bürkert
FLUID CONTROL SYSTEMS

Type 8695 REV.3

Control Head
Steuerkopf
Tête de commande

Quickstart

English Deutsch Français

MAN 1000564228 EN Version: -Status: RL (released | freigegeben) printed: 21.12.2022

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1 ABOUT THESE INSTRUCTIONS

The Quickstart contains extremely important information on the device.

→ Keep these instructions ready to hand at the operation site.

Important safety information.

- Carefully read these instructions.
- Observe in particular the safety instructions, intended use and operating conditions.
- Persons, who work on the device, must read and understand these instructions.

The operating instructions can be found on the Internet at: www.burkert.com

1.1 Symbols

DANGER!

Warns of an immediate danger.

- Failure to observe the warning may result in a fatal or serious injury.

WARNING!

Warns of a potentially dangerous situation.

- Failure to observe the warning may result in serious or fatal injuries.

CAUTION!

Warns of a possible danger.

- Failure to observe the warning may result in moderate or minor injuries.

ATTENTION!

Warns of damage to property.

- Failure to observe the warning may result in damage to the device or system.

Indicates important additional information, tips and recommendations.

Refers to information in these instructions or in other documentation.

- Designates an instruction to prevent risks.

→ Designates a procedure that must be carried out.

Indicates a result.

1.2 Definition of term

The term “device” used in these instructions always stands for the control head Type 8695 REV.3.

The term “büS” (Bürkert system bus) used in this instruction stands for the communication bus developed by Bürkert and based on the CANopen protocol.

In these instructions, the abbreviation “Ex” always refers to “potentially explosive atmosphere”

2 INTENDED USE

The control head Type 8695 REV.3 is designed to be mounted on pneumatic actuators of process valves for the control of media. The permitted fluid media are listed in the technical data.

- Use the device for its intended purpose only. Non-intended use of the device may be dangerous to people, nearby equipment and the environment.
- Correct transportation, correct storage as well as correct installation, commissioning, operation and maintenance are essential for reliable and problem-free operation.
- When using the device, observe the permitted data, operating conditions and application conditions. This information can be found in the contractual documents, the operating instructions and on the type label.
- Use the device only in conjunction with third-party devices and components recommended and authorized by Bürkert.
- Do not use the device outdoors without protection from the weather.
- In potentially explosive atmosphere, only use devices approved for use in those areas. These devices are labeled with a separate Ex type label. For such use, note the information provided on the separate Ex type label and the additional explosion-related information or separate explosion-related operating instructions.

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not consider any contingencies or incidents which occur during installation, operation and maintenance.

The operator is responsible for observing the location-specific safety regulations, also with reference to the personnel.

DANGER

Risk of injury from high pressure and discharge of medium.

- Before working on the device or system, switch off the pressure. Vent or drain lines.

Risk of injury from electric shock.

- Before working on the device or system, switch off the power supply. Secure against reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.

To prevent injury, ensure the following:

- Secure device or system to prevent unintentional activation.
- Only trained technicians may perform installation and maintenance work.
- Perform installation and maintenance with suitable tools only.
- Do not make any changes to the device and do not subject it to mechanical stress.
- Operate the device only in perfect state and in consideration of the operating instructions.
- Observe the general rules of technology.
- Install the device according to the regulations applicable in the respective country.

- Do not feed corrosive or flammable media into the device connections.
- Do not feed any fluids into the connections of the device.
- After the process is interrupted, restart in a controlled manner. Observe sequence:
  1. Connect electrical or pneumatic power supply.
  2. Charge the device with medium.
- Observe intended use.

4 GENERAL INFORMATION

4.1 Contact address

Germany

Bürkert Fluid Control System
Chr.-Bürkert-Str. 13-17
D-74653 Ingelfingen
TE-mail: info@burkert.com

International

Contact addresses can be found on the final pages of the printed operating instructions.

And also on the Internet at:

www.burkert.com

4.2 Warranty

The warranty is only valid if the control head Type 8695 is used as intended in accordance with the specified application conditions.

4.3 Information on the internet

The operating instructions and data sheets for Type 8695 can be found on the internet at:

www.burkert.com

5 SYSTEM DESCRIPTION

5.1 Structure and function

The control head Type 8695 can control single or double-acting process valves.

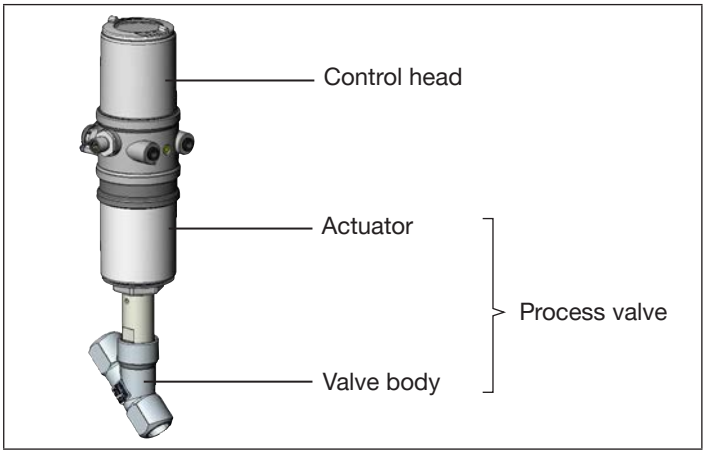


Fig. 1: Structure 1

Depending on the conditions of use, different process valves from the Bürkert range can be combined with the control head. Angle-seat valves, globe valves and diaphragm valves of series 21xx (ELEMENT) and 20xx (CLASSIC) are suitable.

The control head Type 8695 has been optimized for the integrated modular fitting of series 21xx process valves (ELEMENT) with actuator size ∅ 50. Various expansion stages are possible thanks to the modular design.

For installation on the 20xx series (CLASSIC) there is a special variant.

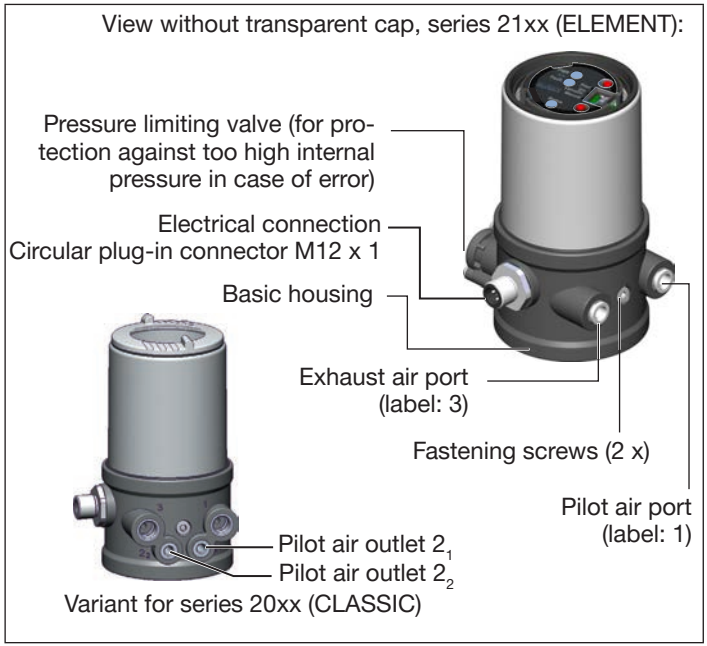


Fig. 2: Structure 2

6 TECHNICAL DATA

6.1 Standards and directives

The device complies with the relevant EU harmonisation legislation. In addition, the device also complies with the requirements of the laws of the United Kingdom.

The harmonised standards that have been applied for the conformity assessment procedure are listed in the current version of the EU Declaration of Conformity/UK Declaration of Conformity.

6.2 Approvals

The product is approved for use in zone 2 and 22 in accordance with ATEX directive 2014/34/EU category 3GD.

Observe instructions on operation in an potentially explosive atmosphere (Ex area). Observe the ATEX additional instructions.

The product is cULus approved. Instructions for use in the UL area see chapter “6.7 Electrical data”.

6.3 Operating conditions

WARNING!

Solar radiation and temperature fluctuations may cause malfunctions or leaks.

- If the device is used outdoors, do not expose it unprotected to the weather conditions.
- Ensure that the permitted ambient temperature does not exceed the maximum value or drop below the minimum value.

Ambient temperature	see type label
Degree of protection	

Evaluated by the manufacturer:	Evaluated by UL:
IP65 / IP67 according to EN 60529[1)]	UL Type 4x Rating indoor only[1)]

Operating altitude	up to 2000 m above sea level
Relative air humidity	max. 90% at 55 °C / 60 °C (non condensing)

1) *Only if cables, plugs and sockets have been connected correctly and in compliance with the exhaust air concept see chapter “8 Pneumatic installation”.*

6.4 Mechanical data

Dimensions		See data sheet
Body material	exterior interior	PPS, PC, stainless steel PA6, ABS
Sealing material	exterior	EPDM/FKM
Stroke range of valve spindle		
21xx series (ELEMENT) and 20xx series (CLASSIC)		2 – 35 mm
Third-party devices (modified guide element required)		2 – 44 mm

6.5 Type labels

6.5.1 Type label standard

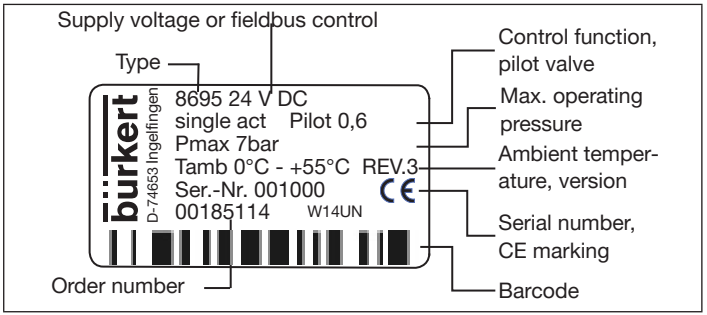


Fig. 3: Type label (example)

6.5.2 UL type label

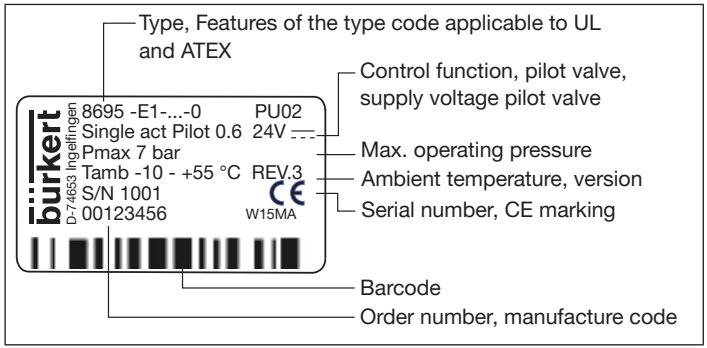


Fig. 4: UL type label (example)

6.5.3 UL additional label

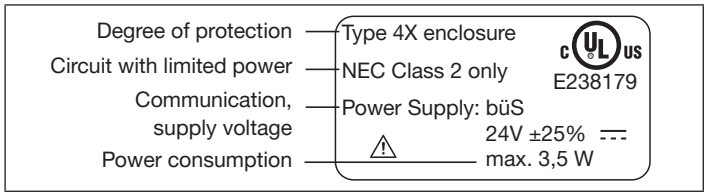


Fig. 5: UL additional label (example)

6.6 Pneumatic data

Control medium		neutral gases, air Quality classes in accordance with ISO 8573-1
Dust content	Class 7	max. particle size 40 µm, max. particle density 10 mg/m³
Water content	Class 3	max. pressure dew point -20 °C or min. 10 °C below the lowest operating temperature
Oil content	Class X	max. 25 mg/m³
Temperature range		-10 – +50 °C
Pressure range		3 – 7 bar
Air output of pilot valve		7 l_N/min (for aeration and deaeration) (Q_{Nn} - value according to definition for pressure drop from 7 to 6 bar absolute)
Connections	21xx (ELEMENT)	Plug-in hose connector ∅ 6 mm / 1/4“ Socket connection G 1/8
	20xx (CLASSIC)	Socket connection G 1/8 with M5 connection for connecting to the actuator

6.7 Electrical data

WARNING!

Only circuits with limited power may be used for UL approved components according to “NEC Class 2”.

6.7.1 Electrical data without field bus communication

Protection class	III as per DIN EN 61140 (VDE 0140-1)
Connections	
Supply	Circular plug-in connector (M12 x 1, 8-pin)
Communication	büS service interface
Operating voltage	24 V ⎓ ± 25% max. residual ripple 10 %
Current consumption	90 mA @18 V ⎓ + current load for an active digital output
Digital output	2 x 24V ⎓ PNP
Output current	max. 100 mA per output
Output voltage	Low = GND + max. 2 V and High = operating voltage – max. 2 V
Digital input	24 V ⎓ potential-free (suitable for PNP and NPN control)
Output current	max. 9 mA @30 V ⎓ (as per EN 61131-2 Type 1)
Output voltage	Low = 0...5 V ⎓ and High = 15...30 V ⎓ (as per EN 61131-2 Type 1)

Power consumption incl. load on one active digital output	2 W / 5 W
Communication software	Bürkert Communicator

6.7.2 Electrical data, IO-Link

Protection class	III as per DIN EN 61140 (VDE 0140-1)
Connection	
Supply, IO-Link	Circular plug-in connector M12 x 1, 5-pin, port class A Circular plug-in connector M12 x 1, 5-pin, port class B
Communication	büS service interface
Operating voltage	
System supply (Pin 1+3)	24 V ⎓ ±25 % (according to specification)
Only for port class B:	
Actuator supply (Pin 2+5)[2)]	24 V ⎓ ±25 % (according to specification)
Current consumption	
System supply (Pin 1+3)	Port class A: max. 150 mA, only with installed pilot valves Port class B: max. 100 mA
Only for port class B:	
Actuator supply (Pin 2+5)	max. 50 mA
Communication software	Bürkert Communicator

2) *Actuator supply is galvanically isolated from system supply in accordance with IEC 60664 and for electrical safety in accordance with SELV from IEC 61010-2-201*

6.7.3 Electrical data, büS

Protection class	III as per DIN EN 61140 (VDE 0140-1)
Connection	Circular plug-in connector M12 x 1, 5-pin, A coded
Operating voltage	24 V ⎓ ±25 %
Current consumption	max. 150 mA, only with installed pilot valves

6.7.4 Electrical data, AS-Interface

Protection class	III as per DIN EN 61140 (VDE 0140-1)
Connection	
Supply, ASi	Circular plug-in connector M12 x 1, 4-pin
Communication	büS service interface
Operating voltage	
System supply ASi (Pin 1+3)	via AS-Interface power supply unit according to specification with 29.5 V...31.6 V ⎓
Power consumption	
Output pilot valve	approx. 0.8 W incl. integrated watchdog function

Current consumption	max. 110 mA, only with installed pilot valve
Communication software	Bürkert Communicator

6.8 Communication

6.8.1 IO-Link

Port class	A	B
IO-Link Specification	V1.1.2	
Supply	via IO-Link (M12 x 1, 5-pin, A-coded)	
SIO mode	No	
IODD file	see Internet	
VendorID	0x0078, 120	
DeviceID	see IODD file	
ProductID	8695 class A	8695 class B
Transmission speed	COM3 (230.4 kbit/s)	
PD Input Bits	56	
PD Output Bits	8	
M-sequence Cap.	0x0D	
Min. cycle time	5 ms	
Data Storage	Yes	
Max. cable length	20 m	

7 INSTALLATION

Only for control head without pre-assembled process valve.

7.1 Safety instructions

DANGER!

Risk of injury from high pressure in the equipment/device.

- Before working on equipment or device, switch off the pressure and deaerate/drain lines.

Risk of electric shock.

- Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.

WARNING!

Risk of injury from improper installation.

- Installation may be carried out by authorized technicians only and with the appropriate tools.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

- Secure system from unintentional activation.
- Following assembly, ensure a controlled restart.

7.2 Installation of the control head on process valves of series 21xx

ATTENTION!

When mounting on process valves with a welded connection, follow the installation instructions in the operating instructions for the process valve.

When the control head is being installed, the collets of the pilot air ports must not be fitted to the actuator.

ATTENTION!

Damaged printed circuit board or malfunction.

- Ensure that the puck is situated flat on the guide rail.

→ Align the puck and the control head until
1. the puck can be inserted into the guide rail of the control head (see "Fig. 6") and
2. the connection pieces of the control head can be inserted into the pilot air ports of the actuator (see also "Fig. 7").

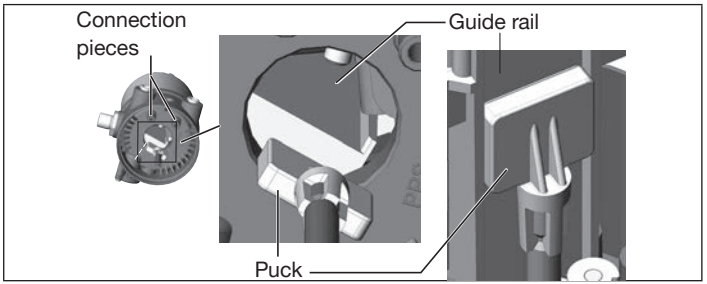


Fig. 6: Aligning the puck

→ Push the control head, without turning it, onto the actuator until no gap is visible on the form seal.

ATTENTION!

Too high torque when screwing in the fastening screw does not ensure protection class IP65 / IP67.

- The fastening screws may be tightened to a maximum torque of 1.5 Nm only.

→ Attach the control head to the actuator using the two side fastening screws. In doing so, tighten the screws only hand-tight (max. torque: 1.5 Nm).

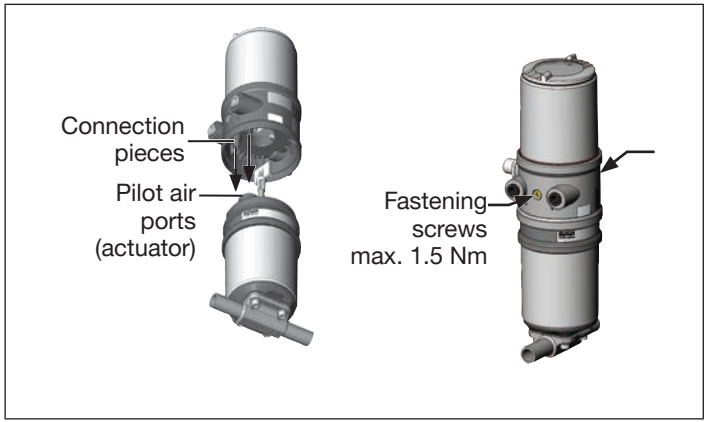


Fig. 7: Installation of control head, 21xx series

7.3 Installation of the control head on process valves of series 20xx

Procedure:

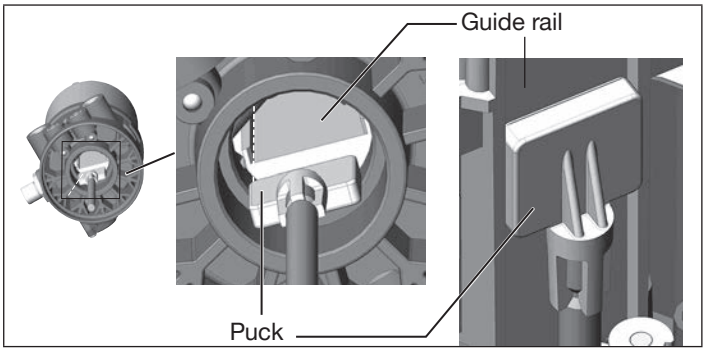


Fig. 8: Aligning the puck

ATTENTION!

Damaged printed circuit board or malfunction.

- Ensure that the puck is situated flat on the guide rail.

→ Push the control head onto the actuator. The puck must be aligned in such a way that it is inserted into the guide rail of the control head (see “Fig. 8”).

→ Press the control head all the way down as far as the actuator and turn it into the required position.

Ensure that the pneumatic connections of the control head and those of the valve actuator are situated preferably vertically one above the other (see “Fig. 9”).

ATTENTION!

Too high torque when screwing in the fastening screw does not ensure protection class IP65 / IP67.

- The fastening screws may be tightened to a maximum torque of 1.5 Nm only.

→ Attach the control head to the actuator using the two side fastening screws. In doing so, tighten the fastening screws hand-tight only (maximum torque: 1.5 Nm).

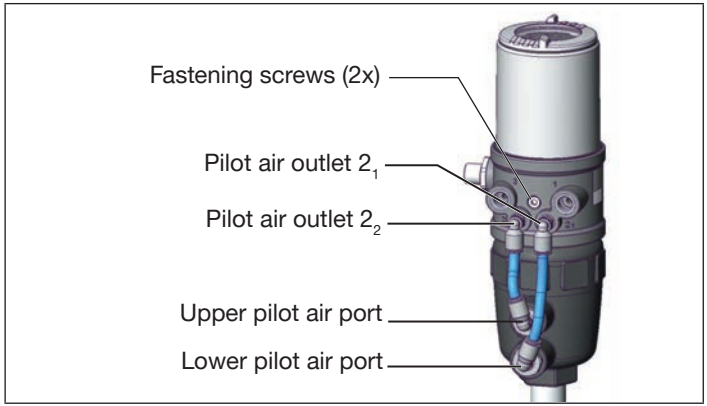


Fig. 9: Installing the pneumatic connection, 20xx series

→ Screw the plug-in hose connectors onto the control head and the actuator.

→ Using the hoses supplied in the accessory kit, make the pneumatic connection between the control head and actuator with the “Tab. 1: Pneumatic connection to actuator”.

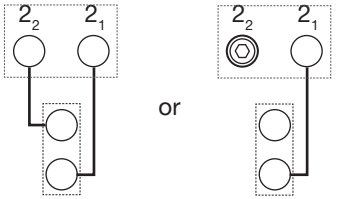
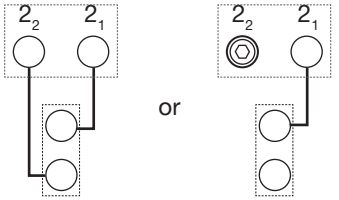
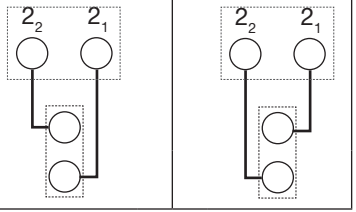
ATTENTION!

Damage or malfunction due to ingress of dirt and moisture.

▸ To comply with protection class IP65 / IP67, connect the pilot air outlet (only for CFA or CFB) which is not required to the free pilot air port of the actuator or seal with a plug.

“In rest position” means that the pilot valves of the control head Type 8695 are isolated or not actuated.

If the ambient air is humid, a hose can be connected between pilot air outlet 2_2 of the control head and the unconnected pilot air port of the actuator for control function A or control function B. As a result, the spring chamber of the actuator is supplied with dry air from the vent duct of the control head.

Control function A (CFA) Process valve closed in rest position (by spring force)			
Control head	Pilot air outlet		
Actuator	Upper pilot air port		
	Lower pilot air port		
Control function B (CFB) Process valve open in rest position (by spring force)			
Control head	Pilot air outlet		
Actuator	Upper pilot air port		
	Lower pilot air port		
Control function I (CFI)			
Process valve in rest position		closed	open
Control head	Pilot air outlet		
Actuator	Upper pilot air port		
	Lower pilot air port		

Tab. 1: Pneumatic connection to actuator

7.4 Manual actuation of the actuator via pilot valve

The actuator can be moved without a power supply from the rest position to its end position and back again, *when the control air is connected*.

To do this, the pilot valve must be actuated with a screwdriver.

ATTENTION!

Breakage of the pneumatic connection pieces due to rotational impact.

- When unscrewing and screwing in the body casing or transparent cap, do not hold the actuator of the process valve but the basic housing.

→ To activate the device manually, unscrew the body casing.

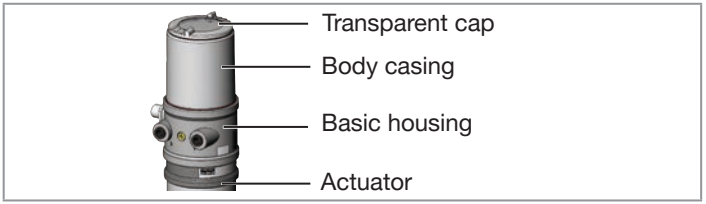


Fig. 10: Opening and closing the device

ATTENTION!

Damage or malfunction due to ingress of dirt or moisture.

To observe the degree of protection IP65 or IP67:

- Screw in body casing to the stop.

ATTENTION!

The manual override may be damaged if it is simultaneously pressed and turned.

- Do not press the manual override when turning it.

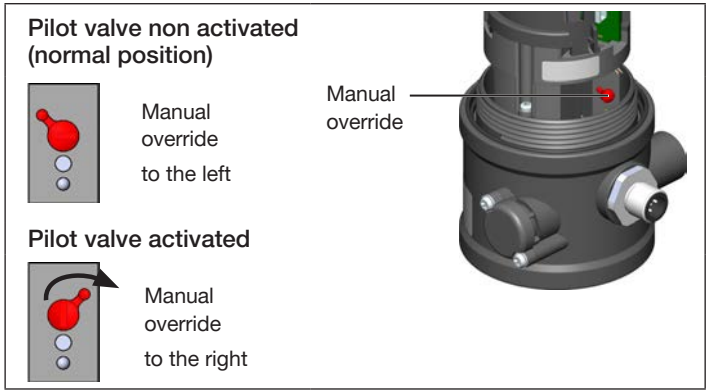


Fig. 11: Pilot valve for aerate and deaerate the actuator

Move actuator to end position

→ Turn the manual override to the right using a screwdriver.

Note: Do not press the manual override when turning it

Move actuator back to the rest position

→ Turn the manual override to the left using a screwdriver.

Note: Do not press the manual override when turning it

8 PNEUMATIC INSTALLATION

DANGER!

Risk of injury from high pressure in the equipment/device.

- Before working on equipment or device, switch off the pressure and deaerate/drain lines.

WARNING!

Risk of injury from improper installation.

- Installation may be carried out by authorized technicians only and with the appropriate tools.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

- Secure system from unintentional activation.
- Following installation, ensure a controlled restart.

Procedure:

→ Connect the control medium to the pilot air port (1) (3 – 7 bar; instrument air, free of oil, water and dust).

→ Attach the exhaust airline or a silencer to the exhaust air port (3) (see "Fig. 12: Pneumatic connection").

Keep the adjacent supply pressure **always** at least 0.5 – 1 bar above the pressure which is required to move the actuator to its end position.

Important information for the problem-free functioning of the device:

- The installation must not cause back pressure to build up.
- Select a hose for the connection with an adequate cross-section.
- The exhaust air line must be designed in such a way that no water or other liquid can get into the device through the exhaust air port.

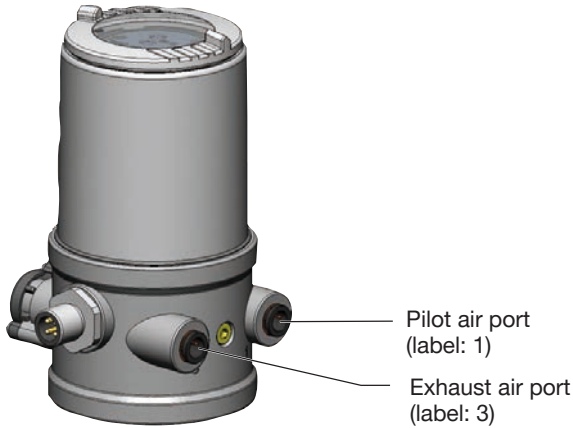


Fig. 12: Pneumatic connection

Exhaust air concept:
In compliance with protection class IP67, an exhaust air line must be installed in the dry area.

9 ELECTRICAL INSTALLATION

9.1 Safety instructions

DANGER!

Risk of electric shock.

- Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.

WARNING!

Risk of injury from improper installation.

- Installation may be carried out by authorized technicians only and with the appropriate tools.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

- Secure system from unintentional activation.
- Following installation, ensure a controlled restart.

Minimum temperature rating of the cable to be connected to the field wiring terminals: 75 °C

9.2 Electrical installation, without fieldbus communication

→ Connect the control head according to the table.

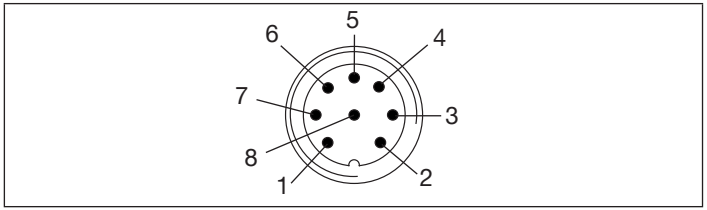


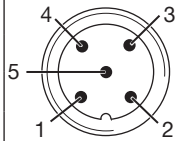
Fig. 13: Circular plug M12 x 1, 8-pin

Pin	Wire color[3)]	Designation	Configuration
1	white	Digital output end position with actuator activated	DO2+
2	brown	Digital output end position with actuator deactivated	DO1+
3	green	Operating voltage	GND
4	yellow	Operating voltage +	24 V DC
5	grey	Digital input, valve control +	Valve +
6	pink	Digital input, valve control –	Valve –
7		-	Not assigned
8		-	Not assigned

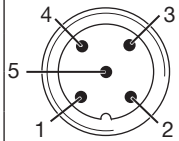
Tab. 2: Connection with circular plug-in connector

3) *The indicated colors refer to the connecting cable available as an accessory.*

9.3 Electrical installation, IO-Link, port class B and port class A

Port class B	Pin	Desi-gnation	Configuration	
	1	L +	24 V DC	System supply
	2	P24	24 V DC	Actuator supply
	3	L –	0 V (GND)	System supply
	4	C/Q	IO-Link	
	5	M24	0 V (GND)	Actuator supply

Tab. 3: Pin assignment, port class B

Port class A	Pin	Desi-gnation	Configuration	
	1	L +	24 V DC	System supply
	2	Not assigned		
	3	L –	0 V (GND)	System supply
	4	C/Q	IO-Link	
	5	Not assigned		

Tab. 4: Pin assignment, port class A

9.4 Electrical installation, büS

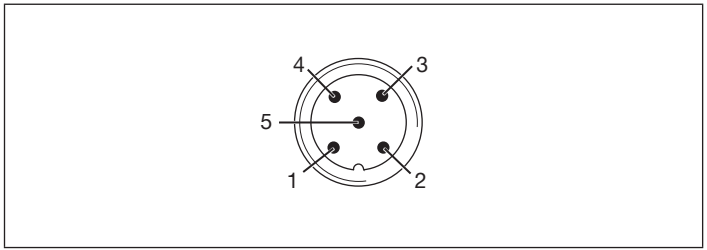


Fig. 14: Pin assignment

Pin	Wire color	Configuration
1	CAN plate/shielding	CAN plate/shielding
2	red	+24 V DC ±25 %, max. residual ripple 10 %
3	black	GND / CAN_GND
4	white	CAN_H
5	blue	CAN_L

Tab. 5: Pin assignment

For electrical installation with büS network, note:

Use a 5-pin round plug and shielded 5-core cable.

The shielding in the device is not connected to the functional earth.

9.5 Electrical installation, AS-Interface

9.5.1 Connection with with circular plug-in connector

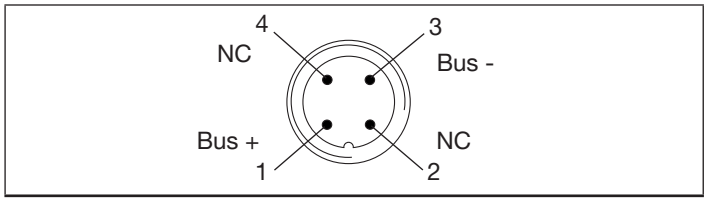


Fig. 15: Pin assignment

Pin	Designation	Configuration
1	Bus +	AS-Interface bus line +
2	NC	Not assigned
3	Bus –	AS-Interface bus line –
4	NC	Not assigned

Tab. 6: Pin assignment of circular plug-in connector for AS-Interface

9.5.2 Connection with multi-pole cable and ribbon cable terminal

As an alternative to the bus connection model with 4-pole circular plug, there is the control head with multipole cable (M12 circular plug) and ribbon cable terminal. The wiring diagram of the circular plug corresponds to the bus connection of the M12 4-pole circular plug and can easily be connected to the ribbon cable terminal.

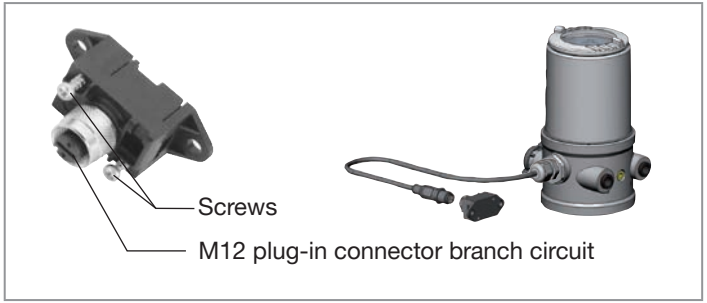


Fig. 16: Control head 8695 with multi-pole cable and ribbon cable terminal

Handling the ribbon cable terminal

The multi-pole cable features a ribbon cable terminal - with M12 plug-in connector branch circuit - for ASInterface cable harness. The ribbon cable terminal contacts the AS-Interface cable harness by means of penetration technology which allows installation by “clipping in” the AS-Interface cable harness without cutting and without removing insulation.

→ Open the ribbon cable terminal
(loosen screws and remove cover)

→ Insert cable harness conclusively

→ Close ribbon cable terminal again

→ Tighten screws
Slightly undo thread-forming screws
(approx. 3/4 turn to the left) and position them on the existing tapped bore and screw in.

10 START-UP

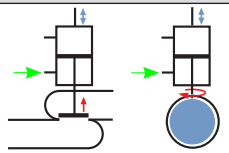
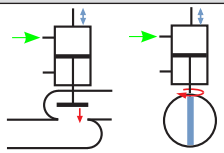
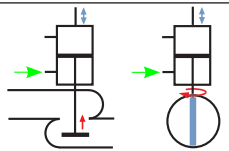
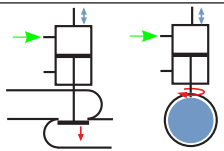
10.1 Invert process valve direction

In the factory settings, the following actuator end positions and colours of the status indicator are assigned to the valve positions:

Valve position	Status indicator	Actuator position
Valve open	is lit green	Actuator deactivated
Valve closed	is lit yellow	Actuator activated

Tab. 7: Factory settings

Depending on the device combination of actuator type and valve type, it follows whether the process valve direction must be inverted so that the valve position (closed/open) can be assigned to the actuator position:

Actuator with stroke movement of the switch spindle	
 Valve opens when pressurized below	 Valve closes when pressurized at the top
→ No adjustment required.	
 Valve closes when pressurized below	 Valve opens when pressurized at the top
→ Invert process valve direction.	

Tab. 8: Device combination

Invert process valve direction:

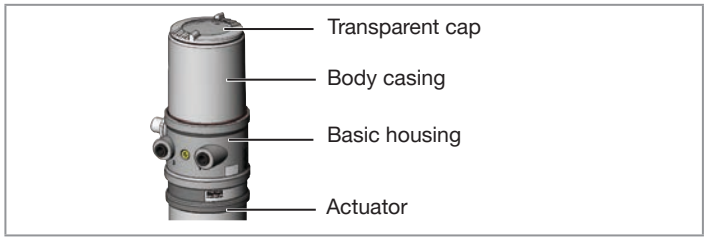


Fig. 17: Open and close the device

ATTENTION!

Breakage of the pneumatic connection pieces due to rotational impact.

- When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the basic housing.

→ Unscrew the transparent cap in a counter-clockwise direction.

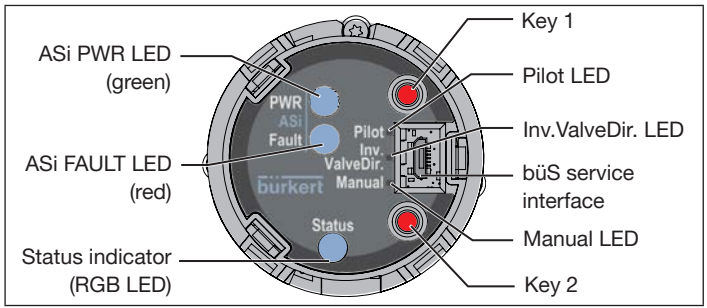


Fig. 18: Operating and display elements

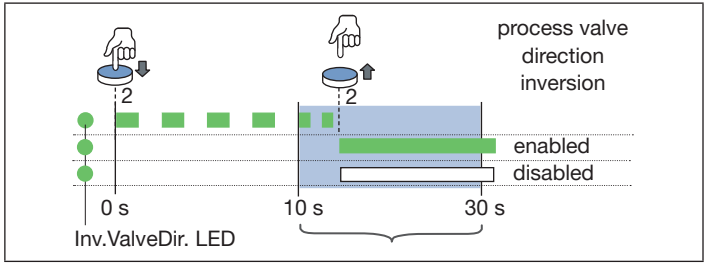


Fig. 19: Invert process valve direction

→ Keep key 2 pressed for > 10 s. The green Inv.ValveDir. LED flashes for 10 s at 10 Hz.

→ When the green Inv.ValveDir. LED flashes for a shorter time, release key 2.

✔ The valve direction inversion is enabled: the green Inv.ValveDir. LED is lit.

✔ The valve direction inversion is disabled: the Inv.ValveDir. LED is not lit.

ATTENTION!

Damage or malfunction due to penetration of dirt and humidity.

- To observe protection class IP65/IP67, screw the transparent cap in all the way.

→ Close the device (see accessories for assembly tool).

10.2 Teach function: Determine end positions and save these, REV.3

- **Automatic teach function:** For devices with pilot valve
  The teach function automatically identifies and saves the end positions of the valve.
- **Manual teach function:** For devices without pilot valve
  The end positions are captured and saved automatically.
- **Teach-in-operation function:** The teach-in operation function (if previously activated) identifies and saves the end positions during normal operation.

With the IO-Link and AS-Interface variant, the teach function can also be started via the bus communication (see respective parameter list) or with all variants of the REV.3 versions with the Bürkert Communicator.

DANGER!

Danger due to the valve position changing when the teach function is running.

When the teach function is running under operating pressure, there is an acute risk of injury.

- ▸ Never run the automatic or manual teach function while a process is running.
- ▸ Secure system from unintentional activation.

Important:

When the automatic or manual teach function is activated the actuator cannot be actuated via the communication interface.

10.2.1 Start automatic teach function

For devices with pilot valve:
The teach function automatically identifies and saves the end positions of the valve.

Essential requirements:

- The device is mounted on the actuator.
- The supply voltage is connected.
- The compressed air supply is connected.
- So that the correct reference conditions are identified, the pilot pressure must correspond to the operating conditions.

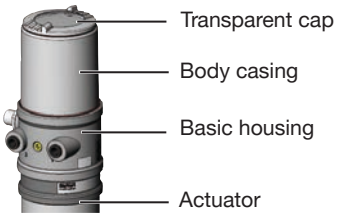


Fig. 20: Open or close the device

ATTENTION!

Breakage of the pneumatic connection pieces due to rotational impact.

- ▸ When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

→ Open the device: turning the transparent cap anti-clockwise.

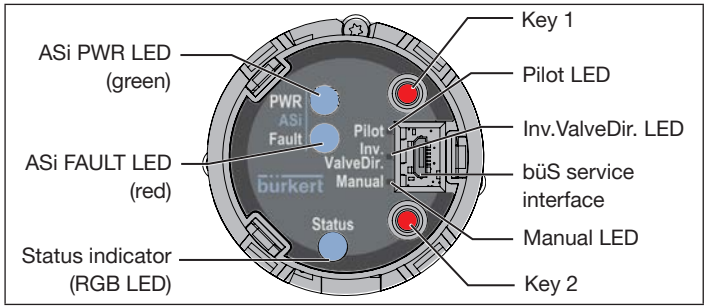


Fig. 21: Operating and display elements

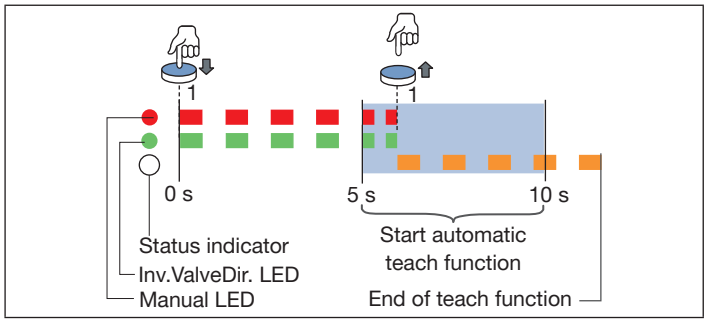


Fig. 22: Start automatic teach function

→ Press and hold key 1 for > 5 s to start the automatic teach function. The red manual LED and the green Inv.ValveDir. LED flash for 5 s at 5 Hz.

→ When the red manual LED and the green Inv.ValveDir. LED start flashing faster (10 Hz), release key 1 within the next 5 s.

✓ The status indicator flashes orange while the automatic teach function is running (function check). When the status indicator stops flashing orange, the teach function is complete.

✓ The end positions of the valve have been identified and saved.

Note: If the status indicator is lit red, the teach function is faulty and must be repeated.

ATTENTION!

Damage or malfunction due to penetration of dirt and humidity.

▸ To observe protection class IP65 / IP67, screw the transparent cap in all the way.

→ Close the device (see accessories for assembly tool).

Chronological description of the automatic teach function:

The status insicator flashes orange when the teach function is running.

- The first end position (POS1 = pilot valve deactivated) is scanned in.
- The pilot valve switches.
- The actuator moves automatically to the second end position (POS2 = pilot valve activated).
- The second end position (POS2 = pilot valve activated) is scanned in.
- The pilot valve is switched off.
- The actuator moves to the first end position (POS1 = pilot valve deactivated).

10.2.2 Start manual teach function

For devices without pilot valve:
The end positions are captured and saved manually by the user.

Essential requirements:

- The device is mounted on the actuator.
- The supply voltage is connected.
- The compressed air supply is connected.
- So that the correct reference conditions are identified, the pilot pressure must correspond to the operating conditions.
- Provide the possibility for the user to switch the pneumatic actuator (open and closed).

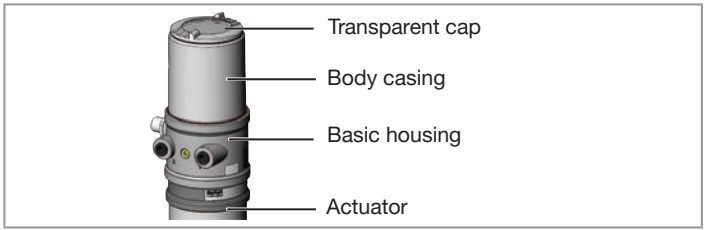


Fig. 23: Open or close the device

ATTENTION!

Breakage of the pneumatic connection pieces due to rotational impact.

- When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

→ Open the device: turning the transparent cap anti-clockwise.

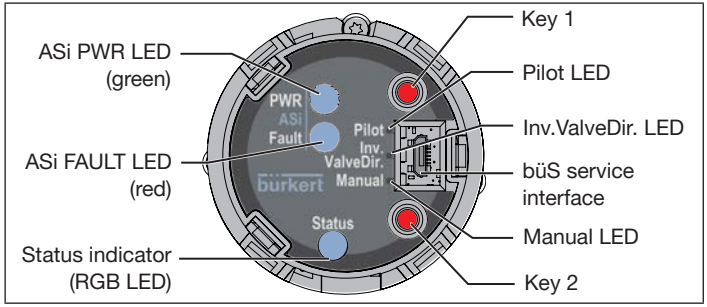


Fig. 24: Operating and display elements

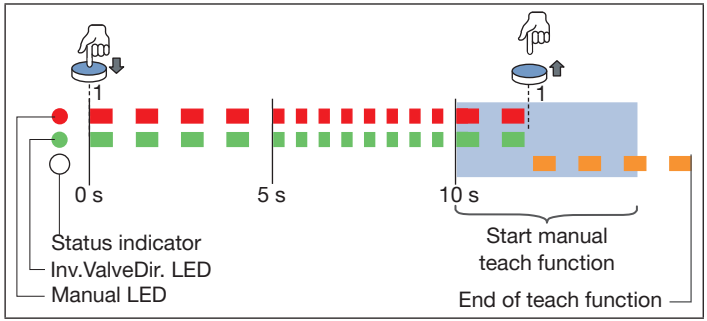


Fig. 25: Start manual teach function

→ Air bleed the pneumatic actuator: move to the unactuated end position.

→ Press and hold key 1 to start the manual teach function for >10 s (red manual LED + green Inv.ValveDir. LED flash together: the first 5 s slowly, the second 5 s quickly, >10 s slowly again, then release key 1).

☑ The status indicator flashes orange while the manual teach function is running (function check).

→ Check whether the pneumatic actuator is in the deaerated, unactuated end position.

→ Confirm this end position by briefly pressing key 1.

☑ Yellow Pilot LED is lit.

→ Move the pneumatic actuator into the aerated, switched end position.

→ Confirm this end position by briefly pressing key 1.

☑ Yellow Pilot LED is not lit.

→ Air bleed the pneumatic actuator: move to the unactuated end position.

☑ When the status indicator stops flashing orange, the teach function is complete.

☑ The end positions of the valve have been identified and saved.

Note: If the status indicator is lit red, the teach function is faulty and must be repeated.

ATTENTION!

Damage or malfunction due to penetration of dirt and humidity.

▸ To observe protection class IP65 / IP67, screw the transparent cap in all the way.

→ Close the device (see accessories for assembly tool).

10.2.3 Teach-in-operation function

The teach-in-operation function can be used if the device is to carry out the end positions of the process valve automatically during normal operation (once when the control unit is switched on for the first time).

This function may only be used for process valve actuators with control function A (normally closed).

The function must first be enabled via the büS service interface (Bürkert Communicator).

For devices that are delivered without a process valve, this function is already enabled because no other teach function has yet been carried out.

If the function is enabled, the device reports the device status „Warning“ (out of specification) until the first switching has been carried out properly, but it is ready for operation and outputs the end positions specified in the last properly carried out teach function via the digital outputs of the device.

Process description:

- Enable teach-in-operation function with the communicator.
- Device issues “Warning” until both end positions have been successfully determined.
- The first end position is determined when the pilot valve is deactivated for at least 5 s and no movement is detected.
- The second end position is determined when the pilot valve is activated for at least 5 s and no movement has been detected.
- Both end positions are saved and the „Warning“ device status is withdrawn.
- The enabling of this function is reset.

Note: the enabling of this function is also reset if one of the other two teach functions (automatic or manual teach function) was carried out before the first switching.

10.3 Setting the device with Bürkert Communicator

The Bürkert Communicator can be used to make all settings on the device.

The settings in the Bürkert Communicator can be found in the operating manual.

10.3.1 Connecting the device with Bürkert Communicator

Devices without fieldlbus communication, devices with IO-Link or AS-Interface via büS service interface:

To ensure clear communication, the fieldbus devices should not be parameterised simultaneously by the higher-level controller (PLC) and with the Bürkert Communicator (via the service).

Required components:

- Communications software: Bürkert Communicator for PC
- USB-büS interface set (see accessories)
- büS adapter for communication interface (see accessories)
- If necessary, a büS cable extension (see accessories)

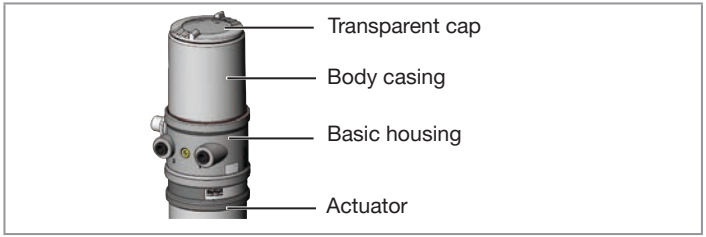


Fig. 26: Open device

ATTENTION

Breakage of the pneumatic connection pieces due to rotational impact.

- When opening or closing the device, do not press against the actuator, but against the basic housing.

→ Screw off the transparent cap by turning counterclockwise.

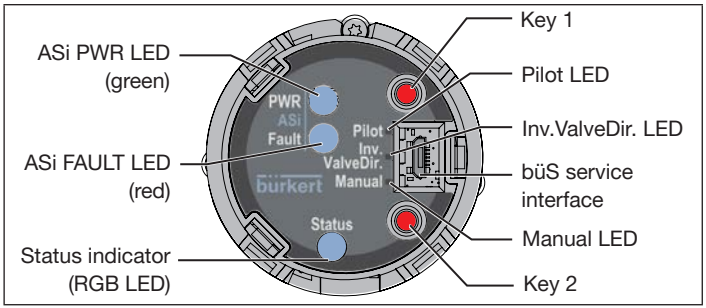


Fig. 27: Operating and display elements

→ Insert micro USB plug in büS service interface.
→ Establish connection to PC with USB-büS interface set.
→ Starting Bürkert Communicator.
→ Implementing settings.

büS device:
Required components:
- Communications software: Bürkert Communicator for PC
- USB-büS interface set (see accessories)

→ Establish connection to PC with USB-büS interface set.
→ Starting Bürkert Communicator.
→ Implementing settings.

10.4 IO-Link

10.4.1 Configuration of the fieldbus

The required start-up files and the description of the process data and acyclic parameters are available on the Internet.

Download from:
www.burkert.com / Type 8695 / Software

10.5 büS

10.5.1 Information, büS

büS is a system bus developed by Bürkert with a communication protocol based on CANopen.

10.5.2 Configuration of the fieldbus

The required start-up files and the description of objects are available on the Internet.

Download from:
www.burkert.com / Type 8695 / Software

10.6 AS-Interface

10.6.1 Certification

The device is certified according to AS-Interface specification version 3.0.

Certificate No.: on request

10.6.2 Programming data

I/O-Konfiguration	B hex
ID code	A hex (bit assignment see operating instructions)
Extended ID code 1	7 hex
Extended ID code 2	E hex
Profile	S-B.A.E

Tab. 9: Programming data

11 CONTROL AND DISPLAY ELEMENTS

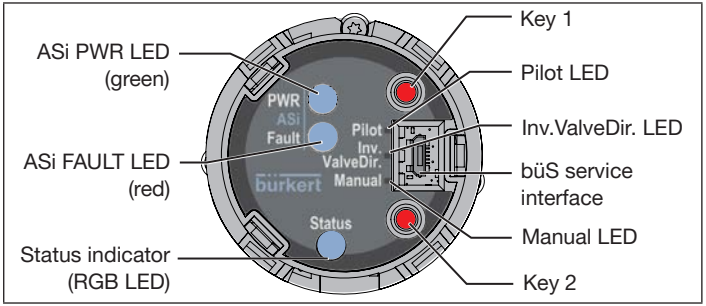


Fig. 28: Operating and display elements

Key	Description of the functions
1	Press for 5–10 s: start automatic teach function Press for > 10 s: start manual teach function
2	Press briefly (only in MANUAL operating state): Switch pilot valve on/off Press for 10–30 s: Enable/disable process valve direction inversion
1 and 2	Press both for 2–10 s: Switch MANUAL ↔ AUTO Press both for 10–30 s: Start device restart Press both for > 30 s: Reset device to factory settings

Tab. 10: Operating elements

LED	Description of the displays
Status indicator RGB LED	Valve position, error, warning see chapter „Status indicator“
Pilot LED yellow	Is lit: pilot valve is actuated (on)
Manual LED red	Is lit: MANUAL operating state active Flashes at 10 Hz for 0–2 s: Switch MANUAL ↔ AUTO
Inv.ValveDir. green	Is lit: inversion of process valve direction active
Manual LED red and Inv.ValveDir. LED green	Both flash after pressing and holding key 1: Flash slowly for 5 s Flash quickly for 5–10 s → Release key: start automatic teach function. Flash slowly for > 10 s → Release key: start manual teach function.
Pilot LED yellow and Manual LED red and Inv.ValveDir. LED green	All flash at 5 Hz for 10–30 s: device restart started All flash at 10 Hz for > 30 s: the device is reset to factory settings
AS-Interface only:	
ASi PWR LED green	Display of ASi-Power
ASi FAULT LED red	Display of ASi-Fehler

Tab. 11: Display elements

11.1 Open and close the device

ATTENTION!

Breakage of the pneumatic connection pieces due to rotational impact.

- When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the basic housing.

→ Unscrew the transparent cap in a counter-clockwise direction.

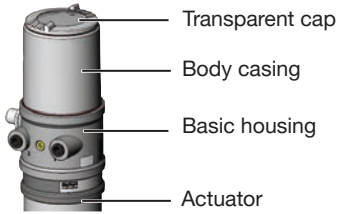


Fig. 29: Open and close the device

ATTENTION!

Damage or malfunction due to penetration of dirt and humidity.

- To observe protection class IP65/IP67, screw the transparent cap in all the way.

11.2 Operating state

To operate the keys, make sure that the local control lock is deactivated/unlocked (factory setting): with communication software or fieldbus communication.

AUTOMATIC (AUTO)

In AUTOMATIC operating state, the device is in normal operation: the valve is controlled via the process interface.

MANUAL (MANU)

In MANUAL operating state the valve can be opened and closed manually via the key 2.

11.3 Functions of the operating and display elements

To operate the keys, make sure that the local control lock is deactivated/unlocked (factory setting): with communication software or fieldbus communication.

Changing the operating state (MANU ↔ AUTO)

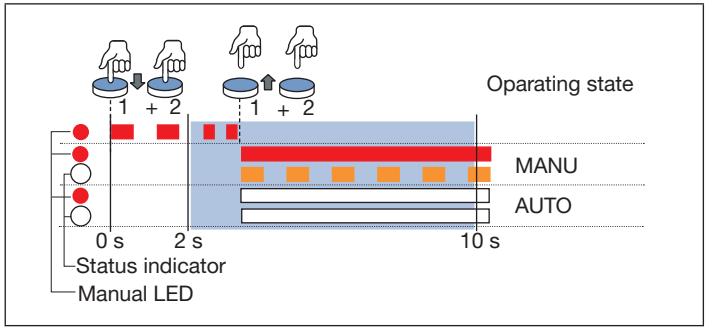


Fig. 30: Changing the operating state

→ Press and hold keys 1 and 2 for > 2 s. The red manual LED flashes for approx. 2 s at 5 Hz.

→ When the red manual LED starts flashing faster (10 Hz), release keys 1 and 2 within the next 5 s.

✔ MANUAL operating state: the red manual LED is lit and the status indicator flashes orange.

✔ AUTO operating state: the red manual LED and the status indicator is not lit.

Switch pilot valve (only possible in MANUAL operating state)

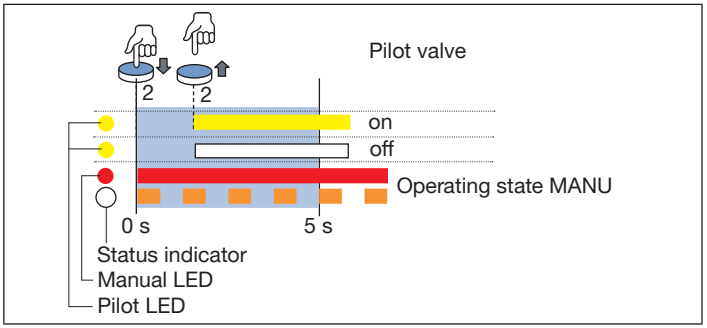


Fig. 31: Switch pilot valve

→ Briefly press key 2.

✔ Pilot valve on: the yellow pilot LED is lit.

✔ Pilot valve off: the yellow pilot LED is not lit.

Perform device restart

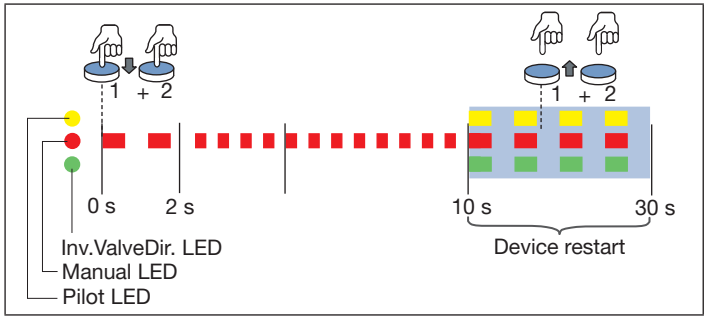


Fig. 32: Perform device restart

→ Keep keys 1 and 2 pressed for 10–30 s. The red manual LED flashes for approx. 2 s at 5 Hz, then at 10 Hz.

→ When the red manual LED flashes more slowly again (5 Hz), release keys 1 and 2 within the next 20 s.

✓ The device will restart.

Factory reset

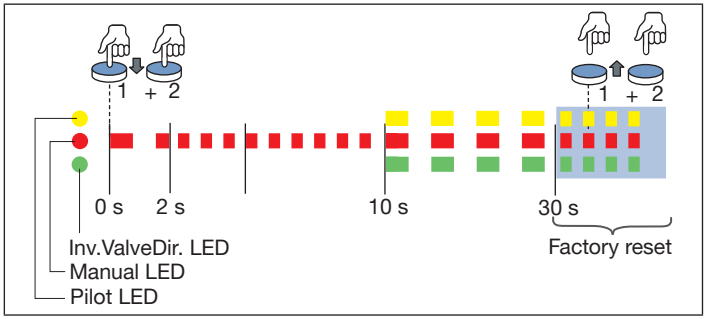


Fig. 33: Factory reset

→ Keep keys 1 and 2 pressed for > 30 s. The red manual LED flashes for approx. 2 s at 5 Hz, then at 10 Hz, then again at 10 Hz.

→ When the red manual LED flashes faster again (10 Hz), release keys 1 and 2.

✓ The device is reset to factory settings.

11.3.1 Status indicator

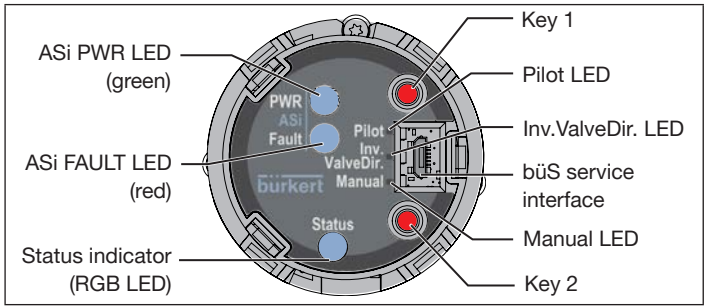


Fig. 34: Operating and display elements

The status indicator (RGB LED) show the device status and the valve position.

The user can set the following LED modes:

- Valve mode
- Valve mode with error messages (valve mode + errors)
- Valve mode with error messages and warnings (valve mode + warnings, factory setting)
- NAMUR mode
- Fixed color
- LED off

With the IO-Link and AS-Interface variant, the teach function can also be started via the bus communication (see respective parameter list) or with all variants of the REV.3 versions with the Bürkert Communicator.

The description for setting the LED mode can be found in the section "Setting the LED mode, status indicator" in the operating instruction.

Displays in valve mode + warnings (factory setting)

- Valve position: open, half-way, closed
- Device status: failure, function check, out of specification, maintenance required (according to NAMUR)

If several device statuses exist simultaneously, the device status with the highest priority is displayed.

Valve position		Device status
	Status, colour	Normal operation
Open	is lit yellow*	--
Half-way	LED off*	--
Closed	is lit green*	--

Tab. 12: Valve mode + warnings, normal operation

** Factory setting, selectable colours for the valve position: Off, white, pink, blue, turquoise, green, yellow, orange, red*

Valve position		Device status	
	Status, colour	Error	
Open	is lit yellow*	blinks red	alternately with yellow*
Half-way	LED off*	blinks red	alternately with LED off*
Closed	is lit green*	blinks red	alternately with green*

Tab. 13: Valve mode + warnings, device status error

Valve position		Device status	
	Status, colour	Function check	
Open	is lit yellow*	blinks orange	alternately with yellow*
Half-way	LED off*	blinks orange	alternately with LED off*
Closed	is lit green*	blinks orange	alternately with green*

Tab. 14: Valve mode + warnings, device status function check

Valve position		Device status	
	Status, colour	Out of specification	
Open	is lit yellow*	blinks yellow	alternately with yellow*
Half-way	LED off*	blinks yellow	alternately with LED off*
Closed	is lit green*	blinks yellow	alternately with green*

Tab. 15: Valve mode + warnings, device status out of specification

Valve position		Device status	
	Status, colour	Maintenance required	
Open	is lit yellow*	blinks blue	alternately with yellow*
Half-way	LED off*	blinks blue	alternately with LED off*
Closed	is lit green*	blinks blue	alternately with green*

Tab. 16: Valve mode + warnings, device status maintenance required

For warning messages, the LEDs are briefly switched off between the change of the colours.

For localizations, the colours are only shown momentarily.

** Factory setting, selectable colours for the valve position: Off, white, pink, blue, turquoise, green, yellow, orange, red*

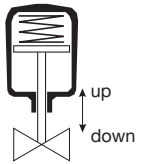
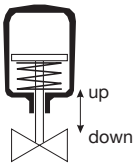
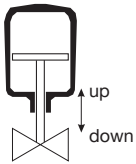
Device status displays in accordance with NAMUR

If several device statuses exist simultaneously, the device status with the highest priority is displayed. The priority is determined by the severity of the deviation from normal operation (red LED = failure = highest priority).

Status display in accordance with NE 107, edition 2006-06-12			
Color	Color code	Status	Description
Red	5	Outage, error or malfunction	Normal operation is not possible due to a malfunction in the device or on its peripheral equipment.
Orange	4	Function check	Work is being carried out on the device; normal operation is therefore temporarily not possible
Yellow	3	Out of specification	Ambient conditions or process conditions for the device are outside the specified area.
Blue	2	Maintenance required	The device is in normal operation, although a function is briefly restricted. → Service device.
Green	1	Diagnostics active	Device is operating perfectly. Status changes are indicated in different colors. Messages are transmitted via a fieldbus if connected.

Tab. 17: Description of the colors

12 SAFETY END POSITIONS

Actuator system	Designation	Safety end positions after failure of the auxiliary power	
		electrical	pneumatic
	single-acting Control function A	down	down
	single-acting Control function B	up	up
	double-acting Control function I	down	not defined

Tab. 18: Safety end positions

13 ACCESSORIES

Designation	Order no.
Connection cable M12 x 1, 8-pin	919061
Wrench for opening/closing the transparent cap	674078
Communication software Bürkert Communicator	Information at www.burkert.com

USB-büS interface set:	
USB-büS interface set (büS stick + 0.7 m cable with M12 plug)	772551
büS adapter for communication interface (M12 on büS service interface Micro-USB)	773254
büS cable extension (M12 pin to M12 socket), length 1 m	772404
büS cable extension (M12 pin to M12 socket), length 3 m	772405
büS cable extension (M12 pin to M12 socket), length 5 m	772406
büS cable extension (M12 pin to M12 socket), length 10 m	772407

Tab. 19: Accessories

13.1 Communications software

The PC operating program Bürkert Communicator is designed for communication with the devices Type 8695.

If you have any questions regarding compatibility, please contact the Bürkert Sales Center.

A detailed description and precise schedule of the procedure for the installation and operation of the software can be found in the associated documentation.

Download the software at: www.burkert.com

14 PACKAGING, TRANSPORT, STORAGE

ATTENTION!

Transport damages.

Inadequately protected equipment may be damaged during transport.

- During transportation protect the device against wet and dirt in shock-resistant packaging.
- Avoid exceeding or dropping below the permitted storage temperature.

Incorrect storage may damage the device.

- Store the device in a dry and dust-free location.
- Storage temperature -20 – +65 °C.

Environmentally friendly disposal

- Follow national regulations regarding disposal and the environment.
- Collect electrical and electronic devices separately and dispose of them as special waste.

Further information country.burkert.com.

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FLUID CONTROL SYSTEMS

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