Process Automation

IMI STI

SHP

Smart High-Performance Positioner

Breakthrough engineering for a better world

SHP

Smart High-Performance 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.

Product features

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

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

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.

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

- 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

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.

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

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Intrinsically safe (Ex ia) / Explosion proof (Ex d [ia]) according to:

ATEX
IECEX
GOST
SANS
INMETRO
ECASEx
AAA
ETL - C
CCoE
KOSHA
CCC
CU TR
UL
UKCa

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 ½" NPT female.
Electrical connections: 3 x ½" NPT female (Ex ia) / 1 x ½" NPT female (Ex d).

Pneumatic

Operating pressure range = 2.5 / 10.5bar – 150PSI (fail freeze 8bar, natural gas 7bar).
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).

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 4 for indoor use (Alluminium enclosure)
NEMA 4X for outdoor use (Stainless steel enclosure)

.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 (only for ATEX certification), with piezo valve and dedicated 3-way valve.

Optional accessories

Remote feedback sensor.

Universal linkage for:
linear long stroke actuator (70÷1700 mm).

VDI/VDE 3845 for rotary applications.

Lever for side yoke or top mounting application.
customized application.

Directly mounted pneumatic accessories:
gauges and lock up valve.

Collected or high silenced exhaust.

High speed communication kit.

High corrosion resistance.

Fail in place version.

Advanced diagnostic with option pack.

Display and push button.

Low bleed version.

Remote control software interface

User friendly interface with all key parameters shown on one screen.

Tool for easy mechanical feedback alignment.

Self calibration wizard.

All parameters with full control via an interactive start up page.

Graph tool for performance monitoring with configurable parameters.

Events and errors report.

Certified HART™ protocol communication 375/475 handheld compliant.

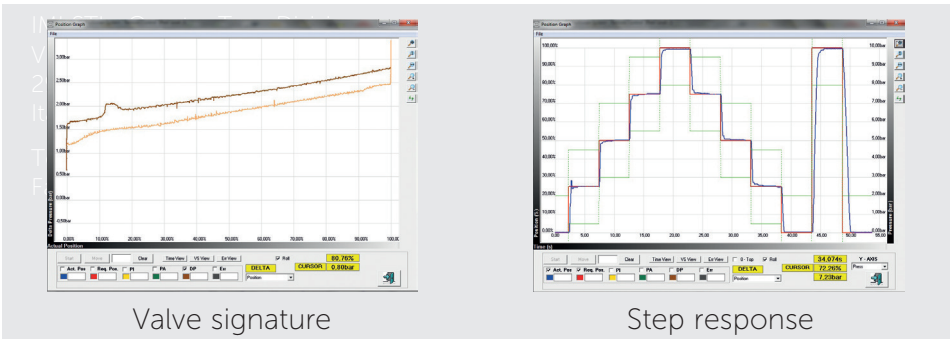
STANDARD PACK
Self-tuning.
Pilot test.
System status.
Parameter monitoring (actual position, required position, line pressure, actuator pressures, pilot signal, etc...).
Graph comparison.
Position/time measurement.
Pressure/time measurement.
Attenuation/phase-delay measurement.
Events.
Counters.

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).

Remote feedback sensor RS



Valve signature

Step response

Process Automation

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