

SVI™ Digital Valve Positioner Accurate, Responsive and Reliable

The third generation Baker Hughes **Masoneilan™ SVI** is a user friendly digital valve positioner for pneumatic control valves. Utilizing advanced control and diagnostic algorithms, along with field-proven non-contact position sensing technology, the SVI delivers accurate, responsive, and reliable positioning performance.



Optimize Service

Data driven valve maintenance via new Online Valve Diagnostics with up to 1 year of data storage.



Improve Reliability

Built on 20+ years of proven technologies like non-contact magnetic position sensing.



Increase Efficiency

Simple, easy to use, modular platform featuring 1-button SmartCal setup and universal mounting.



Reduce Emissions

Low Bleed Pneumatics reduce air consumption by 40%⁽¹⁾ while maintaining best in class control and response.

⁽¹⁾ As compared to conventional positioners.





Benefits

Reliable and Accurate:

- Built on 20+ years of field proven valve position sensing technology, control algorithms, and advanced performance pneumatic design

Increase Plant Efficiency:

- Intelligent troubleshooting using embedded Key Performance Indicators (KPIs)
- Cloning capability for on-demand hot swapping
- One device for all environments and applications enabling reduction of spares inventory
- Low bleed pneumatics

Simple and Easy to use:

- Automated, single button commissioning
- Local user interface providing full configuration capabilities – no additional tools/handheld required
- Integrates with all leading control systems and asset management software systems
- Easy field upgrades enabled by new modular architecture and digital upgrades
- Integrated Input/Output – no additional bolt on accessories required

Features

- SmartCal - One button setup and calibration
- User Interface with high contrast graphical display and push-buttons, rated for operation in hazardous areas
- NAMUR NE 107 alerts
- Universal design for linear and rotary valve applications
- Robust, non-contact, shielded magnetic-type travel sensor
- Industrial metal housing with corrosion resistant Stainless Steel or Aluminum options
- Encapsulated and coated electronics
- Integrated diagnostics: Cycle counts, Step Tests, Ramp Tests, Signatures, as well as system health indicators
- Onboard valve position feedback and limit switches
- SmartRecovery - Optional pressure control mode for increased uptime
- Stainless Steel mounting brackets for any valve actuator combination, fully backwards compatible to SVI II AP / SVI1000 brackets
- Explosion-proof and Intrinsically Safe universal labeled, with US, Canada, ATEX, and IEC approvals (various regional country approvals available)
- HART® 7 communication compliant
- Fully collectable actuator exhaust and positioner vent

Specifications

Housing:

- Case/Cover: Chromated Copper Free⁽¹⁾ aluminum, ASTM A360; Optional 316L Stainless Steel
- Paint: Grey polyurethane with epoxy primer
- Protection: IP66 and NEMA 4X

Note: ⁽¹⁾ Per API RP 14F

Weight:

- Aluminum – 3.3kg (7.4lbs)
- Stainless Steel – 6.26kg (13.8lbs)

Materials:

- I/P Motor and Relay – composite polymers and Stainless Steel (300 and 400 series)
- Mounting Kit – Stainless Steel (300 series)

Input Power and Signal:

- Min/Max current: 3.2mA / 22mA
- Required Compliance voltage: 9Vdc at 20mA, 11Vdc at 4mA
- Termination: Screw-type terminals
- Electrical Entries: Two 1/2" NPT female

Optional Input/Output Signals:

- Two Configurable solid state switches:
 - 1A – 30Vdc, self-protected
 - Normally Open or Normally Closed (when powered)
- One 4 to 20 mA Output – Position Retransmit (NAMUR NE-43)
- One Configurable Digital Input
- One Masoneilan Remote Position Sensor Input : 1k Ohm
- One 1-5V Remote Position Sensor Input

Communication, Setup and Calibration:

- HART® Protocol, Rev 7
- Integrates with leading DCSs with full DTM, EDD and FDI Package support, including, but not limited to:
 - Emerson DeltaV / AMS
 - Honeywell / FDM
 - Yokogawa / PRM
- Optional local user interface with graphical LCD and keypad, approved for use in hazardous areas
- SmartCal one button calibration including Stops, Air-action, Autotuning and Pre-determined Tuning sets

Ambient Temperature and Humidity Limits:

- Standard Temperature, -40°C to 85°C (-40°F to 185°F), nitrile diaphragms
- Optional Extreme Temperature, -55°C to 85°C (-67°F to 185°F), flourosilicone diaphragms
- Sensors (pressure, temp, hall, current) factory calibrated across full temperature range
- 100% RH non-condensing

Tropical environmental compatibility

- Fungus resistance per ASTM-G21
- Critical circuits protected with silicone encapsulant
- Exposed circuits tropicalized via polyurethane conformal coating
- Positively pressured housing with insect-resistant vents

EMC Conformity Standards:

- Meets IEC/EN61326-1 Edition 2
- Emission: CISPR11 Class A
- Immunity: IEC/EN61000-4-2, 3, 4, 5, 6, 8
- EMC 2014/30/EU Directive

Performance⁽²⁾ per ISA S75.13:

- Accuracy +/- 0.5 percent Full span
- Hysteresis + DeadBand +/- 0.3 percent Full span
- Repeatability +/- 0.3 percent Full span
- Power-Up with position control <150ms
- Power Interruption without reset <100ms

Note: ⁽²⁾ For linear characteristic

Actuator capabilities:

Non-contact shielded magnetic travel sensor capable of:

- Linear Motion: 0.25" to 8" (6.4 to 200 mm)
- Rotary Motion: 18° to 140°
- Travel Sensor Resolution: 0.0125% (Typical – Rotary)

Pneumatics (Single-acting only)

- Dry, oil-free air or sweet natural gas – regulated and filtered
- Operating Supply Pressure: 1.4 to 8.3 bar (20 to 120 psi)
- Proof pressure: 12.4 bar (180 psi)
- Optional Exhaust routing manifold for 100% collection

Air delivery:

- 410 SLPM (14.5 SCFM) @ 30psi

Air capacity:

- Loading Cv = 0.66
- Venting Cv = 0.51

Steady State Air Consumption:

- 2.8 SLPM (5.9 SCFH) @ 30psi
- 3.4 SLPM (7.2 SCFH) @ 45psi

Advanced Diagnostics:

Online:

- Travel odometer, Cycles, Time Closed/Open, Time Near Closed, Alarms

Offline:

- Ramp Test: Hysteresis, Deadband, Accuracy, Linearity
- Step Test: Overshoot, Response resolution, Deadtime
- Valve Signature: Spring Range, Friction, Seat Profile

Online Valve Diagnostics:

Online:

- Friction, Stick Slip, Spring Range, Error Offset, RMS Error, Obstruction Detection, Calibration Error, and Setpoint cycling tests

Hazardous Area and Safety Certifications:

- ATEX, IECEx, US, and Canada approvals for:
 - Flameproof / Explosion-proof
 - Intrinsic Safety
 - Dust Ignition Proof
 - Increased Safety (e)
- IEC61508 compliant up to SIL3 certified by EXIDA

Note: See manual for a complete listing of all available certifications and marking codes



SVI3

Model* SVI3- Smart Valve Interface - 3rd Generation

a

Diagnostics

- Advanced Diagnostics
- Online Valve Diagnostics

b

Pneumatic Train / Capacity / Fault State

- Single Acting, Standard Flow ($C_v >=0.5$), De-energize on fault (Fail Safe)

c

Instrument Air / Temperature

- Compressed Air or Natural Gas, Standard Temperature (-40°C to 85°C), Nitrile Diaphragms
- Compressed Air Only, Extreme Temperature (-55°C to 85°C), Silicone Diaphragms

d

Construction / Display

- Aluminum / No Display
- Aluminum / Display with local interface
- Stainless Steel / No Display
- Stainless Steel / Display with local interface

e

Communication

- 4-20mA - HART* Communication Protocol

f

Input/Output Options

- None
- 4-20mA Analog Output (Position Retransmit) Quantity (1)
Configurable Switched Outputs Quantity (2)
Configurable Switched Input Quantity (1)
1-5V Remote Position Sensor Input (1)
Masoneilan Remote Position Sensor(RPS) Input (1)

g

Agency Approvals

- None
- Hazardous Area Unilable (ATEX, IECEx, US, Canada, UKEX, EQM, RCM, CMIM)

h

- None
- India (CCOE)
- China (CCC), Taiwan (ITRI)
- Russia (CU-TR) Azerbaijan (AZS), Uzbekistan (GOST-U)
- Brazil (INMETRO)
- Japan (JIS)
- South Africa (IA)
- Ukraine (UATR)
- Korea (KOSHA)

SVI3-

2
3

1

1
2
3
4

1

1

1
2

0

1

0 → 8

Example: SVI3-31111210

* Some models and options are mutually exclusive. Consult your local Masoneilan Authorized representative for a complete list of available models.

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