



SP8-10 Smart Positioner

Description

The SP8-10 is an electronically configurable positioner with communication capabilities designed for mounting on pneumatic linear or rotary actuators. It features a small and compact design, a modular construction, and an excellent cost-performance ratio. Fully automatic determination of the control parameters and adaptation to the positioner allow for considerable time savings as well as optimum control behaviour.

An I/P module with subsequent pneumatic amplifier is used to control the pneumatic actuator. The well-proven I/P module proportionally converts the permanent electrical set point signal from the CPU into a pneumatic signal used to adjust a 3/3-way valve. Dosing of the air flow for pressurizing or depressurizing the actuator is continuously adjusted. As a result, excellent control results are achieved. When reaching the set point, the 3/3-way valve is closed in centre position to minimize the air consumption. The pneumatic system can be supplied in four versions: for single acting and double acting actuators and each with the 'fail-safe' / 'fail-freeze' safety function.

In addition to its input for the analogue position set point, the positioner is equipped with a digital input which can be used to activate control system functions in the device. A digital output allows you to output collective messages (alarms / faults).



Applications

The SP8-10 can be used with any actuator that conforms to NAMUR, this includes all of the following Spirax Sarco pneumatic actuators:

BVA300 rotary

PN9000 series

PN1600 series

TN2000 series

PNS3000 and PNS4000 series

Materials

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

Technical data

Input signal range	4-20 mA (split range minimum amplitude 8 mA)
Impedance	485 ohms at 20mA
Output pressure	0 to 10 bar (0 to 145 psi)
Actuator stroke	Min. and max. limits, freely configurable in range 0 to 100 %
Action	Single acting/fail vent/Double acting
Operating temperature	-40 to 85 °C (-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	20 °C (68 °F)
Influence of vibration	≤ 1 % to 10 g and 80 Hz
Degree of protection	IEC 60529 IP65 (Ex versions IEC 60079-0 IP64)
Weight	Linear mounting kit - 0.78 kg (1.7 lb)
	Rotary mounting kit - 0.4 kg (0.8 lb)

SP8-10 Approvals

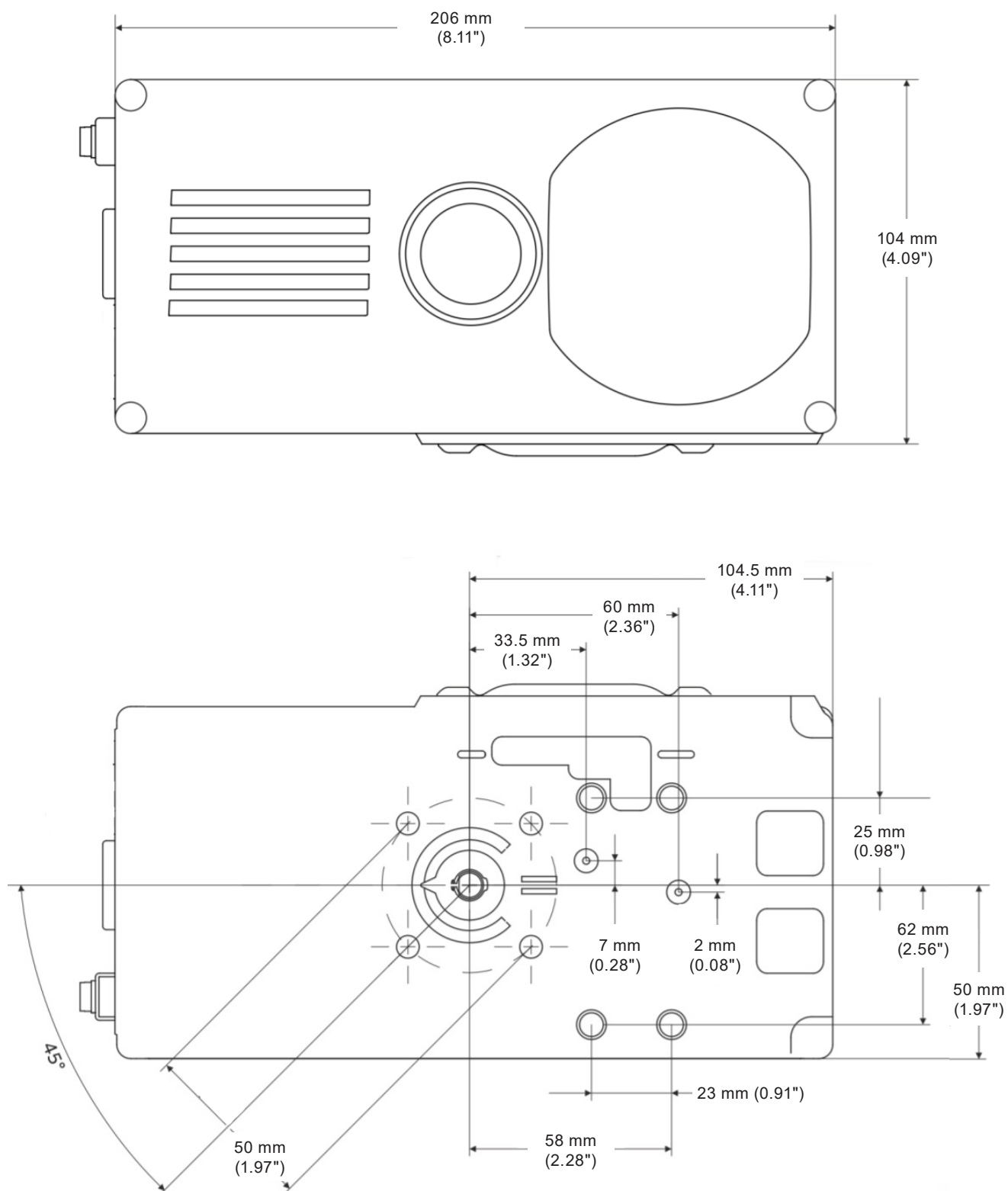


ATEX II 1G Ex ia IIC T6 Ga
ATEX II 1D Ex ia IIIC T ₂₀₀ 70 °C Da
ATEX II 1G Ex ia IIC T4 Ga
ATEX II 1D Ex ia IIIC T ₂₀₀ 115 °C Da
ATEX II 3G Ex ec IIC T6 Gc
ATEX II 2D Ex tb IIIC T ₂₀₀ 70 °C Db
ATEX II 3G Ex ec IIC T4 Gc
ATEX II 2D Ex tb IIIC T ₂₀₀ 115 °C Db

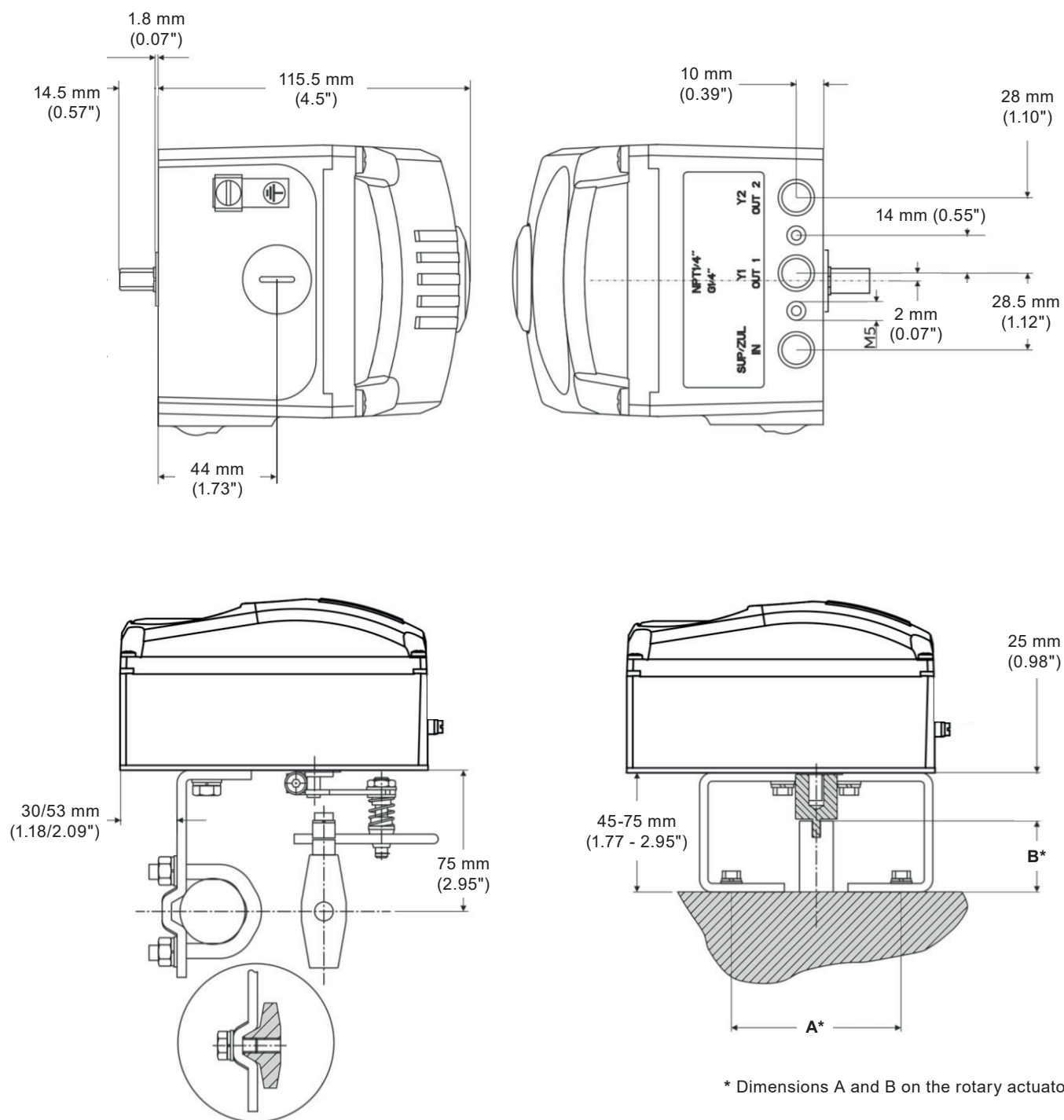
IECEX

IECEX Ex ia IIC T6 Ga
IECEX Ex ia IIIC T ₂₀₀ 70 °C Da
IECEX Ex ia IIC T4 Ga
IECEX Ex ia IIIC T ₂₀₀ 115 °C Da
IECEX Ex ec IIC T6 Ga ; Ex nA IIC T6 Gc
IECEX Ex tb IIIC T ₂₀₀ 70 °C Da
IECEX Ex ec IIC T4 Ga ; Ex nA IIC T4 Gc
IECEX Ex tb IIIC T ₂₀₀ 115 °C Da

Dimensions (approximate) in mm (and inches)



Dimensions (approximate) in mm (and inches)



Rotary positioner mounting kits

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

For BVA actuators the AKR14 mounting kit is required.

Positioner Options for SP8-10

Standard	Explosion Protection Certification	Without	Y0
		ATEX II 1G Ex ia IIC T6 Ga ATEX II 1D Ex ia IIIC T200 70 °C Da Ta = -40 °C to 40 °C (-40 °F to 104 °F) ATEX II 1G Ex ia IIC T4 Ga ATEX II 1D Ex ia IIIC T200 115 °C Da Ta = -40 °C to 85 °C (-40 °F to 185 °F) IP64 Connection values : see manual	A1
		ATEX II 3G Ex ec IIC T6 Gc ATEX II 2D Ex tb IIIC T200 70 °C Db Ta = -40 °C to 40 °C (-40 °F to 104 °F) ATEX II 3G Ex ec IIC T4 Gc Ta = -40 °C to 80 °C (-40 °F to 176 °F) ATEX II 2D Ex tb IIIC T200 115 °C Db Ta = -40 °C to 85 °C (-40 °F to 185 °F) IP64 Connection values : see manual	B1
		IECEX Ex ia IIC T6 Ga IECEX Ex ia IIIC T200 70 °C Da Ta = -40 °C to 40 °C (-40 °F to 104 °F) IECEX Ex ia IIC T4 Ga IECEX Ex ia IIIC T200 115 °C Da Ta = -40 °C to 85 °C (-40 °F to 185 °F) IP64 Connection values : see manual	M11
		IECEX Ex ec IIC T6 Ga ; Ex nA IIC T6 Gc IECEX Ex tb IIIC T200 70 °C Da Ta = -40 °C to 40 °C (-40 °F to 104 °F) IECEX Ex ec IIC T4 Ga ; Ex nA IIC T4 Gc Ta = -40 °C to 80 °C (-40 °F to 176 °F) IECEX Ex tb IIIC T200 115 °C Da Ta = -40 °C to 85 °C (-40 °F to 185 °F) IP64 Connection values : see manual	N1
	Input Signal / Communication Port	4 ... 20 mA	A
		HART digital communication and 4 ... 20 mA	H
	Pneumatic Output Type	Single acting	1
		Double acting	2
	Safe Position	Fail-safe	S
		Fail-freeze	F
	Air Pipe Connection Thread	Air Pipe Connection Thread ¼-18 NPT female	2
	Cable Conduits	Thread M20 x 1.5 female	C
		Thread NPT ½" female	D

When the stainless steel housing material is selected, gauge blocks will automatically be S/S

Positioner options for SP8-10 continued on next page

Positioner options for SP8-10 (continued)

Optional	Option Module Slot 1	Analogue feedback output	A1
		Digital feedback output	A2
	Option Module Slot 2	Analogue universal input	A3
		Analogue feedback output B1	B1
		Digital feedback output B2	B2
		Analogue universal input B3	B3
	Option, Air Power	Emergency shutdown module B4	B4
		50 kg/h	L5
	Position Indicator	Visual Indicator, integrated into cover	D1
	Limit Switches	Microswitches (Not suitable for Ex versions)	F1
		Proximity switches (NC) SJ2-SN	F2
	Housing Material	Stainless steel	H1
	Position Sensor Type	With integrated (contactless) position sensor	K1
		Control Unit for remote position sensor (Not suitable for Ex versions)	K2
	Special Applications	Option with natural gas (Aluminium or Stainless housing. Only for Ex versions ¹)	P8
		With Noise reduction	P9
	Pressure Gauge BI °Ck Type	0 ... 1 MPa (0 ... 10 bar, 0 ... 145 psi)	R3
		Matl. Stainless Steel if option H1 selected	
	Pressure Diagnosis Module	Pressure Sensors	S3
	Additional TAG plate	Stainless steel 18.5 mm x 65 mm (0.73" x 2.5")	T1
		Sticker 11 mm x 25 mm (0.44" x 1") (Not suitable for Ex versions)	T3
	Mounting Options	Prepared for integral mounting	
	Remote Sensor	Basic unit	RS
		Matl. Stainless Steel if option H1 selected	
	Remote Sensor Temperature Range	Extended ambient temperature range -40 ... 100 °C (-40 ... 212 °F)	RT
	Remote Sensor Vibration Resistance	Advanced vibration range 2 g @ 300 Hz	RV
	Remote Sensor Protection Class	Protection class IP 66	RP
	Remote Sensor Cable	5 m cable enclosed	R5
		10 m cable enclosed	R16

Note: Option M1 is not suitable for use with natural gas medium

Ordering Code Example: SP8-10 Y0 H 2 F 2 C

SP8, Without Explosion Protection Certification, HART, Double Acting, Fail-Freeze, ¼ NPT Air Pipe Connection, M20 x 1.5 Cable Conduits.

Safety information, installation and maintenance

Full details are contained in the SP8-10 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 (½" to 2")	AKL10
PN9200		DN15 to DN100 (½" to 4")	AKL10
PN9300		DN15 to DN100 (½" to 4")	AKL10
PN9400		DN125 to DN300 (5" to 12")	AKL17
TN2150	Spira-trol two port and QL three port	DN15 to DN100 (½" to 4")	AKL10
TN2300		DN125 to DN300 (5" to 12")	AKL17
TN2400	AKL17		
	AKL17		
	AKL17		
TN2270	AKL17		
PN3000 Sprg Ext	LE, LEA and Steri-trol	DN15 to DN100 (½" to 4")	AKL10
PN4000 Sprg Ret			
PN5000	KE, KEA, LE and LEA	DN15 to DN100 (½" to 4")	AKL10 +UBC
PN6000			
PN5000	QL three port	DN125 to DN200 (5" to 8")	AKL11 + UBC
PN6000			
PN1600	'C' series	DN65 to DN100 (2½" to 4")	AKL11
PN1600		DN125 to DN200 (5" to 8")	AKL11
PN1600	Spira-trol	DN125 to DN300 (5" to 12")	AKL11

Gauge blocks

	Material	Spirax Nomenclature	Weight
1,0 MPa/145 psi NPT¼"	Aluminium	GBS1A	0.28 kg (0.6 lb)
		GBD1A	0.32 kg (0.7 lb)
		GBS1S	0.50 kg (1.1 lb)
		GBD1S	0.52 kg (1.1 lb)

	Material	Spirax Nomenclature	Weight
10 bar/145 psi NPT¼"	Stainless steel	GBS10A	0.28 kg (0.6 lb)
		GBD10A	0.32 kg (0.7 lb)
		GBS10S	0.50 kg (1.1 lb)
		GBD10S	0.52 kg (1.1 lb)

How to order

Example: 1 off Spirax Sarco SP8-10-Y0H2F2C Smart positioner with AKL10 mounting kit and GBS6A gauge block.

Caution: The SP8-10 positioner must have a high quality air supply to ISO 8573-1:2010 Class 3:3:3.