



Pneumatic control for decentralised automation of ELEMENT process valves

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

Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

	Type 2100 ▶ Pneumatically operated 2/2 way angle seat valve ELEMENT for decentralized automation
	Type 2101 ▶ Pneumatically operated 2/2 way globe valve ELEMENT for decentralized automation
	Type 2103 ▶ 2/2 way diaphragm valve with pneumatic stainless steel actuator (Type ELEMENT) for decentralized automation

Type description

The pneumatic control unit Type 8690 is designed for decentralised automation of ELEMENT Type 21xx pneumatic process valves. Mechanical or inductive limit switches register the valve position. The integrated pilot valve controls single or double-acting actuators.

The design of the control unit and the actuator enables an internal control air routing without external tubings. Besides the electrical position feedback, the status of the device is shown directly on the pneumatic 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. Focused on wash down applications, the IP protection of the housing is supported by a positive pressure inside the control head.

Combined with Bürkert ELEMENT actuators, the pneumatic actuating system enables spring chamber aeration that avoids actuator chamber contamination from the environment.

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1. General technical data

Product properties	
Dimensions	Detailed information can be found in chapter “3. Dimensions” on page 5.
Material	
Body	PPS
Seals	EPDM
Cover	PC
Commissioning	
Setting valve end positions	Manual
Manual override Pilot valve	Yes
Status display	
Display of device and valve status	Optical
Optical position indicator (mechanical)	Yes
Position sensor/Position feedback	
Position feedback	
Micro switch	1 or 2x Micro switch (24 V DC)
Initiator	1 or 2x Initiator 3 wire (24 V DC) 1 or 2x Initiator NAMUR (8 V DC) (ATEX II 2G Ex ia IIC T6)
Stroke range for linear actuators	
Valve spindle - Micro switch	7...28 mm
Valve spindle - Initiator	2...28 mm
Electrical data	
Operating voltage	
Pilot valve	24 V DC $\pm$ 10 %, residual ripple 10 % DC; power consumption 1 W
Micro switch	Max. 24 V DC, max. 2 A
Initiator	10...24 V DC, max. 100 mA ext. load per initiator
Protection class	3 acc. to DIN EN 61140
Power consumption	<1 W
Electrical connection	
Multipole	M12, 8 pin
Cable gland	M16 x 1.5 (cable $\varnothing$ 5...10 mm) with screw terminals for cable cross sections 0.14...1.5 mm ²
Pneumatic data	
Control medium	
Dust content	Neutral gases, air, quality class acc. to ISO 8573-1 Class 7 (<40 μ m particle size)
Particle density	Class 5 (<10 mg/m ³)
Pressure dew point	Class 3 (<-20 °C)
Oil content	Class X (<25 mg/m ³)
Air supply filter	
Mesh size	Exchangeable ~0.1 mm
Supply pressure	3...7 bar ¹⁾
Pilot air ports	Threaded connection G 1/8 stainless steel or push-in connector (pipe $\varnothing$ 6 mm / 1/4")
Actuating system	
Circuit function	Single and double-acting
Actuator series/size	Type 21xx, $\varnothing$ actuator 70/90/130 mm

Approvals and certificates

Protection class	3 acc. to DIN EN 61140
Conformity	EMC directive 2014/30/EU
Ignition protection	II 3D Ex tc IIIC T135 °C Dc II 3G Ex ec IIC T4 Gc II 2G Ex ia IIC T* Gb II 2D Ex ia IIIC T135 °C Db IP64
UL	cULus certificate; E238179
ATEX	II 3D Ex tc IIIC T135 °C Dc II 3G Ex ec IIC T4 Gc Certificate; BVS 14 ATEX E 008 X II 2D Ex ia IIIC T135 °C IP64 II 2G Ex ia IIC T* Gb Certificate; BVS 14 ATEX E052 X
IECEX	Ex tc IIIC T135 °C Dc / Ex ec IIC T4 Gc Certificate; IECEX BVS 14.0009 X Ex ia IIIC T135 °C IP64 / Ex ia IIC T* Gb Certificate; IECEX BVS 14.0035 X

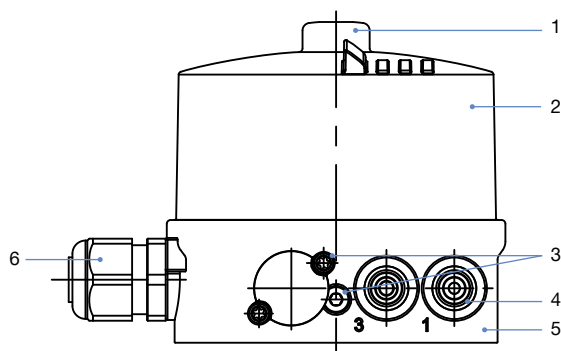
Environment and installation**Installation and mechanical data**

Installation position	As required, preferably with actuator in upright position
Valve actuator (type, size)	ELEMENT Type 21xx (actuator size Ø 70/90/130 mm)
Adapter kits	Detailed information can be found in chapter “Adapter kits” on page 11.

Operating conditions**Ambient temperature (max.)**

With pilot valve	-10...+55 °C
Without pilot valve	-20...+60 °C
Degree of protection	IP65/IP67 acc. to EN 60529, 4X acc. to NEMA 250 Standard
Operating altitude	Up to 2000 m above sea level

1.) The supply pressure must be 0.5...1 bar above the minimum required pilot pressure of the valve actuator.

2. Materials**2.1. Material specifications**

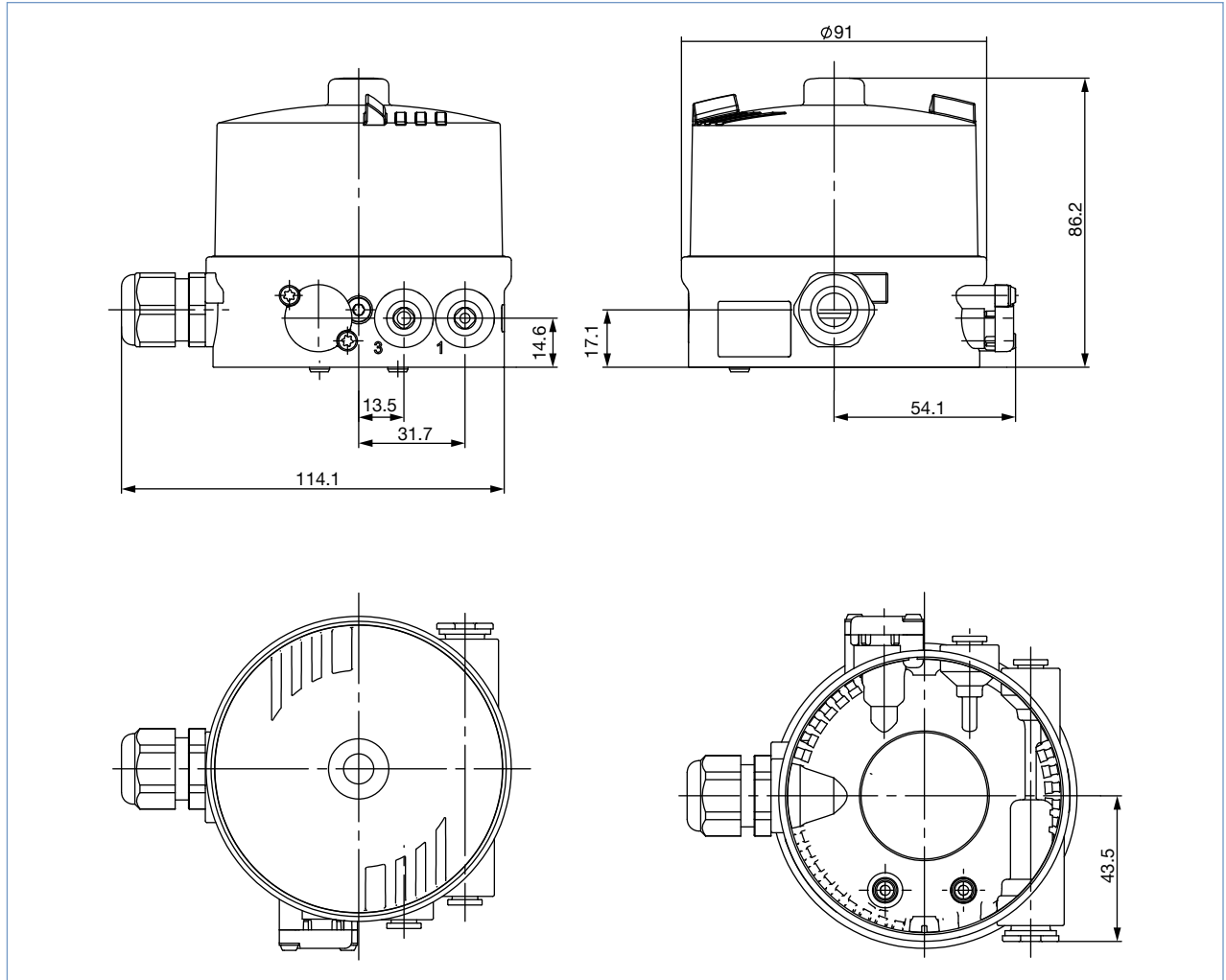
No.	Element	Material
1	Optical position indicator	PC
2	Seals	EPDM
3	Screws	Stainless steel
4	Push-in connector Threaded ports G 1/8	POM/Stainless steel Stainless steel
5	Basic housing	PPS
6	Cable gland, plug connector	PA M12 Stainless steel

3. Dimensions

3.1. Mounting on process valve ELEMENT Type 21xx

Note:

Dimensions in mm

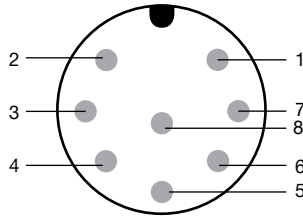


4. Device/Process connections

4.1. Electrical connections

Multipole connection

Circular plug M12, 8 pin



Plug configuration 24 V with micro switch

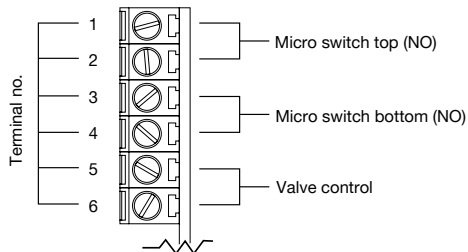
Pin	Assignment	Outer circuitry	
1	Micro switch top (NO)		Micro switch top (NO)
2			Micro switch top (NO)
3	Micro switch bottom (NO)		Micro switch bottom (NO)
4			Micro switch bottom (NO)
5	Valve control 0/24 V		0/24 V DC $\pm 10\%$ Residual ripple 10 %
6	Valve control GND		
7	Not assigned	–	
8	Not assigned	–	

Plug configuration with initiator

Pin	Assignment
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 connection

M16 x 1.5 (cable Ø 10 mm), screw terminals (1.5 mm²)

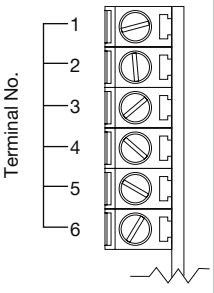
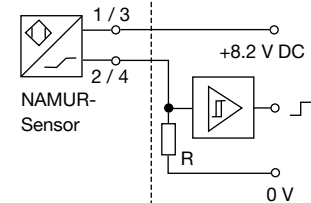


Port configuration 24 V with Micro switch

Pin	Assignment	Outer 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

Pin	Assignment
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-Initiator NAMUR		
	Port configuration with 2 wire Initiator	
	Pin	Assignment
	1	INI Top +
	2	INI Top -
	3	INI Bottom +
	4	INI Bottom -
	5	Valve control +
	6	Valve control GND
	Outer circuitry	
Ex protection area		Non-explosive area
1.)		
2.)		
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		

5. Product installation

5.1. Combination options with pneumatic process valves

Note:

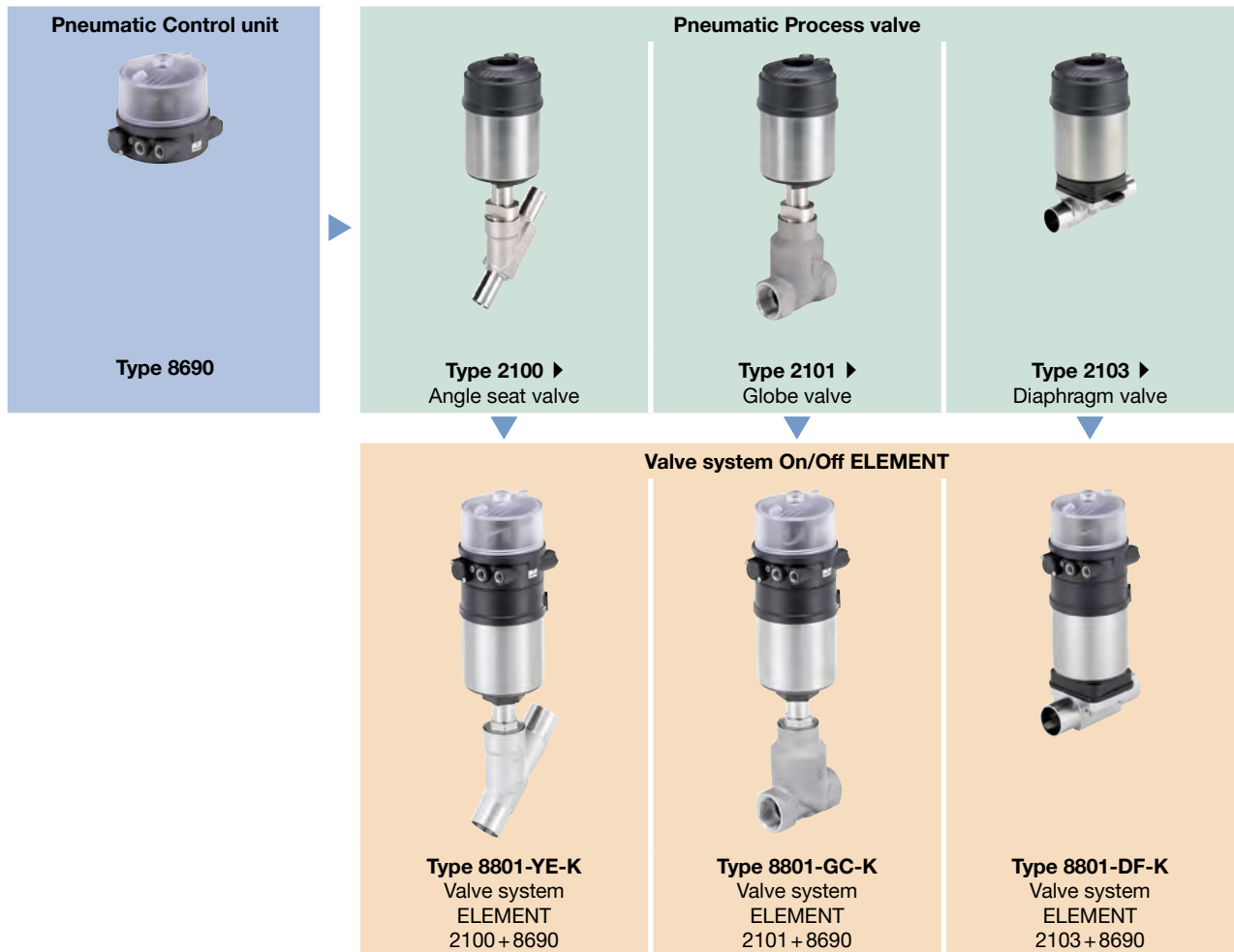
A decentralized, automated valve system consists of **pneumatic control unit Type 8690** and a **process valve ELEMENT Type 21xx**.

The following information is required to select a complete system:

- **Article no.** of the desired Control head **Type 8690**
- **Article no.** of the desired **process valve Type 21xx** (see separate data sheet **Type 2100** ▶, **Type 2101** ▶, **Type 2103** ▶)

You order two components and receive a completely assembled and tested valve.

Example for decentralized automation of On/Off ELEMENT valve systems



1.) See data sheet **adaptations for third-party drives, KK01** ▶ or contact the appropriate Bürkert sales office.

6. Ordering information

6.1. Bürkert eShop – Easy ordering and quick delivery



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6.2. Bürkert product filter



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6.3. Ordering chart

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

Note:

All non-ATEX versions are UL approved.

End position feedback			Electrical connection	Circuit function pilot valve system	Pilot air ports threaded ports	Article no.		
Inductive switch 24 V DC PNP	Inductive switch NAMUR 2-Leiter 8 V DC Ex ia IIC T6	Micro switch 24 V DC				Stand- ard	ATEX II Cat. 3G/D	ATEX II Cat. 2G/D
2	–	–	M12 plug connector	Single-acting	G 1/8	227222 𐀀	264968 𐀀	–
2	–	–		Double-acting	G 1/8	264939 𐀀	264957 𐀀	–
2	–	–		Without	G 1/8	227190 𐀀	264949 𐀀	–
2	–	–	Cable gland	Single-acting	G 1/8	227220 𐀀	264967 𐀀	–
2	–	–		Double-acting	G 1/8	264941 𐀀	264956 𐀀	–
2	–	–		Without	G 1/8	227189 𐀀	264948 𐀀	–
1	–	–	M12 plug connector	Single-acting	G 1/8	227218 𐀀	264964 𐀀	–
1	–	–		Double-acting	G 1/8	264940 𐀀	264953 𐀀	–
1	–	–		Without	G 1/8	265151 𐀀	264945 𐀀	–
1	–	–	Cable gland	Single-acting	G 1/8	227216 𐀀	264963 𐀀	–
1	–	–		Double-acting	G 1/8	264942 𐀀	264952 𐀀	–
1	–	–		Without	G 1/8	265154 𐀀	264944 𐀀	–
–	2	–		Single-acting	G 1/8	–	–	265143 𐀀
–	2	–		Double-acting	G 1/8	–	–	265144 𐀀
–	2	–		Without	G 1/8	–	–	265142 𐀀
–	–	2	M12 plug connector	Single-acting	G 1/8	227234 𐀀	–	–
–	–	1		Single-acting	G 1/8	227230 𐀀	–	–
–	–	2	Cable gland	Single-acting	G 1/8	227232 𐀀	–	–
–	–	2		Without	G 1/8	227195 𐀀	–	–
Without end position feedback			Cable gland	Single-acting	G 1/8	225883 𐀀	264961 𐀀	–
				Double-acting	G 1/8	265156 𐀀	265935 𐀀	–

Further versions on request

	Additional Push-in connector Pilot air ports (pipe-Ø 6 mm / 1/4")
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6.4. Ordering chart accessories

Standard accessories

Note:

Must be order separately

Description	Article no.
M12 socket, 8 pin with 5 m cable for input and output signal	919267 
Silencer G 1/8	780779 
Silencer push-in connector	902662 

Adapter kits

Adapter kits for third-party actuators can be found in the data sheet **Adaptation for third-party actuators, KK01** ► or contact the appropriate Bürkert sales office.

Description	Actuator size	Control function	Article no.
Adapter kit ELEMENT Types 21xx	Ø 70/90/130 mm	Universal	665720 

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