



## Pneumatic Control Unit for the integrated mounting on process valves

- Compact design
- Pilot valve with high air flow rate
- Internal control air channel
- Visual position indicator
- Air supply filter

Type 8690 can be combined with...



**Type 2100**

Angle seat valve



**Type 2101**

Globe valve



**Type 2103**

Diaphragm valve



**Type 2000**

Angle seat valve

The 8690 pneumatic control unit is optimised for integrated mounting on the 21XX process valve series. Mechanical or inductive limit switches register the position of the valve. The integrated pilot valve controls single or double-acting actuators.

The design of the control unit and the actuator enables an internal control air channel without external tubings. Besides the electrical position feedback signal the status of the device is shown directly on the control head itself.

The housing is easy to clean and features proven electrical IP protection and chemically resistant materials for use in hygienic processing, in food, beverage and pharmaceutical industries. Combined with Bürkert ELEMENT actuators the unique pilot valve system enables a compressed air recycling that avoids actuator chambers contamination from the environment.

### Technical Data

<b>Material</b>	
Body	PPS
Cover	PC
Sealing	EPDM
<b>Operating voltage</b>	
Pilot valve	24 V DC $\pm 10\%$ residual ripple 10 % DC Consumption 1W max. 24 VDC, max. 2A
Micro switch	10 to 24 VDC, max. 100mA ext. load per initiator
Initiator	According to Fieldbus specification
<b>Control medium</b>	
Dust concentration	Neutral gases, air DIN ISO 8573-1
Particle density	Class 5 (<40 $\mu$ m particle size)
Pressure condensation point	Class 5 (<10mg/m <sup>3</sup> )
Oil concentration	Class 3 (<-20°C) Class 5 (<25mg/m <sup>3</sup> )
<b>Supply pressure</b>	3 to 7 bar <sup>1)</sup>
<b>Air input filter</b>	
Mesh aperture	Exchangeable ~0.1mm
<b>Pilot air ports</b>	Threaded ports G1/8, stainless steel Push-in connector (External $\varnothing$ 6 mm or 1/4" )
<b>Position feedback</b>	1 or 2x micro switch (24 VDC) 1 or 2x initiator 3-wires (24 VDC) 1 or 2x initiator NAMUR (8 VDC) (ATEX II 2G Ex ia IIC T6)
<b>Stroke range valve spindle</b>	
Micro switch	7 to 28 mm
Initiator	2 to 28 mm
<b>Ambient temperature</b>	
with pilot valve	0 to +55 °C
Without pilot valve	-10 to 50 °C
<b>Installation</b>	As required, preferably with actuator in upright position
<b>Protection class</b>	IP65 and IP67 acc. to EN 60529 (NEMA4x in preparation)
<b>Protection class</b>	3 acc. to VDE 0580
<b>Conformity</b>	According to CE in compliance with EMV2004/108/EG
<b>Electrical connection</b>	
Multipole	M12, 8-pole
Cable gland	M16x1,5 (cable- $\varnothing$ 10mm), screw terminals (1,5mm <sup>2</sup> )

<sup>1)</sup> The supply pressure has to be 0,5 - 1 bar above the minimum required pilot pressure for the valve actuator.

## Ordering information for process valve system with integrated pneumatic control unit

A complete process valve system consists of a pneumatic control unit Type 8690 and a process valve Type 21xx or 20xx.

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

- **Item no.** of the desired pneumatic control unit **Type 8690** (see Ordering chart on p. 3)

- **Item no.** of the selected process valve **Type 21xx or Type 20xx**

(see separate datasheet for e.g. Types 2100, 2101, 2103 and 2000, 2012, 2031)

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 for process valve systems

**Pneumatic control unit**  
**Type 8690**

**Desired process valve, example**



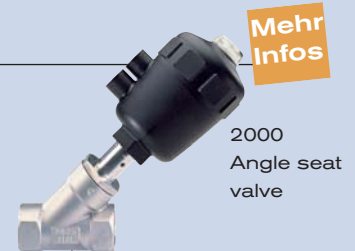
Mehr  
Infos

2100  
Angle seat  
valve



Mehr  
Infos

2103  
Diaphragm  
valve



Mehr  
Infos

2000  
Angle seat  
valve

### Complete process valve system



**Valve system**  
**On/Off ELEMENT**  
**Type 8801-YE-K**  
**2100 + 8690**



**Valve system**  
**On/Off ELEMENT**  
**Type 8801-DF-K**  
**2103+8690**



**Valve system**  
**On/Off Classic**  
**Type 8801-YA-K**  
**2000 + 8690**

## Ordering chart pneumatic control unit Type 8690 (other versions on request)

Electrical connection	Position feedback		Control function pilot valve system	Pilot air ports	Item no. Actuator series ELEMENT Type 21xx	Item no. Actuator series CLASSIC Type 20xx	
<b>Inductive proximity switch</b>							
<b>M12 Connection</b>	2 Inductive switches 24 VDC PNP	open/ closed	single-acting (NO/NC)	Threaded ports G1/8	227 222	227 226	
			single-acting (NO/NC)	Push-in connector external ø 6 mm or 1/4"	227 223	227 227	
		none	double-acting (springless)	Push-in connector external ø 6 mm or 1/4"	227 206	247 084	
			Threaded ports G1/8	227 190	na		
			Push-in connector external ø 6 mm or 1/4"	227 191	na		
			none	none	na	227 193	
	1 Inductive switch 24 VDC PNP	open/ closed	single-acting (NO/NC)	Threaded ports G1/8	227 218	na	
			single-acting (NO/NC)	Push-in connector external ø 6 mm or 1/4"	227 219	na	
		none	double-acting (springless)	Push-in connector external ø 6 mm or 1/4"	227 204	na	
			Push-in connector external ø 6 mm or 1/4"	227 187	na		
			none	na	228 286		
			none	na	228 286		
	<b>Cable gland</b>	2 Inductive switches 24 VDC PNP	open/ closed	single-acting (NO/NC)	Threaded ports G1/8	227 220	227 224
				single-acting (NO/NC)	Push-in connector external ø 6 mm or 1/4"	227 221	227 225
none			double-acting (springless)	Push-in connector external ø 6 mm or 1/4"	227 205	na	
			double-acting (springless)	Threaded ports G1/8	na	227 207	
			Threaded ports G1/8	227 189	na		
			none	none	na	227 192	
1 Inductive switch 24 VDC PNP		open/ closed	single-acting (NO/NC)	Threaded ports G1/8	227 216	na	
			single-acting (NO/NC)	Push-in connector external ø 6 mm or 1/4"	227 217	245 356	
		none	double-acting (springless)	Push-in connector external ø 6 mm or 1/4"	227 203	na	
			none	na	227 188		
2 Inductive switches NAMUR 2-wire 8 VDC II 2G Ex ia IIC T6		open/ closed	single-acting (NO/NC)	Threaded ports G1/8	204 185	204 191	
			single-acting (NO/NC)	Push-in connector external ø 6 mm or 1/4"	204 188	204 194	
		none	double-acting (springless)	Threaded ports G1/8	204 186	204 192	
			Threaded ports G1/8	204 182	na		
			Push-in connector external ø 6 mm or 1/4"	204 187	na		
			none	na	204 190		
none		open/ closed	single-acting (NO/NC)	Threaded ports G1/8	225 883	na	
			single-acting (NO/NC)	Push-in connector external ø 6 mm or 1/4"	227 215	225 231	

## Ordering chart pneumatic control unit Type 8690 (other versions on request)

Electrical connection	Position feedback		Control function pilot valve system	Pilot air ports	Item no. Actuator series ELEMENT Type 21xx	Item no. Actuator series CLASSIC Type 20xx		
<b>micro switch feedback</b>								
<b>M12 Connection</b>	2 micro switches	open/ closed	single-acting (NO/NC)	Threaded ports G1/8	227 234	227 238		
			single-acting (NO/NC)	Push-in connector external ø 6 mm or 1/4"	227 235	227 239		
			double-acting (springless)	Push-in connector external ø 6 mm or 1/4"	227 212	na		
			none	Push-in connector external ø 6 mm or 1/4"	227 197	na		
			none	none	na	227 200		
	1 micro switch	open	single-acting (NO/NC)	Threaded ports G1/8	227 230	na		
			single-acting (NO/NC)	Push-in connector external ø 6 mm or 1/4"	227 231	na		
			double-acting (springless)	Push-in connector external ø 6 mm or 1/4"	227 210	na		
			none	Push-in connector external ø 6 mm or 1/4"	227 194	na		
			none	none	na	228 282		
			<b>Cable gland</b>					
			2 micro switches	open/ closed	single-acting (NO/NC)	Threaded ports G1/8	227 232	227 236
single-acting (NO/NC)	Push-in connector external ø 6 mm or 1/4"	227 233			227 237			
double-acting (springless)	Threaded ports G1/8	na			227 213			
double-acting (springless)	Push-in connector external ø 6 mm or 1/4"	227 211			na			
none	Threaded ports G1/8	227 195			na			
none	Push-in connector external ø 6 mm or 1/4"	227 196			na			
1 micro switch	open	none		none	na	227 198		
		single-acting (NO/NC)		Threaded ports G1/8	227 228	na		
		single-acting (NO/NC)		Push-in connector external ø 6 mm or 1/4"	227 229	na		
		double-acting (springless)		Push-in connector external ø 6 mm or 1/4"	227 209	na		
		none	Threaded ports G1/8	233 344	na			
		none	none	na	228 284			

 Further versions on request

 Approvals  
CSA

 Additional  
NEMA4X

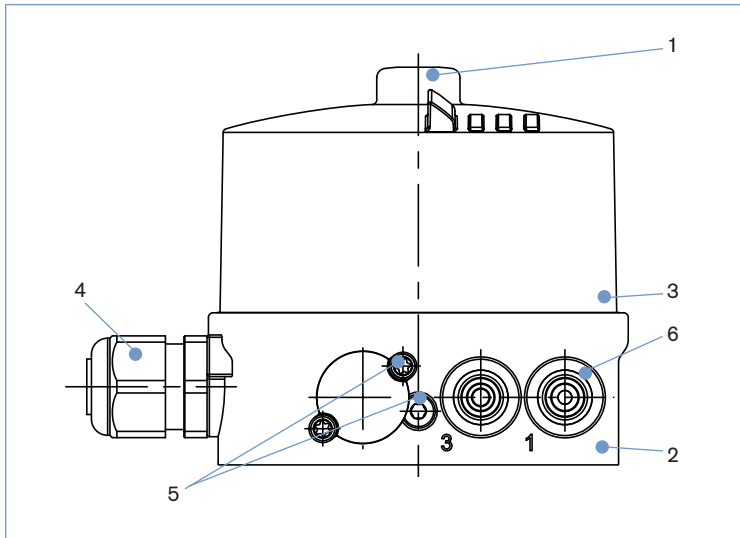
**Ordering chart adapter kit** (has to be ordered separately)

Description	Actuator size	Control function	Item no.
Adapter kit ELEMENT Type 21xx	Ø70/90/130 mm	Universal	665 720
Adapter kit CLASSIC Type 20xx	Ø63 mm	Universal	673 262
		feedback (without pilot valve)	677 203
	Ø80 mm	universal	673 263
		feedback (without pilot valve)	677 204
	Ø100 mm	Universal	673 264
		feedback (without pilot valve)	677 205
	Ø125 mm	Universal	674 513
		feedback (without pilot valve)	677 205
Ø175/225 mm	Universal	see Control Unit, Type 8691	
	feedback (without pilot valve)	see Control Unit, Type 8697	

**Accessories**

Description	Item no.
M12 socket, 8-pins, 2 m assembled cable	919 061
M12 socket, 8-pins, 5 m assembled cable	919 267
M12 socket, 4-pins, 5 m assembled cable	918 038
M12 socket, 5-pins, 2 m assembled cable	438 680
ASI flat cable clip with stainless steel socket M12 (spare part)	799 646
Silencer G1/8	780 779
Silencer, push-in connector	902 662

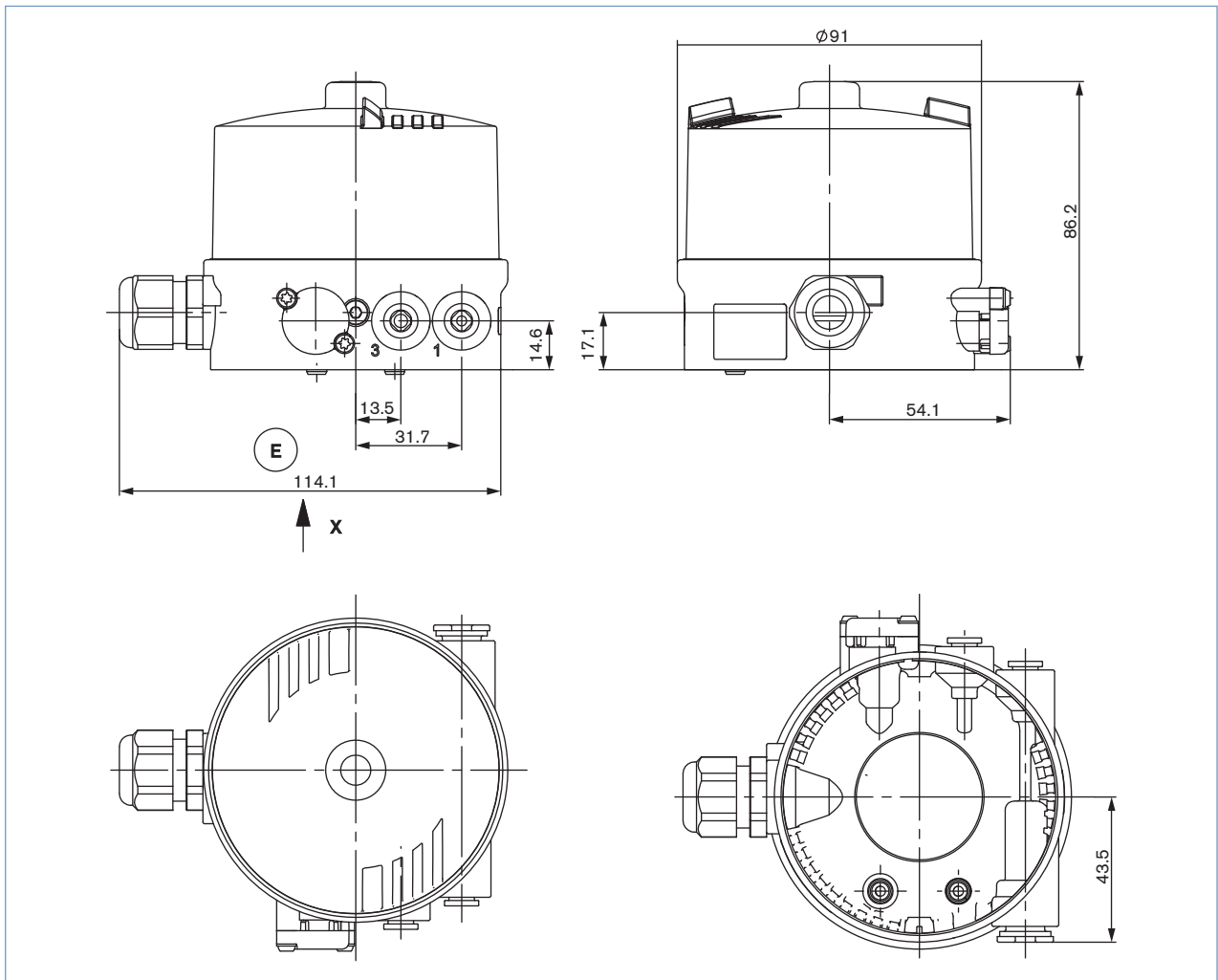
## Materials



<b>1</b>	Transparent cap	PC
<b>2</b>	Basic body	PPS
<b>3</b>	Sealing	EPDM
<b>4</b>	Cable connection plug	PA M12 St. st.
<b>5</b>	Screws	StSt
<b>6</b>	Push-in connector	POM/St. st.
	Threaded ports G1/8	StSt

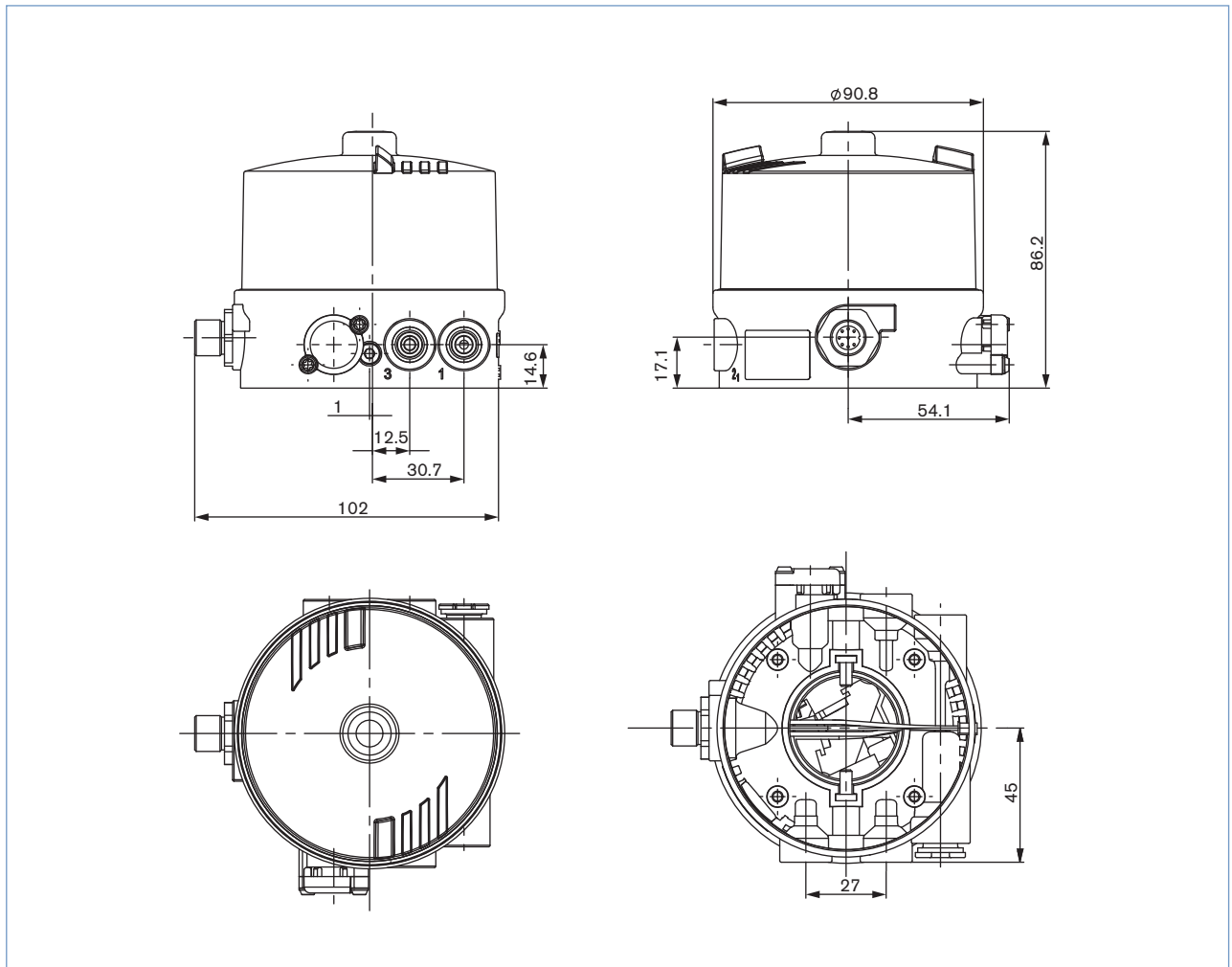
## Dimensions [mm]

Mounting on process valve, ELEMENT Type 21xx



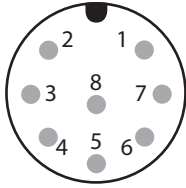
**Dimensions [mm]**

Mounting on process valve, CLASSIC Type 20xx



## Connection options

### Multipole, plug M12 8-pins



#### Plug configuration 24 V with micro switch

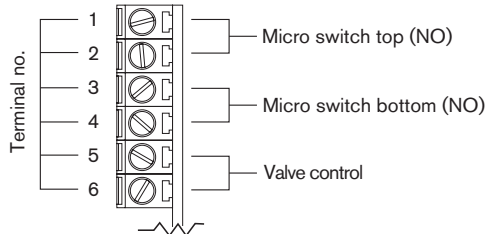
Pin no.	Configuration	External Circuitry
1	Micro switch top (NO)	Micro switch top (NO)
3		Micro switch top (NO)
2	Micro switch bottom (NO)	Micro switch bottom (NO)
4		Micro switch bottom (NO)
5	Valve control 0/24 V	0/24 V DC $\pm$ 10 % Residual ripple 10 %
6	Valve control GND	
7	Not configured	
8	Not configured	

#### Plug configuration with initiator

Pin no.	Configuration
1	INI 1 OUT Output
2	INI 2 OUT Output
3	INI - (GND) Supply
4	INI + (24 V DC) Supply
5	Valve control 0 / 24 V DC
6	Valve control GND

### Cable gland

M16 x 1,5 (cable- $\varnothing$  10 mm), screw terminals (1,5 mm<sup>2</sup>)



#### Port configuration 24 V with micro switch

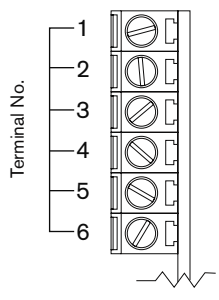
Pin no.	Configuration	External Circuitry
1	Micro switch top (NO)	Micro switch top (NO)
2		Micro switch top (NO)
3	Micro switch bottom (NO)	Micro switch bottom (NO)
4		Micro switch bottom (NO)
5	Valve control 0/24 V	0/24 V DC $\pm$ 10 % Residual ripple 10 %
6	Valve control GND	

#### Port configuration with initiator

Clamp no.	Configuration
1	INI - (GND) Supply
2	INI 1 OUT Output
3	INI 2 OUT Output
4	INI + (24 V DC) Supply
5	Valve control 0 / 24 V DC
6	Valve control GND



## Port configuration with 2-Wire inductive proximity switches NAMUR



Clamp no.	Configuration	External Switching
1	INI Top +	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Ex protection area</p> <p>NAMUR-Sensor</p> </div> <div style="width: 45%; border-left: 1px dashed black; padding-left: 10px;"> <p>non-explosive area</p> <p>+8,2 V DC</p> <p>0 V</p> </div> </div>
2	INI Top -	
3	INI Bottom +	
4	INI Bottom -	
5	Valve control +	
6	Valve control GND	

Tab. 4: Pin Assignment with 2 Wire initiator

<sup>1)</sup> (acc. to Namur recommendation ) also note the certificate of Fa. Turck KEMA 02 ATEX 1090X

<sup>2)</sup> Signal from barriers see PTB 07 ATEX 2048