

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.





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
- 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
- Explosionproof AND Intrinsically Safe Universal label with ETL (US/CA), ATEX, IEC approval (regional approvals pending)
- HART® 7 communication compliant

Specifications

Housing:

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

Note: ⁽¹⁾ Per API RP 14F

Weight:

- 3.3kg (6lb)

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 Analog Remote Position Sensor Input : 1k Ohm

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
 - GE MarkVIe ControlST
- 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), Fluorosilicone Diaphragms
- 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)

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 Certifications:

ATEX, IECEx, ETL (US, CA) approvals for:

- Flameproof / Explosion-proof
- Intrinsic Safety
- Dust Ignition Proof
- Increased Safety (e)

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 / Gas Capture / Temperature

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

d

Construction / Display

1. Aluminum / No Display
2. Aluminum / 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)
Analog Remote Mount Capable Quantity (1)

g

Agency Approvals

0. None
1. Hazardous Area Unilabel (ETL(US, Canada), ATEX, IECEx)

h

Other Agency Approvals

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

SVI3-

2

3

1

1

2

1

2

1

1

2

0

1

0 → 7

Example: SVI3-31111210

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