



Pneumatic control unit for decentralised automation of process valves ELEMENT

- Compact design
- Integrated pilot valve with manual override
- Integrated pilot air duct in the actuator
- Automatic end position feedback setting
- With ATEX II cat. 3G/D and cat. 2G/D 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 2106 Pneumatically operated 3/2-way seat valve ELEMENT for decentralized automation	▶
	Type 2000 Pneumatically operated 2/2-way angle seat valve CLASSIC	▶
	Type 2012 Pneumatically operated 2/2-way globe valve CLASSIC	▶
	Type 2031 2/2-way diaphragm valve with pneumatic plastic actuator (Type CLASSIC)	▶

Type description

The Type 8697 pneumatic control unit is designed for decentralised automation of ELEMENT Type 21xx pneumatic process valves. Mechanical or inductive limit switches record the valve position. The integrated pilot valve controls single-acting actuators. The design of the control unit and the actuator permits an integrated pilot air duct without external piping. As well as the electrical position feedback, the device status is displayed by LEDs 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 the 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.

FLU-TECH CO. LTD.

Email: sales@flutech.co.th **Website:** https://flutech.co.th

Tel: 02-384-6060, 086-369-5871-3 **Fax:** 02-384-5701 **LINE OA:** @flutech.co.th

Address (HQ): 845/3-4, Moo 3, Theparak Rd., T. Theparak, A. Mueang Samut Prakan, Samut Prakan, 10270, Thailand



Table of contents

1. General technical data	3
2. Approvals and conformities	5
2.1. General notes	5
2.2. Conformity	5
2.3. Standards	5
2.4. Explosion protection.....	5
2.5. North America (USA/Canada)	5
2.6. Others	5
China Compulsory Certification (CCC)	5
3. Materials	6
3.1. Material specifications	6
4. Dimensions	6
4.1. Mounting on ELEMENT process valve Types 21xx.....	6
4.2. Mounting on CLASSIC process valves Type 20xx	7
5. Device/Process connections	8
5.1. Electrical connections	8
Multipole connection.....	8
Cable gland	9
6. Product installation	11
6.1. Combination options with pneumatic ELEMENT process valves	11
6.2. Combination options with pneumatic CLASSIC process valves.....	12
7. Ordering information	13
7.1. Bürkert eShop	13
7.2. Bürkert product filter	13
7.3. Ordering chart	14
Pneumatic control unit for decentralised automation of ELEMENT On/Off process valves Type 21xx.....	14
Electrical position feedback for combination with centrally automated CLASSIC On/Off process valves Type 20xx	15
7.4. Ordering chart accessories.....	15
Standard accessories ELEMENT	15
Standard accessories CLASSIC.....	15
Adapter kits ELEMENT.....	16
Adapter kits CLASSIC	16

1. General technical data

Product properties	
Dimensions	Further information can be found in chapter "4. Dimensions" on page 6.
Material	
Body	PPS
Seal	EPDM
Cover	PC
Commissioning	
Setting valve end position	Automatic (mechanical)
Manual override of pilot valve	Yes
Status display	
Display of device and valve status	Coloured LEDs
Optical position indicator (mechanical)	Yes
Performance data	
Position sensor	
Stroke range for linear actuator	
Valve spindle, initiator	2...36 mm
Valve spindle, micro switch	4...36 mm
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 inductive proximity switch (24 V DC), PNP shutter (3-wire) with LEDs 2x inductive proximity switch NAMUR (8.2 V DC) shutter (2-wire) with LEDs 2x inductive proximity switch (24 V DC), shutter (2-wire) with LEDs
Electrical data	
Operating voltage	
Pilot valve	24 V DC $\pm$ 10 %, residual ripple 10 % DC, power consumption 1 W
Residual ripple	10 %
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	III according to DIN EN 61140
Electrical connection	
Multipole version	M12, 8-pin M12, 4-pin
Cable gland version	M16 $\times$ 1.5 (cable $\varnothing$ 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 according to ISO 8573 - 1	
Dust content	Class 7 (< 40 μ m 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) 2)}
Pilot air port	Threaded connection G 1/8 stainless steel or push-in connector (pipe $\varnothing$ 6 mm / 1/4")
Positioning system	
Circuit function	Single-acting
Air capacity	7 l _N /min (for aeration and ventilation) (Q _{Nn} value according to definition at pressure drop from 7 to 6 bar abs)
Actuator series/size	
Pneumatic control unit / Position feedback indicator	Type 21xx, actuator $\varnothing$ 50 mm
Position feedback	Type 20xx, actuator $\varnothing$ 40 bis 225 mm

Approvals and conformities

Explosion protection

Ignition protection class	II 3G Ex ec IIC T4 Gc II 3D Ex tc IIIC T135 °C Dc II 2G Ex ia IIC T4 Gb II 2D Ex ia IIIC T135 °C Db
ATEX	BVS 13 ATEX E 087 X II 3G Ex ec IIC T4 Gc II 3D Ex tc IIIC T135 °C Dc BVS 13 ATEX E104 X II 2G Ex ia IIC T4 Gb II 2D Ex ia IIIC T135 °C
IECEx	IECEx BVS 13.0097 X Ex tc IIIC T135 °C Dc / Ex ec IIC T4 Gc IECEx BVS 13.0105X Ex ia IIIC T135 °C Db / Ex ia IIC T4 Gb

Further information can be found in chapter **"2.4. Explosion protection" on page 5.**

North America (USA/Canada)

UL Listed for the USA and Canada	cULus certificate: E238179 Further information can be found in chapter "2.5. North America (USA/Canada)" on page 5.
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Others

China Compulsory Certification (CCC)	The products with Ex approval are suitable for import and use for hazardous applications in China. Further information can be found in chapter "2.6. Others" on page 5.
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Further information can be found in chapter **"2. Approvals and conformities" on page 5.**

Environment and installation

Operating conditions

Ambient temperature

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 ia IIIC 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 according to EN 60529, 4X according to NEMA 250 standard
Operating altitude	Up to 2000 m above sea level

Installation and mechanical data

Installation position	As required, preferably with actuator in upright position
Valve actuator (type, size)	ELEMENT Type 21xx (actuator size Ø 50 mm) CLASSIC Type 20xx (actuator size Ø 40...225 mm) only in combination with position feedback indicator without pilot valve
Adapter kit	Further information can be found in chapter "Adapter kits ELEMENT" on page 16 and in chapter "Adapter kits CLASSIC" on page 16.

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

2.) Pressure data: overpressure to atmospheric pressure

2. Approvals and conformities

2.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available versions can be supplied with the below mentioned approvals or conformities.

2.2. Conformity

In accordance with the Declaration of Conformity, the product is compliant with the EU Directives.

2.3. Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

2.4. Explosion protection

Approval	Description
 	Optional: Explosion protection ATEX: BVS 13 ATEX E 087 X II 3G Ex ec IIC T4 Gc II 3D Ex tc IIIC T135 °C Dc BVS 13 ATEX E104 X II 2G Ex ia IIC T4 Gb II 2D Ex ia IIIC T135 °C IECEx: IECEx BVS 13.0097 X Ex tc IIIC T135 °C Dc / Ex ec IIC T4 Gc IECEx BVS 13.0105X Ex ia IIIC T135 °C Db / Ex ia IIC T4 Gb

2.5. North America (USA/Canada)

Approval	Description
	Optional: UL Listed for the USA and Canada The products are UL Listed for the USA and Canada according to: • UL 61010-1 (ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE – Part 1: General Requirements) • CAN/CSA-C22.2 No. 61010-1

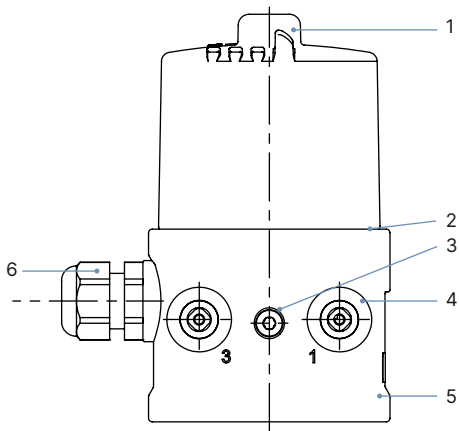
2.6. Others

China Compulsory Certification (CCC)

Conformity	Description
	Optional: China Compulsory Certification (CCC) The products with Ex approval are suitable for import and use for hazardous applications in China.

3. Materials

3.1. Material specifications



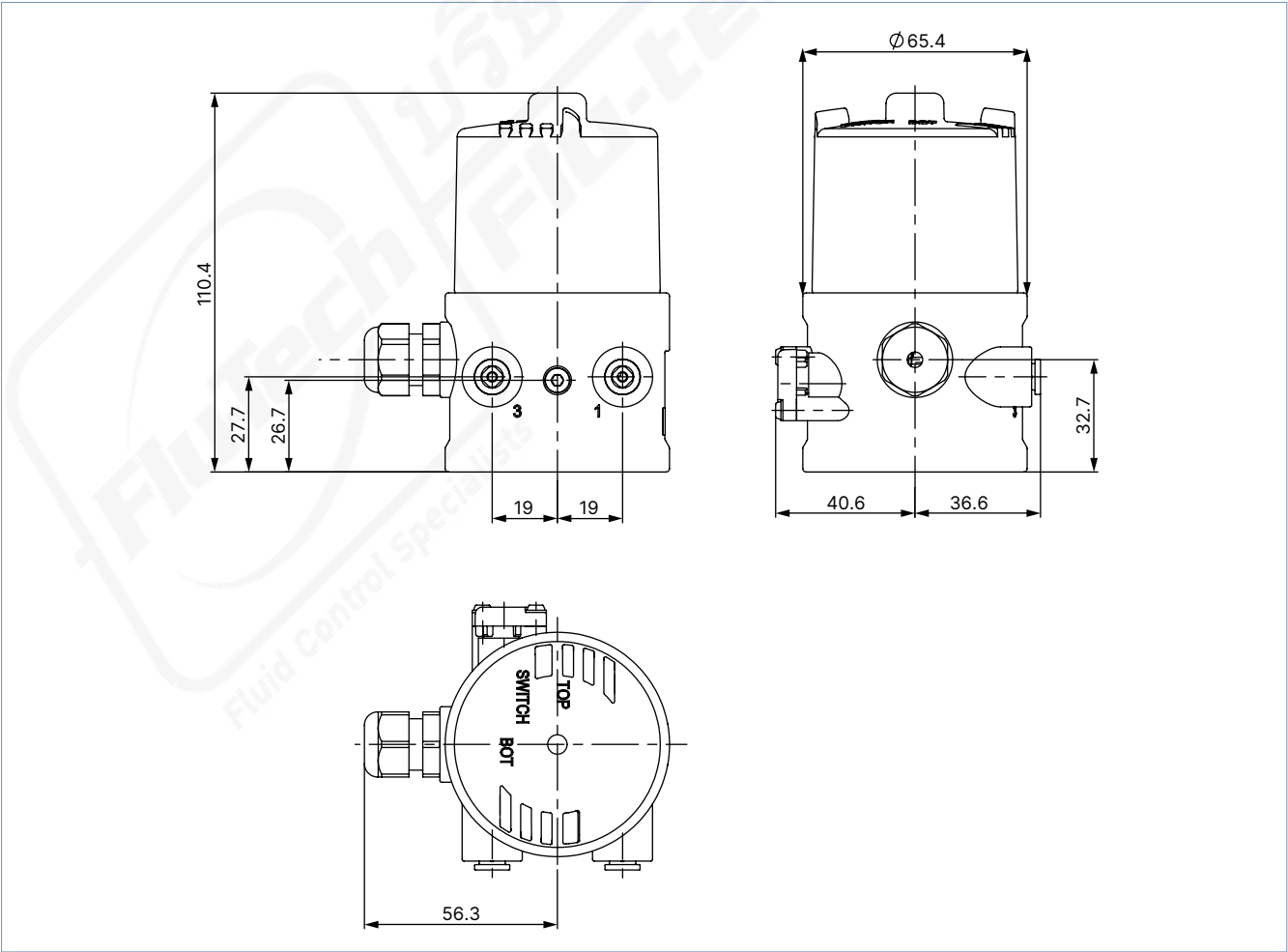
No.	Element	Material
1	Cover	PC
2	Seals	EPDM
3	Screws	Stainless steel
4	Push-in connector Threaded connection G 1/8	POM/Stainless steel Stainless steel
5	Basic housing	PPS
6	Cable gland M12 plug connector	PA Stainless steel

4. Dimensions

4.1. Mounting on ELEMENT process valve Types 21xx

Note:

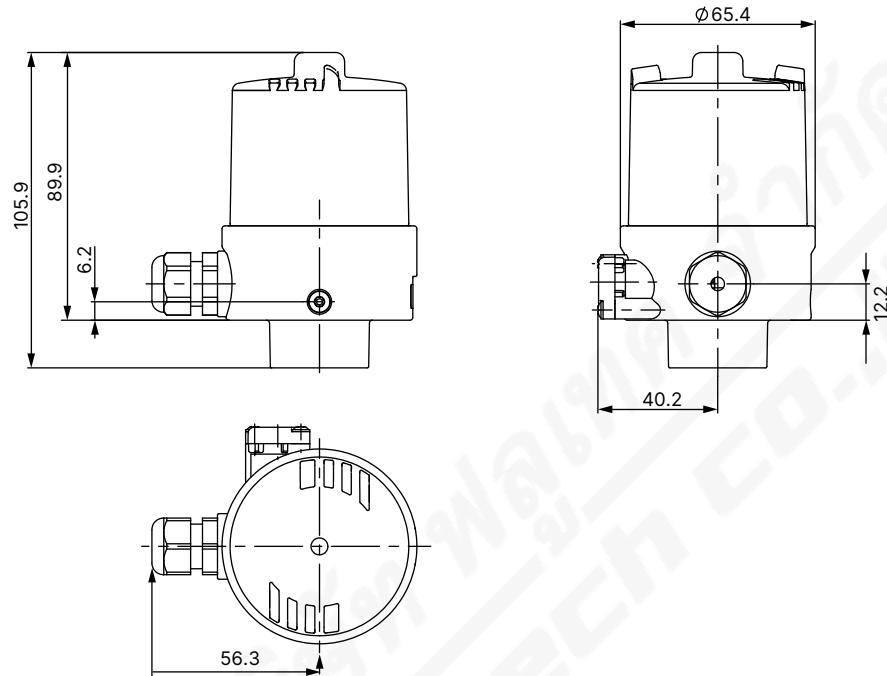
Dimensions in mm



4.2. Mounting on CLASSIC process valves Type 20xx

Note:

Dimensions in mm



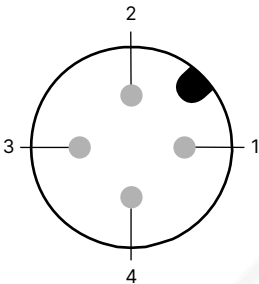
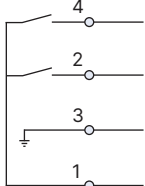
5. Device/Process connections

5.1. Electrical connections

Multipole connection

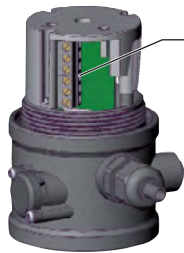
Circular plug M12, 8-pin		Plug configuration with inductive proximity switch 3-wire 24 V DC PNP		
Pin	Wire colour ^{1.)}	Configuration	External circuitry	
1	White	INI Bottom OUT Output 1		Output 1(24 V)
2	Brown	INI Top OUT Output 2		Output 2 (24 V)
3	Green	INI – (GND) Supply		GND
4	Yellow	INI + (24 V 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).

Circular plug M12, 4-pin		Pin assignment without control valve (feedback head) with inductive proximity switches 3-wire 24 V DC PNP	
	Pin	Configuration	External circuitry
	1	INI + (24 V DC) Supply	
	2	INI Top OUT Output 2	
	3	INI – (GND) Supply	
	4	INI Bottom OUT Output 1	
			Output 1 (24 V) Output 2 (24 V) GND + 24 V DC

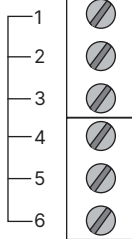
Cable gland

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



Screw terminal

Terminal numbering



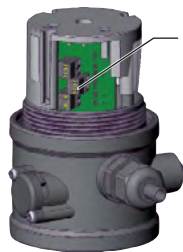
Terminal assignment with micro switch 0...48 V DC/50...250 V AC/DC

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

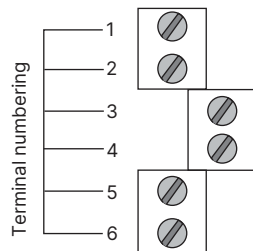
Terminal assignment with inductive proximity switch 3-wire 24 V DC PNP

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

Cable gland M16 × 1.5 (cable Ø 4...8 mm), screw terminals (1.5 mm²)



Screw terminal



Port configuration with inductive proximity switch NAMUR

Terminal	Configuration	External circuitry
1	INI Top +	Explosion protected area Non-hazardous area See footnote¹⁾

Terminal assignment with inductive proximity switch 2-wire 24 V DC

Terminal	Configuration	External circuitry
1	INI Top +	

1.) According to NAMUR recommendation. Observe the Turck KEMA 02 ATEX 1090X-type examination certificate.

2.) Barrier signal see PTB 07 ATEX 2048

6. Product installation

6.1. Combination options with pneumatic ELEMENT process valves

Note:

A decentralised, **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 decentralised automation of ELEMENT On/Off process valves Type 21xx" on page 14**
- **Article no.** of the **desired process valve Type 21xx**, see **data sheet Type 2100 ▶, Type 2101 ▶ and Type 2103 ▶**

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

Example for decentralised automation of On/Off ELEMENT valve systems



6.2. Combination options with pneumatic CLASSIC process valves

Note:

An **On/Off CLASSIC valve system** consists of an **electrical position feedback indicator Type 8697** and a **process valve Type 20xx CLASSIC**. The function of the position feedback indicator 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 indicator Type 8697**, see [“Electrical position feedback for combination with centrally automated CLASSIC On/Off process valves Type 20xx” on page 15](#)
- **Article no.** of the selected **process valve Type 20xx**, see separate **data sheet Type 2000 ▶**, **Type 2012 ▶** and **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 the **valve terminal Type 8640 ▶**, **Type 8644 ▶** or **Type 8650 ▶**.



7. Ordering information

7.1. Bürkert eShop



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7.2. Bürkert product filter



Bürkert product filter – Get quickly to the right product

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7.3. Ordering chart

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

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),4)}	cULus	Pilot air ports	Article no.
Inductive proximity 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								
Pneumatic control unit (Pilot valve 3/2-way, single-acting NO/NC)												
2	–	–	–	–	Yes	Cable gland	–	–	–	Yes	G 1/8	248816 
2	–	–	–	–	Yes		Yes	–	–	–	G 1/8	255847 
2	–	–	–	–	Yes	M12 Multipole, 8-pin	Yes	–	–	–	G 1/8	255849 
2	–	–	–	–	Yes		–	–	–	Yes	G 1/8	248818 
–	2	–	–	–	Yes	Cable gland	–	Yes	–	–	G 1/8	248822 
–	2	–	–	–	Yes		–	–	Yes	–	G 1/8	255862 
–	–	2	–	–	Yes		–	–	–	Yes	G 1/8	248814 
–	–	2	–	–	Yes		Yes	–	–	–	G 1/8	255845 
Without end position feedback						M12 Multipole, 8-pin	–	–	–	Yes	G 1/8	260278 
						Cable gland	–	–	–	Yes	G 1/8	260279 
							Yes	–	–	–	G 1/8	260280 
Electrical position feedback (without pilot valve)												
2	–	–	–	–	Yes	Cable gland	–	–	–	Yes	G 1/8	248812 
2	–	–	–	–	Yes		Yes	–	–	–	G 1/8	255843 
2	–	–	–	–	Yes	M12 Multipole, 8-pin	Yes	–	–	–	G 1/8	255857 
2	–	–	–	–	Yes		–	–	–	Yes	G 1/8	250471 
2	–	–	–	–	Yes	M12 Multipole 4-pin	–	–	–	–	G 1/8	363443 
–	2	–	–	–	Yes	Cable gland	–	Yes	–	–	G 1/8	248820 
–	2	–	–	–	Yes		–	–	Yes	–	G 1/8	255860 
–	–	2	–	–	Yes		–	–	–	Yes	G 1/8	248810 
–	–	2	–	–	Yes		Yes	–	–	–	G 1/8	255841 
–	–	–	2	–	–		–	–	–	Yes	G 1/8	248824 
–	–	–	–	2	–		–	–	–	Yes	G 1/8	248808 

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

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

3.) II 2G Ex ia IIC T4 Gb

4.) CCC (China Compulsory Certificate) for device versions with Ex approval

Further versions on request



Additional

Feedback switch-point NPN coded, Push-in pilot air ports (tube Ø 6 mm and 1/4")

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

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),4)}	cULus	Pilot air ports threaded port	Article no.	
Inductive proximity switch			Micro switch		Feedback status LEDs								
3-wire	2-wire	2-wire	0...48 V AC/DC	50...250 V AC/DC									
PNP	NAMUR	24 V DC											
End position feedback													
2	–	–	–	–	Yes	Cable gland	–	–	–	Yes	Without	248827 	
2	–	–	–	–	Yes		Yes	–	–	–	–	Without	255851 
2	–	–	–	–	Yes		M12	Yes	–	–	–	Without	255858 
2	–	–	–	–	Yes	Multipole, 8-pin	–	–	–	Yes	Without	250472 	
2	–	–	–	–	Yes	M12 Multipole 4-pin	–	–	–	–	Without	280169 	
2	–	–	–	–	Yes		Yes	–	–	–	–	Without	281131 
–	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 ec IIC T4 Gc

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

3.) II 2G Ex ia IIC T4 Gb

4.) CCC (China Compulsory Certificate) for device versions with Ex approval

7.4. Ordering chart accessories

Standard accessories ELEMENT

Note:

Must be ordered separately.

Description	Article no.
M12 circular socket with cable, 4-pin, A-coded, cable length: 5 m	918038 
M12 circular socket with cable, 8-pin, cable length: 5 m, for input and output signals	919267 
Silencer G 1/8"	780779 
Silencer 6 mm, PE	902662 

Standard accessories CLASSIC

Note:

Must be ordered separately.

Description	Article no.
M12 circular socket with cable, 4-pin, A-coded, cable length: 5 m	918038 
M12 circular socket with cable, 8-pin, cable length: 5 m, for input and output signals	919267 
Silencer G 1/8"	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 Type 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 

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 Type 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 instructions Type 8697** ▶.

Actuator CLASSIC Type 20xx, Ø 40	
Old version (without optical position feedback indicator)	New version (with optical position feedback indicator)
	