SP7-10
Smart Positioner

Description
The SP7-10 smart positioner can control any valve that is actuated by a linear or rotary pneumatic actuator that conforms with NAMUR. It guarantees an exact proportionality between the stroke of the valve and the value of the electrical input signal (mA) into the positioner.
The SP7-10 has a cast aluminium housing that is also treated for outdoor installation. The unit can be mounted onto pneumatic actuators either rotary -57 to 57° or linear -28 to 28°.
The positioner can be supplied without a mounting kit or with a kit for rotary or linear actuators, the type must be specified when ordering.
The positioner can be supplied without a pressure gauge block or with a pressure gauge block, the type must be specified when ordering.
The positioner is supplied for a control signal in mA and for an air supply pressure from 1.4 to 6 bar.
The SP7-10 positioner can also be used to reverse the action of the control signal.

Air supply
The SP7-10 positioner must be provided with a high quality air supply to ISO 8573-1:2010 Class 3:3:3

Applications
The SP7-10 can be used with any actuator that conforms to NAMUR, this includes all of the following Spirax Sarco pneumatic actuators:

BVA300 rotary

PN1600 series

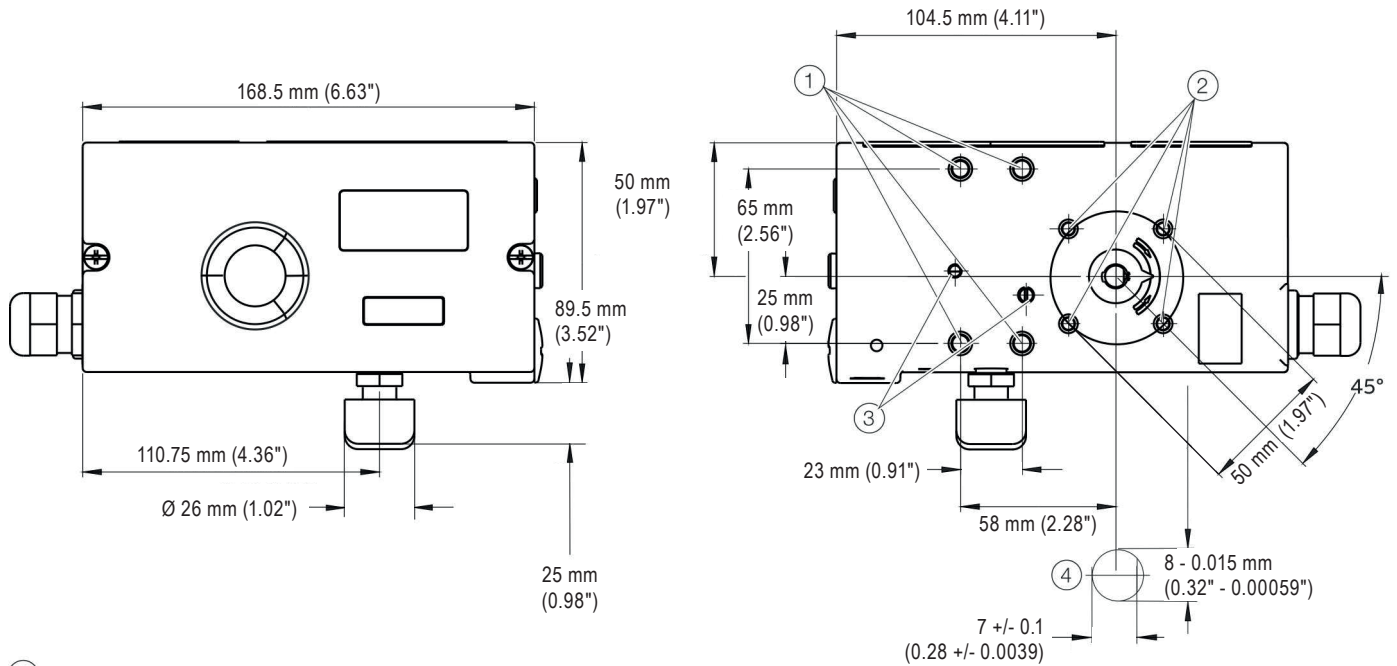**PNS3000** and **PNS4000 series**

PN9000 series

TN2000 series

Materials

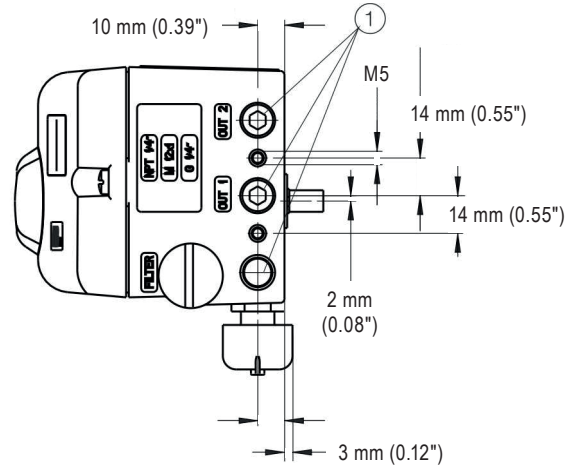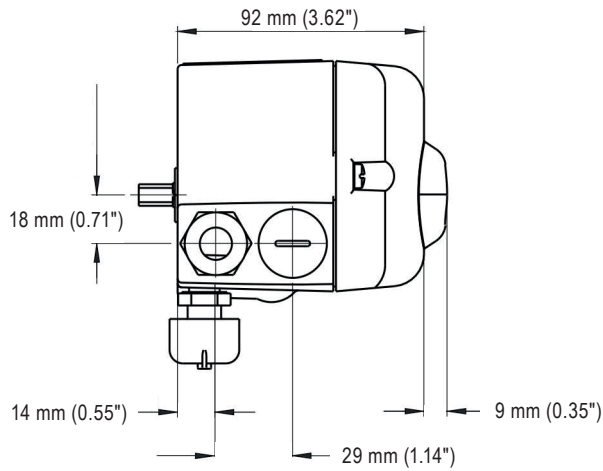| Part	Material	Finish
Case and cover	Die cast aluminium	Case - Anti-corrosive paint, Black
		Cover - Anti-corrosive paint to RAL9016
Mounting kits	Stainless steel	-
Follower pin cone	Nylon	-

E X P E R T I S E │ S O L U T I O N S │ S U S T A I N A B I L I T Y

Technical data

Input signal range	4-20 mA (split range minimum amplitude 8 mA)
Impedance	Max 485 +/- 15 Ω
Air supply	20 to 90 psi g
Air quality	ISO 8573-1:2010 Class 3:3:3
Output pressure	0 to 100% supply pressure
Actuator stroke	¾" to 6" or 55 ° to 90 °
Action	Single acting/fail vent/Double acting
Operating temperature	−40 to 185 °F
Air connections	¼" NPT female
Deviation	≤ 0.5 %
Tolerance band	0.3 to 10 %, adjustable
Configurable dead zone	0.1 to 10 %, adjustable
Resolution (AD-conversion)	> 16,000 steps
Sampling frequency	20 ms
Ambient temperature effect	≤ 0.5 % per 10 K
Reference temperature	68 °F
Influence of vibration	≤ 1 % to 10 g and 80 Hz
Weight	Linear mounting kit - 1.71 lbs
	Rotary mounting kit - 0.9 lbs
	Gauge block - 0.70 lbs
	Gauge block stainless steel - 1.15 lbs

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Dimensions (approximate) in mm (and inches)

Ø 8 mm (0.31") h9

14.5 mm (0.57")

1 mm (0.04")

168.5 mm (6.63")

50 mm (1.97")

89.5 mm (3.52")

110.75 mm (4.36")

Ø 26 mm (1.02")

25 mm (0.98")

104.5 mm (4.11")

65 mm (2.56")

25 mm (0.98")

23 mm (0.91")

58 mm (2.28")

45°

50 mm (1.97")
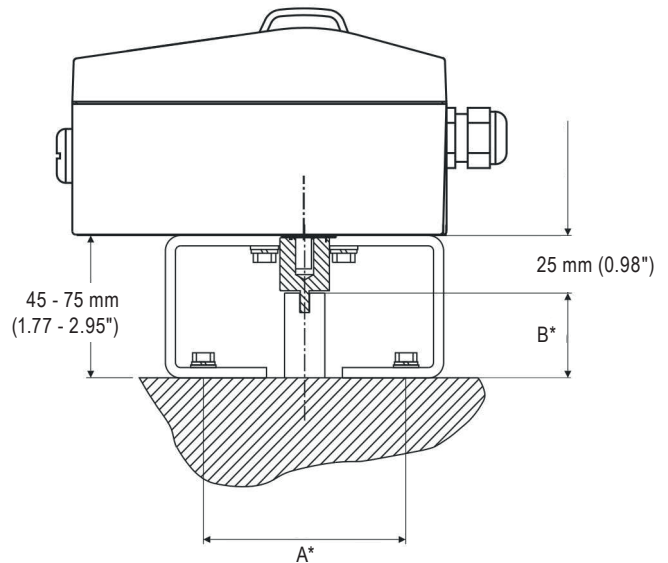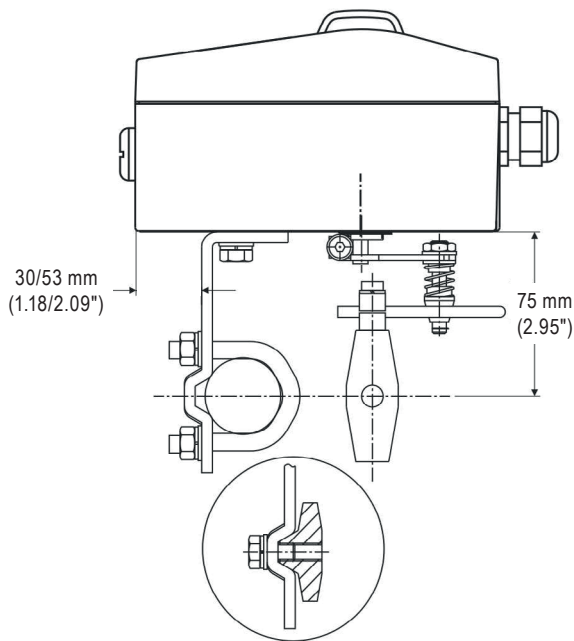
8 - 0.015 mm (0.32" - 0.00059")

7 +/- 0.1 (0.28 +/- 0.0039)
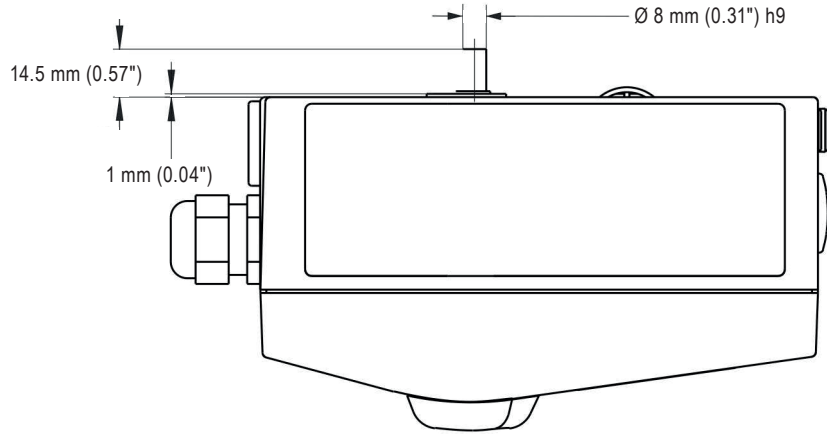
① Threaded hole M8 (10 mm [0.39"] deep)

② Threaded hole M6 (8 mm deep [0.31"])

③ Threaded hole M5 x 0.5 (air outputs for direct mount)

④ Sensor shaft (shown larger than scale)

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Dimensions (approximate) in mm (and inches)

92 mm (3.62")
18 mm (0.71")
14 mm (0.55")
29 mm (1.14")
9 mm (0.35")

10 mm (0.39")
M5
14 mm (0.55")
14 mm (0.55")
2 mm (0.08")
3 mm (0.12")

OUT 2
OUT 1
NPT ¼
G ¼
M 5
FILTER

① Pneumatic connections, NPT ¼ in-18 oder G¼

30/53 mm (1.18/2.09")
75 mm (2.95")
45 - 75 mm (1.77 - 2.95")
25 mm (0.98")
B*
A*

* Dimensions A and B depend on the rotary actuator

Rotary positioner mounting kits

Actuator model	Actuator mounting dimensions	Spirax kit nomenclature
BVA300	80/20 mm	AKR13
	80/30 mm	AKR14
	130/30 mm	AKR15
	130/50 mm	AKR16

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Positioner options

Standard	**Case/Mounting**	Case made of aluminium, varnished, for mounting to linear actuators acc. DIN/IEC 534/NAMUR or to rotary actuators acc. VDI/VDE 3845	10
		Case made of aluminium, varnished, with mechanical position indicator, for mounting to linear actuators acc. DIN/IEC 534/NAMUR or to rotary actuators acc. VDI/VDE 3845	20
		Remote sensor control unit (Note 1)	70
	Input/Communication Port	Input 4 ... 20 mA, two-wire, with connector plug for LKS adapter	1
		Input 4 ... 20 mA, two-wire, with connector plug for LKS adapter and FSK module for HART communication	2
	Explosion Protection	Without	0
	Output/Safe Position (in case of an electrical power failure)	Single acting, fail safe	1
		Single acting, fail freeze	2
		Double acting, fail safe (Note 2)	4
		Double acting, fail freeze (Note 2)	5
	Connections	Cable: Thread 1/2-14 NPT, air pipe: Thread 1/4-18 NPT	2
		Cable: Thread M20 x 1.5, air pipe: Thread 1/4-18 NPT	5
	Option Modules for Analog or Digital Position Feedback	Without	0
		Plug-in module for analog position feedback, signal range 4 ... 20 mA, two-wire	1
		Plug-in module for digital position feedback	3
		Plug-in module for analog position feedback, signal range 4 ... 20 mA, two-wire, and digital position feedback	5
	Optional Mechanical Kit for Digital Position Feedback	Without	00
		Mechanical kit for digital position feedback with proximity switches SJ2-SN (NC or logical 1) (Note 3)	10
		Mechanical kit for digital position feedback with 24 V AC/DC microswitches (change-over contacts) (Note 4)	50
	Design (Varnish/Coding)	Standard	1
		Higher Stiffness + Lower Air Capacity	H
		Protection Class IP 66/NEMA 4X	P
		Increased Corrosion Protection incl. Protection Class IP66	S
Optional	**Device Identification Label**	Stainless steel 18.5 x 65 mm (0.73 x 2.56 in.) (Note 7)	MK1
		Sticker 11 x 25 mm (0.43 x 0.98 in.)	MK3
	Remote Sensor	Basic unit (Note 8)	RS
		Basic unit with position indicator (Note 8)	RD
	Remote Sensor Temperature Range	Extended ambient temperature range -40 ... 100 °C (-40 ... 212 °F) (Note 8)	RT
	Remote Sensor Vibration Resistance	Advanced vibration range 2 g @ 300 Hz (Note 8)	RV
	Remote Sensor Protection Class	Protection class IP 67 (Note 8)	RP
	Remote Sensor Cable	5 m (16.5 ft) cable enclosed (Note 8)	R5
		10 m (33.0 ft) cable enclosed (Note 8)	R6

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Note 1: With standard characteristic curve, if delivered without remote sensor
Note 2: Not for for integral mounting
Note 3: Only for model with mechanical position indicator
Note 4: Not for explosion protected version and only for model with mechanical position indicator
Note 5: Details on request
Note 7: Plain text, max. 16 letters
Note 8: Only with remote sensor control unit

Ordering Code Example:

SP7-10	20	1	0	1	5	0	00	1

Safety information, installation and maintenance
Full details are contained in the SP7-10 digital positioner Installation and Maintenance Instructions.

Mounting/linkage kit : Positioner mounting kits will be supplied for central mounting as standard.

Actuator Model	Valve Models	Valve Sizes	Spirax kit Nomenclature
PN9100	Spira-trol two port and QL three port	DN15 to DN50	AKL10
PN9200		DN15 to DN100	AKL10
PN9300		DN15 to DN100	AKL10
PN9400		DN125 to DN300	AKL17

Actuator Model	Valve Models	Valve Sizes	Spirax kit Nomenclature
TN2030	Spira-trol two port and QL three port	DN15 to DN100	AKL10
TN2150		DN15 to DN100	AKL10
TN2300		DN125 to DN300	AKL17
		DN125 to DN300	AKL17
TN2400	Spira-trol two port and QL three port	DN125 to DN300	AKL17
		DN125 to DN300	AKL17
TN2270		DN125 to DN300	AKL17
		DN125 to DN300	AKL17

Actuator Model	Valve Models	Valve Sizes	Spirax kit Nomenclature
PN3000 Sprg Ext	LE, LEA and Steri-trol	DN15 to DN100	AKL10
PN4000 Sprg Ret		DN15 to DN100	AKL10

Actuator Model	Valve Models	Valve Sizes	Spirax kit Nomenclature
PN5000	KE, KEA, LE and LEA	DN15 to DN100	AKL10 +UBC
PN6000		DN15 to DN100	AKL10 + UBC
PN5000	QL three port	DN125 to DN200	AKL11 + UBC
PN6000		DN125 to DN200	AKL11 + UBC

Actuator Model	Valve Models	Valve Sizes	Spirax kit Nomenclature
PN1600	'C' series	DN65 to DN100	AKL11
PN1600		DN125 to DN200	AKL11
PN1600	Spira-trol	DN125 to DN300	AKL11

Customer requirement example:
1 off Smart positioner for use with single acting PN9300 actuator, having 30 mm stroke.

How to order
Example: 1 off Spirax Sarco SP7-10-2010150001 Smart positioner with AKL10 mounting kit.
Caution: The SP7-10 positioner must have a high quality air supply to ISO 8573-1:2010 Class 3:3:3.