



## Digital electropneumatic positioner for the integrated mounting on process control valves

- Compact, robust stainless steel design
- Start-up by automatic Tune function
- Contact-free position sensor
- Integrated control air routing
- Fieldbus interface AS-Interface (option)

Type 8694 can be combined with...



**Type 2301**

Globe control valve



**Type 2300**

Angle-seat control valve



**Type 2103**

Diaphragm control valve



Hygienic process control valves

Compact positioner for integrated mounting on pneumatically operated process valves. Remote setpoint adjustment via a 4-20 mA signal or through AS-Interface. A contact-free analog position sensor measures the position of the valve spindle. Simple installation through automatic tune function and setting through DIP-switch:

- Close tight function
- Characteristic curves selection
- Reversal of effective direction
- Switching manual /automatic operation
- Binary input

Additional parametrisation options are possible through DTM devices. A software interface can be used for, amongst others, linearisation of the operation characteristics by using free programmable fixed points. The valve position indication is shown through LED components. As an option an analogue position feedback can be integrated.

Technical Data	
<b>Material</b>	Body PPS, stainless steel Cover PC Sealing EPDM
<b>Power supply</b>	24 V DC ± 10% UL: NEC Class 2
<b>Residual ripple</b>	max. 10%
<b>Setpoint setting</b>	4 to 20 mA (0 to 20 mA adjustable via communication interface)
<b>Output resistance</b>	180 Ω
<b>Control medium</b>	neutral gases, air, quality classes acc. to ISO 8573-1 Dust concentration Class 7 (< 40 µm particle size) Particle density Class 5 (< 10 mg/m <sup>3</sup> ) Pressure condensation point Class 3 (< -20 °C) Oil concentration Class X (< 25 mg/m <sup>3</sup> )
<b>Ambient temperature</b>	- 10 °C to + 55 °C
<b>Pilot air ports</b>	Threaded ports G 1/8 stainless steel or push-in connector (tube Ø 6 mm / 1/4")
<b>Supply pressure</b>	Low air flow rate 0 to 7 bar <sup>1)</sup> High air flow rate 3 to 7 bar
<b>Air input filter</b>	Exchangeable (mesh aperture~0.1 mm)
<b>Actuator system</b>	Actuator series ELEMENT 23xx Low air flow rate : Ø Actuator 70 / 90 mm High air flow rate: Ø Actuator 130 mm
<b>Position detection module</b>	Contact-free, wear-free
<b>Stroke range valve spindle</b>	3 to 45 mm
<b>Installation</b>	as required, preferably with actuator in upright position
<b>Protection type</b>	IP65/IP67 acc. to EN 60529, Type 4X acc. to NEMA 250 standard
<b>Protection class</b>	3 acc. to DIN EN 61140
<b>Approvals</b>	ATEX  II 3D Ex tc IIIC T135 °C Dc /  II 3G Ex ec IIC T4 Gc Certificate; BVS 14 ATEX E 008 X IECEX Ex tc IIIC T135 °C Dc / Ex ec IIC T4 Gc Certificate; IECEX BVS 14.0009 X UL cULus Certificate; E238179
<b>Ignition protection</b>	II 3D Ex tc IIIC T135 °C Dc II 3G Ex ec IIC T4 Gc
<b>Conformity</b>	EMC directive 2014/30/EU
<b>Options</b>	Analogue position feedback, 4-20 mA
<b>Fieldbus interface</b>	AS-Interface, IO-Link, bÜS-Bürkert System Bus (based on CANopen)

<sup>1)</sup> The supply pressure has to be 0.5-1 bar above the minimum required pilot pressure for the valve actuator.

**Technical data - cont.**

<b>Without filed bus communication</b>	
<b>Power supply</b>	24 V DC $\pm$ 10 % UL: NEC Class 2
<b>Risidual ripple</b>	10%
<b>Power consumption</b>	< 3.5 W
<b>Electrical connection</b>	
Multipole	M12 (8 pins), stainless steel
Cable gland	M16 x 1.5 (cable $\varnothing$ 5...10 mm) with screw terminals for cable cross-sections 0.14...1.5 mm <sup>2</sup> .

<b>Technical data AS-interface - (Option)</b>	
<b>Profile</b>	S-7.3.4 Output: 16 Bit setpoint / Certificate no. 87301 acc. to Version 3.0 -7.A S.5 Output: 16 Bit setpoint; Input: 16 Bit feedback / Certificate no. 95401 acc. to version 3.0
<b>Programmed Information</b>	see operating instructions
<b>Power supply through bus line</b>	29.5 to 31.6 V DC acc. to specification UL: NEC Class 2
<b>Max. Current consumption</b>	150 mA
<b>Electrical connection</b>	M12 x 1, 4 pin stainless steel plug assembled to 80 cm cable and flat cable clip

**Ordering information for ELEMENT TopControl control valve systems**

A TopControl control valve system consists of a **BASIC positioner Type 8694** and an **ELEMENT control valve Type 23xx/2103**.

The following information is necessary for the selection of a complete system:

- **Article no.** of the BASIC TopControl positioner **Type 8694** (see ordering chart on p. 4)
- **Article no.** of the desired control valve **Type 23xx** (see separate datasheet 2300, 2301 2103)

You order two components and receive a complete assembled and certified valve.

Click on the orange box "More info." below... you will come to our website for the resp. product where you can download the datasheet.

**Example of variations of control valve systems**

**BASIC positioner Type 8694**

**Pneumatic process control valves**



**Control valve system**



**Control valve system  
ELEMENT  
Type 8802-GD-L  
2301 + 8694**

**Control valve system  
ELEMENT  
Type 8802-YG-L  
2300 + 8694**

**Control valve system  
ELEMENT  
Type 8802-DF-L  
2103 + 8694**

**Customised attachment  
to 3rd party actuators\***

**More info.**

\*: please see datasheet Type KK01 adapter kits for hygienic process valves or contact your sales office for related drawings or individual engineering support]

**Ordering chart Type 8694 (other versions on request)**

Control function Pilot valve system	Communi- cation	Electrical connection	Analogue feedback	Pilot air ports threaded ports	Article no.	
<b>Actuator series ELEMENT Type 23xx, size Ø 70/90 mm</b>					<b>Standard</b>	<b>ATEX II cat. 3G/D</b>
Low air capacity single-acting		M12 multipole		G 1/8	227405	265046
		Cable gland	yes	G 1/8	227406	265047
	AS-Interface S-7.A.5		M12 connector /flat cable clip / 80 cm cable	yes	G 1/8	227402
		16 Bit via Bus		G 1/8	239615	265043
<b>Actuator series ELEMENT Type 23xx, size Ø 130 mm</b>						
High air capacity single-acting		M12 multipole		G 1/8	227426	265059
		Cable gland	yes	G 1/8	227427	265060
	AS-Interface S-7.A.5		M12 connector /flat cable clip / 80 cm cable	yes	G 1/8	227422
		16 Bit via Bus		G 1/8	227423	265058
				G 1/8	239616	265056

**Note:** All non-ATEX versions are UL approved.

**i Further versions on request**

- > Additional**  
Push-in pilot air ports (tube Ø 6 mm / 1/4")

**Ordering chart adapter kit (has to be ordered separately)**

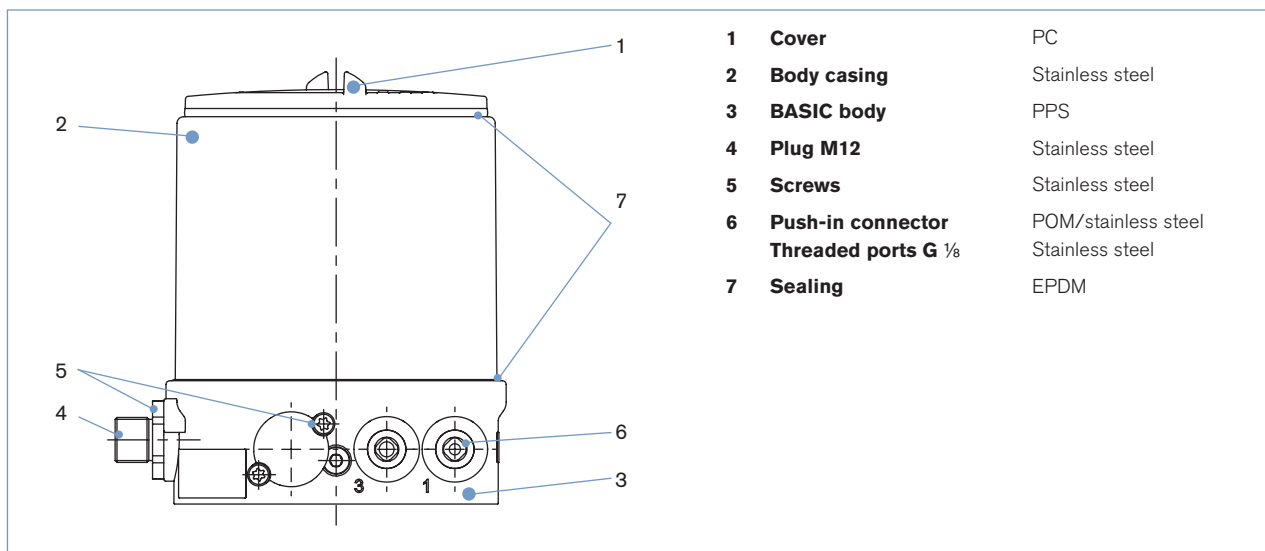
Description	Actuator size	Control function	Article no.
Adapter kit ELEMENT Types 23xx/2103	Ø 70 / 90 / 130 mm	universal	679917

for installation kits to 3rd party process valves please see datasheet [Type KK01](#) adapter kits or contact your sales office for related drawings or individual engineering support

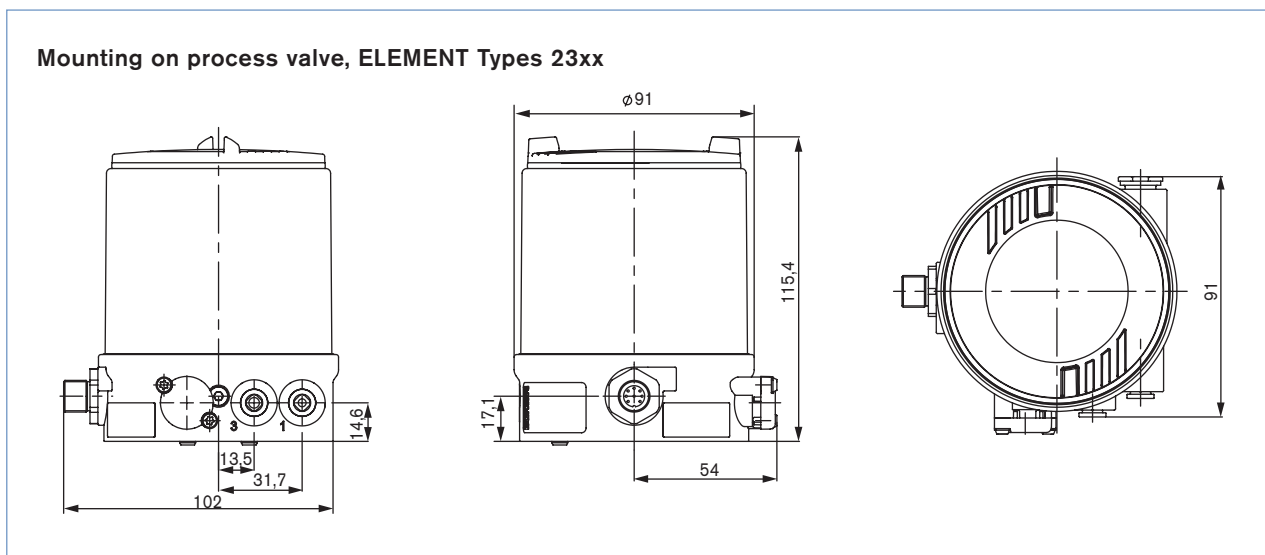
**Ordering chart accessories**

Description	Article no.
M12 socket 8 pin with 5 m cable for power supply and input/output signals	919267
Silencer G 1/8	780779
Silencer, push-in connector	902662
Sensor puck (spare part)	682240
USB interface for serial communication	227093

**Materials**



**Dimensions [mm]**



Mounting on third party hygienic process valves

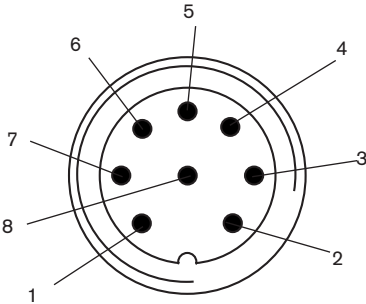


**Customised attachment  
to 3rd party actuators\***

\*: please see datasheet Type KK01  
Adapter kits for hygienic process  
**valves** or contact your sales office for  
related drawings or individual engi-  
neering support]

**Connection options**

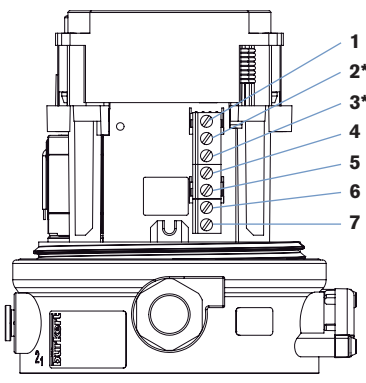
**Multipole connection**



Pin	Configuration
1	Setpoint + (0/4 - 20 mA)
2	Setpoint GND
3	Operating voltage GND
4	Operating voltage + 24 V DC
5	Binary input +
6	Binary input GND
7	Analogue position feedback GND
8	Analogue position feedback +

**Connection cable gland**

**Screw terminal connections**



\* Option only

**Input signal**

Pin	Configuration
4	Setpoint +
5	Setpoint GND
1	Binary input +
6	Power supply +
7	Power supply GND

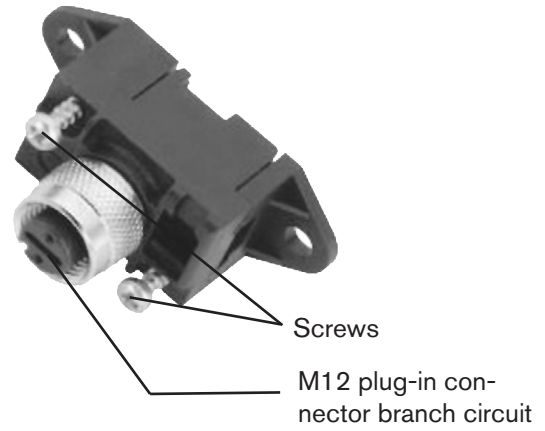
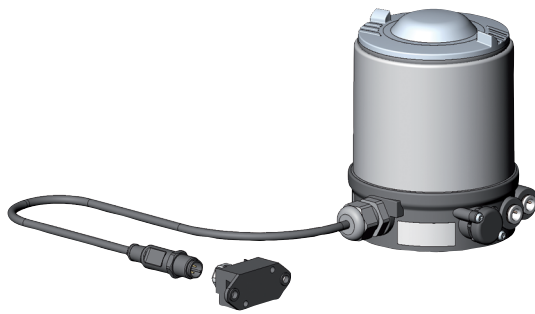
**Output signal with analogue feedback option**

Pin	Configuration
2	Analogue feedback +
3	Analogue feedback GND

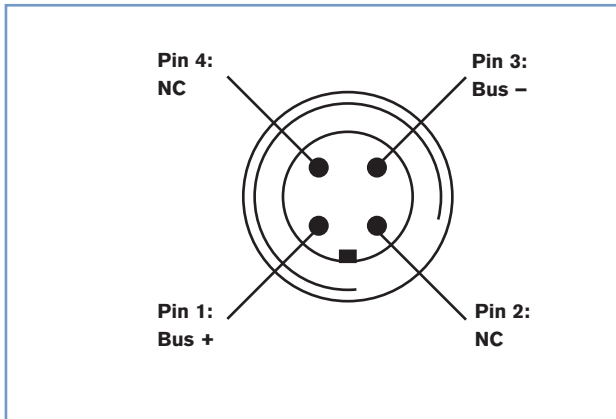
**Connection options (cont.)**

**Connection AS-Interface**

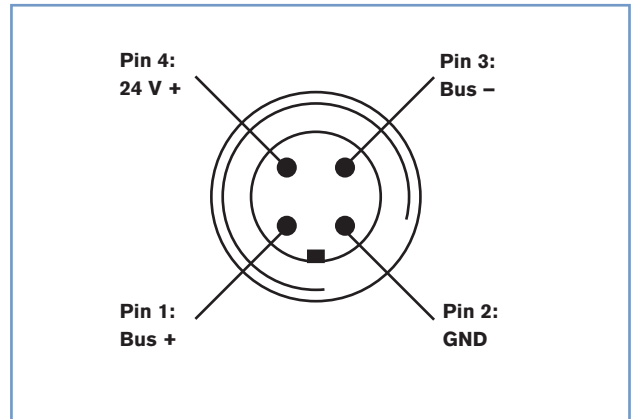
M12 4 pin plug assembled to 80 cm cable and flat cable clip



Plug layout: from front looking at the pins, the solder is behind



**Bus connection without external power supply**



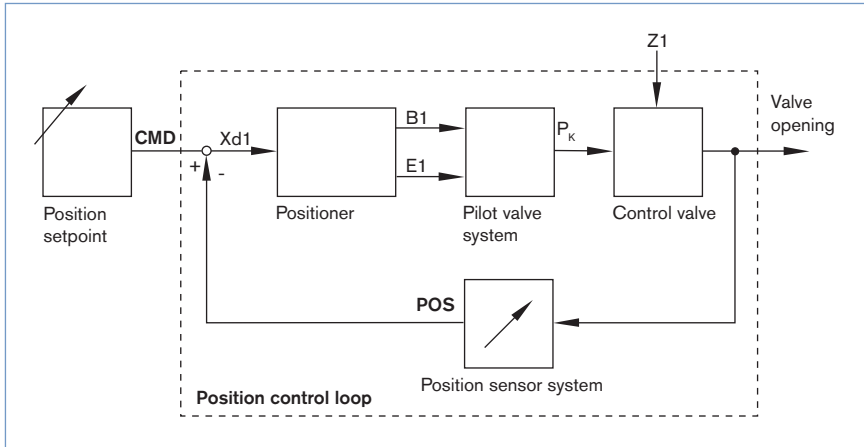
**Bus connection with external power supply (on request)**

Pin	Designation
1	Bus +
2	NC or GND (optional)
3	Bus -
4	NC or 24 V + (optional)



## Signal flow diagram

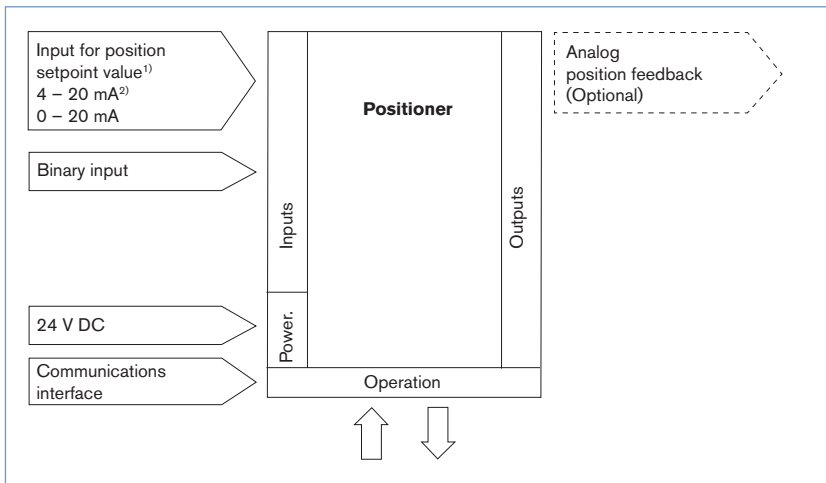
### Position control loop



### TopControl BASIC functions

- X.Tune function for automatic start-up
- Linear
- Close-tight function
- Reversal
- Switching
- Binary input
- Parametrisation of the device through PactWare/DTM main functions:
  - Setpoint value selection (0/4 - 20 mA)
  - Position controller parametrisation
  - Programmable stroke range limit
  - Limitation of opening/closing time
  - Safety position definition
  - Signal error detection
  - Binary input configuration
  - Analogue output configuration position setpoint/feedback
  - Setting setpoint/actuator direction (rise/fall)
  - Reset device

## Schematic diagram of the TopControl BASIC



<sup>1)</sup> or optional bus connection AS interface  
<sup>2)</sup> Default setting

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