

Smart High-Performance Positioner



SHP Positioner



The Smart High-Performance (SHP) Positioner is a high capacity and high precision digital pneumatic positioner, mainly used as a valve care controller that replaces or substitutes the existing FT Positioner. Its flow rate and its control algorithm system and logic, patented by STI, ensure unique dynamic performance and very low stroking time. Its advanced diagnostics (on-line and off-line) have been specifically developed to meet all customer needs.

Key features

High Flow CV 2.3 / ½" NPT

The unique design provides high speed performance in large volume actuators, minimizing the need for amplification devices (e.g. volume booster or quick exhaust).

Hardware features

Its contactless magnetic feedback sensor with excellent reliability and optimal accuracy, is resistant to strong and persistent vibrating systems.

On-Line Diagnostic

Several features monitor the valve during operation, including the event recorder and counters, event logs, valve life prediction and system status (NE107). The graphical user interface monitors the valve during operation.

Certifications and Approvals

Intrinsically safe (Ex ia) and explosion proof (Ex d), according to all main global certifications.

Connectivity and Communications

- Dedicated remote control software (SHP Remote Control) to set, customize, control, and monitor performances on a laptop.
- 4-20 mA control and power, with HART 7 communication protocol.
- USB high speed serial connection provides real time graphs on remote control software (SHP Remote Control).
- FDI driver to connect the positioner to any DCS system.
- Local user interface with graphical display and keyboard.

Off-Line Diagnostic

Step test, valve signature test, and frequency test available, using remote control software (SHP Remote Control) or FDI driver. Graphical user interface can compare different data recorded during tests.

Control Features

Able to manage piston or diaphragm linear actuator, rotary actuator, single or double acting. Double parameter set for open and close control.

Option Packs

> Standard Pack

- Self-tuning.
- Pilot test.
- System status.
- Parameter monitoring (actual position, required position, line pressure, actuator pressures, pilot signal, etc...).
- Graph comparison.
- Position/time measurement.
- Pressure/time measurement.
- Attenuation/phase-delay measurement.
- Events.
- Counters.

> Option Pack 1

- Standard pack.
- Step test.
- Valve signature test.
- Dynamic error band test.
- Pressure fallback.

> Option Pack 2

- Option pack 1.
- Stability control.
- Soft approach to seat (soft cut off).
- Frequency test.

> Option Pack 3

- Option pack 2.
- Quick exit from cut off.
- Online logger.
- Valve life prediction.
- Partial stroke test (coming soon 2024).

Technical specifications

> Hardware

- Housing: stainless steel ASTM A351 / low copper aluminum EN AC 43500.
- Total weight < 9kg (stainless steel) / < 4kg (aluminum).
- Total dimensions less than 190mm x 120mm x 145mm.
- Mechanical interface for fixing screws according to VDE/VDI 3845 (NAMUR).
- Pneumatic connections: 3 x 1/2" NPT female.
- Electrical connections: 3 x 1/2" NPT female (Ex ia) / 1 x 1/2" NPT female (Ex d).

> Pneumatic

- Operating pressure range = 2.5 / 10.4bar – 150PSI (fail freeze 8bar, natural gas 6bar).
- Design pressure = 15bar / 220PSI.
- Instrument air / natural gas / nitrogen / sweet and dry gases, according to ISO 8573-1 class 3 (oil concentration) and class 6 (dust concentration).
- High Flow → Supply Cv max = 2.3 / Exhaust Cv max = 2.3 (180Nm³/h @ 6bar / 21°C). (Air consumption ≤ 1.5Nm³/h @ 6bar / 21°C).
- Low Flow → Supply Cv ≤ 0.3 / Exhaust Cv = 0.3.

> Position Feedback

- Contactless sensor into positioner, able to work 360° rotation.
- Remote contactless sensor (option), up to 20m distance from the positioner.
- Linear magnet kit (option) available when strokes up to 100mm / 4 inch.

> Environment

- Operating temperature range = -55°C / +85°C, see Ex certificate for T4 - T5 - T6.
- Storage temperature range = -55°C / +85°C.
- IP 66 / NEMA 4X.

> Electronic

- Communication protocol HART 7, 4-20mA.
- Input voltage range = 10-30V (Ex ia) / 18-30V (Ex d) / 17V-30V (Ex ia fail freeze application).
- Impedance < 500Ω (Ex ia) / < 900 Ω (Ex d) / < 850 Ω (Ex ia fail freeze application).
- Output signal 4-20mA passive loop.
- Digital input 24V isolated qty 2 configurable.
- Digital output 24V isolated qty 2 configurable (qty 2 NPN or qty 1 NAMUR), external power supply needed.
- Electric consumption < 1W.
- Electronic internal loop update rate = 10ms.
- Analog output update rate = 10ms.

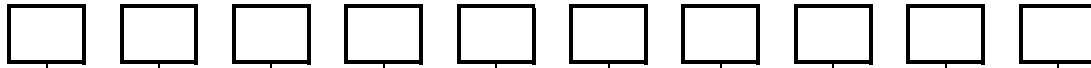
> Performances

- Quick action = 100ms (time needed to achieve Cv max starting from Cv = 0).
 - Hysteresis + Dead band = +/- 0.10%. (*)
 - Repeatability = +/- 0.05%. (*)
 - Sensitivity = +/- 0.10%. (*)
 - Linearity = +/- 0.30%. (*)
 - Thermal drift from -55°C to +85°C < 0.4%. (from -40°C to +85°C < 0.1%).
- (*) @ 21°C / 120° rotation.

> Applications

- Fail safe (Pneumatic connection A vent / B pressurized).
- Fail freeze (N/A with Ex d certification), with piezo valve and dedicated 3-way valve.

Smart High-Performance positioner Model Selection



E - EXECUTION

S	IP 66
I	IP 66 & Intrinsically Safe
D	IP 66 & Intrinsically Safe & Explosion Proof

H - COMMUNICATION

H	4-20 mA & HART 7
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D - EXHAUST PORT

0	Standard
1	Collected
2	Closed loop ⁽¹⁾

F - POSITION SENSOR

0	Contactless Integrated ⁽²⁾
1	Potentiometer Integrated (optional)
2	Contactless Remoted ⁽²⁾ (coming soon 2024)
3	Potentiometer Remoted (optional)

A - SIGNAL FAIL POSITION

A	Fail Safe
F	Fail Freeze / Zero Bleed in Steady State ⁽³⁾

L - LOCAL INTERFACE

S	Blind cover, without display and push button
D	Display and push button

I - TYPE & CONNECTIONS

Type		Connections		
		Electrical	Pneumatic	
S	High flow double/single acting	CV 2,3	1/2" NPT	1/2" NPT
R	Standard flow double/single acting	CV 0,3	1/2" NPT	1/4" NPT

M - MATERIAL

A	Aluminum low copper housing
S	Stainless steel 316 housing

T - TEMPERATURE RANGE

U	-55°C / +85°C
L	-40°C / +85°C

OPTIONS

+2M	Quantity 1 SS316 pressure gauges on actuator side ports (A) + Quantity 1 SS316 pressure gauge on supply port (IN)
+3M	Quantity 2 SS316 pressure gauges on actuator side ports (A, B) + Quantity 1 SS316 pressure gauge on supply port (IN)
+LB	Low bleed application
+M20	Quantity 3 adapters for electrical connection M20x1.5
+Pack1	Standard Pack ⁽⁴⁾ , Step Test, Valve Signature Test, Dynamic Error Band Test, Pressure Falback
+Pack2	Pack1, Stability Control, Soft Approach To Seat (Soft Cut Off), Frequency Test
+Pack3	Pack 2, Quick Exit From Cut Off, Online Logger, Valve Life Prediction, Partial Stroke Test (coming soon 2024)
+CBL	SHP Remote Control Software connection cable (High Speed Transfer Data USB cable)

⁽¹⁾ Available only for single acting actuators.

⁽²⁾ Additional magnet holders are required, depending on application. For further informations, please see IOM.

⁽³⁾ Additional accessories are required. For further informations, please see IOM.

⁽⁴⁾ Standard Pack included in the base model: Self-tuning, Pilot Test, System Status, Parameter Monitoring, Graph Comparison, Parameter Measurement, Events, Counters.

Contact us to
learn more



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