



Pneumatic control unit for decentralized automation of ELEMENT process valves

- Compact design
- Integrated pilot valve with manual override
- Integrated control air routing
- Visual position indicator
- With ATEX II cat. 3G/D and cat. 2D/G approval

Type 8690 can be combined with...



Type 2100

Angle seat valve



Type 2101

Globe valve



Type 2103

Diaphragm valve

The pneumatic control unit Type 8690 is designed for decentralized automation of ELEMENT Type 21xx pneumatic process valves. 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 unit itself.

The housing is easy to clean and features proven 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	
Material - Body Cover Sealing	PPS PC EPDM
Operating voltage * Pilot valve Micro switch Initiator	24 V DC $\pm 10\%$ residual ripple 10 % DC Consumption 1 W max. 24 V DC, max. 2 A 10 to 24 V DC, max. 100 mA ext. load per initiator According to Fieldbus specification
Control medium Dust concentration Particle density Pressure condensation point Oil concentration	neutral gases, air, quality classes acc. to ISO 8573-1 Class 7 (<40 μm particle size) Class 5 (<10 mg/m^3) Class 3 (<-20 °C) Class X (<25 mg/m^3)
Supply pressure	3 to 7 bar ¹⁾
Air input filter Mesh aperture	Exchangeable ~0.1 mm
Pilot air ports	Threaded ports G 1/8, stainless steel or push-in connector (tube \varnothing 6 mm or 1/4")
Position feedback	1 or 2x micro switch (24 V DC) 1 or 2x initiator 3-wires (24 V DC) 1 or 2x initiator NAMUR (8 V DC) (ATEX II 2G Ex ia IIC T6)
Stroke range valve spindle Micro switch Initiator	7 to 28 mm 2 to 28 mm
Ambient temperature with pilot valve without pilot valve	-10 to +55 °C -20 to +60 °C
Installation	As required, preferably with actuator in upright position
Protection type	IP65/IP67 acc. to EN 60529, Type 4X acc. to NEMA 250 standard
Protection class	3 acc. to DIN EN 61140
Conformity	EMC directive 2014/30/EU
Approvals	ATEX II cat. 3G/D and cat. 2D/G cULus Cert. No. 238179
Ignition protection:	II 3D Ex tc IIIC T135°C Dc II 3G Ex nA IIC T4 Gc II 2G Ex ia IIC T* Gb II 2D Ex ia IIIC T135°C Db IP64
Electrical connection Multipole Cable gland	M12, 8-pole M16x1,5 (cable- \varnothing 10 mm), screw terminals (1,5 mm^2)

* Supply voltage according to UL NEC Class 2 for versions with cULus approval.

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

Ordering information for decentralized automation of On/Off ELEMENT valve systems

A decentralized, automated valve system consists of **pneumatic control unit Type 8690** and a **process valve ELEMENT Type 21xx**.

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** (see separate datasheets, Type 2100, 2101, 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 for decentralized automation of On/Off ELEMENT valve systems

Pneumatic control unit Type 8690



Pneumatic process valves

More info.



Angle seat valve
Type 2100

More info.



Globe valve
Type 2101

More info.



Diaphragm valve
Type 2103

On/Off ELEMENT valve system



Valve system
Type 8801-YE-U
2100 + 8690



Valve system
Type 8801-GC-U
2101+8690



Valve system
Type 8801-DF-U
2301+8690

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

Pneumatic control unit for decentralized automation of ELEMENT On/Off process valves Type 21xx

End position feedback			Electrical connection	Control function	Pilot air ports threaded ports	Standard	Item no.	
Inductive switch 24 V DC PNP	Inductive switch NAMUR 2-wire 8 V DC Ex ia IIC T6	Micro switch 24 V DC					ATEX II cat. 3G/D	ATEX II cat. 2G/D
2			M12 multipole	single-acting	G 1/8	227 222	264 968	
2				double-acting	G 1/8	264 939	264 957	
2					G 1/8	227 190	264 949	
2			Cable gland	single-acting	G 1/8	227 220	264 967	
2				double-acting	G 1/8	264 941	264 956	
2					G 1/8	227 189	264 948	
1			M12 multipole	single-acting	G 1/8	227 218	264 964	
1				double-acting	G 1/8	264 940	264 953	
1					G 1/8	265 151	264 945	
1			Cable gland	single-acting	G 1/8	227 216	264 963	
1				double-acting	G 1/8	264 942	264 952	
1					G 1/8	265 154	264 944	
	2			single-acting	G 1/8			265 143
	2			double-acting	G 1/8			265 144
	2				G 1/8			265 142
		2	M12 multipole	single-acting	G 1/8	227 234		
		1			G 1/8	227 230		
		2	Cable gland	single-acting	G 1/8	227 232		
		2			G 1/8	227 195		
without end position feedback			Cable gland	single-acting	G 1/8	225 883	264 961	
				double-acting	G 1/8	265 156	265 935	

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")

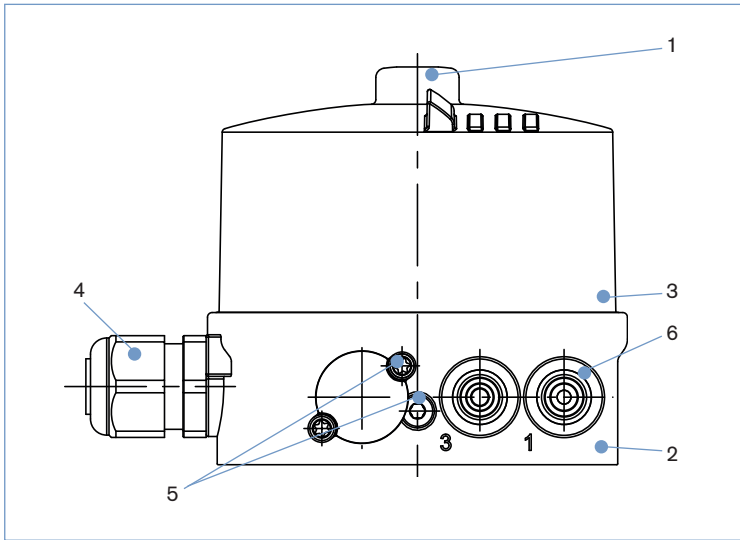
Ordering chart adapter kit (has to be ordered separately)

Description	Actuator size	Control function	Item no.
Adapter kit ELEMENT Type 21xx	Ø 70/90/130 mm	Universal	665 720

Accessories

Description	Item no.
M12 socket 8-pin with 5 m cable for power supply and input/output signals	919 267
ASI flat cable clip with stainless steel socket M12 (spare part)	799 646
Silencer G 1/8	780 779
Silencer, push-in connector	902 662

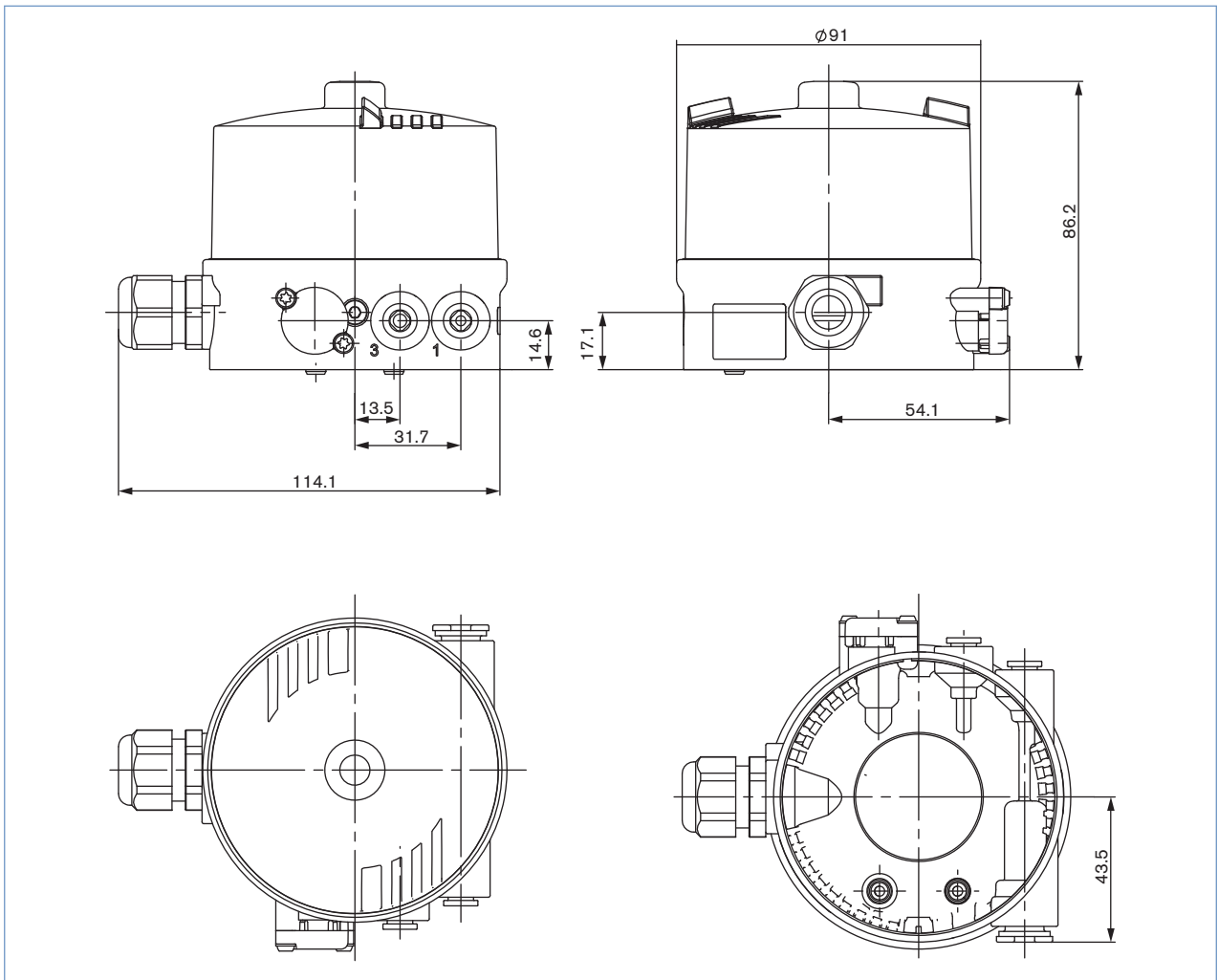
Materials



- 1 Transparent cap** PC
- 2 BASIC body** PPS
- 3 Sealing** EPDM
- 4 Cable connection Plug** PA
M12 Stainless steel
- 5 Screws** Stainless steel
- 6 Push-in connector** POM/Stainless steel
- Threaded ports G 1/8** Stainless steel

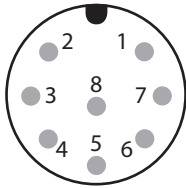
Dimensions [mm]

Mounting on process valve, ELEMENT Type 21xx



Connection options

Multipole, plug M12 8-pins



Plug configuration 24 V with micro switch

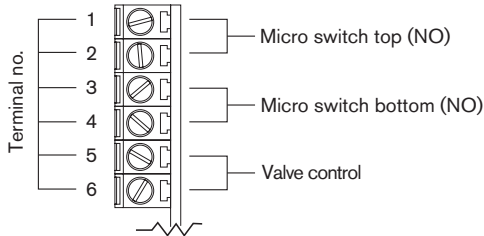
Pin no.	Configuration	External Circuitry
1	Micro switch top (NO)	Micro switch top (NO)
3		
2	Micro switch bottom (NO)	Micro switch bottom (NO)
4		
5	Valve control 0/24 V	0/24 V DC ± 10 % Residual ripple 10 %
6	Valve control GND	
7	Not configured	
8	Not configured	

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-ø 10 mm), screw terminals (1,5 mm²)



Port configuration 24 V with micro switch

Pin no.	Configuration	External circuitry
1	Micro switch top (NO)	1 Micro switch top (NO)
2		
3	Micro switch bottom (NO)	3 Micro switch bottom (NO)
4		
5	Valve control 0/24 V	0/24 V DC ± 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> </div> <div style="width: 45%;"> <p>non-explosive area</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

¹⁾ (acc. to NAMUR recommendation) also note the certificate of Fa. Turck KEMA 02 ATEX 1090X

²⁾ Signal from barriers see PTB 07 ATEX 2048

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In case of special application conditions, please consult for advice

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