

# 8697 Pneumatic Control Unit/Feedback



## Pneumatic Control/Feedback

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

Type 8697 can be combined with...



**Type 2100**

Angle seat valve



**Type 2101**

Globe seat valve



**Type 2103**

Diaphragm valve



**Type 2000**

Angle seat valve

The pneumatic control unit Type 8697 is optimized for integrated mounting on the ELEMENT 21XX process valve and CLASSIC 20XX 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 routing without external tubings. Besides the electrical position feedback signal the status of the device is shown directly on the control unit itself via LEDs.

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	
<b>Material</b> - Body	PPS
Cover	PC
Sealing	EPDM
<b>Operating voltage *</b>	
Pilot valve	24 V DC ±10% - residual ripple 10%, consumption 1 W
Micro switch	24V Version: 0 – 48 V AC/DC, max. 2 A 230V Version: 50 – 250 V AC/DC, max. 2 A
Initiator	10 to 30 V DC - max.100 mA per initiator
<b>Control medium</b>	neutral gases, air, quality classes acc. to ISO 8573-1
Dust concentration	Class 7: max. particle size 40 µm
Particle density	Class 5: max. particle density 10 mg/m <sup>3</sup>
Pressure condensation point	Class 3: max. -20 °C or min. 10 °C below the lowest operating temperature
Oil concentration	Class X: max. 25 mg/m <sup>3</sup>
<b>Supply pressure</b>	3 to 7 bar <sup>1)</sup>
<b>Pilot air ports</b>	Threaded ports G 1/8 or push-in connector (tube Ø 6 mm / 1/4")
<b>Position feedback</b>	2x micro switch (0 – 48 V AC/DC, max. 2 A) 2x micro switch (50 – 250 V AC/DC, max. 2 A) 2x initiator (24 V DC), PNP shutter 3-wire <b>with LEDs</b> 2x initiator NAMUR (8,2 V DC) (2-wire) <b>with LEDs</b> 2x initiator (24 V DC), Schließer (2-wire) <b>with LEDs</b>
<b>Stroke range valve spindle</b>	2 to 36 mm
<b>Ambient temperature</b>	
with/without pilot valve	0 to +55°C (II 3D Ex tc IIIC T135°C Dc, II 3G Ex nA IIC T4 Gc)
with/without pilot valve with pilot valve	0 to +55°C (II 2D Ex ia IIIC T135°C Db IP64, II 2G Ex ia IIC T4 Gb)
without pilot valve	-10 to +55°C (without ATEX or for II 2G Ex ia IIC T4 Gb)
without pilot valve	-20 to +60°C (without ATEX or for II 2G Ex ia IIC T4 Gb)
<b>Installation</b>	as required, preferably with actuator in upright position
<b>Protection type</b>	IP65 and IP67 according to EN 60529, Type 4X
<b>Protection class</b>	3 acc. to DIN EN 61140
<b>Conformity</b>	EMC directive 2014/30/EU
<b>Ignition protection</b>	II 3D Ex tc IIIC T135°C Dc II 3G Ex nA IIC T4 Gc II 2D Ex ia IIIC T135°C Db IP64 II 2G Ex ia IIC T4 Gb
<b>Approval</b>	cULus certificate no. E238179
<b>Electrical connection</b>	
Multipole	M12, 8-pole
Cable gland	M16x1.5 SW22 (cable diameter 4 -8 mm), terminal screws 0.14 bis 1.5 mm <sup>2</sup>

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

<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 8697 and a process valve Type ELEMENT 21XX or CLASSIC 20XX. The following information is necessary for the selection of a complete system:

- **Item no.** of the desired pneumatic control unit **Type 8697** (see Ordering chart)
- **Item no.** of the selected process valve **Type 21XX or Type 20XX**

If you order two components, you receive a complete assembled and certified valve.

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 for process valve systems**

**Pneumatic Control Unit  
Type 8697**

**Desired process valve, example**



2100  
Angle-seat  
valve



2103  
Diaphragm  
valve



2000  
Angle-seat  
valve

**Complete process valve system**



**Process valve system  
On/Off ELEMENT  
Type 8801-YE-U  
2100+8697**



**Process valve system  
On/Off ELEMENT  
Type 8801-DF-U  
2103+8697**



**Process valve system  
On/Off CLASSIC  
Type 8801-YA-U  
2000+8697**

**Ordering chart** (other versions on request)

End position feedback						Electrical connection	ATEX / IECEX Cat. 3D/G Zone 22/2 <sup>2)</sup>	ATEX / IECEX Cat. 2D/G Zone 21/1 <sup>3)</sup>	ATEX/ IECEX Cat. 2G Zone 1 <sup>4)</sup>	cULus	Pilot air ports threaded ports	Item no.			
Inductive Switch 3-wire PNP	Inductive Switch 2-wire NAMUR	Inductive Switch 2-wire 24V DC	Micro Switch 24V DC	Micro Switch 50-250V AC/DC	Feedback status LEDs							Actuator series ELEMENT Type 21XX	Actuator series CLASSIC Types 20XX		
<b>Pneumatic Control Unit (pilot valve 3/2 way, single acting NO/NC)</b>															
2					yes	Cable gland				yes	G1/8	248 816	na		
2					yes					yes	G1/8 / M5	na	248 829		
2					yes			yes			G1/8	255 847	na		
2					yes			yes			G1/8 / M5	na	255 853		
2					yes		M12 connector	yes			G1/8	255 849	na		
2					yes				yes			G1/8 / M5	na	255 855	
2					yes						yes	G1/8	248 818	na	
2					yes						yes	G1/8 / M5	na	248 830	
	2				yes		Cable gland		yes		G1/8	248 822	na		
	2				yes				yes			G1/8 / M5	na	248 832	
	2				yes				yes		G1/8	255 862	na		
	2				yes				yes		G1/8 / M5	na	255 864		
		2			yes					yes	G1/8	248 814	na		
		2			yes					yes	G1/8 / M5	na	248 828		
		2			yes			yes			G1/8	255 845	na		
		2			yes			yes			G1/8 / M5	na	255 852		
Without end position feedback						M12 Multipole				yes	G1/8	260 278	na		
						Cable gland				yes	G1/8	260 279	na		
							yes			G1/8	260 280	na			
<b>Feedback (without pilot valve)</b>															
2					yes	Cable gland				yes	G1/8	248 812	na		
2					yes					yes	without	na	248 827		
2					yes			yes			G1/8	255 843	na		
2					yes			yes			without	na	255 851		
2					yes		M12 connector	yes			G1/8	255 857	na		
2					yes				yes			without	na	255 858	
2					yes						yes	G1/8	250 471	na	
2					yes						yes	without	na	250 472	
	2				yes		Cable gland		yes		G1/8	248 820	na		
	2				yes				yes			without	na	248 831	
	2				yes				yes		G1/8	255 860	na		
	2				yes				yes		without	na	255 863		
		2			yes					yes	G1/8	248 810	na		
		2			yes					yes	without	na	248 826		
		2			yes			yes			G1/8	255 841	na		
		2			yes			yes			without	na	255 850		
			2						yes	G1/8	248 824	na			
			2						yes	without	na	248 833			
				2					yes	G1/8	248 808	na			
				2					yes	without	na	248 825			

**Note:** cULus only valid for versions without ATEX approval

<sup>2)</sup> II 3D Ex tc IIC T135 / II 3G Ex nA IIC T4 Gc

<sup>3)</sup> II 2D Ex ia IIC T135°C Db IP64 / II 2G Ex ia IIC T4 Gb

<sup>4)</sup> II 2G Ex ia IIC T4 Gb

**i Further versions on request**

**Approvals**  
FM

**> Additional**  
Feedback switchpoint NPN-coded  
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 21XX	Pneumatic Control Unit / Feedback	Ø50mm	single acting / universal	682 259
Adapter kit CLASSIC Types 20XX	Pneumatic Control Unit	Ø40mm	single acting	698 573
	Pneumatic Control Unit	Ø50mm Seat valve Types 2000 / 2012	single acting	682 255
	Pneumatic Control Unit	Ø50mm Diaphragm valve Types 2030 / 2031	single acting	682 258
	Pneumatic Control Unit	Ø63mm <sup>5)</sup>	single acting	682 256
	Feedback	Ø40mm	universal	698 573
	Feedback	Ø50/63/80mm	universal	682 264
	Feedback	Ø100/125mm	universal	682 265
	Feedback	Ø175/225mm	universal	684 944

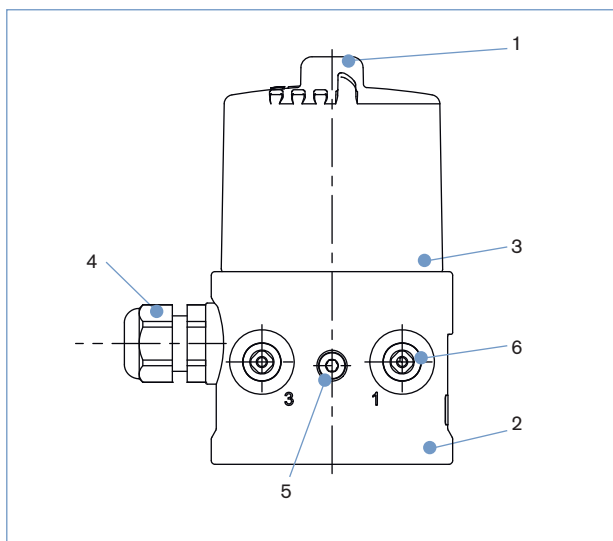
For installation kits to 3rd party process valves please see datasheet "Installation Kits for hygienic process valves" or contact your sales office for related drawings or individual engineering support

<sup>5)</sup> When combining actuator size Ø 63 mm with 8697 CLASSIC reduced switching dynamics should be expected. Please choose Type 8690 for shorter response times.

**Ordering chart accessories**

Description	Item no.
M12 socket, 8-pins, 2m assembled cable	919 061
M12 socket, 8-pins, 5m assembled cable	919 267
Silencer G1/8	780 779
Silencer, push-in connector	902 662
Stroke limitation actuator CLASSIC Ø50/63mm	689 353
Stroke limitation actuator CLASSIC Ø80mm	689 354
Stroke limitation actuator CLASSIC Ø100/125mm	689 355

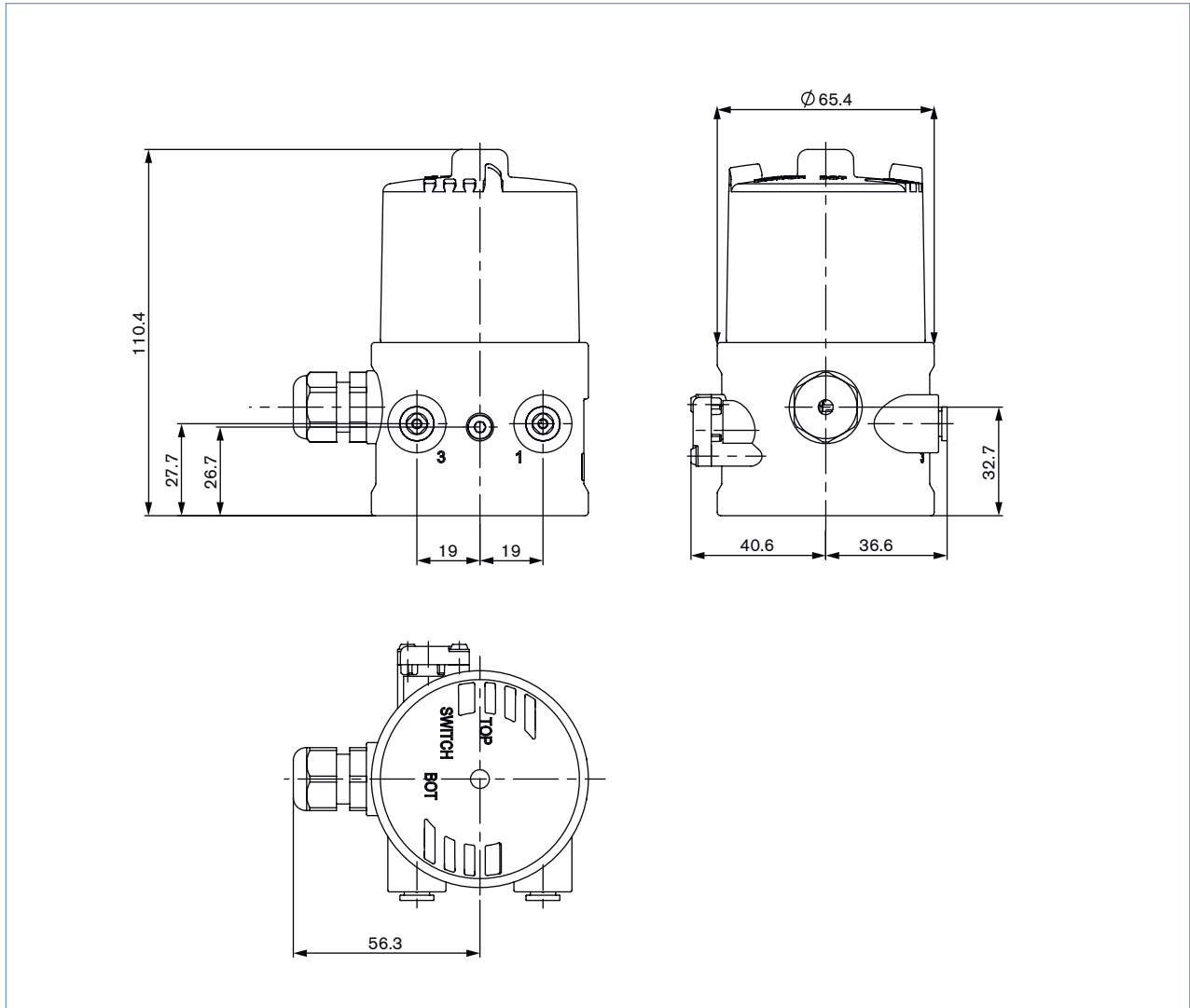
**Materials**



- |          |                     |                       |
|----------|---------------------|-----------------------|
| <b>1</b> | Transparent cap     | PC                    |
| <b>2</b> | Basic body          | PPS                   |
| <b>3</b> | Sealing             | EPDM                  |
| <b>4</b> | Cable gland         | PA                    |
|          | Plug M12            | Brass nickel plated   |
| <b>5</b> | Screws              | Stainless steel       |
| <b>6</b> | Push-in connector   | POM / stainless steel |
|          | Threaded ports G1/8 | stainless steel       |

Dimensions [mm]

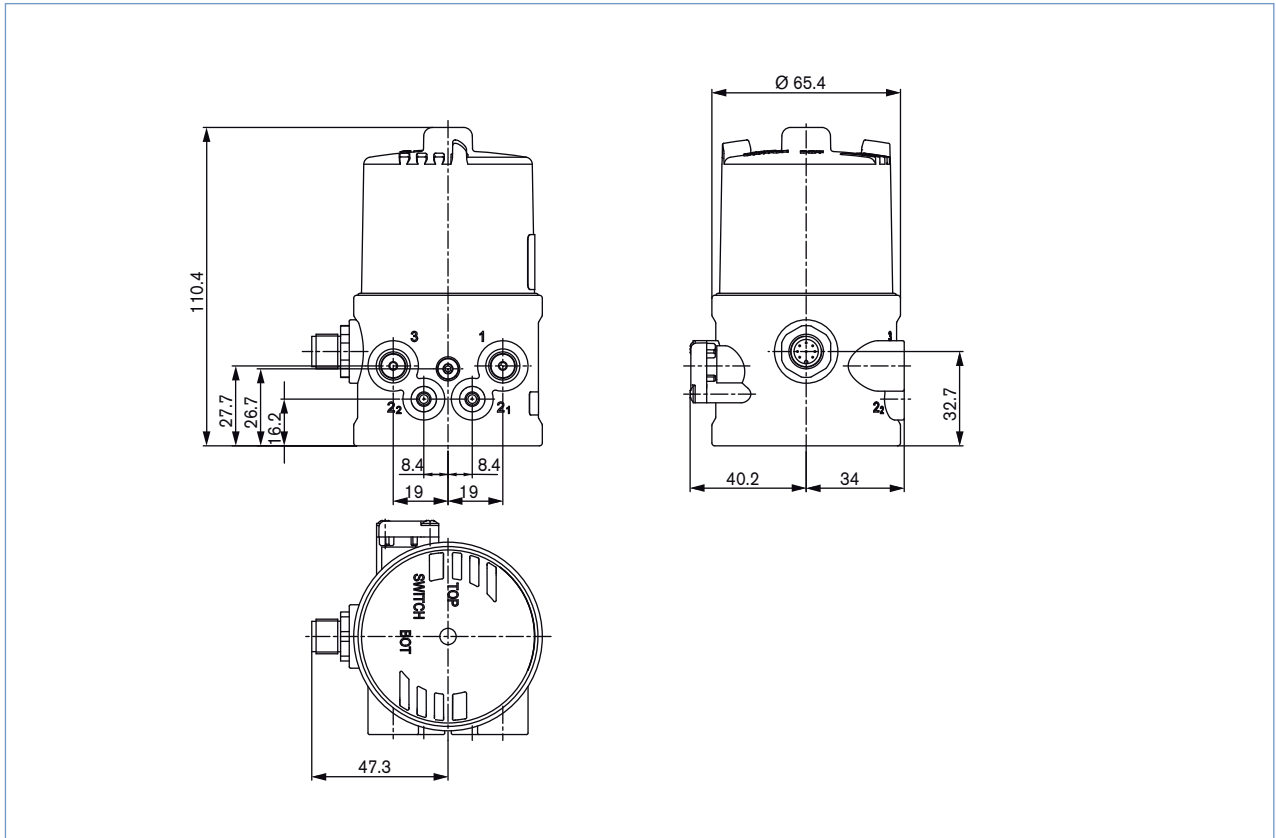
Pneumatic Control Unit/Feedback for mounting on process valve ELEMENT Types 21XX



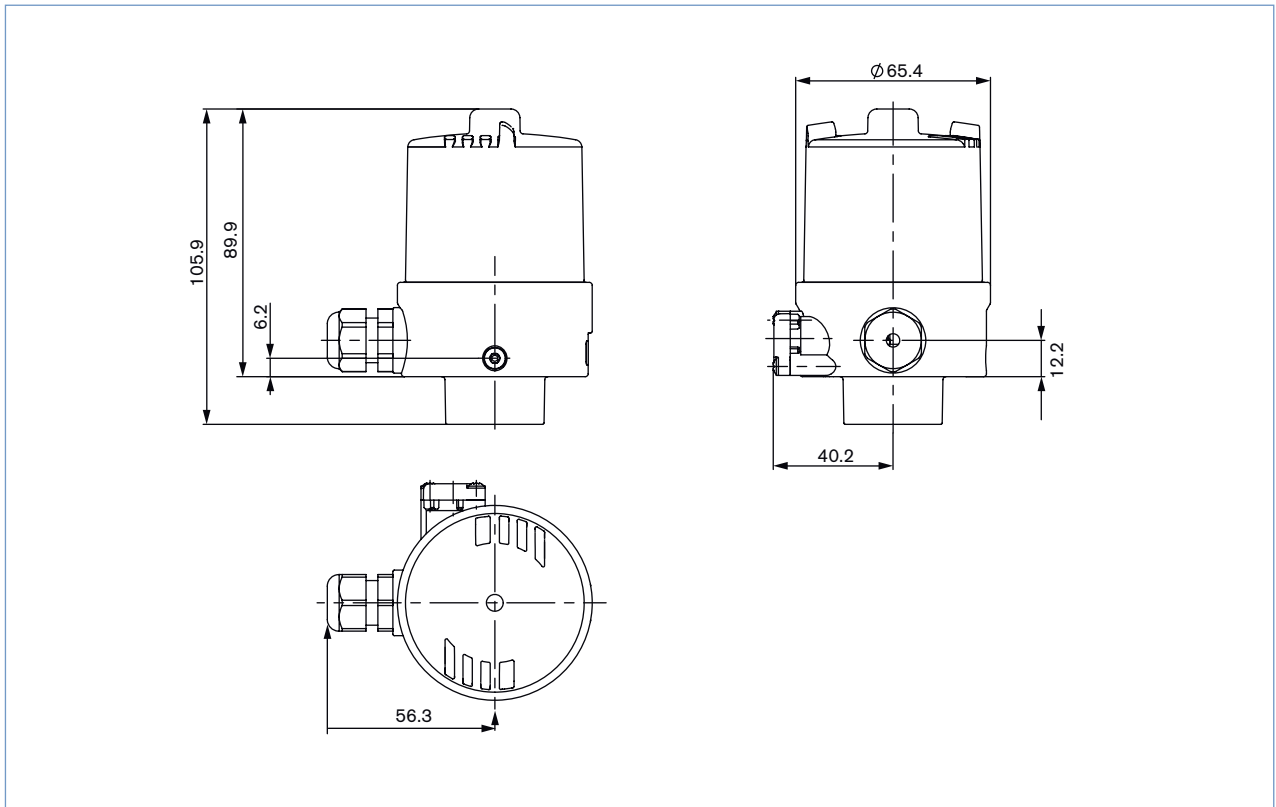
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**Dimensions [mm]**

**Control Unit for mounting on process valve CLASSIC Types 20XX**

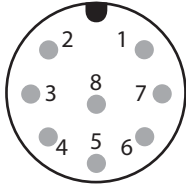


**Feedback for mounting on process valve CLASSIC Types 20XX**



**Connection options**

**Multipole, plug M12 8-pins**

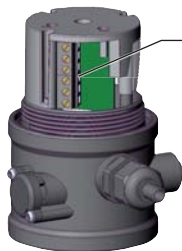


**Plug configuration with 3-wire inductive switch, 24 V DC**

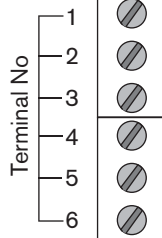
Pin no.	Wire colour <sup>6)</sup>	Configuration	External circuit
1	white	INI Bottom OUT Output 1	
2	brown	INI Top OUT Output 2	
3	green	INI - (GND) Supply	
4	yellow	INI + (24 V DC) Supply	
5	grey	Valve control 0/24 V	
6	pink	Valve control GND	

<sup>6)</sup> The indicated colours refer to the connecting cable available as an accessory (919 061)

**Cable gland** , M16 x 1.5 (cable-ø 10 mm), terminal screws (1.5 mm<sup>2</sup>)



Screw terminals



**Port configuration with micro switch, 24 V DC / 250 V AC/DC**

Terminal	Configuration	External circuit
1	Micro switch top	
2		
3		
4	Micro switch bottom	
5		
6		


**Port configuration with 3-wire inductive switch, 24 V DC**

Terminal	Configuration	External circuit
1	INI + (24 V DC) Supply	
2	INI GND Supply	
3	INI Top OUT Output 1	
4	INI Bottom OUT Output 2	
5	Valve control 0/24 V DC	
6	Valve control GND	

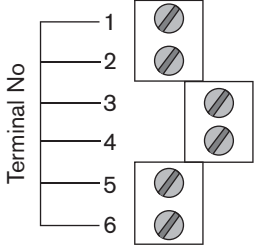
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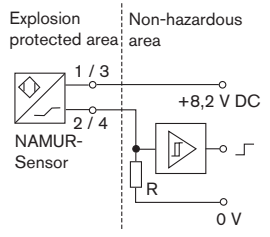
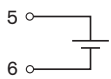
Port configuration with 2-wire inductive proximity switches



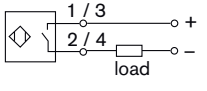
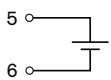
Screw terminals



**2-wire inductive proximity switches (NAMUR)**

Terminal	Configuration	External circuit
1	INI Top +	
2	INI Top -	
3	INI Bottom +	
4	INI Bottom -	
5	Valve control +	
6	Valve control GND	

**2-wire inductive proximity switches, 24 V**

Terminal	Configuration	External circuit
1	INI Top +	
2	INI Top -	
3	INI Bottom +	
4	INI Bottom -	
5	Valve control +	
6	Valve control GND	

<sup>7)</sup> (Acc. to NAMUR recommendation). Please note the prototype test certificate from Turck KEMA 02 ATEX 1090X

<sup>8)</sup> Barrier signal, see PTB 07 ATEX 2048

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