bürkert
FLUID CONTROL SYSTEMS

Control head for decentralized automation of hygienic process valves

- Universal attachment for hygienic process valves
- Contactless position measurement system with 3 switching points (Teach-In function)
- Coloured status display
- Manual override operative with closed housing
- AS-Interface, IO-Link, büS/CANopen

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

Can be combined with

Single seat valve
Double seat valve

Butterfly valve Ball valve

Type description

The control head Type 8681 is optimized for decentralised automation of hygienic process valves. Thanks to its universal adapter it can be combined with all normal commercial butterfly valves, ball valves, single and double seated valves.

With a decentralised automation concept, the control head takes over all pneumatic actuation, feedback and diagnostic functions including field bus communication.

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.

Depending on the process valve type, up to 3 pneumatic actuator chambers can be controlled independently from each other. The switching speeds of both movement directions can be set separately. A built-in check valve prevents incorrect switching of process valve actuator chambers which could result from back-pressure.

The process valve switching positions are detected by an inductive, analogue position sensor and reported to the PLC system. Up to 3 switching points can be adjusted automatically by a Teach-In function. Additionally a fourth switching position can be read in and fed back via an external inductive proximity switch. The coloured status display signals the particular process valve switching position or indicates a diagnostic function such as maintenance required status or fault conditions.

The pilot valves are equipped with a manual override. If the device housing is closed, the patented magnetically encoded manual override tool can be used to open the process valve from the exterior. Bus communication is available with AS-interface, IO-Link or büS/CANopen.

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Visit product website ▸

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1. General technical data

1.1. Control head Type 8681

Product properties	
Dimensions	Further information can be found in chapter "4. Dimensions" on page 12.
Material	
Body	PA, PPO, VA, stainless steel
Cover	CR, EPDM
Seal	PC, PSU
Operation	
Operating keys	Teach keys
DIP switch	Yes
Service interface	Connection with PC via USB connection
Configuration tool	Bürkert Communicator or PC service programme (according to device version)
Commissioning	
Setting valve end position	Through automatic or manual teach function
Manual override of pilot valve	Yes
Status display	
Display of device and valve status	High-power LEDs (colours individually adjustable)
Communication	
Fieldbus	AS-Interface
Digital	IO-Link, Bürkert system bus (büS) (based on CANopen)
Fieldbus specific data	
Bit configuration table	Further information can be found in chapter "1.7. Bit configuration table" on page 8.
Programming data table	Further information can be found in chapter "1.8. Programming data table" on page 8.
Performance data	
Functional overview	Further information can be found in chapter "1.9. Functional overview Type 8681" on page 9.
Position sensor	
Analogue position sensor	Inductive (contactless), 3 self-regulated switching points PNP (Teach resp. autotune function), closer (normally open), PNP output short circuit proof, clocking short circuit protection
Stroke range for linear actuator	
Valve spindle	0...80 mm
Position feedback	
Output current	Max. 100 mA per feedback signal
Resolution	≤ 0.1 mm
Total error	± 0.5 mm when using a target for the dimensional drawing, (material 1.4021) and a piston rod (Ø 22 mm, material 1.4301) (error refers to the reproducibility of the teach position)
Pneumatic data	
Control medium	**Neutral gases, air, quality class according to ISO 8573 - 1**
Dust content	Class 7 (< 40 µm particle size)
Particle density	Class 7 (< 10 mg/m³)
Pressure dew point	Class 3 (← 20 °C)
Oil content	Class X (< 25 mg/m³)
Supply pressure	2.5...8 bar
Pilot air port	
Air inlet and outlet	G ¼
Service port	G ⅛

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Actuating system	
Circuit function	Single-acting and double-acting
Air performance [1.)]	110 l_N/min for aeration and ventilation 110 l_N/min delivery condition 200 l_N/min maximum typical flow rate
Approvals and conformities	
Explosion protection	
ATEX	Dust: II 3 D Ex tc IIIC T135 °C Dc X Gas: II 3 G Ex ec IIC T4 Gc X Further information can be found in chapter "2.4. Explosion protection" on page 10.
North America (USA/Canada)	
UL Listed for the USA and Canada	cULus-Zertifikat: E238179
FM Explosion Protection	Nonincendive for Class I, Division 2, Groups A, B, C and D hazardous locations
Further information can be found in chapter "2.5. North America (USA/Canada)" on page 10.	
Environment and installation	
Operating conditions	
Ambient temperature	- 10 to + 55 °C + 5 to + 55 °C (in Ex atmosphere (Zone 2))
Degree of protection	IP65/IP67 according to EN 60529
Operating altitude	Up to 2000 m above sea level
Installation and mechanical data	
Installation position	As required, preferably with actuator in upright position

1.) Q_{Nn}-value for pressure drop from 7 to 6 bar absolute at 20 °C

1.2. Without fieldbus communication: 24 V DC

Electrical data	
Operating voltage	12 bis 28 V DC
Residual ripple	Max. 10 %
Protection class	III according to DIN EN 61140
Power consumption	< 5 W (according to version and operating status, see **operating manual Type 8681** ▶)
Inputs valve control (Y1 - Y3)	
Signal level active	U > 10 V, max. 24 V DC + 10 %
Signal level inactive	U < 5 V
Impedance	U > 30 kOhm
Outputs/digital feedback signal (S1 OUT - S4 OUT)	
Design	Closer (normally open), PNP output short circuit proof, self-clocking short circuit protection
Switchable output current	Max. 100 mA per feedback signal
Output voltage active	≥ Operating voltage - 2 V
Output voltage inactive	Max. 1 V in unloaded state
Input / proximity switch (external initiator: S4 I_N)	
Operating voltage	Voltage applied at control head - 10 %
Current carrying capacity, sensor operating voltage	Max. 90 mA short circuit protection
Design	DC 2-wire and 3-wire, NO or NC (factory setting NO), PNP output
Input current 1 signal	I_{Sensor} > 6.5 mA, limited internally to 10 mA
Input voltage 1 signal	U_{Sensor} > 10 V
Input current 0 signal	I_{Sensor} < 4 mA
Input voltage 0 signal	U_{Sensor} < 5 V
Electrical connection	
Multipole	M12, 12-pin with 8 cm cable, 1 x M16 × 1.5 cable glands for external initiator (clamping range 3...6 mm)
Cable gland	M16 × 1.5 (cable Ø 5...10 mm, screw terminals 0.14...1.5 mm²), 1 x M16 × 1.5 cable glands for external initiator (clamping range 3...6 mm)

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1.3. Without fieldbus communication: 120 V AC

Electrical data	
Operating voltage	110...130 V AC/50/60 Hz
Protection class	I according to DIN EN 61140
Current consumption (stand by current)	10 mA at 120 V AC
Input, valve control (Y1 - Y3)	
Signal level active	U > 60 V AC
Signal level inactive	U < 20 V AC
Impedance	> 40 Ω
Output/digital feedback signal S1 OUT - S3 OUT	
Design	Closer (normally open), L-switching, short circuit protection via automatically resetting fuse
Switchable output current	Max. 50 mA per feedback signal
Output voltage active	≥ operating voltage - 2 V
Output voltage inactive	Max. 1 V in unloaded state
Input/proximity switch (external initiator: S4 I_N)	
Operating voltage	Voltage applied at control head: $U_{Nominal}$ = 120 V AC, 50/60 Hz
Current carrying capacity sensor operating voltage	Max. 0.7 A
Design	DC 2 and 3 wire, NO contact, L switching
Input current 1-Signal	I_{Sensor} < 2 mA
Electrical connection	
Cable gland	M16 × 1.5 (cable Ø 5...10 mm, screw terminals 0.14...1.5 mm²), 1 x M16 × 1.5 cable glands for external initiator (clamp range 3...6 mm)

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1.4. With fieldbus communication: AS-Interface

Product properties	
Profile	S- 7.A.E (AB slave max. 62 slaves/master) S- 7.F.F (max. 31 Slaves/Master)
Electrical data	
Operating voltage	
Via bus cable	According to specification
Isolated from bus signal	Reversible (jumper)
Protection class	III according to DIN EN 61140
Power consumption equipment without external operating voltage	
Maximum current consumption	< 160 mA (including external initiator with 30 mA)
Current consumption in normal operation	< 150 mA
(after power reduction of the valves + 1 end position reached)	3 valves activated, 1 position feedback with LED display, no external initiator
Current consumption device with external operating voltage	
The operating voltage unit must contain a safe disconnection according to IEC 60364 - 4 - 41. It must comply with the SELV standard. The ground potential must not have an earth connection.	19.2 V DC to 31.6 V DC ≤ 110 mA 24 V DC ≤ 150 mA typical
Output (from master perspective)/solenoid valve	
Contact rating	Max. 0.9 W per solenoid valve for 200 ms after switching on
Typical contact rating	0.6 W per solenoid valve from 200 ms after switching on
Watchdog function	Integrated
Typical inrush current per solenoid valve	30 mA resp. 0.9 W/200 ms (at 30.5 AS-i voltage)
Typical hold current per solenoid valve	20 mA resp. 0.6 W/200 ms (at 30.5 AS-i voltage)
Operating mode	Continuous operation (100 % duty cycle)
Valve type	6524
Input/proximity switch (external initiator: S4 I_N)	
Operating voltage	AS-Interface voltage applied at control head - 10 %
Current carrying capacity of sensor operating voltage	Max. 30 mA short circuit protection
Design	DC 2- and 3-wire, NO or NC (factory setting NO), PNP output
Input current 1 signal	I_{Sensor} > 6.5 mA, limited internally to 10 mA
Input voltage 1 signal	U_{Sensor} > 10 V
Input current 0 signal	I_{Sensor} < 4 mA
Input voltage 0 signal	U_{Sensor} < 5 V
Electrical connection (standard: AS-i flat cable clip at 80 cm cable)	
Multipole	M12, 4-pin on 8 cm cable (resp. 0.3 m cable length according to AS-Interface specification) or on 80 cm cable (resp. 1.0 m cable length according to AS-Interface specification)
Cable gland	1 x M16 × 1.5 for external initiator (clamp range 3...6 mm)

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1.5. With digital communication: IO-Link

Electrical data	
IO-Link revision	1.1
SIO mode	No
VendorID	0×78, 120
DeviceID	See corresponding IODD file (Port Class A, resp. Port Class B) The IODD file can be downloaded from our **website Type 8681** ▶, see Software > Device Description Files A.04.
Transmission rate	230.4 kbit/s
Frame type in operation	TYPE_2_V
Cycle time	Min. 2 ms
Data Storage	Yes
Cable length	Max. 20 m
Port Class	A resp. B
Operating voltage	18 bis 30 V DC (according to specification)
Operating voltage	Via IO-Link
Protection class	III according to DIN EN 61140
Maximum current consumption	
Port Class A	< 170 mA at 18 V, without external initiator for 3 solenoid valves
Port Class B	< 65 mA at 18 V, without external initiator from power 1, < 100 mA at 18 V for 3 valves from power 2
Current consumption in normal operation (after power reduction of the 3 solenoid valves + 1 end position reached)	
Port Class A	< 155 mA at 18 V, without external initiator at 3 solenoid valves
Port Class B	< 65 mA at 18 V, without external initiator from power 1, < 85 mA at 18 V for 3 solenoid valves from power 2
Output (from master perspective)/solenoid valves	
Contact rating	Max. 0.9 W (per solenoid valve)
Typical continuous output	0.6 W (per solenoid valve)
Inrush current	40 mA resp. 0.9 W/200 ms (for voltage rating 24 V)
Hold current	25 mA resp. 0.6 W (for voltage rating 24 V)
Operating mode	Continuous operation (100 % duty cycle)
Input/proximity switch (external initiator: S4 I_N) solenoid valves	
Operating voltage	Voltage at power 1...10 %
Current carrying capacity sensor operating voltage	Max. 30 mA, short circuit protection
Design	DC 2- and 3-wire, NO, PNP output
Input current 1 signal	I_{Sensor} > 6.5 mA, limited internally to 10 mA
Input voltage 1 signal	U_{Sensor} > 10 V
Input current 0 signal	I_{Sensor} < 4 mA
Input voltage 0 signal	U_{Sensor} < 5 V
Electrical connection	
Multipole	M12, 4-pin (IO-Link, Port Class A) M12, 5-pin (IO-Link, Port Class B)
Cable gland	M16 × 1.5 (clamp range 5...10 mm, screw terminals 0.14...1.5 mm²) 1 x cable gland M16 × 1.5 (clamp range 3...6 mm, screw terminals 0.14...1.5 mm²) for external initiator

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1.6. With digital communication: büS/CANopen

Electrical data	
Power supply	**11...25 V DC**
Protection class	III according to DIN EN 61140
Current consumption	< 180 mA at 24 V DC
Output (from master perspective)/solenoid valve	
Typical contact rating	0.9 W per solenoid valve for 200 ms after switching on
Typical continuous output	0.6 W per solenoid valve from 200 ms after switching on
Power reduction	Via the büS/CANopen interface, electronically integrated
Typical inrush current per solenoid valve	38 mA resp. 0.9 W/200 ms at 24 V DC
Typical hold current per solenoid valve	75 mA typically at 24 V DC (3 solenoid valves)
Operating mode	Continuous operation (100 % duty cycle)
Valve type	6524
Input/proximity switch (external initiator: S4 I_N)	
Operating voltage	Via the büS/CANopen operating voltage - 10 %
Current carrying capacity of sensor operating voltage	Max. 30 mA
Short circuit protection design	DC 2- and 3-wire, closer (NO), PNP output
Input current 1 signal	I_{Sensor} > 6.5 mA, limited internally to 10 mA
Input voltage 1 signal	U_{Sensor} > 10 V
Input current 0 sSignal	I_{Sensor} < 4 mA
Input voltage 0 signal	U_{Sensor} < 5 V
Electrical connection	
Multipole	M12, 5-pin on 80 cm cable, 1 x M16 × 1.5 cable gland for external initiator (clamp range 3...6 mm)
Cable gland	1 x M16 × 1.5 cable gland (clamping range 5...10 mm), 1 x M16 × 1.5 cable gland for external initiator (clamp range 3...6 mm)

1.7. Bit configuration table

Bit assignment				
Databit	**D3**	**D2**	**D1**	**D0**
Input	External initiator S4	Position 3	Position 2	Position 1
Output	Not assigned	Solenoid valve 3	Solenoid valve 2	Solenoid valve 1
Parameterbit	**D3**	**D2**	**D1**	**D0**
Output	Not assigned	Not assigned	Not assigned	Not assigned

1.8. Programming data table

Programming data		
Databit	**Programming data with 62 slaves AS-Interface – Device for AB slave addressing (standard device)**	**Programming data with 31 slaves AS-Interface (optional)**
E/A-Configuration	7 hex (4 inputs/4 outputs) see "1.7. Bit configuration table" on page 8	7 hex (4 inputs/4 outputs) see "1.7. Bit configuration table" on page 8
ID-Code	A hex	F hex
Extended ID Code 1	7 hex	(F hex)
Extended ID Code 2	E hex	(F hex)
Profile	S- 7.A.E	S- 7.F.F

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1.9. Functional overview Type 8681

Function	Version					
	24 V DC	120 V AC	AS-Interface standard slave	AS-Interface AB slave	IO-Link	büS/ CANopen
Basic functions						
Teach function of the position measuring system for 3 definable teach points (S1, S2, S3) 1.)	X	X	X	X	X	X
Manual override of pilot valve (mechanical)	X	X	X	X	X	X
Manual override, magnetic (for pilot valve MV1 = 2/A1)	X	X	X	X	X	X
Position feedback process valve OPEN/CLOSED 2.)	X	X	X	X	X	X
Feedback signal current valve position (intermediate position)					X 3.)	X 4.)
Optical position feedback of teach points (S1, S2, S3) and S4 1.)	X	X	X	X	X	X
Colour change of the optical position feedback possible	X	X	X	X	X	X
Selection of LED display modes	–	–	–	–	X	X
Diagnosis LEDs (on the electronic module)	–	–	X	X	X	X
Locating function	–	–	–	–	X	X
büS communication interface (Burkert system bus)	–	–	–	–	–	X
büS service interface (for Bürkert Communicator software)	–	–	–	–	X	–
Diagnosis						
Counter switching cycles of pilot valve MV1...3 with definable limit value	X	X	X	X	X	X
Counter operating hours with definable limit value	X	X	X	X	X	X
Maintenance / service notification (feedback when selected limit values are exceeded)	X	X	X	X	X	X
Active diagnostic messages	–	–	–	–	X	X
Device reset	X	X	X	X	X	X
Feedback Teach error	X	X	X	X	X	X
Feedback overtemperature	–	–	–	–	X	X
Feedback communication error	–	–	X	X	X	X
Feedback for opening/closing timeout	–	–	–	–	X	–
Tolerance for switching time overrun	–	–	–	–	X	–
Error detection if the setpoint position is not reached (end positions not reached)	–	–	–	–	X	–
Detection of under-voltage and over-voltage of operating voltage	–	–	–	–	X	–
Trigger maintenance function	–	–	–	–	X	X
Tolerance band of end position detection	X	X	X	X	X	X
Log function for error cases (via Bürkert Communicator)	–	–	–	–	X	X
Parameterisation						
Parameterisation via PC-Tool 8681 (service interface on electronic module)	X	X	X	X	–	–
Parameterisation via büS communication interface	–	–	–	–	–	X
Parameterisation via büS service interface	–	–	–	–	X	–
Activation/deactivation safety position in case of bus error	–	–	–	–	X	X
Fail-safe positions are defined in case of power and compressed air failure	X	X	X	X	X	X
Activation/deactivation of the magnetic manual override	X	X	X	X	X	X
Deactivation of local operation (lock function)	–	–	–	–	X	X
Factory reset function (reset to factory setting)	X	X	X	X	X	X

1.) S1 - mostly lower valve position (valve completely closed)
S2 - mostly upper valve position (valve fully open)
S3 - mostly specific intermediate position (e.g. upper cycle stroke for double-seat valves)
S4 - external feedback/initiator (e.g. lower cycle stroke for double-seat valves)
2.) OPEN/CLOSED via S1/S2/intermediate position via S3/external feedback/initiator via S4
3.) Specification for I/O link in mm with 0.1 mm resolution
4.) Specification for büS/CANopen in mm with 1 mm resolution

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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

<table>
<tr><th>Approval</th><th>Description</th></tr>
<tr><td> </td><td>Optional: Explosion protection

ATEX:
<table><tr><th>Dust</th><th>Gas</th></tr><tr><td>II 3 D Ex tc IIIC T135 °C Dc X</td><td>II 3 G Ex ec IIC T4 Gc X</td></tr></table></td></tr>
</table>

2.5. North America (USA/Canada)

<table>
<tr><th>Approval</th><th>Description</th></tr>
<tr><td> </td><td>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</td></tr>
<tr><td> </td><td>Optional: FM (Factory Mutual) – Explosion Protection
Nonincendive for Class I, Division 2, Groups A, B, C and D hazardous locations</td></tr>
</table>

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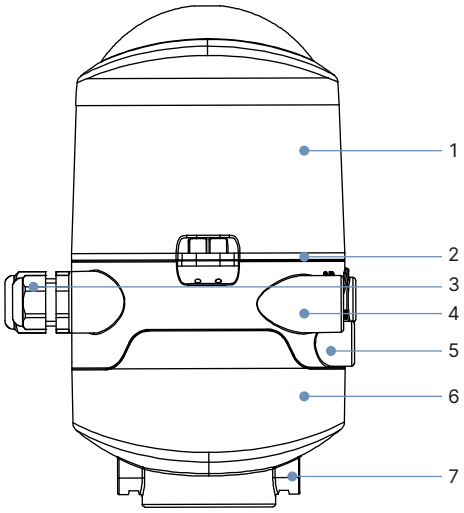
3. Materials

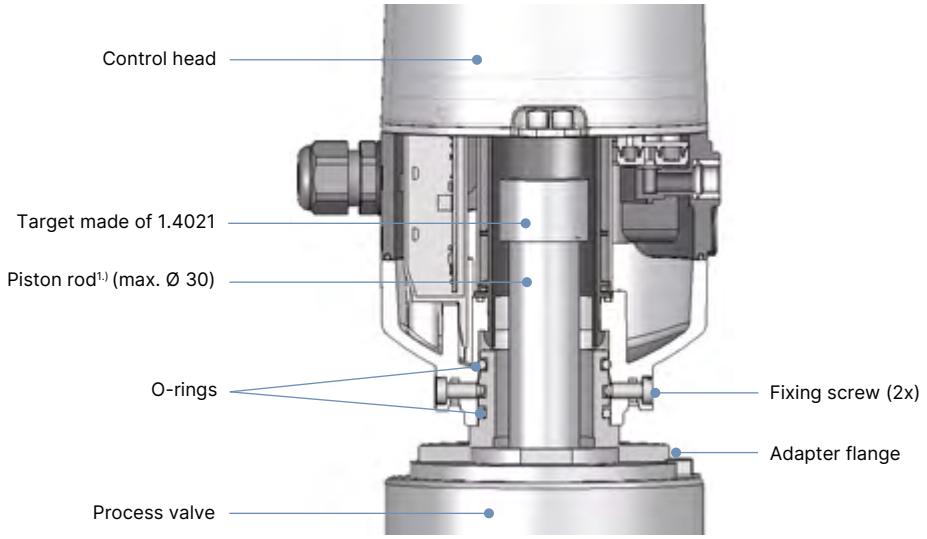
3.1. Material specifications



No.	Element	Material
1	Cover	PC, PSU 1.)
2	Seals	EPDM, CR
3	Cable glands	PA
4	Fluid part	PPO
5	Screws/Threaded ports	Stainless steel
6	Lower part of body	PPO
7	Screws/Threaded ports	Stainless steel

1.) PC cover material: only for Atex and FM appliances

3.2. Flange for process valve and target specification



1.) Target and piston should not be made of ferromagnetic material or material with high electrical conductivity (e.g. copper, aluminium). Stainless steel without ferromagnetic properties such as 1.4404 is suitable (if necessary verify after processing).

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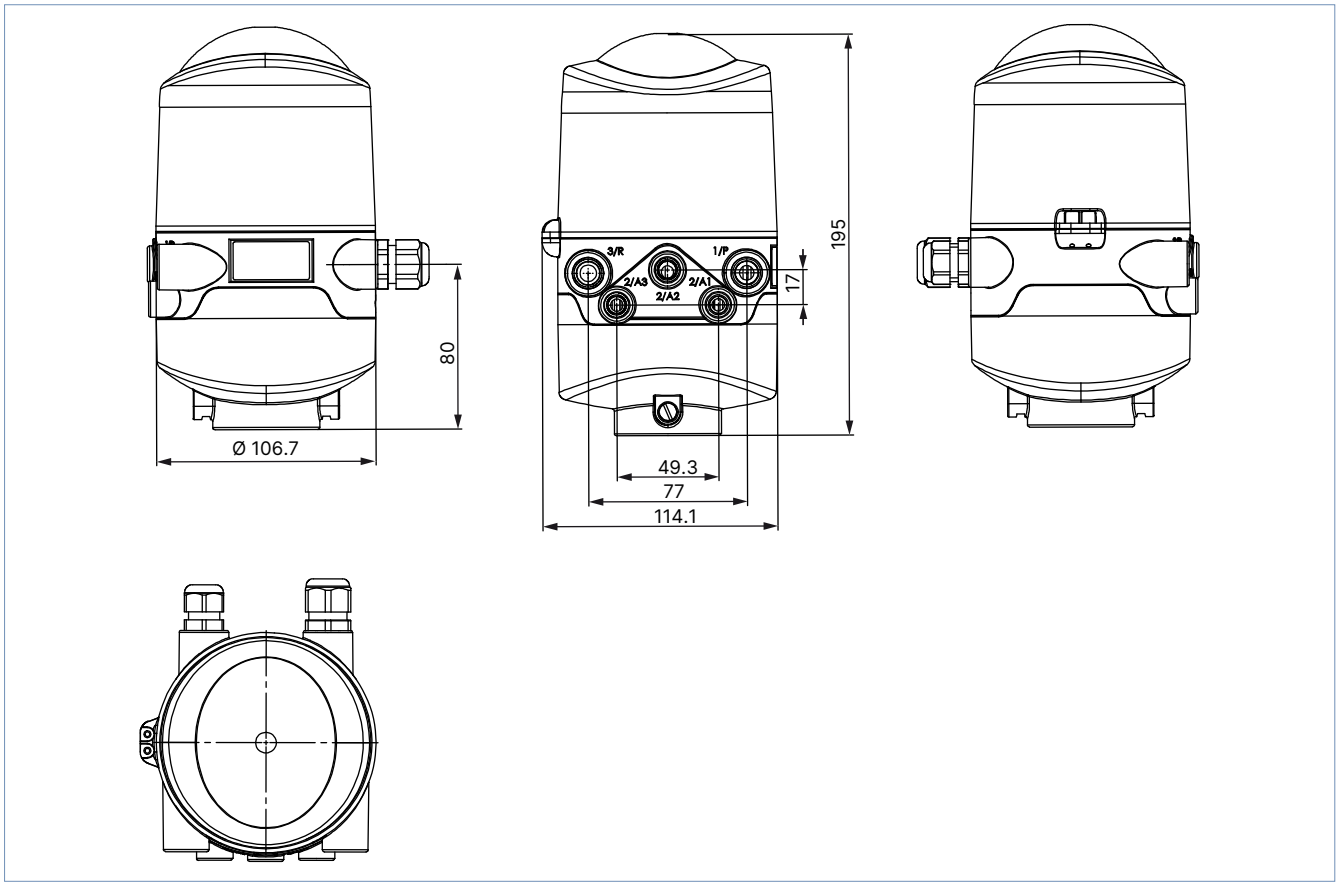
4. Dimensions

4.1. Control head

Note:
Dimensions in mm



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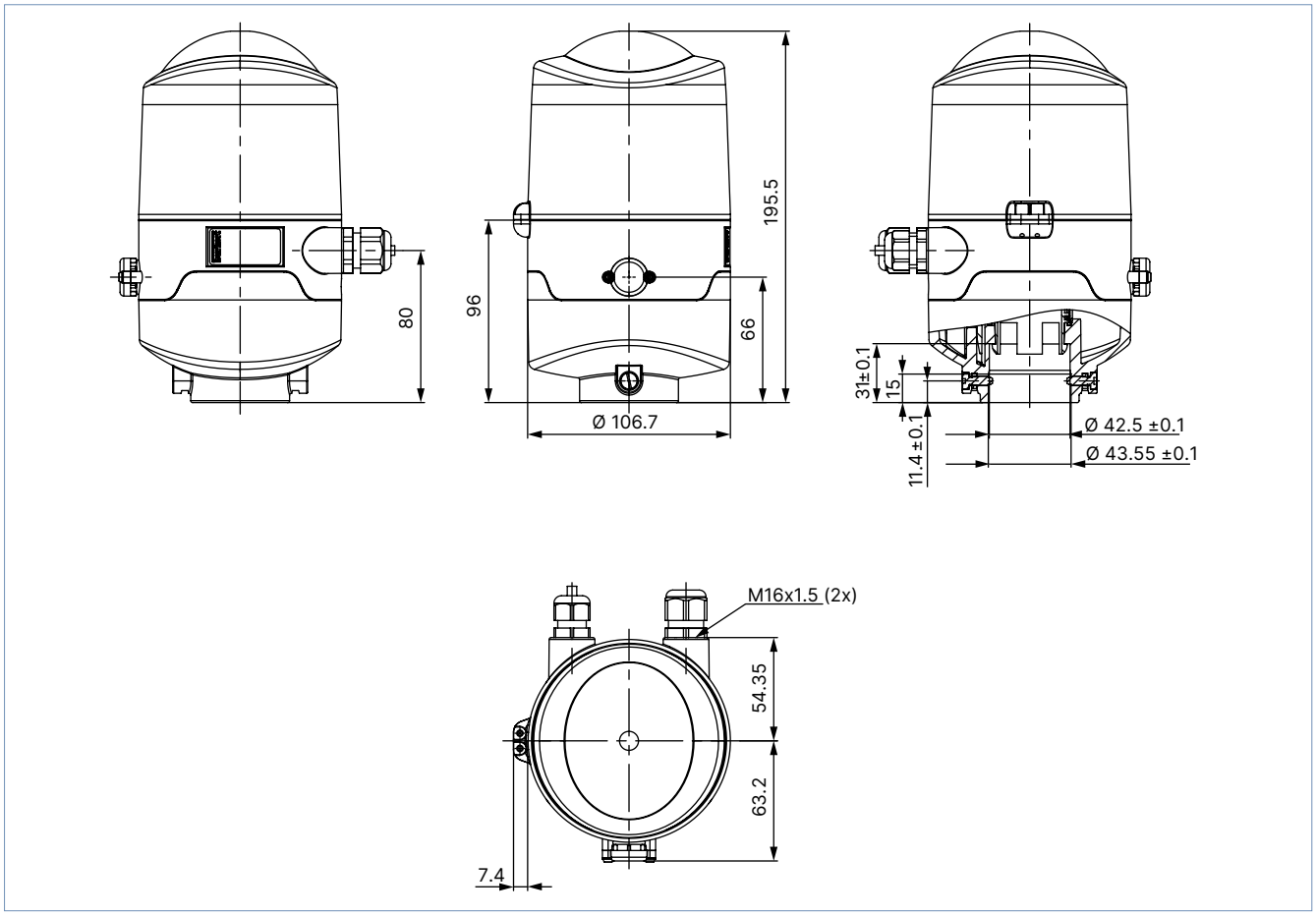
4.2. Feedback version (without pilot valves)

Note:
Dimensions in mm



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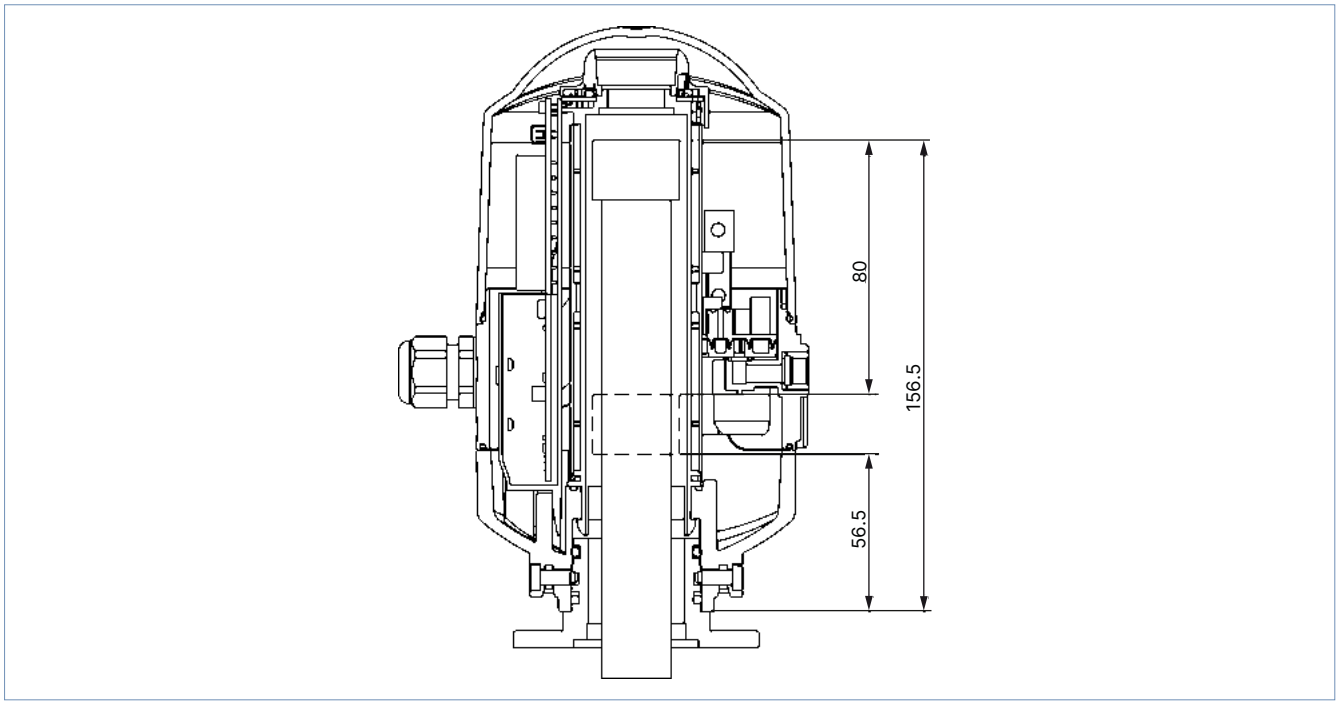
4.3. Measuring range of piston rod and target

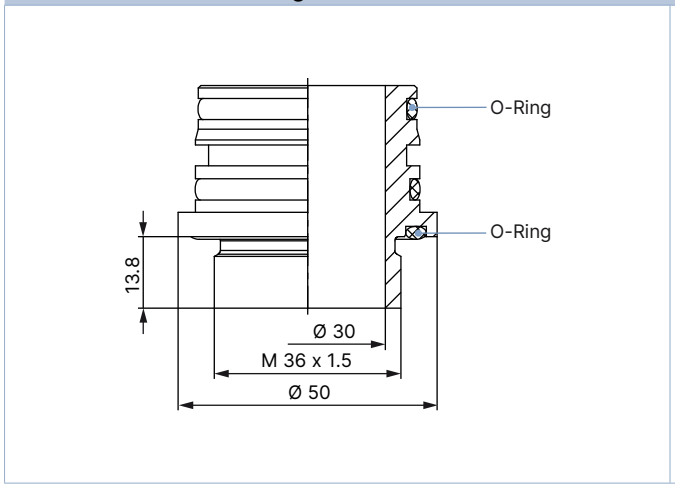
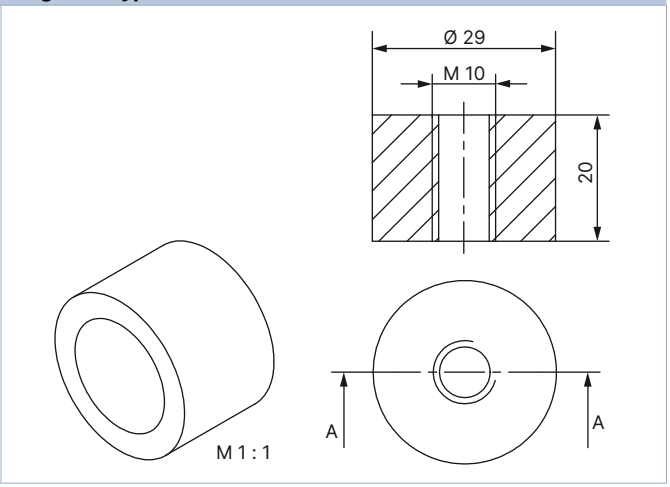
Note:
Dimensions in mm



4.4. Accessories

Note:

- Dimensions in mm
- For in-house production of a flange adapter, please request a detailed dimensional drawing.

Universal stainless steel flange	Target for Type 8681 (1.4021)
	

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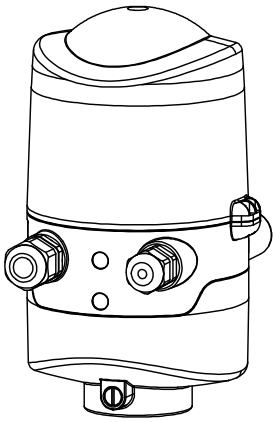
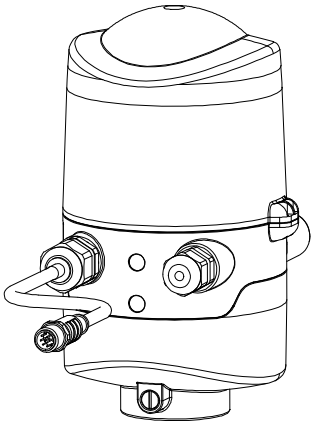
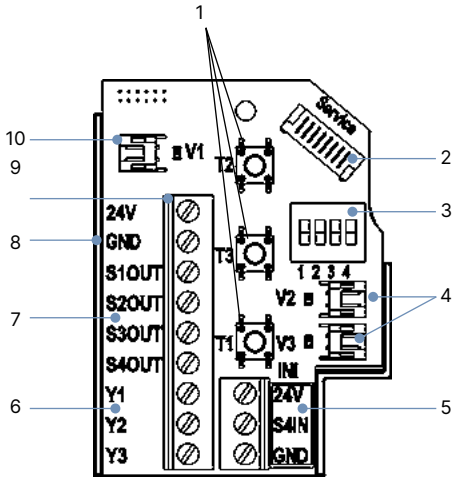
5. Device/Process connections

5.1. Electrical connection

Without fieldbus communication: 24 V DC

Cable glands			
		Version with 12-pin plug (for 24 V) [1.]	
			
Connection left: Voltage, signals	Connection right: External initiator	Connection left: Voltage, signals	Connection right: External initiator

1.) M12 plug according to IEC 61076 - 2 - 101, 12-pin with 8 cm cable



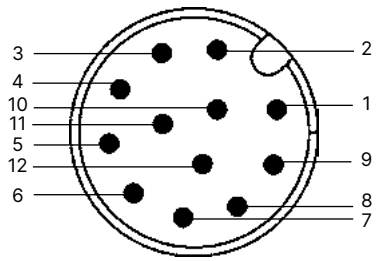
Pin	Description	Pin assignment
1	T1 T2 T3	Teach keys
2	Service	Service interface
3	–	DIP button for colour coding of LEDs
4	V2 V3	Solenoid valve connection with status LED for valves 2, 3
5	24 V S4IN GND	Connection of the external initiators
6	Y1 Y2 Y3	Control unit solenoid valve Y1...3
7	S1 OUT S2 OUT S3 OUT S4 OUT	Feedback signals S1...4 OUT
8	GND	Operating voltage
9	–	Terminal strip
10	–	Solenoid valve connection with status LED for valve 1

Description terminal strip	Pin assignment
24 V	Operating voltage 24 V
GND	GND
S1 OUT	Output position 1
S2 OUT	Output position 2
S3 OUT	Output position 3
S4 OUT	Output external initiator
Y1	Solenoid valve input 1
Y2	Solenoid valve input 2
Y3	Solenoid valve input 3

Description terminal strip	Pin assignment
24 V	Operating voltage 24 V for external initiator
S4 I_N	Input external initiator
GND	GND external initiator

Multipole connection M12, 12-pin input and output signals to the higher level control system (SPS)

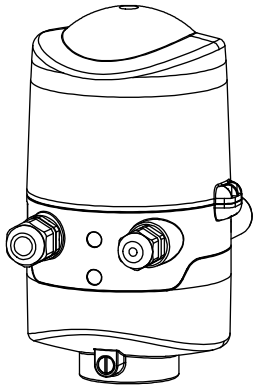
12-pin circular plug connector M12 × 1.0 (according to IEC 61076-2-101)



Pin	Description	Pin assignment
1	24 V	Operating voltage 24 V
2	GND	GND
3	S1 OUT	Output position S1
4	S2 OUT	Output position S2
5	S3 OUT	Output position S3
6	S4 OUT	Output external initiator S4
7	Y1	Solenoid valve input 1
8	Y2	Solenoid valve input 2
9	Y3	Solenoid valve input 3
10	–	Not assigned
11	–	Not assigned
12	–	Not assigned

Without fieldbus communication: 120 V AC

Cable gland



Description terminal strip 1	Pin assignment	
PE	Protective earth conductor	
L N	Operating voltage 120 V AC	Conductor Neutral conductor
S1 OUT	Output position 1	
S2 OUT	Output position 2	
S3 OUT	Output position 3	
S4 OUT	Output external initiator	
Y1	Solenoid valve input 1	
Y2	Solenoid valve input 2	
Y3	Solenoid valve input 3	
Description terminal strip 2	**Pin assignment (external initiator)**	
L	Operating voltage, live conductor	
S4 I_N	Input external initiator	
N	Operating voltage, neutral conductor	

Connection left: Voltage, signals	Connection right: External initiator

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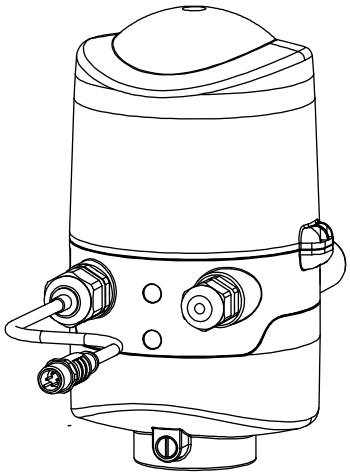
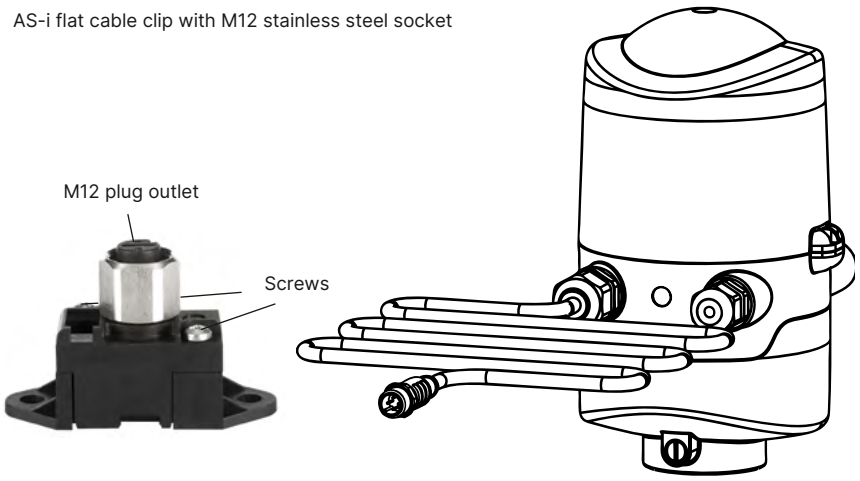
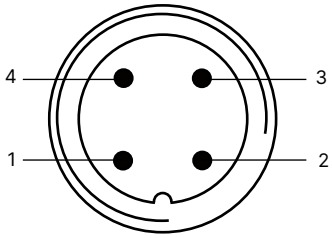
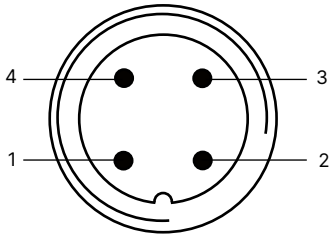
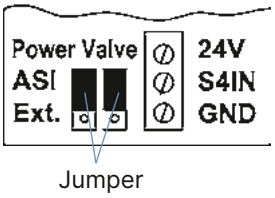
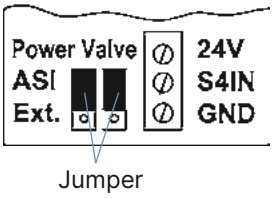
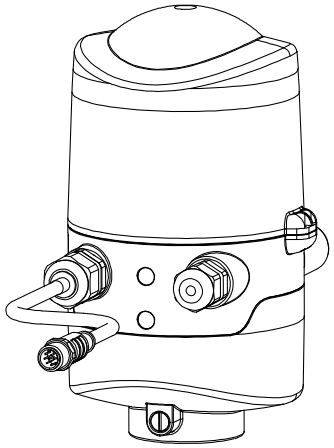
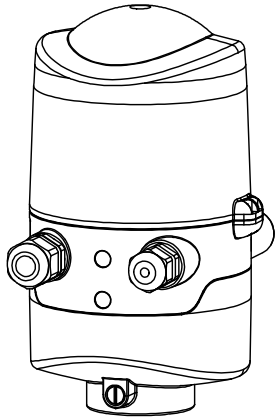
AS-Interface connection

With multipole connection [1.)]	With multipole connection
M12 plug according to IEC 61076 - 2 - 101, 4-pin on 8 cm cable	M12 plug according to IEC 61076 - 2 - 101, 4-pin with mounted AS-i flat cable clip on 80 cm cable
	
Connection left: AS-Interface / Connection right: External initiator	Connection left: AS-Interface / Connection right: External initiator

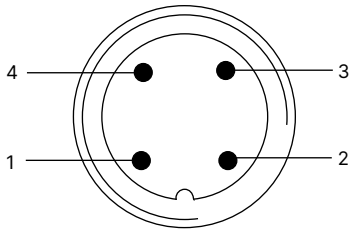
1.) On request

M12 circular plug, 4-pin							
Bus connection operating voltage via bus				**Bus connection with external operating voltage**			
							
Pin	**Description**	**Pin assignment**	**Wire colour**	**Pin**	**Description**	**Pin assignment**	**Wire colour**
1	ASI +	AS-Interface - AS-i +	Brown	**1**	ASI +	AS-Interface - AS-i +	Brown
2	NC	Not assigned	White	**2**	GND	GND	White
3	ASI –	AS-Interface - AS-i -	Blue	**3**	ASI –	AS-Interface - AS-i -	Blue
4	NC	Not assigned	Black	**4**	24 V +	24 V +	Black
							

IO-Link connection

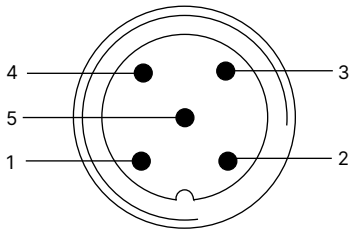
Multipole connection		Cable gland	
M12 plug according to IEC 61076 - 2 - 101, 4-pin (Port Class A) or 5-pin (Port Class B) on a 15 cm cable		M16 × 1.5 (SW22)	
			
Connection left: Voltage, signals (IO-Link connection)	Connection right: External initiator	Connection left: Voltage, signals (IO-Link connection)	Connection right: External initiator

M12 circular plug, 4-pin, Port Class A



Pin	Description	Pin assignment	Wire colour
1	L+	24 V DC	Brown
2	DIO/2L+	Not assigned	(White)
3	L-	0 V (GND)	Blue
4	C/Q	IO-Link	Black

M12 circular plug, 5-pin, Port Class B



Pin	Description	Pin assignment	Wire colour
1	L+	24 V DC (Power 1)	Brown
2	DIO/2L+	24 V DC (Power 2)	White
3	L-	0 V (GND, Power 1)	Blue
4	C/Q	IO-Link	Black
5	2M	0 V (GND, Power 2)	Grey or yellow/green

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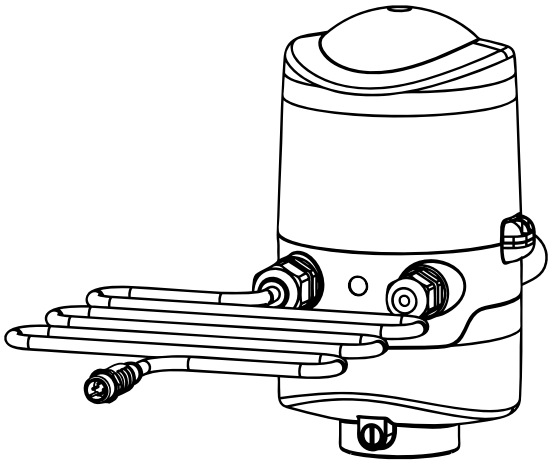
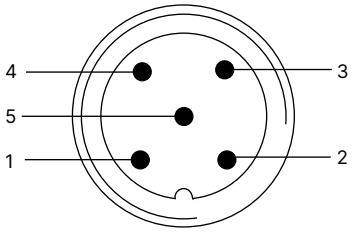
Bürkert system bus büS/CANopen connection

Multipole



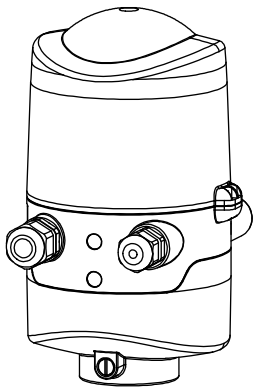
Connection left: büS/CANopen	Connection right: External initiator

M12 circular plug, 5-pin



Pin	Description	Wire colour
1	Shielding	Shielding
2	V+	Red
3	V-	Black
4	CAN_H	White
5	CAN_L	Blue

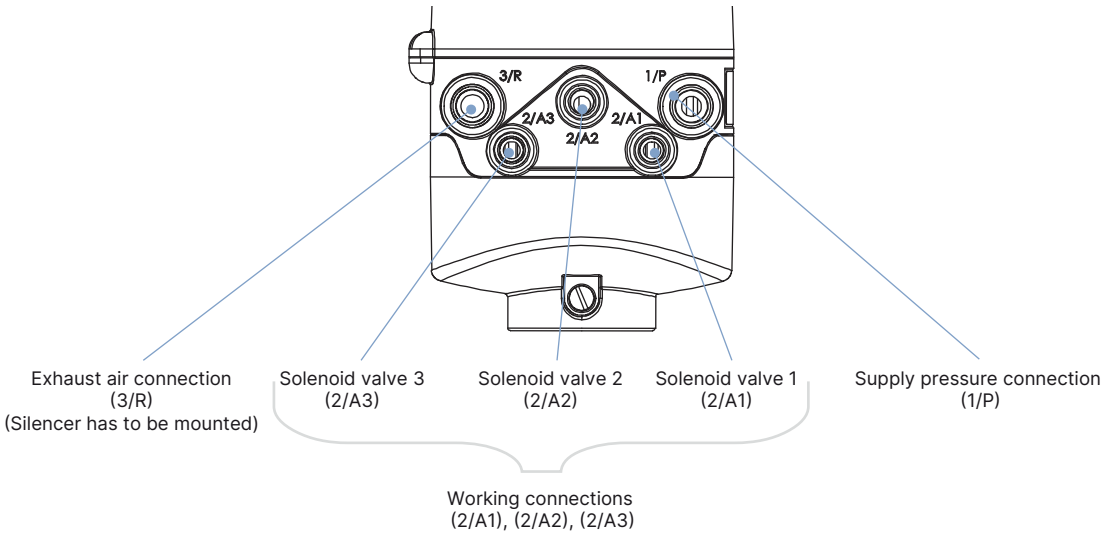
Cable gland



Connection left: Voltage, signals	Connection right: External initiator

Description terminal strip 1	Wire colour	Pin assignment
V+	Red	Operating voltage büS/CANopen
V-	Black	Operating voltage büS/CANopen
CAN_H	White	Bus signal CAN high
CAN_L	Blue	Bus signal CAN low
Description terminal strip 2	**Pin assignment**	
V+	Operating voltage for external initiator	
S4 I_N	Input external initiator	
GND	GND external initiator	

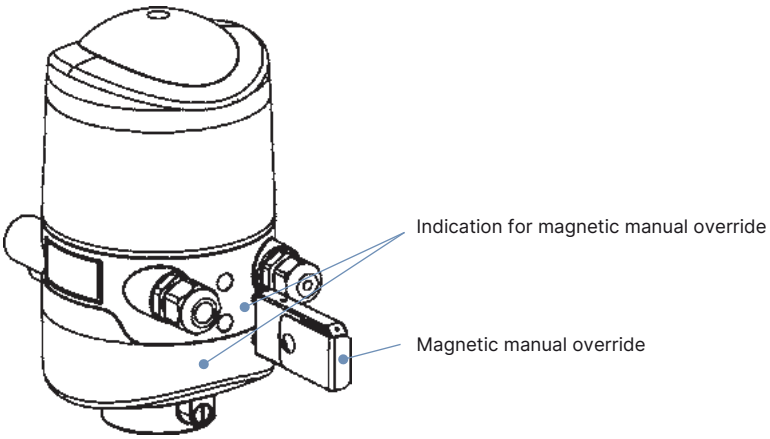
Pneumatic connection



6. Product operation

6.1. Magnetic manual override

Activation / Deactivation solenoid valve 1 (process valve maintenance function)



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7. Ordering information

7.1. Bürkert eShop

Bürkert eShop – Easy ordering and quick delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

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7.2. Bürkert product filter

Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements?
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7.3. Ordering chart

Note:
Further versions are available on request.

Communi-cation	Operating voltage	Connection	ATEX Zone 2/22 Cat. 3	FM NI Class I Division 2	cULus	Number of solenoid valves	Position feedback	Article no.
Analogue	12...28 V DC	Cable gland	–	–	–	0	3 int. + 1 ext.	196410
			–	–	–	1	3 int. + 1 ext.	196411
			–	–	–	2	3 int. + 1 ext.	196412
			–	–	–	3	3 int. + 1 ext.	196413
			Yes	–	–	1	3 int. + 1 ext.	196415
	12...28 V DC	M12, 12-pin, 8 cm cable	–	–	–	0	3 int. + 1 ext.	196420
			–	–	–	1	3 int. + 1 ext.	196421
			–	–	–	2	3 int. + 1 ext.	196422
			–	–	–	3	3 int. + 1 ext.	196423
			Yes	–	–	1	3 int. + 1 ext.	196425
	120 V AC	Cable gland	–	–	–	0	3 int. + 1 ext.	196470
			–	–	–	1	3 int. + 1 ext.	196471
			–	–	–	2	3 int. + 1 ext.	196472
			–	–	–	3	3 int. + 1 ext.	196473
			Yes	–	–	1	3 int. + 1 ext.	196475
AS-Interface (62 slaves)	29.5...31.6 V DC	Version with AS-i flat cable clip and 80 cm cable	–	–	–	0	3 int. + 1 ext.	196430
			–	–	–	1	3 int. + 1 ext.	196431
			–	–	–	2	3 int. + 1 ext.	196432
			–	–	–	3	3 int. + 1 ext.	196433
			Yes	–	–	1	3 int. + 1 ext.	196435
		Version with 80 cm cable, without AS-i flat cable clip	–	–	–	0	3 int. + 1 ext.	20056039
			–	–	–	1	3 int. + 1 ext.	384550
			–	–	–	2	3 int. + 1 ext.	20029227
			–	–	–	3	3 int. + 1 ext.	291622
IO-Link	18...30 V DC (according to specification)	Multipole M12, 5-pin (Port Class B) with 15 cm cable	–	–	–	0	3 int. + 1 ext.	359308
			–	–	–	1	3 int. + 1 ext.	358577
			–	–	–	2	3 int. + 1 ext.	359309
			–	–	–	3	3 int. + 1 ext.	355009
			Yes	–	–	0	3 int. + 1 ext.	359322
			Yes	–	–	1	3 int. + 1 ext.	359323
			Yes	–	–	2	3 int. + 1 ext.	359324
			Yes	–	–	3	3 int. + 1 ext.	359325
		Multipole, 4-pin (Port Class A) with 15 cm cable	–	–	–	0	3 int. + 1 ext.	359167
			–	–	–	1	3 int. + 1 ext.	358578
			–	–	–	2	3 int. + 1 ext.	359258
			–	–	–	3	3 int. + 1 ext.	358579
			Yes	–	–	0	3 int. + 1 ext.	359318
			Yes	–	–	1	3 int. + 1 ext.	359319
			Yes	–	–	2	3 int. + 1 ext.	359320
			Yes	–	–	3	3 int. + 1 ext.	359321
büS / CANopen	Via bus	Cable gland	–	–	–	0	3 int. + 1 ext.	363169
			–	–	–	1	3 int. + 1 ext.	363164
			–	–	–	2	3 int. + 1 ext.	363166
			–	–	–	3	3 int. + 1 ext.	363168
		Multipole M12, 5-pin, 80 cm cable	–	–	–	1	3 int. + 1 ext.	363140
			–	–	–	2	3 int. + 1 ext.	363160
			–	–	–	3	3 int. + 1 ext.	363163

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Communi-cation	Operating voltage	Connection	ATEX Zone 2/22 Cat. 3	FM NI Class I Division 2	cULus	Number of solenoid valves	Position feedback	Article no.
FM/UL version								
Analogue	12...28 V DC	Cable gland	–	Yes	–	0	3 int. + 1 ext.	267358
			–	Yes	–	1	3 int. + 1 ext.	261483
			–	Yes	–	3	3 int. + 1 ext.	261484
			–	–	Yes	1	3 int. + 1 ext.	281497
			–	–	Yes	3	3 int. + 1 ext.	281498
AS-Interface (62 slaves)	29.5...31.6 V DC	Cable gland	–	Yes	–	1	3 int. + 1 ext.	261485
			–	Yes	–	2	3 int. + 1 ext.	268730
			–	Yes	–	3	3 int. + 1 ext.	261486
			–	–	Yes	1	3 int. + 1 ext.	329396
			–	–	Yes	3	3 int. + 1 ext.	329397
IO-Link	18...30 V DC (according to specification)	Cable gland (Port Class B)	–	Yes	–	1	3 int. + 1 ext.	20003495
			–	Yes	–	2	3 int. + 1 ext.	20003499
			–	Yes	–	3	3 int. + 1 ext.	20003500
		Multipole 5-pin (Port Class B) with 15 cm cable	–	–	Yes	0	3 int. + 1 ext.	359314
			–	–	Yes	1	3 int. + 1 ext.	359315
			–	–	Yes	2	3 int. + 1 ext.	359316
			–	–	Yes	3	3 int. + 1 ext.	359317
		Cable gland (Port Class A)	–	Yes	–	1	3 int. + 1 ext.	20002932
			–	Yes	–	2	3 int. + 1 ext.	20003418
			–	Yes	–	3	3 int. + 1 ext.	20003427
		Multipole, 4-pin (Port Class A) with 15 cm cable	–	–	Yes	0	3 int. + 1 ext.	359310
			–	–	Yes	1	3 int. + 1 ext.	359311
			–	–	Yes	2	3 int. + 1 ext.	359312
			–	–	Yes	3	3 int. + 1 ext.	359313

Further versions on request

Additional
AS-Interface: connection M12, 4-pin 8 cm cable
AS-Interface (31 Slaves)

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7.4. Ordering chart accessories

Standard accessories

Note:
Must be ordered separately.

Version	Article no.
Rotary push-in fitting, nickel-plated brass G ¼ for tube Ø 8/6	780084
Rotary push-in fitting, nickel-plated brass G ⅛ for tube Ø 6/4	780082
Universal adapter with O-ring	196495
Target for position sensor, 1.4021	196494
Magnetic manual override tool	196490
AS-Interface flat cable clamp, M12 outlet, stainless steel outlet	799646
USB interface for serial communication	227093
USB büS interface set 1 (Type 8923) for connection to the Bürkert Communicator software: includes connection cable (M12 and micro USB), stick with integrated terminating resistor, power supply and software	772426
Software Bürkert Communicator	**Type 8920** ▶
Silencer, G ¼	780780
Blind plug PP, G ⅛	770901
8 cm cable with M12 plug, 12-pin, for 24 V DC	217574
80 cm cable with M12 plug, 4-pin, for AS-i	217572
27 cm cable with M12 plug, 4-pin	217573
Set with 20 lead seals to avoid tool-free opening of the cover	257100

Special accessories for Type 8681 büS/CANopen

Note:
Standard gateway (non-configured) see **data sheet Type ME43** ▶.

Version	Article no.
Pre-configured SYME43 gateway [1.)] for integration of Type 8681 büS/CANopen in EtherNet/IP	316696
CAN distributor with 8 x M12 sockets, stainless steel	338398
Connection cable with M12 plug, 5-pin, cable length: 990 mm	218187
Connection cable with M12 socket, stainless steel, cable length: 1 m	773482
Connection cable with M12 socket, stainless steel, cable length: 3 m	773483
Extension cable for M12 plug and M12 socket, stainless steel, cable length: 0.5 m	773484
Extension cable for M12 plug and M12 socket, stainless steel, cable length: 1 m	773485
Extension cable for M12 plug and M12 socket, stainless steel, cable length: 3 m	773486
Extension cable for M12 plug and M12 socket, stainless steel, cable length: 5 m	773487
Extension cable for M12 plug and M12 socket, stainless steel, cable length: 10 m	773488
Extension cable for M12 plug and M12 socket, stainless steel, cable length: 20 m	773489
CAN terminating resistor, M12 plug, stainless steel, 120 Ω	773490
CAN terminating resistor, M12 socket, stainless steel, 120 Ω	773491
M12 CAN Y connection piece, stainless steel (1x M12 plug, 2x M12 socket)	773492
M12 CAN T connection piece, stainless steel (1x M12 plug, 2x M12 socket)	773493
Fixing plate for M12-CAN-T connection piece, stainless steel	773494
Screw plug for M12 socket	308778
Set protection cover M12 with O-ring (spare part)	308785
USB büS interface set 1 (Type 8923) for connection to the Bürkert Communicator software: includes connection cable (M12 and micro USB), stick with integrated terminating resistor, power supply and software	772426

1.) Further system-specific configurations are available on request.

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