

# SMARTPoZ™ 8400SHN

Smart Positioner - Non-contact Type



# SMARTPoz™ 8400SHN

The Forbes Marshall SMARTPoz™ 8400SHN smart positioner brings advanced sensor technology with numerous salient features. A simple to use, operator friendly device which is easy to adapt to control valve applications. Numerous functions can be easily achieved by simple configuration. The design lends itself for use in all process plants such as power, pharma, chemical, paper etc. It is built in an elegant aluminium pressure die cast case with environmental protection and yet easy to maintain.

## Operating principle

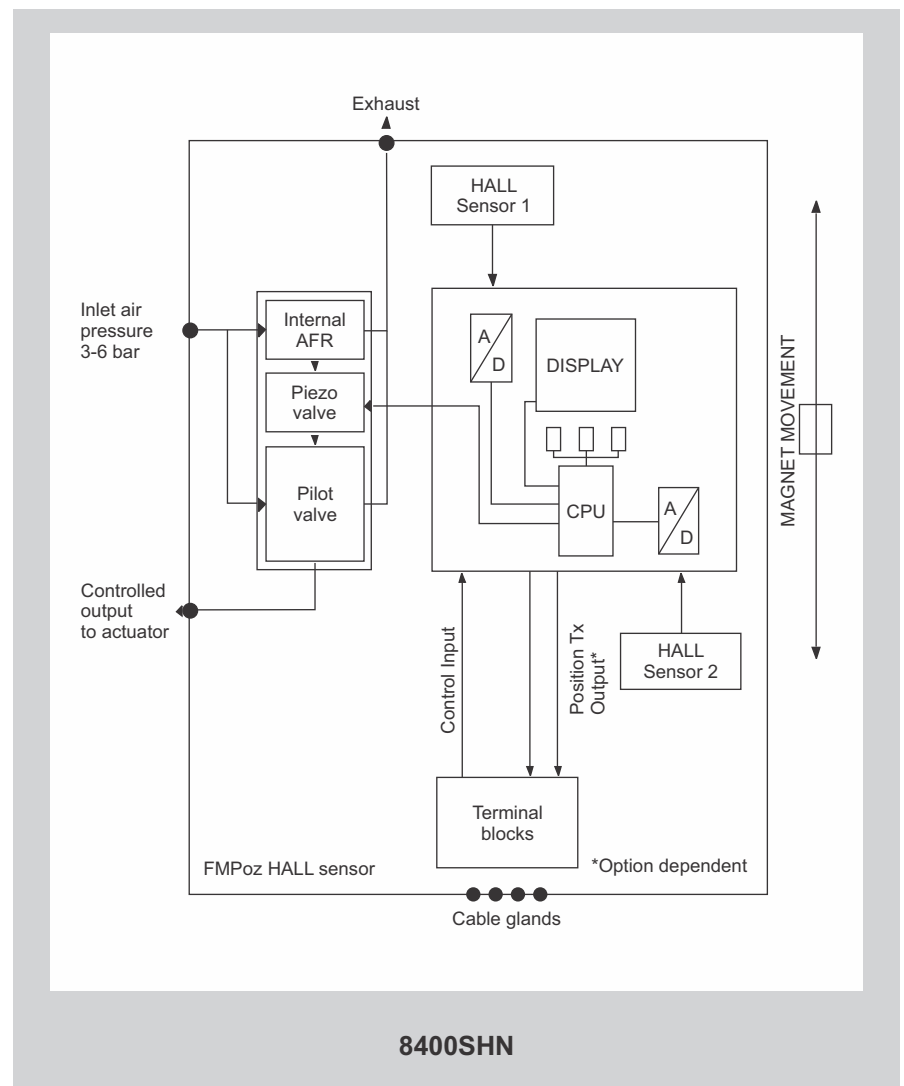
SMARTPoz™ 8400SHN is a two-wire device that uses a 4-20mA signal input as its set point, from which it derives its power. It compares the set point with the actual position of the actuator stem and eliminates the positioning error accurately using an internal PID control action.

This smart positioner has variants designed for use in both – safe and hazardous environments respectively. It is a microprocessor based positioner that provides fast, sensitive and accurate positioning for single acting linear pneumatic actuators.

SMARTPoz™ 8400SHN uses a unique contact-less magnetic position sensing technique in combination with a pair of Hall sensors. This mechanism is free from backlash and friction and helps achieve a fast and accurate position. The position sensing is contact-less and achieved by a combination of a shaft-mounted magnet and Hall-effect sensors mounted within the control unit.

The heart of the Positioner is a small piezo based transducer, which is a low power and low air consumption device. The electrical signal from the micro-controller is converted to precise equivalent pneumatic signals through the transducer, which operates the pilot valve, which in turn supplies proportional air to the valve actuator.

## Block diagram



Operating specifications	
Position sensing	HALL sensor : magnetic link-free sensing
Controller type	Microprocessor based non-contact type
Stroke length	16, 20, 30, 60, 100 mm
Valve characteristics	Linear, Equal %, Inv Equal%, free adjustment
Actuator type	Single-acting, linear pneumatic actuator. • MF series • U series
Control input (SP)	4-20mA
Display	Custom alphanumeric LCD with bar graph
User input	Via Tactile keys : require opening of Lid HALL-effect switches: externally operable using bar magnet
Operating power	4-20mA control input signal, with Compliance voltage 10VDC to maintain current of $\geq 3.4\text{mA}$ at 500 Ohms. It is mandatory to maintain Compliance voltage 10VDC minimum to keep the positioner ON.
Operating temperature	[-] 20 °C to [+] 80 °C
Pneumatic input	1.5 – 6 bar pressure
Air Quality	Filtered with 5 microns, Oil Class : 3 (< 1 ppm), Dried according to ISO8573-1 Class 3 Humidity – Class I
Air consumption	< 0.02 m <sup>3</sup> /hr at 6 Bar air pressure

Position transmitter (optional)	
Position feedback signal	Passive 4-20mA output
External power supply	Vs = 12 to 30 VDC max. RI = [Vs-5V]/20mA
Temperature stability	0.2% /10° K of full scale
Accuracy of position feedback	± 0.5% of Span
Communication	4-20 mA

	Standard	Specially for Ex-Proof / Intrinsically Safe
<b>Connections</b>		
Terminations	Screw type, for 1sqmm conductor termination	Additional stud for EARTH connection
Cable gland	M20 x 1.5mm single compression	M20 x 1.5mm Double compression
Cable construction	2 core, 1sqmm each conductor, 7-12mm OD	2 core, 1sqmm each conductor, 7-12mm OD
Cable specs	Cable inductance : 3.05mH max Cable capacitance : 0.083 $\mu\text{F}$ max	Cable inductance : 3.05mH max Cable capacitance : 0.083 $\mu\text{F}$ max
Cable type	Control input : Unshielded 2 core Feedback : Unshielded 2 core	Control input : Armored 3 core (input+EARTH) Feedback : Armored 2 core
Pneumatic connection	1/4" NPT(F)	
<b>Enclosure</b>		
Housing	Aluminium pressure die cast (same for safe & hazardous area)	
Weight	3 kgs	
<b>Area Classification and Approvals</b>		
Ingress protection	IP 66	
Certification EMC, EMI	Conforms to IEC 61000-2, IEC 61000-4	
Certification Ex	ATEX/ICEx, CE Marking	Ex IIG Ex d IIC T6      Ex ia IIC
Tests	Vibration Test : IEC 60068-2-6, Bump Test : IEC 60068-2-29	

Model de-codification								
Model	Sensor		Communication		Position Transmitter		Enclosure	
8400S	H	HALL	N	4-20 mA	N	Without POS. Tx	W	Weather proof
					T	With POS. Tx	E	Ex-proof*

Ordering code : 8 4 0 0 S - - - -

\* Intrinsically safe version available on request

Example : Model 8400SHNTW : Smart Positioner with Hall, Position transmitter and Weather Proof

## Salient Features

Precise position control

Robust design.

Auto/manual calibration for full stroke

Low air consumption, which ensures payback of investment within few months

Can be used for linear, equal % characteristics irrespective of the Plug characteristics

Split range feature for two valves

Alphanumeric LCD display

Can be used for air to open, air to close application irrespective of actuator type

Magnetic feedback option

Basic programming front fascia without configurator

Retro-fitting of existing positioner is possible

NAMUR tubeless connection for MF-series actuators. Requires less space as external pneumatic tubing is not required

## Advantages of HALL based positioner

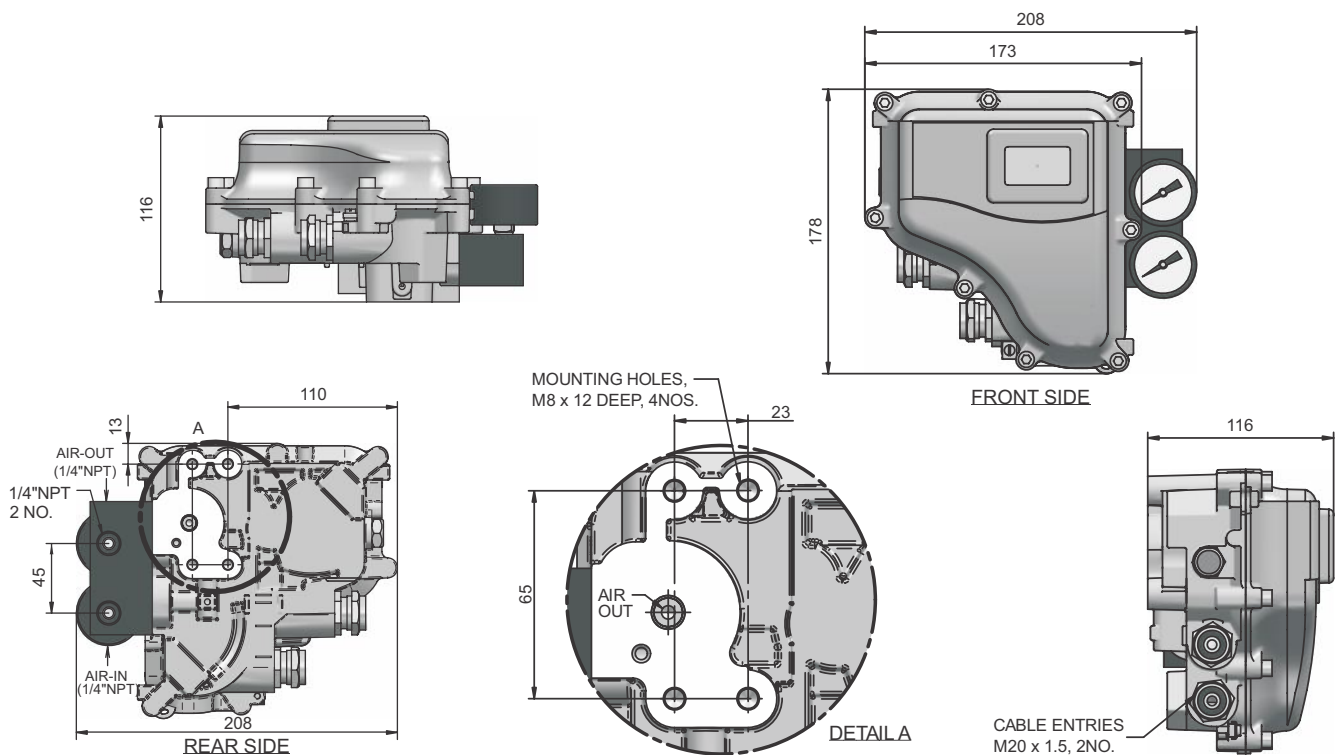
Contactless position feedback system

Free from backlash

No wear and tear of hall-feedback parts because of contactless relative movement

Easy maintenance

## Dimensions



Forbes Marshall  
Krohne Marshall  
Forbes Marshall Arca  
Codel International  
Forbes Solar  
Forbes Vyncke  
Forbes Marshall Steam Systems

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