DATA SHEET

Type 8697

bürkert
FLUID CONTROL SYSTEMS

Pneumatic control for decentralised automation of ELEMENT process valves

- Compact design
- Integrated pilot valve with manual override
- Integrated control air routing in the actuator
- Automatic adjustment of final position feedback
- 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 decentralised automation

Type 2103 ▸
2/2 way diaphragm valve with pneumatic stainless steel actuator (Type ELEMENT) for decentralised automation

Type description

The pneumatic control unit Type 8697 is designed for decentralised automation of process valves ELEMENT Type 21xx. Mechanical or inductive limit switches register the valve position. The integrated pilot valve controls single-acting actuators.

The design of the control unit and the actuator enables internal control air routing without external tubing. Besides the electrical position feedback the status of the device is shown directly on the pneumatic 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 pneumatic actuating system enables spring chamber aeration that avoids actuator chamber contamination from the environment.

DTS 1000215412 EN Version: S Status: RL (released | freigegeben | validé) printed: 05.07.2021

Visit product website ▸

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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	Automatic (mechanical)
Manual override Pilot valve	Yes
Status display	
Display of device and valve status	Coloured LEDs
Optical position indicator (mechanical)	Yes
Position sensor/Position feedback	
Micro switch	2x Micro switch (0…48 V AC/DC, max. 2 A) 2x Micro switch (50…250 V AC/DC, max. 2 A)
Initiator	2x Initiator (24 V DC), PNP shutter 3-wire with LEDs 2x Initiator NAMUR (8.2 V DC) shutter (2-wire) with LEDs 2x Initiator (24 V DC), shutter (2-wire) with LEDs
Stroke range for linear actuators	
Valve spindle	2…36 mm
Electrical data	
Operating voltage	
Pilot valve	24 V DC ± 10 %, residual ripple 10 % DC; power consumption 1 W
Micro switch	0…48 V AC/DC, max. 2 A 230 V version: 50…250 V AC/DC, max. 2 A
Initiator	10…30 V DC - max. 100 mA per initiator
Protection class	3 acc. to DIN EN 61140
Residual ripple	10 %
Power consumption	< 1 W
Electrical connection	
Multipole	M12, 8 pin
Cable gland	M16 x 1.5 (cable Ø 4…8 mm) with terminal screws for cable cross-sections 0.14…1.5 mm^2
Pneumatic data	
Control medium	Neutral gases, air, quality class acc. to ISO 8573-1
Dust content	Class 7 (< 40 µm particle size)
Particle density	Class 5 (< 10 mg/m^3)
Pressure dew point	Class 3 (< -20 °C or min. 10 °C below the lowest operating temperature)
Oil content	Class X (< 25 mg/m^3)
Supply pressure	3…7 bar[1.)]
Pilot air ports	Threaded connection G ⅛ Stainless steel or push-in connector (pipe Ø 6 mm / ¼")
Positioning system	
Circuit function	Single-acting
Air capacity	7 l_N/min (for aeration and ventilation) (Q_{Nn} value acc. to definition at pressure drop from 7 to 6 bar absolute)
Actuator series/size	
Pneumatic Control unit / Position feedback	Type 21xx, actuator Ø 50 mm
Position feedback	Type 20xx, actuator Ø 40 bis 225 mm

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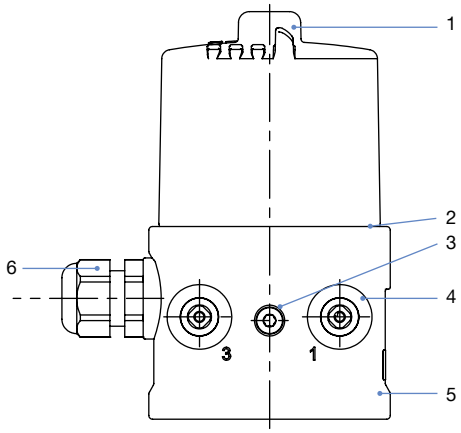
Approvals and certificates	
Conformity	EMC directive 2014/30/EU
Ignition protection	II 3D Ex tc IIIC T135 °C Dc II 3G Ex ec IIC T4 Gc II 2D Ex ia IIIC T135 °C Db IP64 II 2G Ex ia IIC T4 Gb
UL	cULus certificate; E238179
ATEX	II 3D Ex tc IIIC T135 °C Dc II 3G Ex ec IIC T4 Gc Certificate; BVS 14 ATEX E 008 X II 2D Ex ia IIIC T135 °C IP64 II 2G Ex ia IIC T4 Gb Certificate; BVS 13 ATEX E104 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 T4 Gb Certificate; IECEx BVS 13.0105X
Environment and installation	
Installation and mechanical data	
Installation position	As required, preferably with actuator in upright position
Valve actuator	ELEMENT Type 21xx (Actuator size Ø 50 mm) CLASSIC Type 20xx (Actuator size Ø 40…225 mm) only in combination with position feedback without pilot valve
Operating conditions	
Ambient temperature (max.)	
With/without pilot valve	0…+55 °C (II 3D Ex tc IIIC T135 °C Dc, II 3G Ex nA IIC T4 Gc) 0…+55 °C (II 2D Ex IIIC ia T135 °C Db, II 2G Ex ia IIC T4 Gb)
With pilot valve	-10…+55 °C (without ATEX resp. for II 2G Ex ia IIC T4 Gb)
Without pilot valve	-20…+60 °C (without ATEX resp. for II 2G Ex ia IIC T4 Gb)
Degree of protection	IP65/IP67 acc. to EN 60529, 4X acc. to NEMA 250 standard
Operating altitude	Up to 2000 m above sea level

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 connection G ⅛	POM/Stainless steel Stainless steel
5	Basic housing	PPS
6	Cable gland Plug connector M12	PA Brass nickel plated

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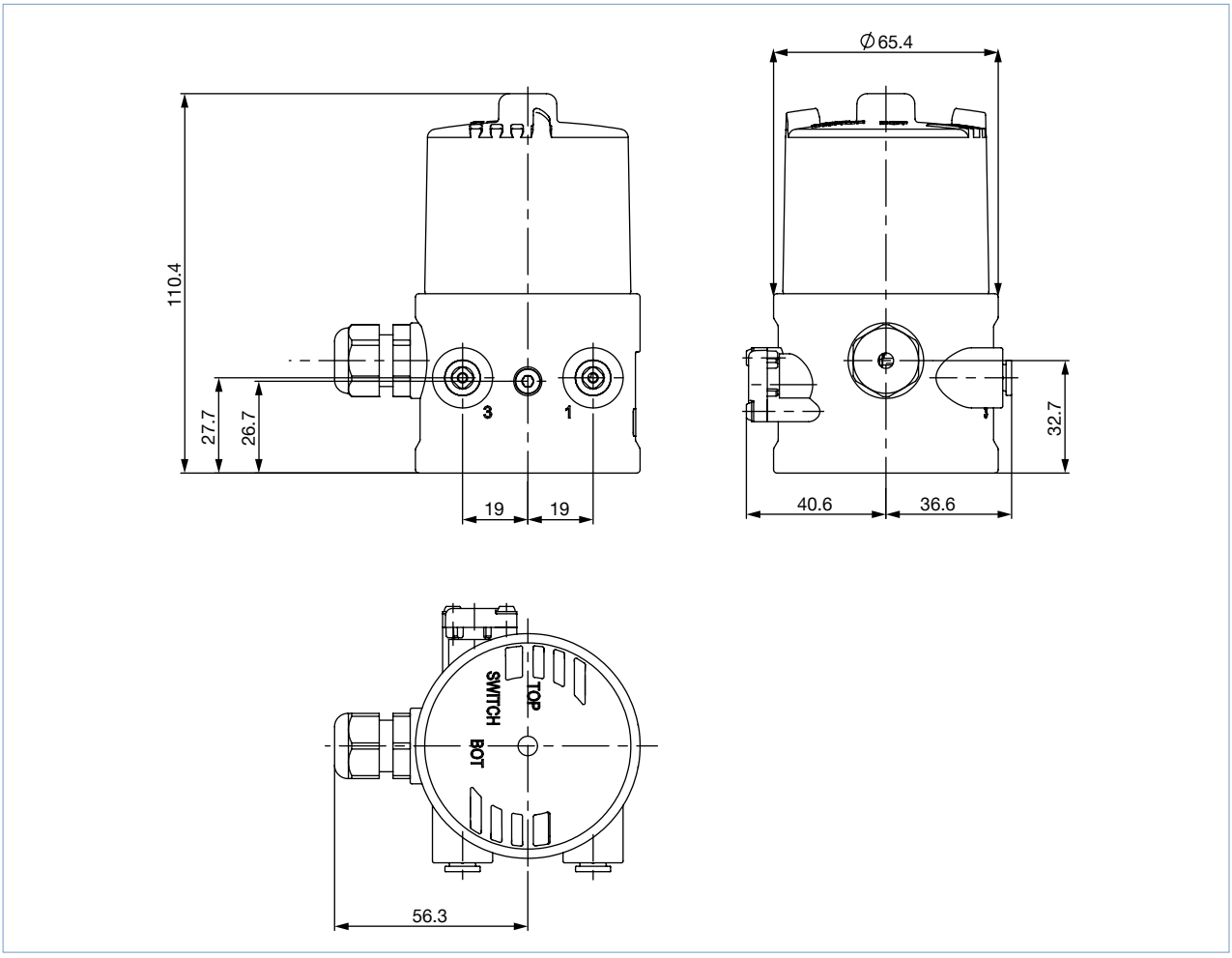
3. Dimensions

3.1. Pneumatic control unit/feedback for mounting on ELEMENT process valve Types 21xx

Note:
Dimensions in mm



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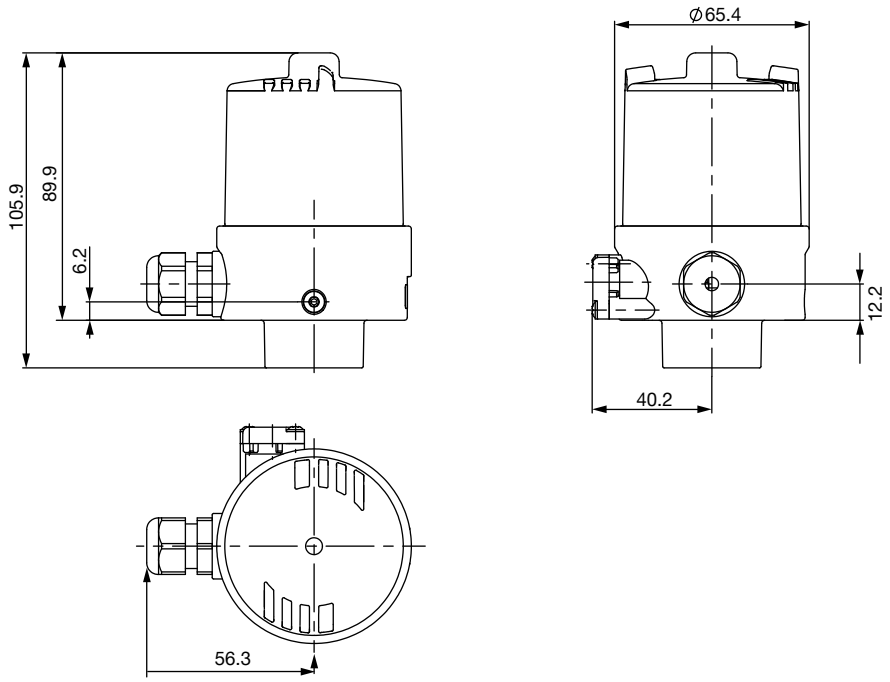
3.2. Position feedback for mounting on CLASSIC process valves Type 20xx



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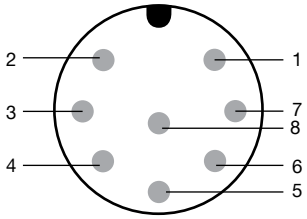
4. Device/Process connections

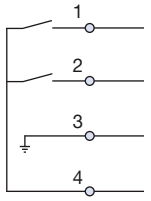
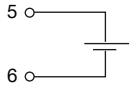
4.1. Electrical connections

Multipole connection

Circular plug M12, 8 pin



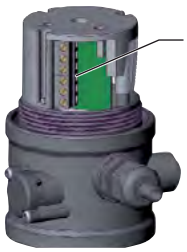
Plug configuration with 3-wire inductive switch, 24 V DC

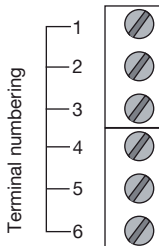
Pin	Wire colour[1.)]	Configuration	External circuitry	
1	White	INI Bottom OUT Output 1		Output 1(24 V)
2	Brown	INI Top OUT Output 2		Output 2 (24 V)
3	Green	INI - (GND) Supply		GND
4	Yellow	INI + (24 V DC) Supply		+24 V DC
5	Grey	Valve control 0/24 V		0/24 V DC ±10 % Residual ripple 10 %
6	Pink	Valve control GND		
7	–	Not assigned	–	
8	–	Not assigned	–	

1.) The colours indicated refer to the connection cable available as an accessory (Article no. 919061 🛒).

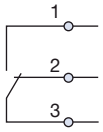
Cable gland connection

M16 × 1.5 (cable Ø 4…8 mm), screw terminal (1.5 mm²)

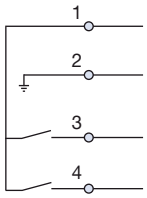
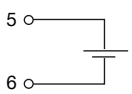




Terminal assignment with micro switch 0…48 V DC/50…250 V AC/DC

Terminal	Configuration	External circuitry	
1	Micro switch top		NO
2			NC
3			Joint connection
4	Micro switch bottom		NO
5			NC
6			Joint connection

Terminal assignment with 3-wire inductive switch 24 V DC

Terminal	Configuration	External circuitry	
1	INI + (24 V DC) Supply		+24 V DC
2	INI GND Supply		GND
3	INI Top OUT Output 1		Output 1
4	INI Bottom OUT Output 2		Output 2
5	Valve control 0/24 V DC		0/24 V DC ±10 %
6	Valve control GND		Residual ripple 10 %

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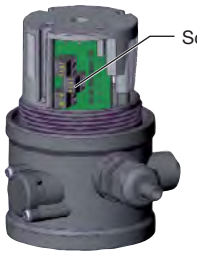
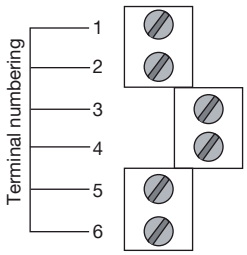
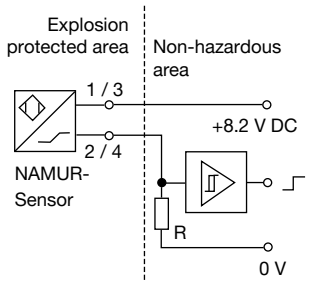
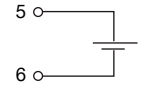
Terminal assignment with 2-wire inductive proximity switches





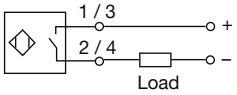
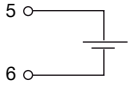
2-wire inductive proximity switches (NAMUR)

Terminal	Configuration	External circuitry
1	INI Top +	 1.)
2	INI Top –	
3	INI Bottom +	
4	INI Bottom –	
5	Valve control +	 2.)
6	Valve control GND	

1.) According to NAMUR recommendation. Please refer to the type examination certificate of Turck KEMA 02 ATEX 1090X.

2.) Signal from barrier see PTB 07 ATEX 2048

2-wire inductive proximity switches, 24 V

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

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5. Product installation

5.1. Combination options with pneumatic ELEMENT process valves

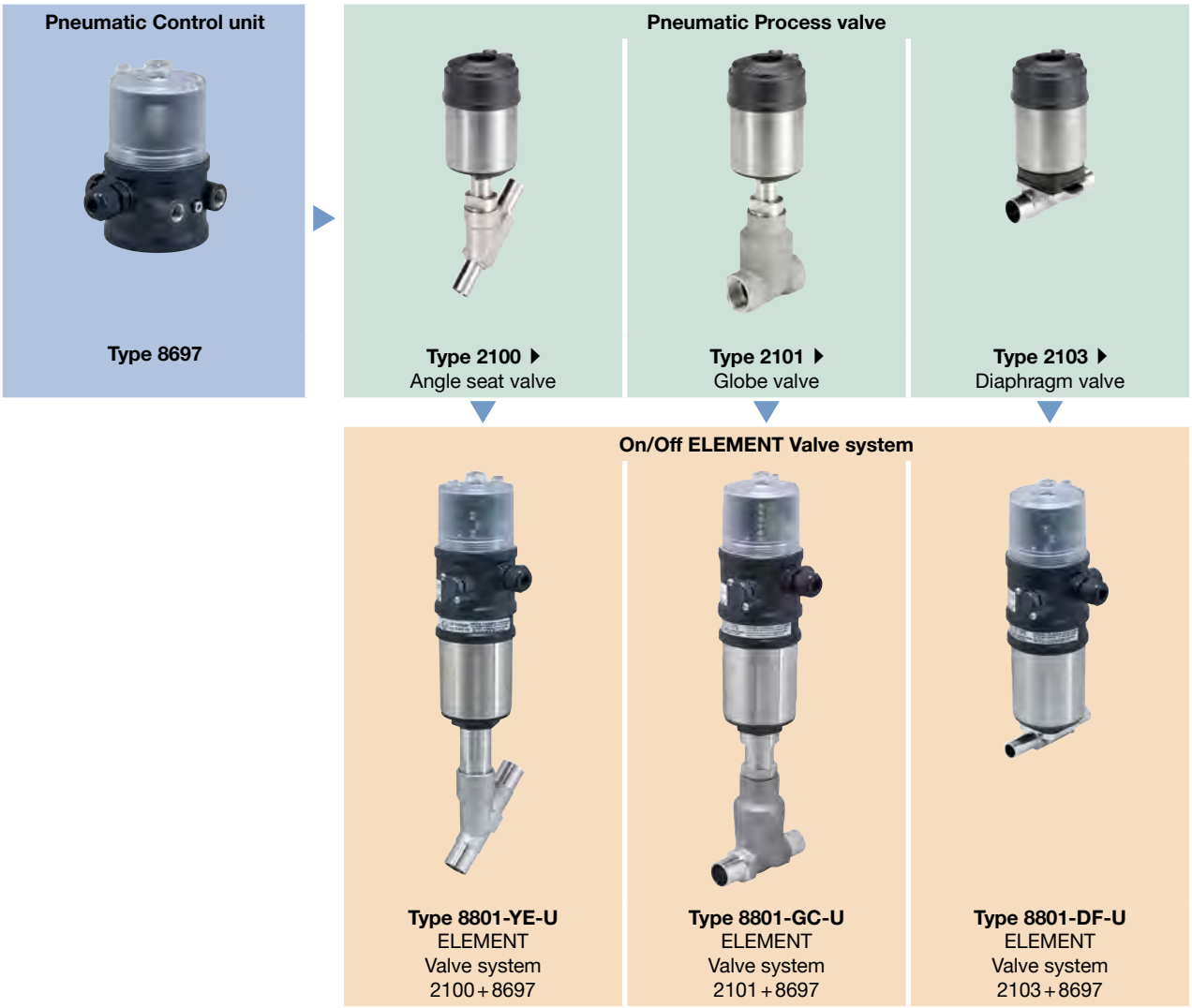
Note:
A decentralized, automated valve system consists of **pneumatic control unit Type 8697** and an **ELEMENT process valve Type 21xx**.

The following information is required to select a complete system:

- **Article no.** of the desired pneumatic control unit **Type 8697** (see **"Pneumatic control unit for decentralized automation of ELEMENT On/Off process valves Type 21xx" on page 12**)
- **Article no.** of the selected 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



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5.2. Combination options with pneumatic process valves CLASSIC

Note:
An On/Off CLASSIC valve system consists of an electrical position feedback **Type 8697** and a CLASSIC process valve **Type 20xx**. The function of the position feedback is solely to transmit the valve end position signals to the control system. The pneumatic control of the process valve is done by the valve island in the control cabinet, either centralized or distributed depending on the system design.

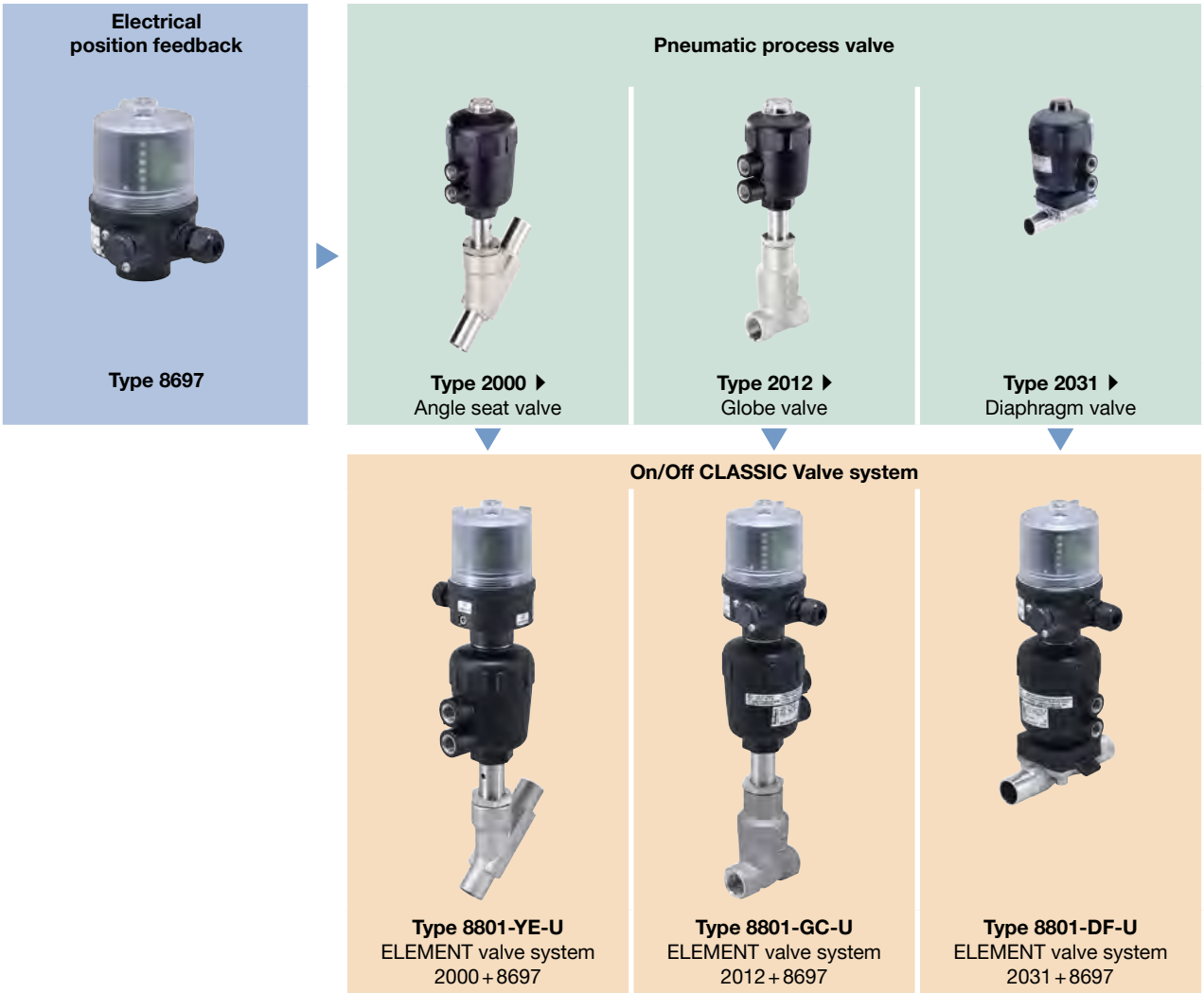
The following information is required to select a complete system:

- **Article no.** of the desired electrical position feedback **Type 8697** (see **"Electrical position feedback for combination with central automated On/Off process valves Type 20xx CLASSIC" on page 13**)
- **Article no.** of the selected process valve **Type 20xx** (see separate data sheet **Type 2000 ▶, Type 2012 ▶, Type 2031 ▶**)

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

Example for centralized/distributed automation of On/Off CLASSIC valve systems

The On/Off CLASSIC valve system can be combined with valve islands **Type 8640 ▶**, **Type 8644 ▶** or **Type 8650 ▶**.



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6. Ordering information

6.1. Bürkert eShop – Easy ordering and quick delivery

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6.3. Ordering chart

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

Note:
cULus only valid for versions without ATEX approval.

End position feedback						Electrical Connection	ATEX/ IECEx Cat. 3D/G Zone 22/2[1.]	ATEX/ IECEx Cat. 2D/G Zone 21/1[2.]	ATEX/ IECEx Cat. 2G Zone 1[3.]	cULus	Pilot air ports threaded port	Article no.
Inductive switch			Micro switch		Feedback status LEDs							
3-wire	2-wire											
PNP	NAMUR	24 V DC	0…48 V AC/ DC	50…250 V AC/ DC								
Pneumatic Control unit (Pilot valve 3/2 way, single-acting NO/NC)												
2	–	–	–	–	Yes	Cable gland	–	–	–	Yes	G ⅛	248816
2	–	–	–	–	Yes		Yes	–	–	–	G ⅛	255847
2	–	–	–	–	Yes	M12 Multipole	Yes	–	–	–	G ⅛	255849
2	–	–	–	–	Yes		–	–	–	Yes	G ⅛	248818
–	2	–	–	–	Yes	Cable gland	–	Yes	–	–	G ⅛	248822
–	2	–	–	–	Yes		–	–	Yes	–	G ⅛	255862
–	–	2	–	–	Yes		–	–	–	Yes	G ⅛	248814
–	–	2	–	–	Yes		Yes	–	–	–	G ⅛	255845
Without end position feedback						M12 Multipole	–	–	–	Yes	G ⅛	260278
						Cable gland	–	–	–	Yes	G ⅛	260279
							Yes	–	–	–	G ⅛	260280
Electrical position feedback (without pilot valve)												
2	–	–	–	–	Yes	Cable gland	–	–	–	Yes	G ⅛	248812
2	–	–	–	–	Yes		Yes	–	–	–	G ⅛	255843
2	–	–	–	–	Yes	M12 Multipole	Yes	–	–	–	G ⅛	255857
2	–	–	–	–	Yes		–	–	–	Yes	G ⅛	250471
–	2	–	–	–	Yes	Cable gland	–	Yes	–	–	G ⅛	248820
–	2	–	–	–	Yes		–	–	Yes	–	G ⅛	255860
–	–	2	–	–	Yes		–	–	–	Yes	G ⅛	248810
–	–	2	–	–	Yes		Yes	–	–	–	G ⅛	255841
–	–	–	2	–	–		–	–	–	Yes	G ⅛	248824
–	–	–	–	2	–		–	–	–	Yes	G ⅛	248808

1.) II 3D Ex tc IIIC T135/II 3G Ex ec IIC T4 Gc

2.) II 2D Ex ia IIIC T135 °C IP64/II 2G Ex ia IIC T4 Gb

3.) II 2G Ex ia IIC T4 Gb

Further versions on request

Additional
Feedback switch-point NPN coded
Push-in pilot air ports (Tube Ø 6 mm and ¼")

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Electrical position feedback for combination with central automated On/Off process valves Type 20xx CLASSIC

End position feedback						Electrical Connection	ATEX/ IECEx Cat. 3D/G Zone 22/2[1.]	ATEX/ IECEx Cat. 2D/G Zone 21/1[2.]	ATEX/ IECEx Cat. 2G Zone 1[3.]	cULus	Pilot air ports thread-ed port	Article no.
Inductive switch			Micro switch		Feed-back status LEDs							
3-wire	2-wire											
PNP	NAMUR	24 V DC	0…48 V AC/ DC	50…250 V AC/ DC								
End position feedback												
2	–	–	–	–	Yes	Cable gland	–	–	–	Yes	Without	248827
2	–	–	–	–	Yes		Yes	–	–	–	Without	255851
2	–	–	–	–	Yes	M12 Multi-pole	Yes	–	–	–	Without	255858
2	–	–	–	–	Yes		–	–	–	Yes	Without	250472
–	2	–	–	–	Yes	Cable gland	–	Yes	–	–	Without	248831
–	2	–	–	–	Yes		–	–	Yes	–	Without	255863
–	–	2	–	–	Yes		–	–	–	Yes	Without	248826
–	–	2	–	–	Yes		Yes	–	–	–	Without	255850
–	–	–	2	–	–		–	–	–	Yes	Without	248833
–	–	–	–	2	–		–	–	–	Yes	Without	248825

1.) II 3D Ex tc IIIC T135/II 3G Ex nA IIC T4 Gc

2.) II 2D Ex ia IIIC T135 °C IP64/II 2G Ex ia IIC T4 Gb

3.) II 2G Ex ia IIC T4 Gb

6.4. Ordering chart accessories

Standard accessories: ELEMENT

Note:
Must be ordered separately

Description	Article no.
M12-socket, 8 pin with 5 m cable for power supply and input/output signal	919267
Silencer G ⅛	780779
Silencer, push-in connector	902662

Standard accessories: CLASSIC

Note:
Must be ordered separately

Description	Article no.
M12 socket, 8 pin with 5 m cable for power supply and input/output signal	919267
Silencer G ⅛	780779
Stroke limitation: CLASSIC actuator Ø 50/63 mm	689353
Stroke limitation: CLASSIC actuator Ø 80 mm	689354
Stroke limitation: CLASSIC actuator Ø 100/125 mm	689355

Adapter kits: ELEMENT

Note:
Must be ordered separately

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 for ELEMENT Type 21xx	Ø 50 mm	Universal	682259

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Adapter kits: CLASSIC

Note:
Must be ordered separately

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 CLASSIC Type 20xx	Ø 40 mm	Universal	682263
	Ø 50/63/80 mm	Universal	682264
	Ø 100/125 mm	Universal	682265
	Ø 175/225 mm	Universal	684944
Retrofit kit[1.)] CLASSIC Type 20xx	Ø 40 mm	Universal	698573

1.) Adapter kit for retrofitting old CLASSIC actuators without optical position indicator on the actuator cover or as a replacement adapter kit for the discontinued position feedback Type 1062. Please observe the general installation instructions in the operating manual.

Actuator CLASSIC Type 20xx, Ø 40	
Old version (Without optical position indicator)	**New version** (With optical position indicator)
	

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