



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

- Automatic teach function
- Contact-free position sensor
- Compact stainless steel design
- AS-Interface communication (option)
- Internal control air routing
- With ATEX II cat. 3G/D approval

Type 8694 can be combined with...



**Type 2301**  
Globe control valve



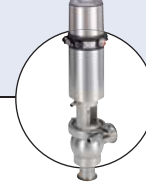
**Type 2300**  
Angle-seat control valve



**Type 2103**  
Diaphragm control valve



**Type 2702**  
Angle-seat 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. Without intrinsic compressed air consumption during steady state.

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.

<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	
<b>Material</b>	Body Cover Sealing
	PPS, stainless steel PC EPDM
<b>Power supply</b>	24 VDC ±10% UL: NEC Class 2
<b>Residual ripple</b>	max. 10%
<b>Setpoint setting</b>	4 to 20mA (0 to 20mA adjustable via communication interface)
<b>Output resistance</b>	180 Ω
<b>Control medium</b>	neutral gases, air DIN ISO 8573-1
	Dust concentration Class 5 (<40µm particle size)
	Particle density Class 5 (<10mg/m <sup>3</sup> )
	Pressure condensation point Class 3 (<-20°C)
	Oil concentration Class 5 (<25mg/m <sup>3</sup> )
<b>Ambient temperature</b>	-10 °C to +55 °C
<b>Pilot air ports</b>	Threaded ports G1/8 stainless steel or push-in connector (tube Ø 6mm / 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~0.1mm)
<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
	Actuator series CLASSIC 27XX
	Low air flow rate : Ø Actuator 80 / 100 mm High air flow rate: Ø Actuator 125 / 175 / 225 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 and IP67 acc. to EN 60529, Type 4X
<b>Protection class</b>	3 according to VDE 0580
<b>Approvals</b>	ATEX II cat. 3G/D cULus Cert. No. 238179
<b>Ignition protection</b>	II 3D Ex tc IIIC T135 °C Dc II 3G Ex nA IIC T4 Gc
<b>Conformity</b>	CE acc. to EMV2004/108/EG
<b>Options</b>	Analogue position feedback, 4-20mA
<b>Communication</b>	AS-Interface (option, in preparation)

**Technical data - cont.**

<b>Without filed bus communication</b>	
<b>Power supply</b>	24 VDC +/- 10% UL: NEC Class 2
<b>Residual ripple</b>	10%
<b>Power consumption</b>	< 3.5W
<b>Electrical connection</b>	M12 (8 pins), stainless steel
Multipole	
Cable gland	1xM16x1.5 (cable Ø5-10), terminal screws (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 VDC acc. to specification UL: NEC Class 2
<b>Max. Current consumption</b>	150 mA
<b>Electrical connection</b>	M12x1, 4-pin stainless steel plug assembled to 80cm cable and flat cable clip

**Ordering information for TopControl-Control valve systems**

A complete **TopControl-Control valve system** consists of a TopControl Basic **Type 8694** and a process valve **Type 23XX or 27XX**. The following information is necessary for the selection of a complete control valve:

- Item no.** of the Positioner TopControl Basic **Type 8694** without process valve, see ordering chart on p. 3
- Item no.** of the desired process valve **Type 23XX or 27XX** (see separate datasheets, e.g. 2300, 2301 or 2702, 2712, 2730)
- Note:** TopControl-Control valve system

When you 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 valves**

**8694 Positioner TopControl Basic**

**Required process valve, example**



2301  
Globe control  
valve



2702  
Angle-seat  
control valve



**Complete control valve  
with required body and  
port connection**



**Valve system  
Continuous ELEMENT  
Type 8802-GD-L  
2301 + 8694**



**Valve system  
Continuous Classic  
Type 8802-YC-L  
2702 + 8694**



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

**More info.**

\*: please see datasheet **8681/ELEMENT** installation kits to 3rd party 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	Communication	Electrical connection	Analogue feedback	Pilot air ports threaded ports	Item no.	
<b>Actuator series ELEMENT Type 23xx, size Ø70/90 mm</b>					<b>Standard</b>	<b>ATEX II cat. 3G/D</b>
Low air capacity single-acting		M12 multipole		G1/8	227 405	265 046
			yes	G1/8	227 406	265 047
		Cable gland		G1/8	227 401	265 044
			yes	G1/8	227 402	265 045
AS-Interface S-7.A.5	M12 connector /flat cable clip / 80cm cable	16 Bit via Bus	G1/8	239 615	265 043	
<b>Actuator series ELEMENT Type 23xx, size Ø130 mm</b>						
High air capacity single-acting		M12 multipole		G1/8	227 426	265 059
			yes	G1/8	227 427	265 060
		Cable gland		G1/8	227 422	265 057
			yes	G1/8	227 423	265 058
AS-Interface S-7.A.5	M12 connector /flat cable clip / 80cm cable	16 Bit via Bus	G1/8	239 616	265 056	
<b>Actuator series CLASSIC Type 27xx, size Ø80/100 mm</b>						
Low air capacity single-acting		M12 multipole		G1/8	227 416	265 053
			yes	G1/8	227 417	265 054
		Cable gland		G1/8	227 411	265 051
			yes	G1/8	227 413	265 052
AS-Interface S-7.A.5	M12 connector /flat cable clip / 80cm cable	16 Bit via Bus	G1/8	239 611	265 050	
<b>Actuator series CLASSIC Type 27xx, size Ø125/175/225 mm</b>						
High air capacity single-acting		M12 multipole		G1/8	227 436	265 065
			yes	G1/8	227 437	265 066
		Cable gland		G1/8	227 432	265 063
			yes	G1/8	227 433	265 064
AS-Interface S-7.A.5	M12 connector /flat cable clip / 80cm cable	16 Bit via Bus	G1/8	239 612	265 062	

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

**i Further versions on request**



**Approvals**  
FM



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

Ordering chart adapter kit (has to be ordered separately)

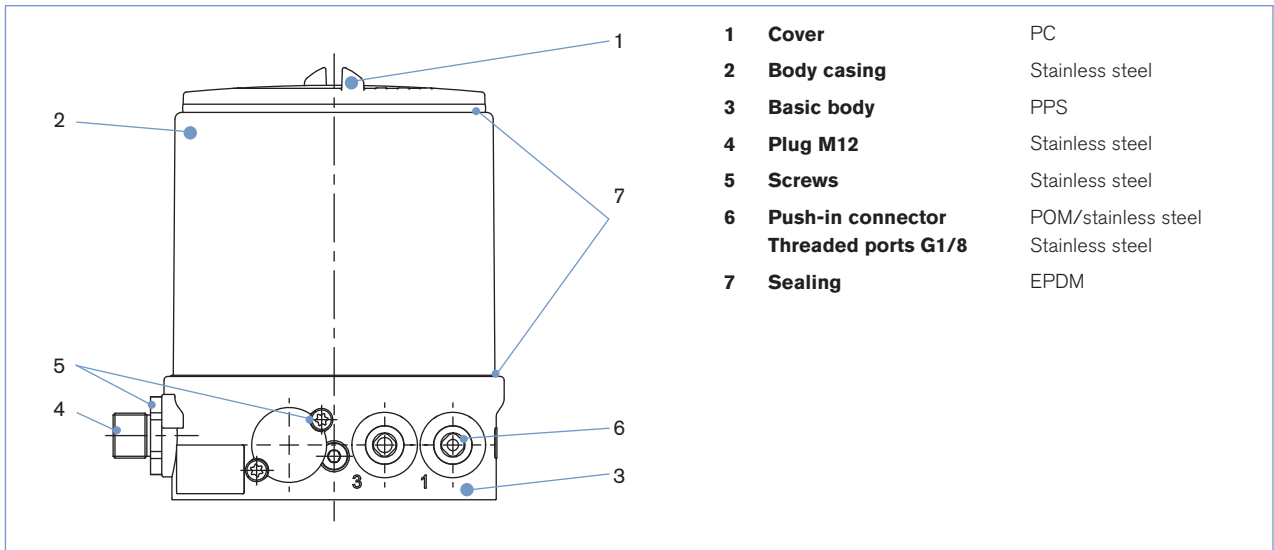
Description	Actuator size	Control function	Item no.
Adapter kit ELEMENT types 23xx	Ø70 / 90 / 130mm	universal	679 917
Adapter kit CLASSIC types 27xx	Ø80mm	universal	679 931
	Ø100mm	universal	679 932
	Ø125mm	A (NO), B (NC)	679 934
	Ø175/225mm	A (NO), B (NC)	679 935

for installation kits to 3rd party process valves please see datasheet 8681/ELEMENT or contact your sales office for related drawings or individual engineering support

Ordering chart accessories

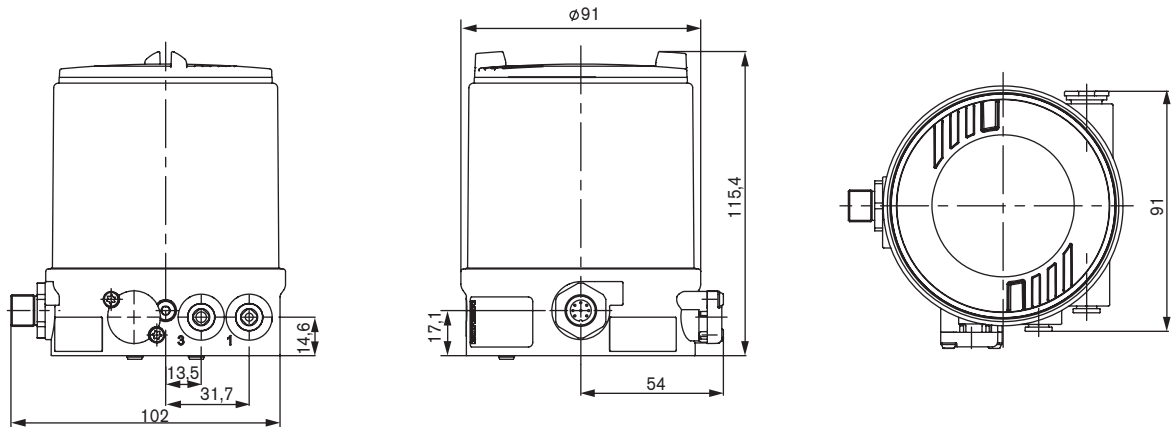
Description	Item no.
M12 socket, 8-pins, 5m assembled cable	919 267
Silencer G1/8	780 779
Silencer, push-in connector	902 662
Sensor puck (spare part)	682 240
USB interface for serial communication	227 093

**Materials**

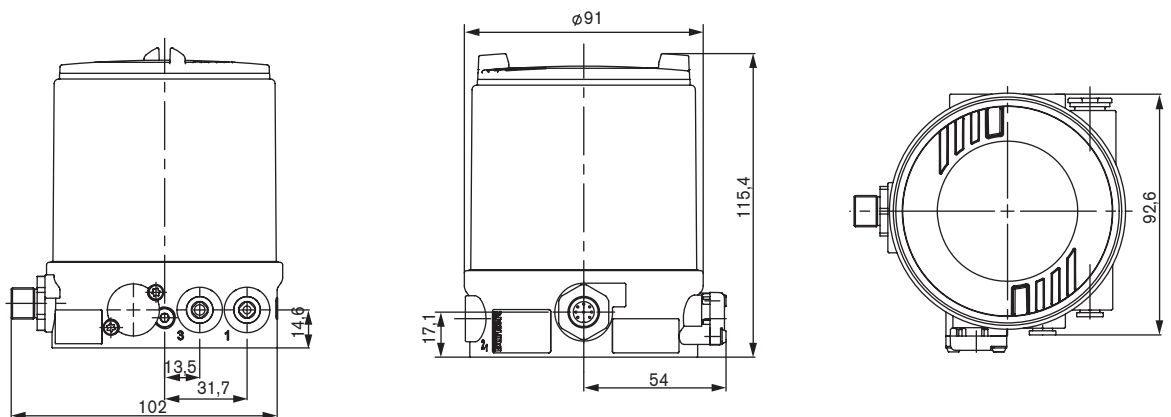


**Dimensions [mm]**

**Mounting on process valve, ELEMENT Types 23xx**



**Mounting on process valve, CLASSIC Types 27xx**



**Mounting on third party hygienic process valves**

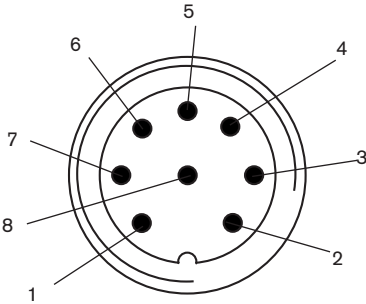


**Customised attachment  
to 3rd party actuators\***

\*: please see datasheet 8681/ELE-  
MENT installation kits to third party  
process valves or contact your sales  
office for related drawings or individual  
engineering support]

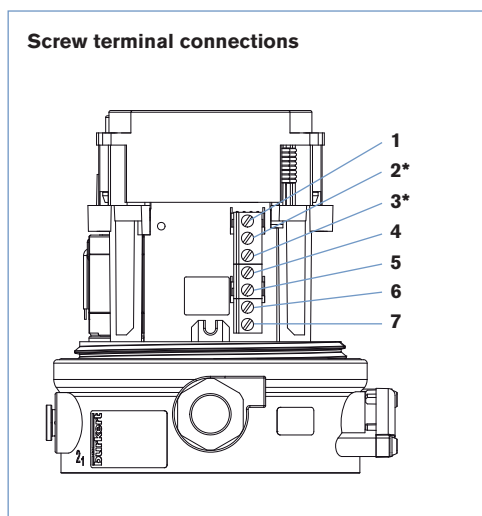
## Connection options

### 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



\* Option only

### Input signal

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

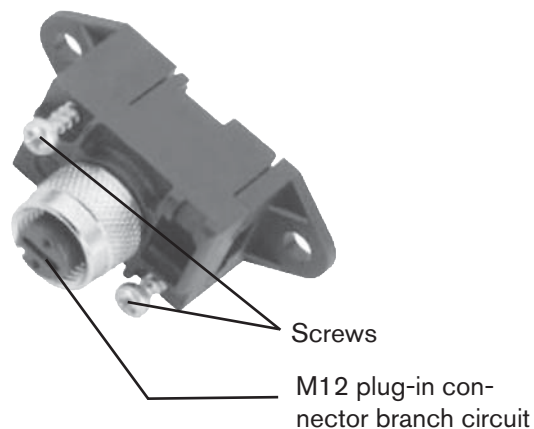
### Output signal with analogue feedback option

Pin	Configuration
2	Analogue feedback +
3	Analogue feedback GND

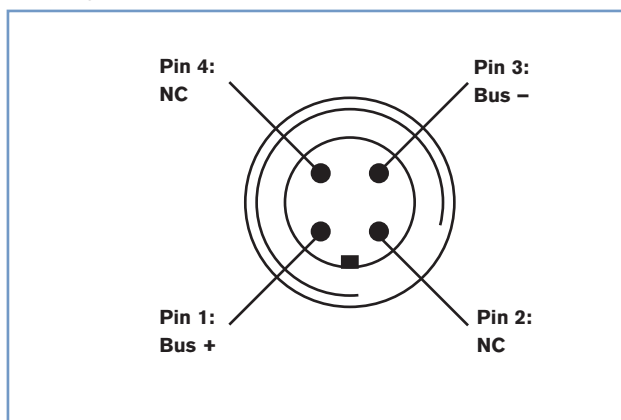
**Connection options (cont.)**

**Connection AS-Interface**

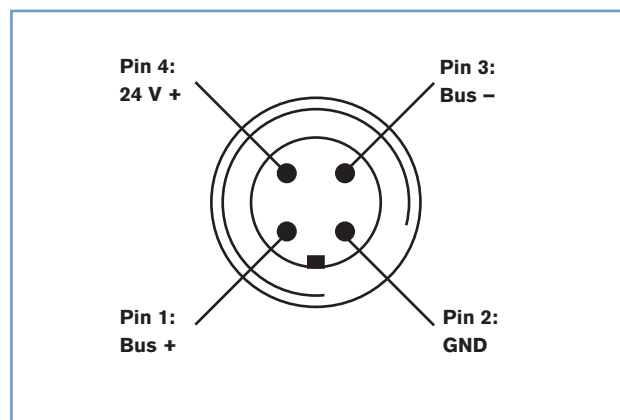
M12 4-pin plug assembled to 80cm cable and flat cable clip



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



**Bus connection without external power supply**



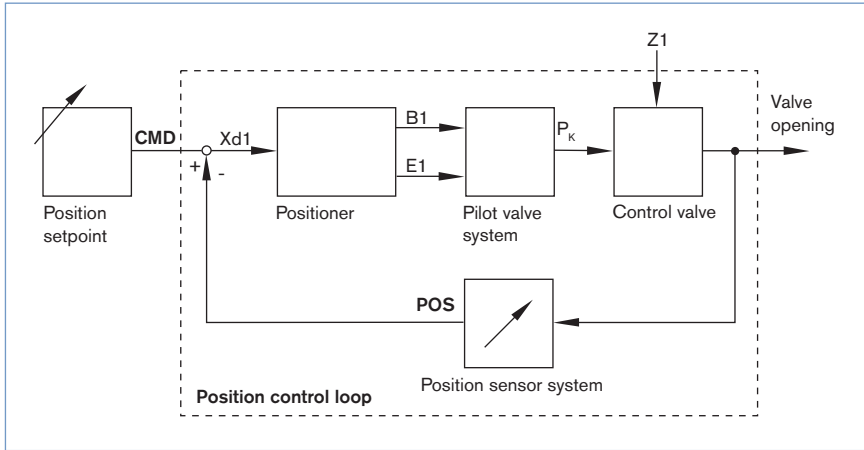
**Bus connection with external power supply (on request)**

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



Signal flow diagram

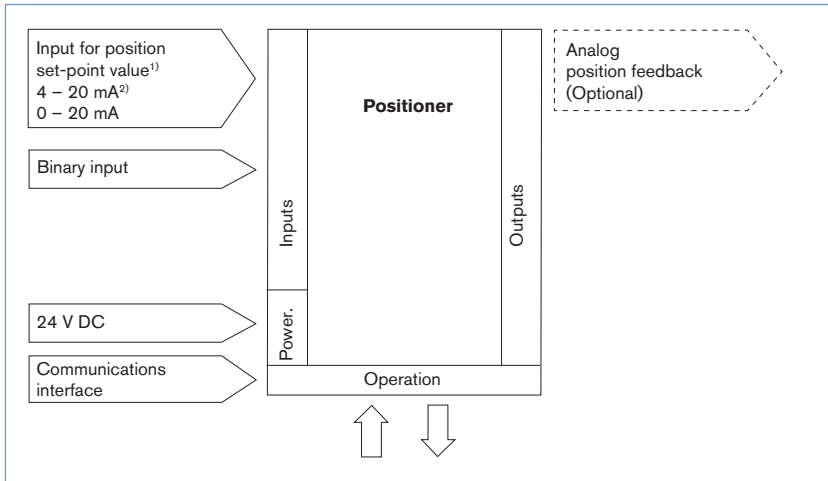
Position control loop



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

DTS 1000110879 EN Version: G Status: RL (released | freigegeben | valide) printed: 19.01.2015

To find your nearest Bürkert facility, click on the orange box → [www.burkert.com](http://www.burkert.com)

In case of special application conditions, please consult for advice.

Subject to alteration.  
© Christian Bürkert GmbH & Co. KG

1412/7\_EU-en\_00895044