



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 | PPS |
| Cover | PC |
| Sealing | EPDM |
| Operating voltage * | |
| Pilot valve | 24 V DC \pm 10 % residual ripple 10 % DC Consumption 1 W |
| Micro switch | max. 24 V DC, max. 2 A |
| Initiator | 10 to 24 V DC, max. 100 mA ext. load per initiator |
| | According to Fieldbus specification |
| Control medium | neutral gases, air, quality classes acc. to ISO 8573-1 |
| Dust concentration | Class 7 (< 40 μ m particle size) |
| Particle density | Class 5 (< 10 mg/m ³) |
| Pressure condensation point | Class 3 (< -20 °C) |
| Oil concentration | Class X (< 25 mg/m ³) |
| Supply pressure | 3 to 7 bar ¹⁾ |
| Air input filter | Exchangeable |
| Mesh aperture | ~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 | 7 to 28 mm |
| Initiator | 2 to 28 mm |
| Ambient temperature | |
| with pilot valve | - 10 to +55 °C |
| without pilot valve | - 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 |

* 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.

Technical data, continued

| | |
|------------------------------|---|
| Approvals | 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 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 cULus certificate; E238179 |
| ATEX | |
| IECEX | |
| UL | |
| 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 |
| Electrical connection | |
| Multipole | M12, 8 pin |
| Cable gland | M16 x 1.5 (cable-Ø 5...10 mm) with screw terminals for cable cross-sections 0,14...1,5 mm ² |

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:

- **Article no.** of the desired pneumatic control unit **Type 8690** (see ordering chart on p. 3)
- **Article 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 of Pilot valve system | Pilot air ports threaded ports | Standard | Article 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 | 227222 ☞ | 264968 ☞ | - |
| 2 | - | - | | double-acting | G 1/8 | 264939 ☞ | 264957 ☞ | - |
| 2 | - | - | | without | G 1/8 | 227190 ☞ | 264949 ☞ | - |
| 2 | - | - | Cable gland | single-acting | G 1/8 | 227220 ☞ | 264967 ☞ | - |
| 2 | - | - | | double-acting | G 1/8 | 264941 ☞ | 264956 ☞ | - |
| 2 | - | - | | without | G 1/8 | 227189 ☞ | 264948 ☞ | - |
| 1 | - | - | M12 multipole | single-acting | G 1/8 | 227218 ☞ | 264964 ☞ | - |
| 1 | - | - | | double-acting | G 1/8 | 264940 ☞ | 264953 ☞ | - |
| 1 | - | - | | without | G 1/8 | 265151 ☞ | 264945 ☞ | - |
| 1 | - | - | Cable gland | single-acting | G 1/8 | 227216 ☞ | 264963 ☞ | - |
| 1 | - | - | | double-acting | G 1/8 | 264942 ☞ | 264952 ☞ | - |
| 1 | - | - | | without | G 1/8 | 265154 ☞ | 264944 ☞ | - |
| - | 2 | - | M12 multipole | single-acting | G 1/8 | - | - | 265143 ☞ |
| - | 2 | - | | double-acting | G 1/8 | - | - | 265144 ☞ |
| - | 2 | - | | without | G 1/8 | - | - | 265142 ☞ |
| - | - | 2 | M12 multipole | single-acting | G 1/8 | 227234 ☞ | - | - |
| - | - | 1 | | single-acting | G 1/8 | 227230 ☞ | - | - |
| - | - | 2 | Cable gland | single-acting | G 1/8 | 227232 ☞ | - | - |
| - | - | 2 | | without | G 1/8 | 227195 ☞ | - | - |
| without end position feedback | | | Cable gland | single-acting | G 1/8 | 225883 ☞ | 264961 ☞ | - |
| | | | | double-acting | G 1/8 | 265156 ☞ | 265935 ☞ | - |

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")

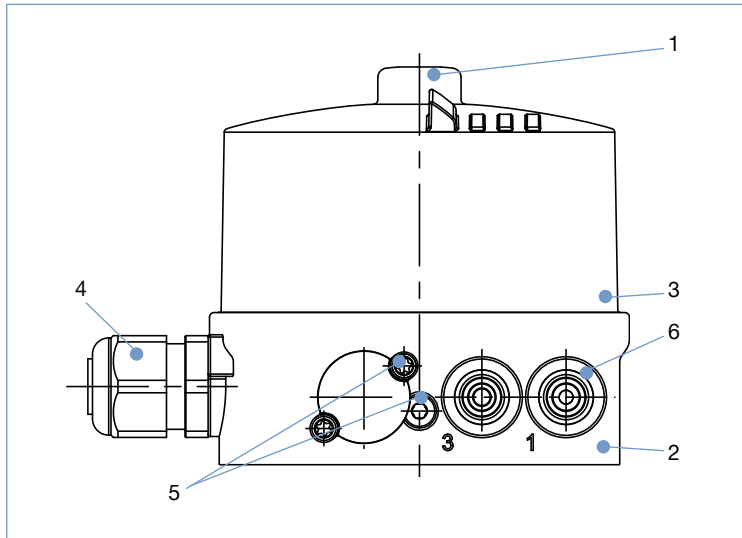
Ordering chart adapter kit (has to be ordered separately)

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

Accessories

| Description | Article no. |
|---|-------------|
| M12 socket 8 pin with 5 m cable for power supply and input/output signals | 919267 ☞ |
| ASI flat cable clip with stainless steel socket M12 (spare part) | 799646 ☞ |
| Silencer G 1/8 | 780779 ☞ |
| Silencer, push-in connector | 902662 ☞ |

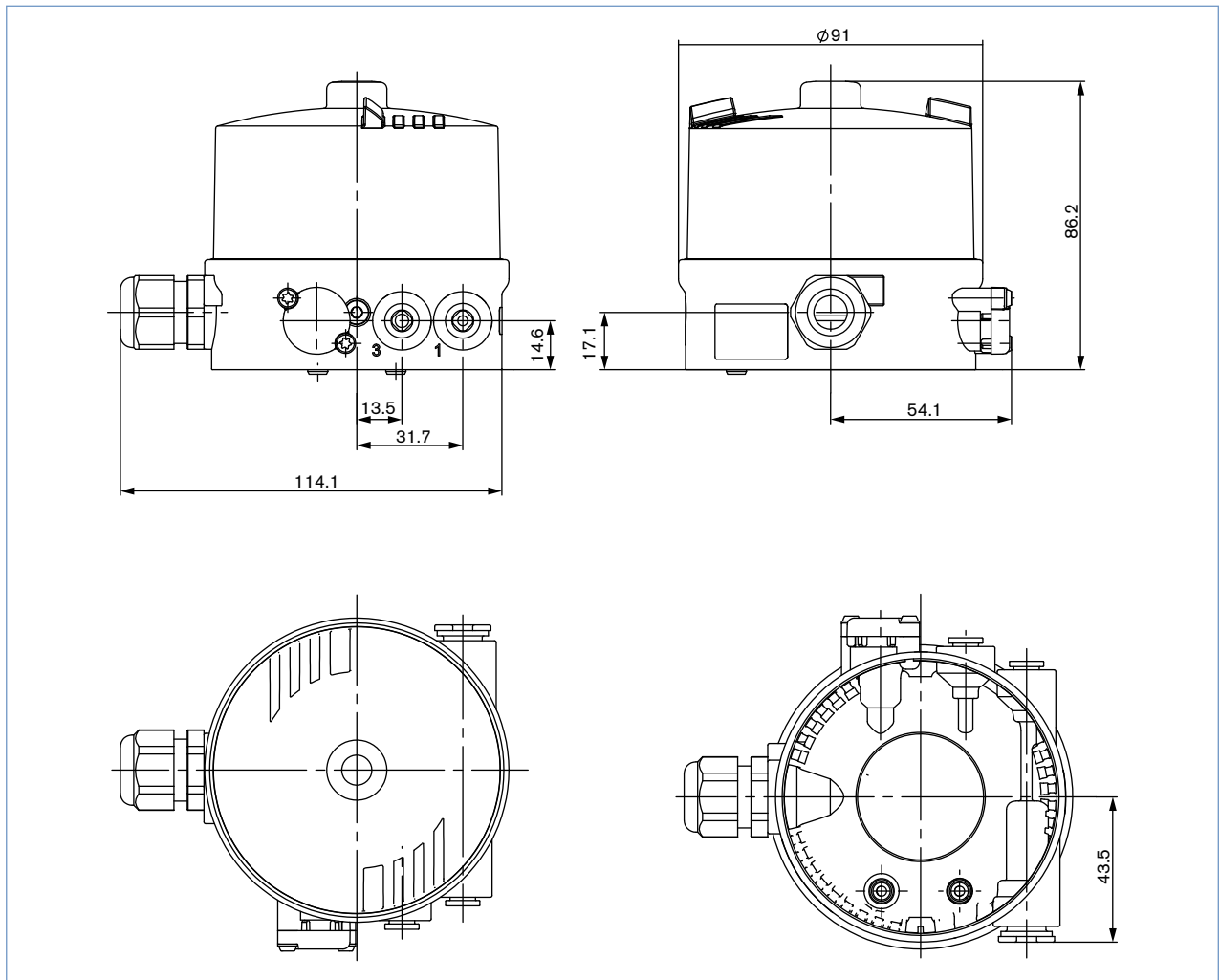
Materials



| | | |
|----------|---|--|
| 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 Threaded ports G 1/8 | POM/Stainless steel Stainless steel |

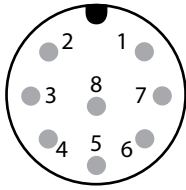
Dimensions [mm]

Mounting on process valve, ELEMENT Type 21xx



Connection options

Multipole, plug M12 8-pins



Plug configuration 24 V with micro switch

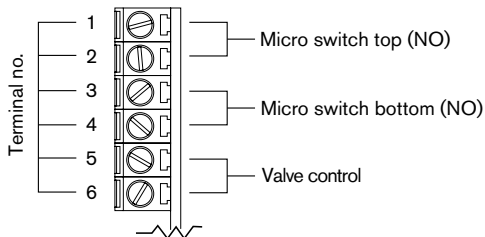
| Pin no. | Configuration | External Circuitry |
|---------|--------------------------|--|
| 1 | Micro switch top (NO) | Micro switch top (NO) |
| 3 | | |
| 2 | Micro switch bottom (NO) | Micro switch bottom (NO) |
| 4 | | |
| 5 | Valve control 0/24 V | 0/24 V DC \pm 10 % Residual ripple 10 % |
| 6 | 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-Ø 10 mm), screw terminals (1.5 mm²)



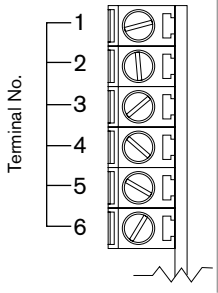
Port configuration 24 V with micro switch


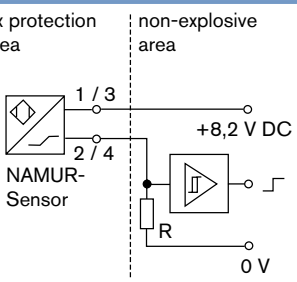
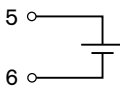
| Pin no. | Configuration | External circuitry |
|---------|--------------------------|--|
| 1 | Micro switch top (NO) | 1 Micro switch top (NO) 2 Micro switch top (NO) |
| 2 | | |
| 3 | Micro switch bottom (NO) | 3 Micro switch bottom (NO) 4 Micro switch bottom (NO) |
| 4 | | |
| 5 | Valve control 0/24 V | 5 0/24 V DC \pm 10 % 6 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%;"> <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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