Masoneilan

a Baker Hughes business

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

- Smart Cal - One button setup & calibration
- User Interface with high contrast graphical display and pushbuttons, 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
- On board valve position feedback and limit switches
- 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 & 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 1/2NPT 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
- 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 and EDD 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
- Smart Cal 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
- Exposed circuits covered with anti-fungal 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
- Air supply pressure: 1.4 to 8.3 bar max (20 to 120 psi max)
- 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)

h
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)

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Example: SVI3-31111210

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

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