Masoneilan 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.*

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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

According to our technical profile, the performance of this positioner is truly outstanding.

1. Easy calibration
2. Maintain the setpoint perfectly
3. Easy installation
4. All the parameters are intuitive to set
5. Big Display
6. Event storage

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**
2. Advanced Diagnostics
3. Online Valve Diagnostics

b — **Pneumatic Train / Capacity / Fault State**
1. Single Acting, Standard Flow (Cv >=0.5), De-energize on fault (Fail Safe)

c — **Instrument Air / Temperature**
1. Compressed Air or Natural Gas, Standard Temperature (–40°C to 85°C), Nitrile Diaphragms
2. Compressed Air Only, Extreme Temperature (–55°C to 85°C), Silicone Diaphragms

d — **Construction / Display**
1. Aluminum / No Display
2. Aluminum / Display with local interface
3. Stainless Steel / No Display
4. Stainless Steel / Display with local interface

e — **Communication**
1. 4–20mA – HART® Communication Protocol

f — **Input/Output Options**
1. None
2. 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**
0. None
1. Hazardous Area Unilable (ATEX, IECEx, US, Canada, UKEX, EQM, RCM, CMIM)

0. None
1. India (CCOE)
2. China (CCC), Taiwan (ITRI)
3. Russia (CU–TR) Azerbaijan (AZS), Uzbekistan (GOST–U)
4. Brazil (INMETRO)
5. Japan (JIS)
6. South Africa (IA)
7. Ukraine (UATR)
8. Korea (KOSHA)

| SVI3- | 2 3 | 1 | 1 2 | 1 2 3 4 | 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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