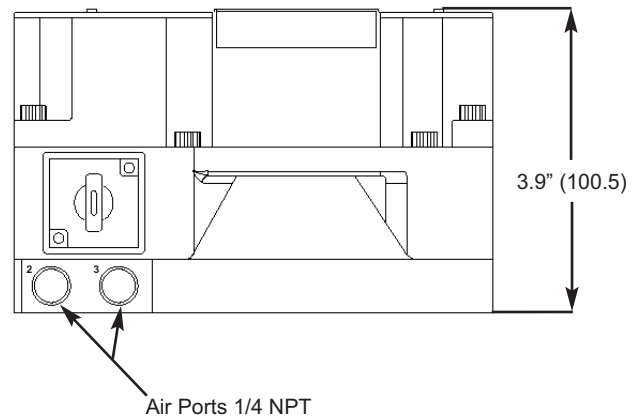
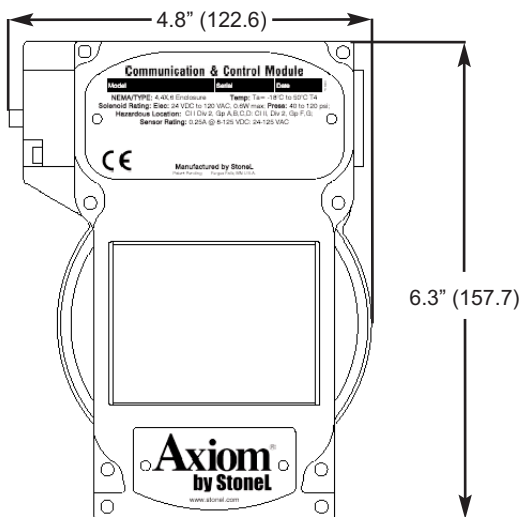


with  **AS-Interface**
Axiom[®] Sensing & Communications Module (Extended Addressing)
 w/ Bluetooth (AMI97____W__)

Installation & Adjusting Instructions



StoneL[®]
 Valve Communication Solutions

StoneL
 26271 US Hwy 59
 Fergus Falls, MN 56537 USA
 Telephone: 218.739.5774
 Toll Free: 800.843.7866
 Fax: 218.739.5776
 E-mail: sales@stonel.com
 Website: www.stonel.com

Axiom Model Selector (Example: AMI975DA13WRA)

	Function	Pneumatic Valve	Approvals	Entry Options	Capabilities	Visual Indicator	Brand	Options
AMI	Bus Communication Modules 97 AS-Interface <i>(with Extended Addressing)</i>	Single Solenoid Spring Return 1B 24VDC/1.8 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> 1D 24VDC/0.5 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> Dual Solenoid Shuttle Piston 2B 24VDC/1.8 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> 2D 24VDC/0.5 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> Single Solenoid Spring Return (Momentary Ext. Manual Override) 3B 24VDC/1.8 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> 3D 24VDC/0.5 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> Dual Solenoid Shuttle Piston (Momentary Ext. Manual Override) 4B 24VDC/1.8 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> 4D 24VDC/0.5 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> Single Solenoid Spring Return (Latching Ext. Manual Override) 5B 24VDC/1.8 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> 5D 24VDC/0.5 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> Dual Solenoid Shuttle Piston (Latching Ext. Manual Override) 6B 24VDC/1.8 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i> 6D 24VDC/0.5 watt coil <i>(Use with Function 92, 94, 95, 96, 97)</i>	A cFMus V ATEX L Inmetro	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 W Wireless Link Enabled	R Red Closed G Green Closed 1 T1 Three Way 2 T2 Three Way X Special	A Stonel M Metso N Neles	-XXXXX Special Unit ID -T Extended Temp. Coil

AS-Interface VCT Module Specifications

Communication Protocol: AS-Interface
 Configuration: (2) Discrete Inputs (Sensors)
 (2) Auxiliary Discrete Inputs
 (2) Discrete Outputs (Solenoids)
 Voltage: 26.5-31.6 VDC (AS-i Voltage)
 Output Voltage: 24 VDC (+/- 10%)
 Current Consumption: 42mA (1) 0.5w coil; 64mA (2) 0.5w coils
 96mA (1) 1.8w coil; 171mA (2) 1.8w coils
 Max. Output Current: 170mA
 ID/IO Codes: ID = A; IO = 7; ID1 = F; ID2 = E (S.7.A.E)
 Default Address: 0A
 Bit Assignment:

Inputs	Outputs
Bit 0 = Aux Input 1	Bit 0 = Control Override
Bit 1 = Aux input 2	Bit 1 = OUT 2
Bit 2 = Green LED	Bit 2 = OUT 1
Bit 3 = Red LED	Bit 3 = Not Available

Wireless Link Specifications

Protocol: *Bluetooth®* Smart technology; Single mode (not compatible with *Bluetooth®* Classic)
 Transmit Power: 4dBm or ~2.5 milliwatts
 Data Rate: 1 Mbit/second; effective information transmit rate ~10 Kbits/second
 Range: Up to 100 meters (330 feet) in free space.
 Range is reduced by obstructions between handheld device and Wireless Link VCT. Line of site is not necessary.
 Registrations: FCC, IC, CE
 CE Compliance: Exceeds industrial compliance standards
 VCT Identification: VCTs in range will be displayed.
 VCT Link: One device accessed at a time between client (handheld device) and server (VCT).
 Each server accessed by one client at a time
 Application: "Stonel Wireless Link" available from the App store
 Handhelds: iPhone® version 4S or above, iPad® version 3.0 or above, iPad mini™ all versions

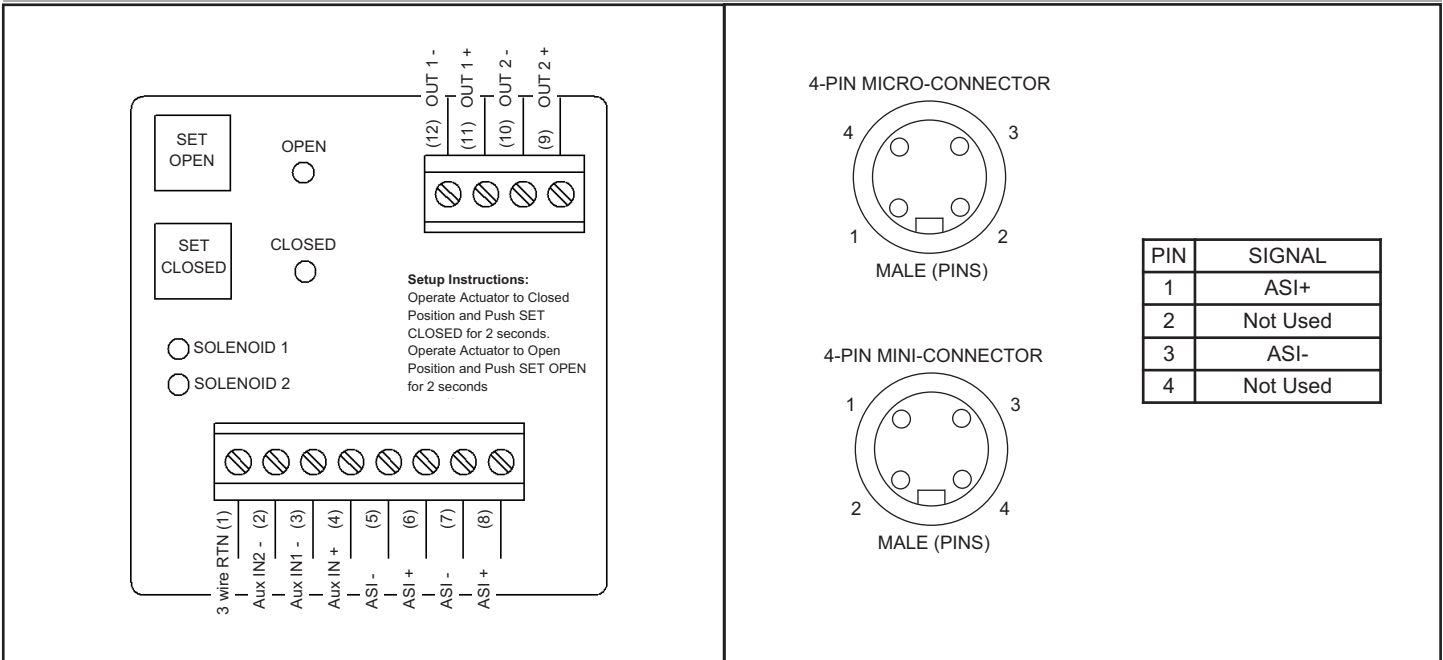
To Bench Test an AS-Interface Sensing & Communications Module:

To test sensors, use a 24 Vdc power supply. No series load resistor is required. Operate actuator to the closed position. Apply power across the "ASI+" and "ASI-" terminal points. Press and hold "Closed Set" button until "Closed LED is lit (2 seconds). Release button. Operate actuator to the open position. Press and hold "Open Set" button until "Open LED is lit (2 seconds). Release button. Set points are retained even after power is removed. A functioning AS-Interface network is required to test communications.

WARNING:

DO NOT APPLY EXTERNAL POWER TO THE OUTPUT TERMINALS. THIS WILL CAUSE PERMANENT DAMAGE TO THE UNIT

Wiring Diagram and Standard Connector Configuration Pin-Out



Materials of Construction

Cover:	Lexan® Polycarbonate
Housing:	Epoxy Coated Anodized Aluminum
Fasteners:	Stainless Steel
O-Rings:	Nitrile compound
Valve Manifold:	Epoxy Coated Anodized Aluminum
Operating Life:	One Million Cycles
Temperature Range:	See Solenoid Specifications

Enclosure Protection

NEMA: 4, 4X, 6; IP67

Hazardous Location Ratings

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

Warranty

Sensing & Communication Module: Five Years
 Mechanical Components: Two Years

Pneumatic Valve Specifications

General Pneumatic Specifications

Valve Design:	Pilot operated spool valve
Pilot Operator Options:	Solenoid Coil or Piezo
Configuration:	
Single Pilot:	5-Way, 2-Position, Spring Return
Dual Pilot:	5-Way, 2-Position, Shuttle Piston
Flow Rating:	0.70 Cv (Kv = 0.60 based on flow m ³ /h)
Porting:	1/4" NPT
Operating Pressure:	40 psi to 120 psi (2.7 to 7.5 bar)
Filtration Requirements:	40 Microns
Operating Temperature:	See pilot specifications
Operating Life:	1 million cycles
Manual Override:	Internal momentary
Material of Construction:	
Spool:	Anodized aluminum
Body:	Epoxy coated anodized aluminum
O-ring Spacers:	Polysulphone
End Caps & Fasteners:	Stainless Steel
O-rings:	A Nitrile Compound

Solenoid Coil Specifications

24 VDC/120 VAC Universal (1H, 2H, 3H, 4H, 5H, 6H)	
Operating Voltage:	22 VDC min/130 VAC max
Power Consumption:	0.6 Watts
AC Current Consumption:	18mA
Operating Temperature:	-18° C to 50° C (0° F to 120° F)
Extended Temp (-T option)	-40° C to 80° C (-40° F to 176° F) (NEC) -40° C to 70° C (-40° F to 158° F) (IEC)
Filtration Requirements:	40 Microns

24 VDC (1B, 2B, 3B, 4B, 5B, 6B)

Operating Voltage:	24 VDC
Power Consumption:	1.8 Watts
Operating Temperature:	-18° C to 50° C (0° F to 120° F)
Extended Temp (-T option)	-40° C to 80° C (-40° F to 176° F) (NEC) -40° C to 70° C (-40° F to 158° F) (IEC)

Filtration Requirements: 40 Microns

24 VDC (1D, 2D, 3D, 4D, 5D, 6D)

Operating Voltage:	24 VDC
Power Consumption:	0.5 Watts
Operating Temperature:	-18° C to 50° C (0° F to 120° F)
Extended Temp (-T option)	-40° C to 80° C (-40° F to 176° F) (NEC) -40° C to 70° C (-40° F to 158° F) (IEC)

Filtration Requirements: 40 Microns

12 VDC (1E, 2E, 3E, 4E, 5E, 6E) (Intrinsically Safe)

Operating Voltage:	12 VDC (output of barrier)
Power Consumption:	0.5 Watts
Operating Temperature:	-18° C to 50° C (0° F to 120° F)
Extended Temp (-T option)	-40° C to 80° C (-40° F to 176° F) (NEC) -40° C to 70° C (-40° F to 158° F) (IEC)

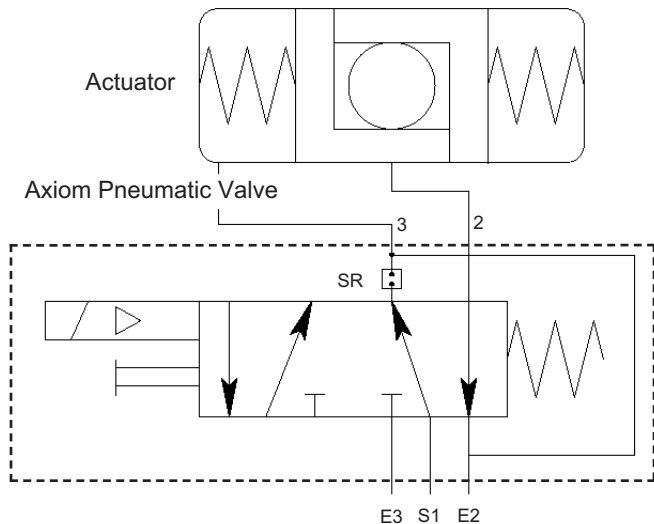
Filtration Requirements: 40 Microns

Entity Parameters: Ui=28VDC; Ii=120mA; Ci=0; Li=0; Pi=1.0W

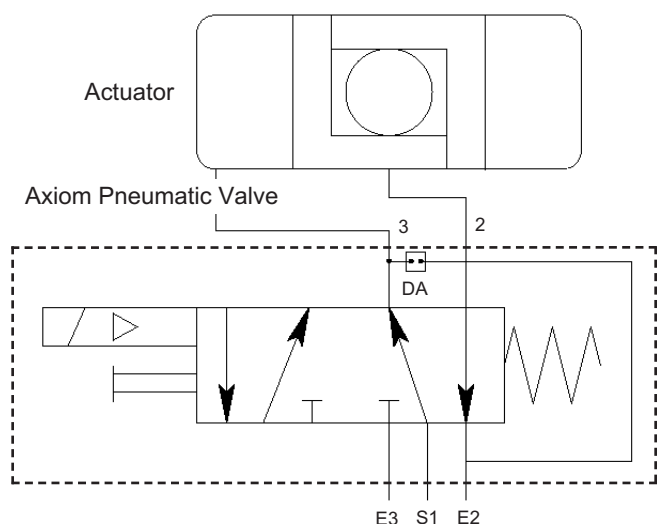
Piezo (1A, 2A, 3A, 4A, 5A, 6A)

Operating Voltage:	5.5 VDC to 9.0 VDC
Current Consumption:	2.0 mA @ 6.5 VDC
Temperature Range:	-10° C to 60° C (14° F to 140° F)
Filtration Requirements:	Dried/30 Microns

Spring Return Actuator with Rebreather Open



Double Acting Actuator with Rebreather Closed



Note

Mounting of the Axiom requires a StoneL mounting kit specific to the actuator the Axiom is to be mounted to.

Note

It is recommended that thread lubricant or anti-seize be used on the Axiom Cover Screws (Item# 1) and Axiom Body Screws (Item# 3) prior to assembly.

Note

In high cycle or high vibration applications, blue Loctite® may be used on the Air Manifold Mounting Screws (Item# 11) and the Visual Indicator Drum Retaining Screw (Item# 9).

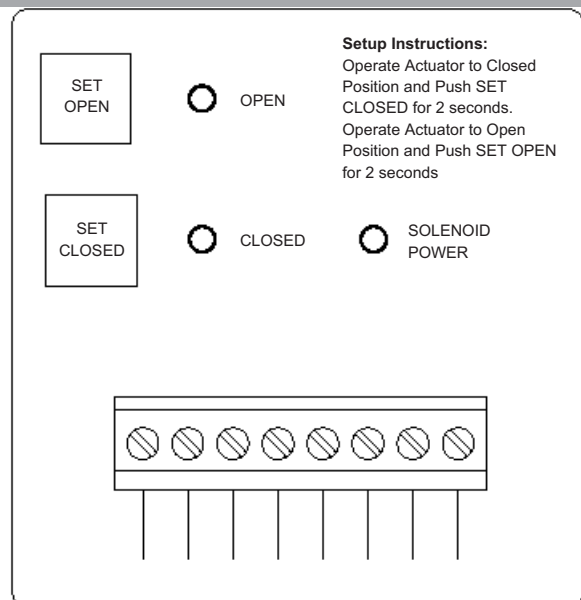
Note

It is highly recommended that exhaust ports E2 and E3 be fitted with low restriction mufflers or breather vent caps to prevent ingestion of water and debris into the pneumatic valve .

1. Refer to Axiom Assembly Drawing located on Page 6 when performing mounting and assembly procedures.
2. Remove Axiom unit from shipping container. Ensure all listed items are present.
3. With an M4 allen wrench, loosen the four captive Axiom Cover Screws (Item# 1), remove cover.
4. Determine if the actuator the Axiom is to be mounted on is double acting (DA) or spring return (SR). Flip the Axiom body (Item# 4) over and ensure the DA/SR Plug (Item# 5) is in the correct position. (See Detail - A on Page 6). If the DA/SR Plug is in the incorrect position, gently remove plug with a pair of pliers and insert into the proper hole.
5. From the mounting kit package, locate the Air Manifold Plate (Item# 14). Place the Air Manifold Plate on the actuator. Using an M4 allen wrench, fasten down with the four Air Manifold Mounting Screws (Item# 11). Torque screws to 25 - 30 in.lbs (2.8 - 3.4Nm).
6. Place Visual Indicator Drive Block (Item# 10) into slot on the actuator shaft. Place Visual Indicator Drum Coupler (Item# 8) onto the Visual Indicator Drive Block. Next, place the Visual Indicator Drum (Item# 7) onto the Visual Indicator Drum Coupler. Align the holes in all three items with the threaded hole in the actuator shaft and fasten down with the Visual Indicator Drum Retaining Screw (Item# 9). Leave screw loose in order to facilitate indexing of the visual indicator.
7. With the actuator in the closed position, center the Visual Indicator Drum until the "OPEN" quadrant is centered between the "V.I INDEX" markings on the Air Manifold Plate. (See Detail - B on Page 6). Tighten down with the Visual Indicator Drum Retaining Screw 15 - 20 in.lbs (1.7 - 2.3Nm).
8. Verify Air Manifold Plate Orifice O-rings (Item# 12) and Visual Indicator Cover O-ring (Item# 13) are in place.
9. Place the Visual Indicator Cover (Item# 6) over the Visual Indicator Drum assembly then set the Axiom Body (Item# 4) in place. With an M4 allen wrench, torque the Axiom Body Screws (Item# 3) to 25 - 30 in.lbs (2.8 - 3.4Nm).
10. After all wiring and sensor setting procedures have been completed, install Axiom Cover and torque Axiom Cover Screws to 15 - 20 in.lbs (1.7 - 2.3Nm).

Sensing & Communications Module Sensor Setting Instructions

1. With the Sensor & Communication Module (CCM) wired to the control system and power applied, (Refer Wiring Diagram located on Page 4), operate actuator to the closed position.
2. Press and hold "Closed Set" button until "Closed LED is lit (2 seconds). Release button.
3. Operate actuator to the open position.
4. Press and hold "Open Set" button until "Open LED is lit (2 seconds). Release button.
5. Set points are retained even after power is removed.
6. Sensor & Communication Modules on Axiom units with a single solenoid have a "Solenoid Power" LED indicating when solenoid power is applied.

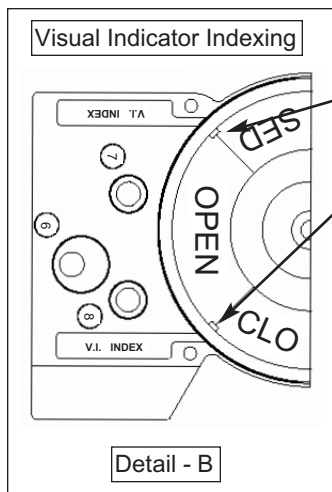
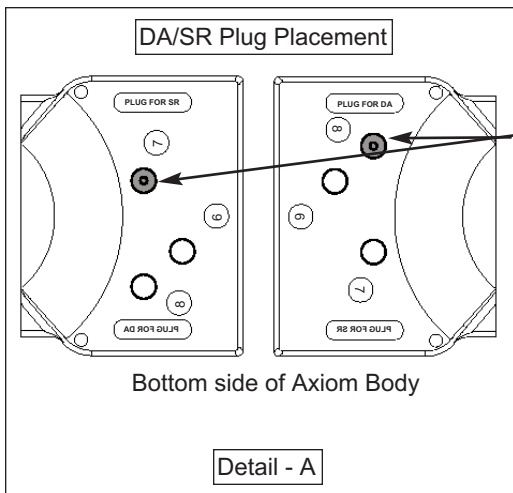
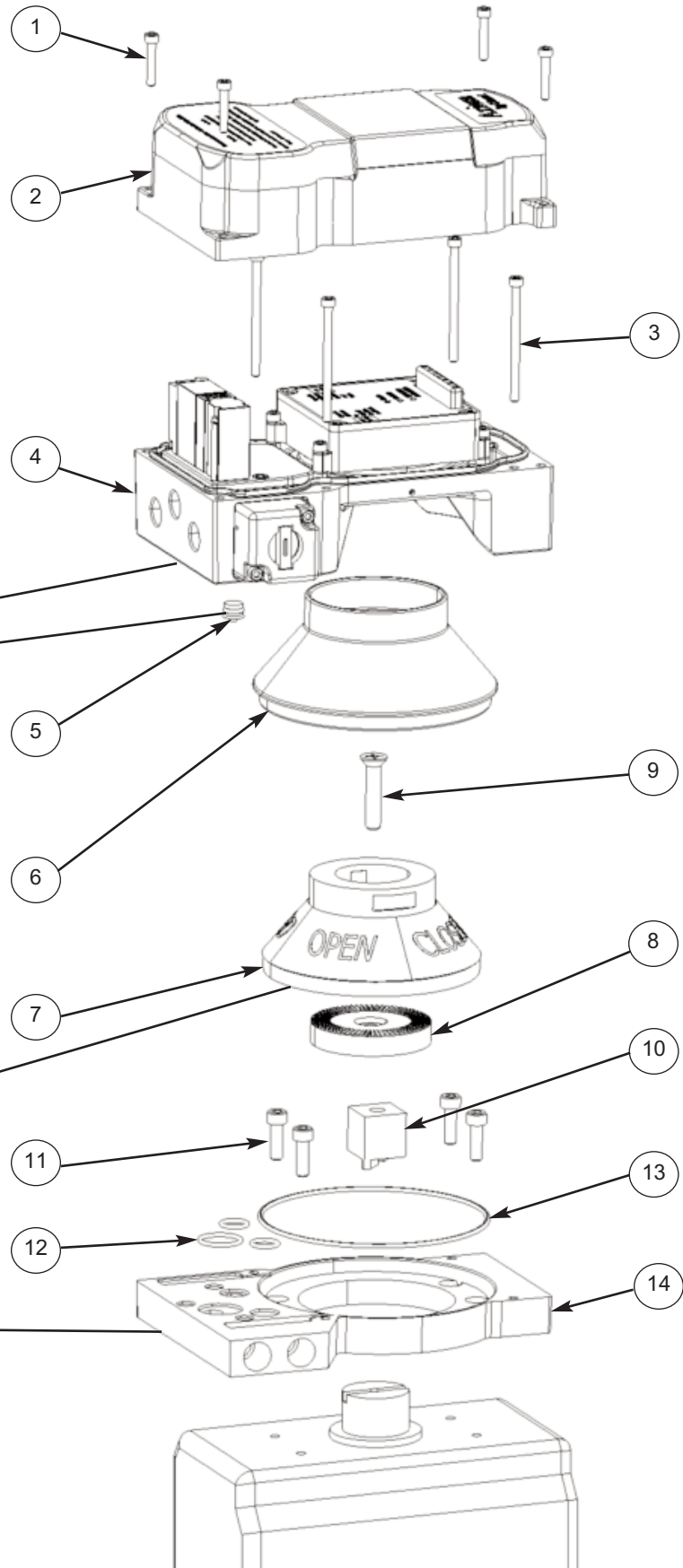


Axiom Assembly Drawing

ITEM#	DESCRIPTION	QTY
1	Axiom Cover Screws	4
2	Axiom Cover	1
3	Axiom Body Screws	4
4	Axiom Body	1
5	DA/SR Plug	1
6	Visual Indicator Cover	1
7	Visual Indicator Drum	1
8	Visual Indicator Drum Coupler	1

Item# 9 thru 14 are provided with the mounting kit.
Mounting kits are sold separately

9	Visual Indicator Drum Retaining Screw	1
10	Visual Indicator Drive Block	1
11	Air Manifold Plate Mounting Screws	4
12	Air Manifold Plate Orifice O-rings	3
13	Visual Indicator Cover O-ring	1
14	Air Manifold Plate	1



Getting Started

Before using this guide, ensure that you have downloaded the most current version of the StoneL Wireless Link app to your iPhone®, iPad®, or iPad mini™ from the App Store

Your iOS device must be running iOS 8 or later, and be equipped with *Bluetooth*® Smart technology to use the StoneL Wireless Link app. (Not compatible with *Bluetooth*® Classic)

Apple® devices that are compatible include:

iPhone®	iPad®	iPad mini™
Version 4S and above	Version 3.0 and above	All

In addition, make sure that your iOS device has its *Bluetooth*® capability turned on when attempting to use the StoneL Wireless Link app. This can be found under your iOS device's "Settings".

To ensure that you have good *Bluetooth*® reception, keep your iOS device within 10 meters of the module that you wish to connect to.

The range of your *Bluetooth*® device is affected by many things, including interference from other devices and physical obstructions.



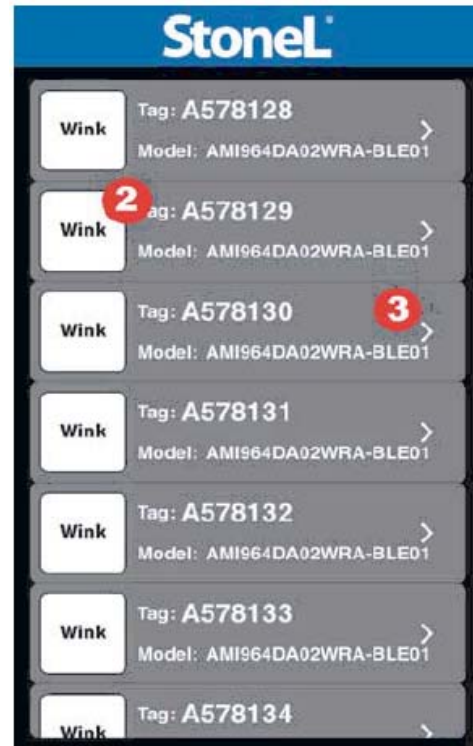
Selecting a Valve

After opening the StoneL Wireless Link app, you are directed to the home screen. This screen allows you to browse and select a specific automated valve when multiple valves are present.

Note: *The list of devices present can be refreshed by swiping downward on the home screen.*

Choosing a Device

1. Tap the StoneL Wireless Link app icon to open the home screen.
2. All energized wireless modules within range of your iOS device will appear on this screen. If no powered devices are within range, the device list will be blank
3. To identify a valve, tap the **Wink** button next to the unit that you wish to select. This will cause the module's LEDs to blink. This feature allows you to isolate a specific valve when multiple valves are present. Tapping this button will cause the module's LEDs to blink for 30 seconds, or until you press the **Stop Winking** button. To select a valve, tap the row that relates to the valve that you wish to select.



Device Detail

After selecting a specific valve, you are taken to the Device Detail screen. From here, you can customize the valve's tag, change the AS-i address, force the solenoids on or off, and set the valve to the open or closed position.

Note: If the buttons on this screen appear grayed-out or unavailable to you, this means the Master is still in control. Check to ensure that the power supply is set to IR addressing mode or overrides are enabled for the device.

Changing the Device Tag or AS-i Address

1. To change the device Tag or AS-i Address, select the text field next to the region and fill in the appropriate information.
 - a. Note: Valve tag may accept 1-16 characters.
 - b. Note: The AS-i address can be set from 0-31A/B.

Forcing the Solenoids ON/OFF

Warning: Upon disconnect or master disabling overrides, output forces will be removed and valve may cycle.

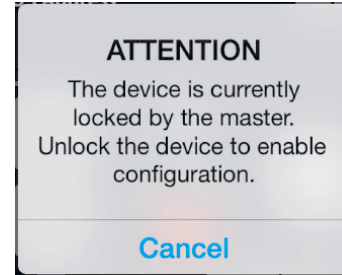
2. The solenoids can be forced on or off from this screen. Forcing a solenoid on or off will override master control if Wireless Link overrides are enabled.

Each solenoid has three available control states; On, Off, and Master control.

- a. The solenoid control state is forced on or forced off when it is highlighted in orange. When a solenoid is on, a yellow light will illuminate next to the solenoid.
- b. When neither **Force On** or **Force Off** are highlighted, the pre-set master has control of the solenoid. Master settings are controlled by the BUS configuration.

Setting the Valve Position

3. The valve open/closed set points can be controlled from the Device Detail screen. To set a valve to the **OPEN** position:
 - a. Actuate the valve to the open position.
 - b. Tap **SET OPEN**. The green open light will illuminate. The valve now remembers the current position as the open position.
 - c. Follow the same procedure to set the valve to the **CLOSED** position.
 - d. Actuate the valve to the closed position.
 - e. Tap **SET CLOSED**. The red closed light will illuminate. The valve now remembers the current position as the open position.



Releasing a Device from App Control

Once you have selected a device, it will be tied to your Apple device until you relinquish control.

Releasing a Device

1. In order for another Apple device user to access control with their Wireless Link app, simply release control by going back to the home screen/device list.

More Information

The final screen of the StoneL Wireless Link app contains information about the valve that is currently connected. To reach this screen, toggle to the right using the arrows at the top of the screen.

Valve Information

1. At the top of the screen, the Axiom model number, serial number, and date code are displayed. These are pre-set from the factory and cannot be changed.
2. In addition, there are two customizable text boxes titled Valve/Actuator Description and Additional Information. Here you can log information about the valve, actuator, maintenance, and service records; up to 160 characters.

Temperature Range and Cycle Count

3. Here, the current temperature of the valve monitor is displayed; along with the temperature range of the valve since last reset. Resetting this information will erase the historical temperature data and start a new period of temperature data collection.
4. Here, the valve's cycle count is displayed. This feature records how many cycles the valve has made since last reset. A cycle is considered to be a complete actuation of the valve. Similar to the temperature range, this data can also be reset.

Website and Instruction Manual

On the bottom of this screen are direct links to the Axiom installation manual and StoneL's webpage. Internet connection is required to access these links.



Federal Communications Commission (FCC) Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

- § Re-orient or relocate the receiving antenna
- § Increase the separation between the equipment and the receiver
- § Connect the equipment to an outlet on a circuit that is different from that to which the receiver is connected.
- § Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications not expressly approved by StoneL Corporation could void the user's authority to operate the equipment.

Contains FCC ID: PI4BL600

FCC Radiation Exposure Statement

This equipment is in compliance with SAR for general population/uncontrolled exposure limits in ANSI/IEEE C95.1-1999 and had been tested in accordance with the measurement methods and procedures specified in OET Bulletin 65 Supplement C.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter