

GEMÜ 44A0

Analogue/digital signals

Multi-functional valve actuation

EN

Operating instructions



webcode: GW-44A0



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Quick commissioning

⚠ CAUTION



Hazardous situation!

- ▶ Risk of injury or damage possible
- For correct commissioning, the product must be calibrated to the process valve via the initialization process.
- During this commissioning, the valve is automatically opened and closed several times. It must therefore be ensured in advance that this does not lead to a dangerous situation.

NOTICE

Operating errors!

- Prior to commissioning, familiarize yourself with the operation of the product.

NOTICE

Incorrect initialization!

- Always carry out initialization without operating medium pressure on the process valve. Carry out initialization of the process valve in neutral position (NO/NC).

NOTICE

- For delivery of the product assembled on a valve at the factory, the complete construction is already ready for operation at a control pressure of 5.5 to 6 bar without operating pressure. A reinitialization is recommended if the plant is operated with a different control pressure or if the mechanical end positions have been changed (e.g. seal replacement on the valve or actuator replacement). The initialization is retained even in the event of voltage cutoff.

NOTICE

- For delivery of the product without default setting (e.g. for delivery without valve) initialization must be carried out once for correct operation. This initialization must be repeated every time that the process valve is changed (e.g. seal replacement or actuator replacement).

1. Mount the product on the process valve mechanically.
2. Connect the product pneumatically: Supply the marked connection with pneumatic control air supply (max. 7 bar).
3. Connect the product electrically.
 - ⇒ Connect the supply voltage 24 V DC – pin 1: Uv+; pin 3: GND (high-visibility LED display briefly flashes turquoise during device start-up).
 - ⇒ If delivered without a valve: High-visibility LED display indicates a warning ("No initialization"). LED flashes alternately orange/red.
4. Carry out automatic initialization (this differs depending on whether OPEN/CLOSE actuation or a positioner is used):
 - **OPEN/CLOSE actuation:**
The end positions are determined automatically as soon as the valve moves. The valve is therefore ready for operation immediately, reports the end positions back after an initial movement cycle, and shows these via the LED display (except when the "Detection of end positions mode" does not correspond to "Autonomous"). In this case, initialization must be manually triggered with a command (magnetic switch or app).
The process valve can be controlled via a 24 V DC control signal to pin 5 (without control signal = vented / 24 V CE control signal present = pressurized).
 - **Positioner:**
Start initialization by magnetic switch, 24 V DC initialization impulse to pin 5 or app.
Magnetic switch procedure:
Briefly hold the magnet (>500 ms) at the initialization position (INIT) marked on the housing cover. As soon as the LED display changes from white to yellow, remove the magnet immediately.

Alternatively, the initialization can be carried out via the app – in this case, detailed status and results information is also displayed. An additional option is the 24 V DC digital input at pin 5, but this is only configured for this function (initialization) at the factory in the "positioner" device function.

5. The initialization phase lasts for a few minutes, during which the process valve is opened and closed several times. The high-visibility LED display flashes alternately yellow/white while this happens. The initialization process is then ended automatically.
6. The product is ready for operation and reacts to specified signals:
 - OPEN/CLOSE actuation: 24 V DC control signal to pin 5.
 - Positioner: Analogue 4–20 mA set value signal to pin 2 (if a set value is missing, a "Set value error" is indicated by a red flashing LED display).

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1 General information

1.1 Information

- The descriptions and instructions apply to the standard versions. For special versions not described in this document the basic information contained herein applies in combination with any additional special documentation.
- Correct installation, operation, maintenance and repair work ensure faultless operation of the product.
- Should there be any doubts or misunderstandings, the German version is the authoritative document.
- Contact us at the address on the last page for staff training information.

1.2 Symbols used

The following symbols are used in this document:

Symbol	Meaning
●	Tasks to be performed
►	Response(s) to tasks
–	Lists

1.3 Warning notes

Wherever possible, warning notes are organized according to the following scheme:

SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger ► Possible consequences in case of non-compliance ● Measures for avoiding danger

Warning notes are always labelled with a signal word and sometimes also with a symbol for the specific danger.

The following signal words and danger levels are used:

 DANGER	
	Imminent danger! ► Non-observance can cause death or severe injury
 WARNING	
	Potentially dangerous situation! ► Non-observance can cause death or severe injury
 CAUTION	
	Potentially dangerous situation! ► Non-observance can cause moderate to light injury

NOTICE



Potentially dangerous situation!

- Non-observance can cause damage to property

The following symbols for the specific dangers can be used within a warning note:

Symbol	Meaning
	Danger of explosion!
	Possible risk of crushing by the indicator spindle!
	Risk of crushing!
	Risk of cutting injuries!
	Hot product!
	The equipment is subject to pressure!
	Hot components!
	Minor or moderate injury from a falling product!

2 Safety information

The safety information in this document refers only to an individual product. Potentially dangerous conditions can arise in combination with other plant components, which need to be considered on the basis of a risk analysis. The operator is responsible for the production of the risk analysis and for compliance with the resulting precautionary measures and regional safety regulations.

The document contains fundamental safety information that must be observed during commissioning, operation and maintenance. Non-compliance with these instructions may cause:

- Personal hazard due to electrical, mechanical and chemical effects
- Hazard to nearby equipment
- Failure of important functions
- Hazard to the environment due to the leakage of dangerous materials

The safety information does not take into account:

- Unexpected incidents and events, which may occur during installation, operation and maintenance
- Local safety regulations which must be adhered to by the operator and by any additional installation personnel

Prior to commissioning:

1. Transport and store the product correctly.
2. Do not paint the bolts and plastic parts of the product.
3. Carry out installation and commissioning using trained personnel.
4. Provide adequate training for installation and operating personnel.
5. Ensure that the contents of the document have been fully understood by the responsible personnel.
6. Define the areas of responsibility.
7. Observe the safety data sheets.
8. Observe the safety regulations for the media used.

During operation:

9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not described in this document without consulting the manufacturer first.

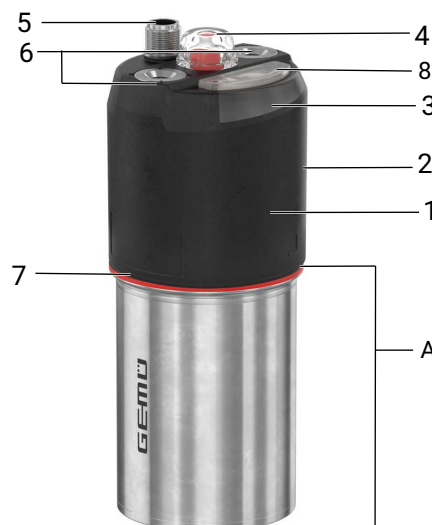
In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

3 Product description

3.1 Construction

Actuator **A** must be ordered separately.



Item	Name	Materials
1	Housing cover, black	PC
2	Housing ventilation	ePTFE
3	LED signalling window	PC
4	Transparent cap	PC
5	Electrical threaded connection	SS/1.4305
6	Pneumatic connectors	SS/1.4305
7	Seal	FKM
8	Type E1B0 Bluetooth module (optional) with slider cover	-
-	Mounting plate (only size 1)	Anodized aluminium

3.2 High visibility LEDs

As well as the electrical position indicator and error output, a visual signal of the various operating conditions is emitted by high visibility LEDs **1** integrated into the housing. The LEDs are arranged so that two light bands integrated on the side are illuminated, making the condition also apparent from a distance. The following conditions are illustrated here:



Valve position indicator for OPEN/CLOSE actuation device function (combi switchbox) ¹⁾

Colour of high visibility LEDs		Function
Standard	Inversed ²⁾	
Green	Orange	Process valve in OPEN position
Orange	Green	Process valve in CLOSED position
Flashing green	Flashing orange	Movement of process valve in OPEN direction
Flashing orange	Flashing green	Movement of process valve in CLOSED direction

Valve position indicator for positioner device function ¹⁾

Colour of high visibility LEDs		Function
Standard	Inversed ²⁾	
Orange (100% brightness)	Green (100% brightness)	Process valve in CLOSED position
Green 25% brightness	Orange 25% brightness	Process valve ≤ 25% open
Green 50% brightness	Orange 50% brightness	Process valve ≤ 50% open
Green 75% brightness	Orange 75% brightness	Process valve ≤ 75% open
Green 100% brightness	Orange 100% brightness	Process valve > 75% open

¹⁾ The valve position indicator can be dimmed or deactivated via parameters.

²⁾ Inverted display can be activated via parameters

Status indication of all device functions

Colour of high-visibility LEDs	Function
Standard	
Flashing yellow/white	Initialization active
Flashing white	Localization active
Flashing orange/red	General warning active
Flashing red	General error active
Flashing yellow/turquoise	Maintenance required
Flashing blue (briefly)	Wireless connection established
Flashing purple/green	Internal update process active
Flashing turquoise (briefly)	Device start
Lit up red (permanently)	Serious error (device faulty)

3.3 Description

Independent of the actuator size, the GEMÜ 44A0 multi-functional valve actuation, as an automation module, is compatible with all pneumatically operated process valves with single acting linear actuator of the new valve generation. Depending on the order variant and the set device functions, the connected process valves can be controlled conventionally open/closed (combi switchbox) or the valve position can be precisely controlled (positioner). Contactless position detection determines the valve position precisely, reliably and without being subject to wear. The current valve position is displayed via high visibility LEDs, and fed back via electrical signals. In addition to this, there is an integrated mechanical position indicator. Modern communication interfaces, an integrated sensor system and the GEMÜ app operating option are all features that characterize this innovative product.

3.4 Function

GEMÜ 44A0 is an intelligent, multi-functional combi switchbox for mounting on pneumatic actuators. The product is directly mounted on the actuator. An integrated digital and contactless position sensor system measures the current valve position via a magnetic spindle that is positively connected to the actuator spindle and reports this position to the electronic system of the product.

NOTICE

- In the order version with code C = positioner, the device function can be changed over between OPEN/CLOSE actuation and the positioner via parameter settings. This means that the same device can be used to implement OPEN/CLOSE applications as well as control applications.
- The order version code B = basic is limited to OPEN/CLOSE actuation.

NOTICE

- The "Extended OPEN/CLOSE actuation" device function, which can be selected, is currently identical to "OPEN/CLOSE actuation".

OPEN/CLOSE actuation device function

(order version code B = basic):

The pneumatic actuator is actuated via integrated pilot valves. Should the valve be opened, the internally installed pilot valves control the pneumatic actuator accordingly. The magnetic spindle in the combi switchbox consequently moves upwards and indicates that the valve is OPEN using the high-visibility LEDs and the electrical interface. Should the valve be closed, the internally installed pilot valves control the pneumatic actuator accordingly. The magnetic spindle simultaneously moves downwards and indicates that the valve is CLOSED using the high-visibility LEDs and the electrical interface.

Positioner device function

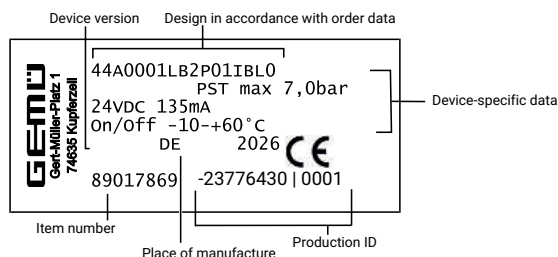
(order version code C = positioner):

The electronic system compares the actual value of the valve (valve position) with the set value specified and readjusts the valve accordingly in the event of a control error. The currently determined valve position is signalled via the high-visibility LEDs and output via the electrical interface. For correct operation, the positioner must first be calibrated (initialized) to the connected process valve. This is done by an automatic initialization function, which can be started via the integrated magnetic switch, a 24 V DC signal at the initialization input or the GEMÜ app. Once this has been carried out, the positioner automatically switches to the normal operating mode and reacts to the set value specified via the electrical interface.

3.5 Product label

The product label is located on the side of the product.

Product label data (example):



The date of manufacture is encoded in the production ID and can be obtained from GEMÜ.

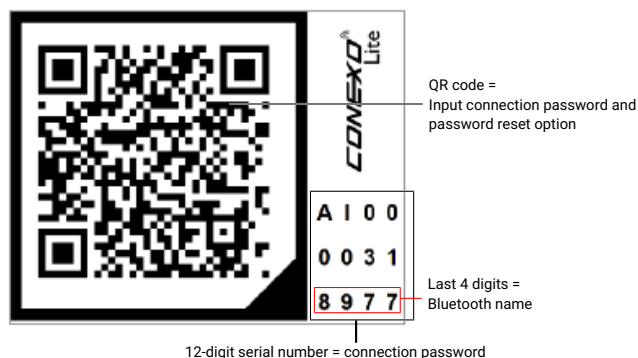
NOTICE

Device version

- The device version is a quick way to tell which firmware is used and what the basic device model is. For full details on specific product composition, the firmware and hardware versions must be read out electronically via the communication interface.

Device version	Firmware version	Effective from	Changes
02	V2.0.0.0	01/2026	- Firmware update functionality (via Bluetooth) integrated - Change in Bluetooth password directive - ASi-5 interface support 44A0 integrated - Integration of specific LED status indicator for serious errors - Support of autonomous end position detection and tracking if there is a Fieldbus error
03	V2.0.0.1	02/2026	Improved robustness compared with temperature-dependent position recording errors.
04	V2.0.0.1	03/2026	Use of IO link printed circuit board with optimized connector alignment.
05	V2.1.0.5	07/2026	- Configuration import/export functionality (via Bluetooth) integrated - Analogue/digital interface support 44A0 integrated - Initialization option via magnetic switch integrated

3.6 Digital product label



The product has a digital name plate. The digital name plate allows the product to be uniquely identified worldwide and, in addition to the classic name plate data, enables lots of additional product-related information to be called up digitally.

Using the digital name plate, GEMÜ fulfils the requirements of DIN SPEC 91406 on the automatic identification of physical objects.

The digital name plate contains a readable 12-digit serial number in addition to the QR code.

For products operated via the GEMÜ App, the last four digits of the 12-digit serial number are used as the Bluetooth names for the product in its default state (e.g. 8977 here). The 12-digit serial number is used as the password for connecting to the product in its default state.

It is recommended that the Bluetooth name and password for the Bluetooth connection are changed (further information is provided in the "Operation" chapter under "Bluetooth interface" (see "Bluetooth interface", page 33).

4 Intended use

DANGER



Danger of explosion!

- ▶ Risk of death or severe injury
- Do **not** use the product in potentially explosive zones.

WARNING

Improper use of the product!

- ▶ Risk of severe injury or death
- ▶ Manufacturer liability and guarantee will be void.
- Only use the product in accordance with the operating conditions specified in the contract documentation and in this document.

The product is not intended for use in potentially explosive areas.

The product with integrated pilot valves is designed to be fitted to GEMÜ valves with linear actuators of the new platform generation. The product has a microprocessor-controlled intelligent position sensor as well as a digital, contactless position sensor system. The valve end positions and the operating conditions can be monitored via the electrical connections. The pneumatic actuator is directly operated and controlled by means of the integrated pilot valves. Any other use or use above and beyond this is not permitted. GEMÜ shall not be liable for any consequential damage. The user alone bears the risk.

1. Use the product in accordance with the technical data.
2. Take care to ensure that the BLE stick is used as intended!

5 Order data

The order data provide an overview of standard configurations.

Please check the availability before ordering. Other configurations available on request.

Note: If there are restrictions on the customer or on the system side which prohibit the use of a Bluetooth interface, we recommend using an order variant with a deactivated Bluetooth interface or without a Bluetooth interface.

For designs with a Bluetooth interface, the option also exists to deactivate the interface via parameters independently later or to uninstall the type E1B0 Bluetooth module.

For designs without a Bluetooth interface, the option also exists to retrofit the interface independently later.

Note:

- Basic device version (code B) = OPEN/CLOSE valve actuation (combi switchbox)
- Positioner device version (code C) contains both the positioner function and OPEN/CLOSE actuation (adjustable via parameter)

Order codes

1 Type	Code
Multi-functional valve actuation	44A0
2 Electrical interface	Code
Analogue/digital signals	00
3 Action	Code
Single acting	1
4 Direction of movement	Code
Linear	L
5 Device version	Code
Basic	B
Positioner	C
6 Interface/size	Code
Size 1	1
Size 2	2
Size 3	3
7 Body material	Code
Plastic	P
8 Options	Code
Without	0
9 Electrical connection	Code
M12 connector	1
10 Air supply	Code
Integrated	I
11 Wireless interface	Code
Bluetooth	B
Without	0
12 Local user interface	Code
LEDs	L
13 Mechanical option	Code
Without	0

Order example

Ordering option	Code	Description
1 Type	44A0	Multi-functional valve actuation
2 Electrical interface	00	Analogue/digital signals
3 Action	1	Single acting
4 Direction of movement	L	Linear
5 Device version	B	Basic
6 Interface/size	2	Size 2
7 Body material	P	Plastic
8 Options	0	Without
9 Electrical connection	1	M12 connector
10 Air supply	I	Integrated
11 Wireless interface	B	Bluetooth
12 Local user interface	L	LEDs
13 Mechanical option	0	Without

6 Technical data

6.1 Medium

Working medium:	Compressed air and inert gases
Dust content:	Class 3, max. particle size 5 µm, max. particle density 5 mg/m³
Pressure dew point:	Class 4, max. pressure dew point +3 °C
Oil content:	Class 5, max. oil concentration 25 mg/m³ Quality classes to DIN ISO 8573-1

6.2 Temperature

Ambient temperature:	-10 – 60 °C
Control medium temperature:	-20 – 60 °C
Storage temperature:	-20 – 70 °C

6.3 Pressure

Control pressure:	Size 1 and 2	Size 3
	0.5 to max. 7 bar	2 to max. 7 bar

The applied pressure must not exceed the maximum control pressure of the process valve.
(If the measured control pressure is ≤ 1.0 bar, a warning is issued as standard to indicate that the control pressure has not been reached, and if it is ≥ 7.1 bar, a warning is issued to indicate that the control pressure has been exceeded. The warning thresholds can be changed.)

Air consumption:	0 NI/min (when idle)
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6.4 Product compliance

EMC Directive:	2014/30/EU
RoHS Directive:	2011/65/EU

6.5 Mechanical data

Installation position:	Optional
-------------------------------	----------

Weight:	Size 1:	240 g
	Size 2:	262 g
	Size 3:	798 g

Travel sensor:		Size 1 and 2	Size 3
	Minimum stroke ¹⁾ :	2.0 mm	5.0 mm
	Maximum stroke ²⁾ :	29.0 mm	45.0 mm
	Correlation between travel sensor spindle/valve position ³⁾	Retracted (top) ± 100% (valve open) Extended (bottom) ± 0% (valve closed)	
	1) Relevant for successful initialization		
	2) Corresponds to the linearized stroke range		
	3) Relative to the setting value 0 = deactivated of the “Inversion of travel sensor signal” parameter. If the inversion of the travel sensor signal is activated, the correlation is correspondingly inverted.		

6.6 Operating conditions

Ambient conditions: Use indoors and protected outdoor areas
Dry and wet environments

Height: Up to 2000 m (above sea level)

Relative air humidity: 0–100%

Protection class:	Single device as supplied	Mounted to actuator
	Unintended operating condition	IP 65

Degree of contamination: 4 (pollution degree)

6.7 Electrical data

Supply voltage U_v : 24 V DC $\pm$ 10%

Duty cycle: Continuous duty

Reverse polarity protection: yes

Electrical protection class: III

Current consumption: Maximum 135 mA

Electrical connection type: 1 x 5-pin M12 plug (A-coded)

Analogue/digital signals: **Note:**
The inputs and outputs listed below can be used depending on the selected or configured OPEN/CLOSE actuation device version (use according to electrical connection pattern).

Analogue input: **Note:**
The analogue input can only be used in the positioner device function.

IO pin 1 (positioner device function)	
Function	4–20 mA set value input
Input type	Passive
Input resistance	125 Ω (+ approx. 0.3 V DC voltage drop due to reverse battery protection)
Max. input current	25 mA
Accuracy	$\leq \pm 0.3\%$ of full flow
Temperature drift	$\leq \pm 0.05\%$ of full flow / 10 °C
Resolution	0.1% of full flow
Reverse battery protection	Yes

Analogue output: **Note:**
The analogue output can only be used in the positioner device function.

IO pin 2 (positioner device function)	
Function	4–20 mA, actual value output
Output type	Active
Accuracy	$\leq \pm 0.5\%$ of full flow
Temperature drift	$\leq \pm 0.01\%$ of full flow / 10 °C
Load resistor	$\leq 800 \Omega$
Resolution	0.1% of full flow

Digital input:**Note:**

The function parameterized at the factory differs depending on the configured device function:

- OPEN/CLOSE actuation: Pilot valve 1 actuation
- Positioner: Initialization input

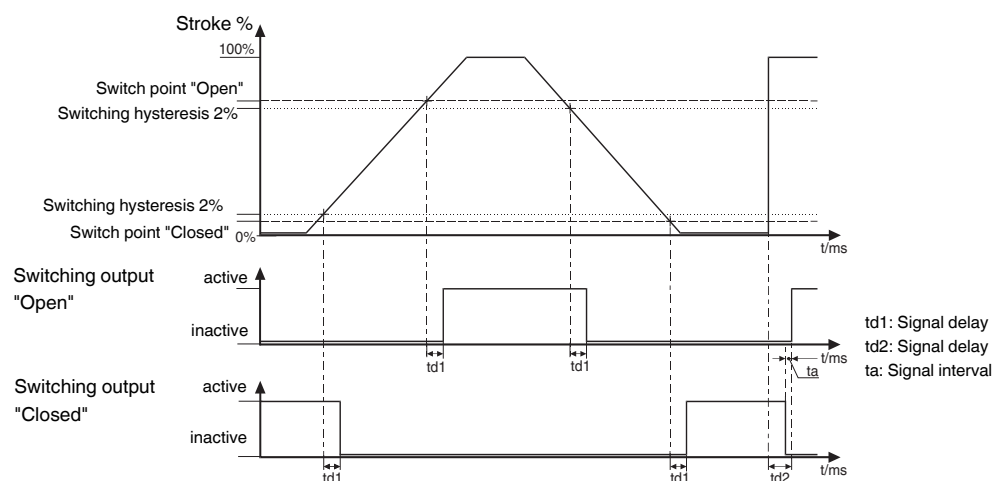
The function can be changed via the relevant parameter: "Standard IO pin 3 function".

IO pin 3 (OPEN/CLOSE actuation device function and positioner)	
Function	Configurable (see parameter description)
min. input voltage	-1 V DC
min. input voltage	+26.4 V DC
Input current	max. 500 μ A
High level	> 18.5 V DC

Digital outputs:**Note:**

The digital outputs can only be used in the OPEN/CLOSED actuation device function. The function parameterized at the factory is reporting back the end position OPEN (IO pin 1) and the end position CLOSED (IO pin 2). The function can be changed via the relevant parameters: "Standard IO pin 1 function" or "Standard IO pin 2 function".

IO pin 1 & 2 (OPEN/CLOSE actuation device function)	
Function	Configurable (see parameter description)
Output type	High side switch outputs
Admissible current	Max. current 50 mA
Switching voltage	$U_v - V_{drop}$
Voltage drop V_{drop}	max. 1 V DC at 50 mA
Overload proof	Yes If the load is too high, the output can only be controlled by pulsing (pulsing 20% PWM) with $I_{ON\ max} = 50\text{ mA}$.
Short-circuit-proof	Yes

Switching characteristic:

Switch points in data in percent of the programmed stroke, with reference to the lower end position (0%)

Switch points:

	Size 1 and 2	Size 3
Switch point CLOSED	Default setting: 12% (adjustable from 0–90%)	
Switch point OPEN	Default setting: 75% (adjustable from 10–100%)	
Min. switch point CLOSED	0.8 mm	1.2 mm
Min. switch point OPEN	0.5 mm	0.75 mm
Switching hysteresis	2% (relative to the initialized range upstream of the respective switch point)	

If the percentage switch points dependent on the programmed stroke are less than the permissible min. switch points, the min. switch points apply automatically. The min. switch points refer to the value before achieving the initialized end position values for the respective item. For example, the CLOSED end position is output at the very latest from 0.8 or 1.2 mm before reaching the initialized end position value of the CLOSED position. The detection and feedback of end positions can also take place earlier (dependent on the stroke) due to the set percentage value of switch point OPEN or CLOSED. A difference of at least 10% must be maintained between the switch point settings.

Travel sensor:

Linearity: < 0.6% of full flow

Repeatability: < 0.3% of full flow

- These values refer to properties including influences of a reference interference field in the form of an identical device with the smallest possible distance to each other.

- The data can only be guaranteed and complied with within the defined functional stroke range of the valves provided. These are a maximum of 25 mm for size 1 and size 2 and a maximum of 41 mm for size 3.

Interface:

	Bluetooth Low Energy (only with integrated wireless interface)	Analogue/digital
Function	Parameterization, configuration, diagnostics and operation	Control
Prerequisite	Compatible smartphone/tablet with Android or iOS ¹⁾ - Apple iOS: Version 16.6 or higher - Android: Version 8.0 ("Oreo") or higher - Bluetooth 4.0 LE or newer	Compatible analogue/digital I/O assembly for 4–20 mA and/or 24 V DC
Version	Bluetooth 5.4 (Low Energy)	-

¹⁾ The compatible GEMÜ app can be downloaded in the respective stores (Apple App Store or Google Play Store).

6.7.1 Wireless-specific parameters

Technology: Bluetooth Low Energy (only possible in conjunction with the GEMÜ app)

Frequency: 2.4 GHz (2.4–2.4835 GHz)

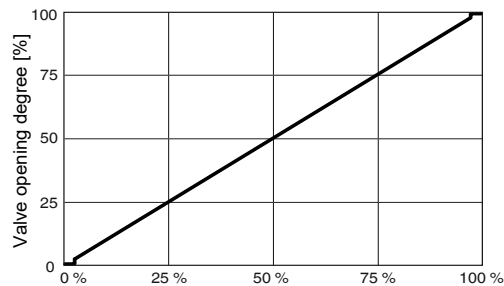
Output power: Max. 11.2 dBm

6.7.2 Positioner data (positioner device function)

Note:

The following diagram is valid for valves with a standard assignment of the spindle position to the valve position.

(See section "Mechanical data, correlation between travel sensor spindle/valve position")

Control diagram:


Note: The control diagram shown here relates to the parameter values at the factory. The control diagram can be influenced/changed by multiple parameters (for example, "Inversion of the travel sensor signal" and/or "Control characteristic")

The digital electro-pneumatic positioner automatically detects the control function of the valve during initialization: Normally open (NO) or normally closed (NC).

For the 0% signal specification, the position of the valve is closed.

The close tight function that is integrated as standard ensures that the valve is moved completely to the end position when the signal "Open valve" or "Close valve" is specified.

Positioner information:

System deviation:
(dead zone)

1% default setting
0.1–25.0% (can be set at fixed values)
0.1–5.0% (adaptive self-adjustment)

Parameterization:
Initialization:

via app
Automatic via magnetic switch on the device, 24 V DC digital signal or app

Close tight function:

Closed: Set value $\leq 0.5\%$
Open: Set value $\geq 99.5\%$
(alterable via parameter)

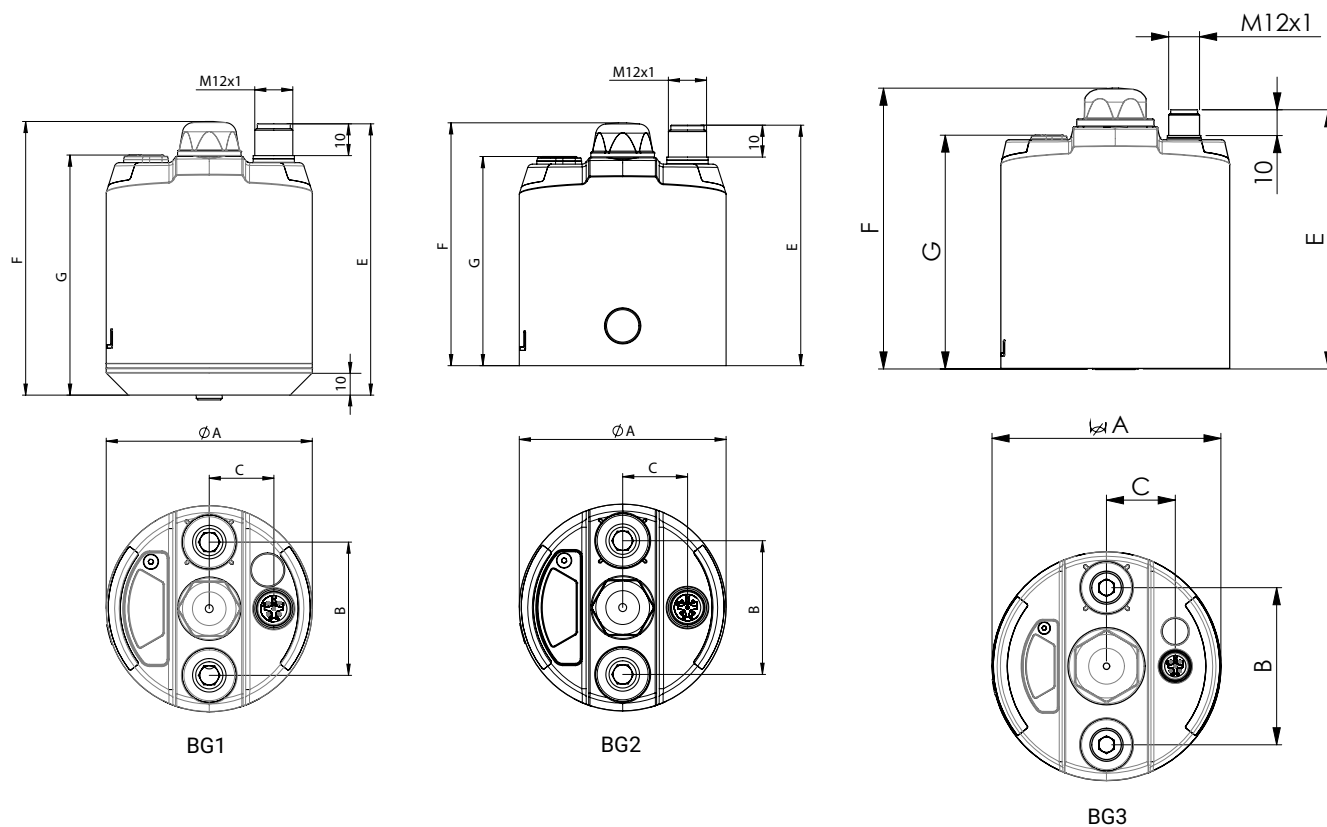
6.7.3 Sensor system for status monitoring

Value	Value range	Sensor resolution	Deviation	Typical deviation.	Long-term stability
Internal temperature	-40 to 100 °C	0.016 °C	$\pm 1.60 \text{ °C}^{1)}$	$\pm 0.20 \text{ °C}^{1)}$	$< \pm 0.02 \text{ °C/year}$
Internal humidity	0 to 100%	0.03%	$\pm 3.5\%$ between 20 to 80% $\pm 6.5\%$ between 0 to 100%	$\pm 2\%$ between 20 to 80% $\pm 3.5\%$ between 0 to 100%	$\pm 0.25\%/year$
Internal pressure	260 to 1260 mbar	24 bit	$\pm 1.0 \text{ mbar}$	$\pm 0.1 \text{ mbar}$	-
Control air supply pressure	0 to 30 bar	1.31 mbar	$\pm 110 \text{ mbar}$	$\pm 30 \text{ mbar}$	$\pm 30 \text{ mbar/year}$
Actuator chamber pressure	0 to 30 bar	1.31 mbar	$\pm 110 \text{ mbar}$	$\pm 30 \text{ mbar}$	$\pm 30 \text{ mbar/year}$
Installation position (in two directions)	-180° to 180°	16 bit	- ²⁾	$\pm 3.1^\circ$ ²⁾	-
Acceleration (in three axes)	-156.96 m/s ² to 156.96 m/s ²	16 bit	$\pm 1.48 \text{ m/s}^2$	$\pm 0.52 \text{ m/s}^2$	-
Current consumption	0 to 375 mA	16 bit	$\pm 3.0 \text{ mA}$	$\pm 0.5 \text{ mA}$	-
Supply voltage	0 to 36 V	16 bit	$\pm 0.5 \text{ V}$	$\pm 0.05 \text{ V}$	-

¹⁾ The value is measured on the inside of the housing with the corresponding influences of the device electronics (e.g. heating).

²⁾ The data refers to a vibration-free status. In the case of vibrations, the deviation can be significantly greater or a value can no longer be determined.

7 Dimensions



	Ø A	B	C	E	F	G
Size 1	65.0	42.0	20.4	85.6	86.3	75.7
Size 2	65.0	42.0	20.4	75.6	76.3	65.7
Size 3	88.9	61.0	26.7	100.7	109.1	90.8

BG = size
Dimensions in mm

8 Manufacturer's information

8.1 Delivery

- Check that all parts are present and check for any damage immediately upon receipt.

The product's performance is tested at the factory. The scope of delivery is apparent from the dispatch documents and the design from the order number.

8.2 Packaging

The product is packaged in a cardboard box which can be recycled as paper.

8.3 Transport

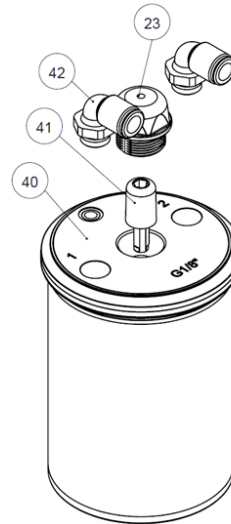
1. Only transport the product by suitable means. Do not drop. Handle carefully.
2. After the installation dispose of transport packaging material according to relevant local or national disposal regulations / environmental protection laws.

8.4 Storage

1. Store the product free from dust and moisture in its original packaging.
2. Avoid UV rays and direct sunlight.
3. Do not exceed the maximum storage temperature (see chapter "Technical data").
4. Do not store solvents, chemicals, acids, fuels or similar fluids in the same room as GEMÜ products and their spare parts.
5. Close the compressed air connections with protection caps or sealing plugs.

9 Assembly and installation

9.1 Preparations for installing the valve (linear actuator)



	Tools:		
	Actuator size 1	Actuator size 2 and 3	Actuator size 4.5 and 6
Open-end wrench 1:	Wrench size 13	Wrench size 17	Wrench size 24
Open-end wrench 2:	Depending on pneumatic connection used		
Allen key:	Wrench size 3	Wrench size 4	Wrench size 6

1. Move actuator **40** into zero position (actuator vented).
⇒ Ensure that the actuator is **depressurized!**
2. Remove transparent cap **23** (open-end wrench 1).
3. Remove indicator spindle **41** (Allen key).
4. Remove pneumatic connections **42** (open-end wrench 2).

9.2 Combi switchbox installation

WARNING



Possible risk of crushing by the indicator spindle!

- Injury possible, because the actuator must be pressurised in order to reach the flat (only NC drives).
- Do not reach into the operating range of the indicator spindle.

NOTICE

Leak-tightness of housing affected.

- If the contact surface of the actuator has previously been damaged, the leak-tightness of the housing cannot be ensured.
- Check the contact surfaces of the actuator before installation and ensure they are undamaged. Contact GEMÜ if damage can be detected.

NOTICE

Contamination and humidity!

- If there is dirt and/or humidity on the inside of the actuator or on the contact surfaces of the actuator, it can cause functional impairment or device failure.
- Check and ensure that there is no humidity and/or dirt on the inside or on the contact surfaces of the actuator, or remove any such before assembly.

NOTICE

Leak-tightness of the product adversely affected!

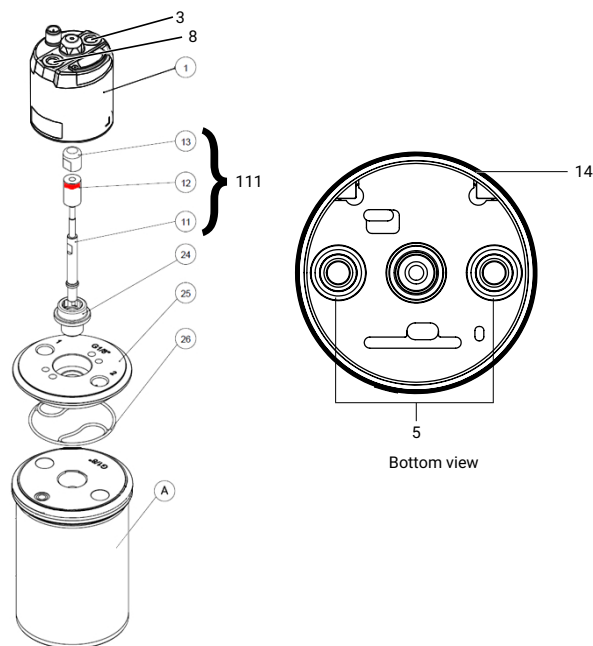
- In the case of unclean inserted or seated seals (14 or 5) both the housing seal and the pneumatic tightness on the actuator can be adversely affected.
- Check and ensure that the seals are complete and that they are seated correctly in the intended position.

NOTICE

The pneumatic connections also act as a fixture to the actuator!

- Before performing any work on the product, depressurize the pneumatic connection.

9.2.1 Installing combi switchbox size 1

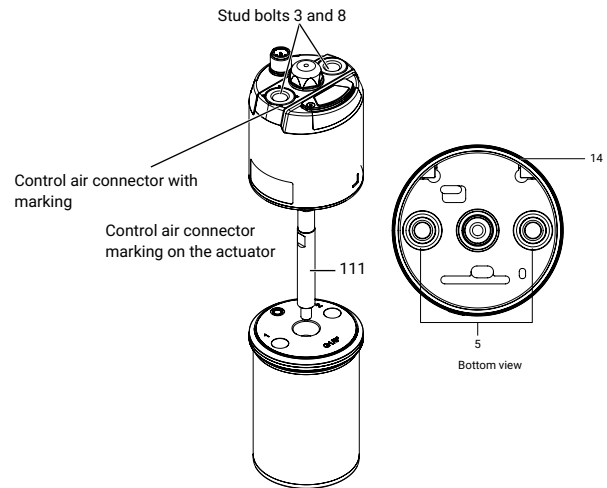


Tools:

Open-end wrench 1:	Wrench size 4
Allen key 2:	Wrench size 10
Allen key 3:	Wrench size 6

1. Move actuator **A** into zero position (actuator vented).
 - ⇒ Ensure that the actuator is depressurized.
2. Carefully insert the seal **26** into the groove provided for it in the mounting plate **25**, and check that it is seated correctly.
3. Align the mounting plate **25** and the inserted seal **26** with the actuator **A** control air connectors of the same name.
 - ⇒ (Marking of mounting plate "1" with control air connector actuator "1" and "2" with "2").
4. Connect mounting plate **25** (if necessary, gently twist until the collars of the mounting plate **25** engage in the control air connectors of actuator **A**) and use collar screw **24** to fasten it to the central thread of actuator **A** and tighten (size 10 Allen key – torque 15 Nm).
5. Connect the compressed air to control air connector 1 (both normally closed and opened by spring force) to open the valve and apply 6 bar of control pressure.
 - ⇒ If compressed air is not applied to the actuator when screwing in the operating bush, the necessary pre-tension may be too low, which can lead to the spindle connection prematurely coming loose during later use.
6. Screw the operating bush **111** into actuator **A** and tighten it to the wrench surface (size 4 open-end wrench) (torque of 2 to 2.5 Nm – the tightening torque is reached if the piston is also turned).
7. Depressurize the actuator again.
 - ⇒ Ensure that the actuator is depressurized.
8. Carefully insert the moulded seal **14** into the groove provided for it at the bottom of the housing of the product **1** and check that it is seated correctly.
9. Check and ensure that the sealing rings **5** are seated correctly on both stud bolts.
10. Align product **1**. **Please note:** The orientation is dependent on the control function of the actuator.
 - ⇒ Control function 1 (normally closed): Actuator control air connector = 1 // → product control air connector **with marking**.
 - ⇒ Control function 2 (normally open): Actuator control air connector = 2 // → product control air connector **with marking**.
11. Alternately screw in the stud bolts **3** and **8** in the correct orientation (size 6 Allen key) and tighten them (10 Nm torque).
 - ⇒ **Note:** The hexagon socket screw drive is incorporated into the stud bolts. As a result, an Allen key with a shaft length of at least 16 mm is required. A short bit insert cannot be used.
12. Make the pneumatic and electrical connection.

9.2.2 Installing combi switchbox size 2 and 3



Tools:

Open-end wrench:	Wrench size 8
Hexagon wrench:	Wrench size 6

1. Connect the compressed air to control air connector 1 (both normally closed and opened by spring force) to open the valve and apply 6 bar of control pressure.
 - ⇒ If compressed air is not applied to the actuator when screwing in the operating bush, the necessary pre-tension may be too low, which can lead to the spindle connection prematurely coming loose during later use.
2. Screw the operating bush **111** in the actuator and tighten to 2.5–3 Nm (size 2) or 25 Nm (size 3) using a size 8 open-end wrench – the tightening torque is reached if the piston is also turned.
3. Depressurize the actuator again.
 - ⇒ Ensure that the actuator is depressurized.
4. Size 2: Carefully insert the moulded seal **14** into the groove provided for it at the bottom of the housing of the product, and check that it is seated correctly.
5. Size 3: Mount the moulded seal **14** on the collar/sealing area of the actuator.
6. Check and ensure that the sealing rings **5** are seated correctly on both stud bolts.
7. Align the product. **Please note:** The orientation is dependent on the control function of the actuator.
 - ⇒ Control function 1 (normally closed): Actuator control air connector = 1 // → combi switchbox control air connector with marking.
 - ⇒ Control function 2 (normally open): Actuator control air connector = 2 // → combi switchbox control air connector with marking.

8. Alternately screw in the stud bolts **3** and **8** in the correct orientation (size 6 Allen key) and carefully tighten them (torque 10 Nm (size 2) or 15 Nm) (size 3)).
 - ⇒ Note: The hexagon socket screw drive is incorporated into the stud bolts. As a result, an Allen key with a shaft length of at least 16 mm (size 2) or 20 mm (size 3) is required. A short bit insert generally cannot be used.
9. Make the pneumatic and electrical connection.

9.3 Mounting the Bluetooth version

9.3.1 Attaching the wireless approval marking

An elbow with country-specific wireless approval markings is included with the product in the version with a Bluetooth interface (wireless interface order code B). Before commissioning, the operator must check which wireless approval marking is required at the product's place of use.

Only markings that are applicable for the relevant country of use or the region may be used. The product with Bluetooth function is only permitted for use in countries or regions for which a corresponding wireless approval is present.

- Permanently attach the corresponding adhesive label to the product so that it is clearly visible and readable.

9.3.2 Preparations for installation

1. Ensure ESD protection.
2. Attach the wireless approval marking.
3. Prevent foreign matter from penetrating into the device's open slot.
4. Avoid mechanical stress (for example, vibrations).
5. Ensure that the environment is clean.
6. Check for moisture prior to installation.
7. Disconnect the product from the power supply.

9.3.3 Installing the type E1B0 Bluetooth module

Note: This chapter is only relevant for later installation or a replacement.

Refer to the separate documentation for the type E1B0 Bluetooth module.

CAUTION



Risk of crushing!

- ▶ Pinching of fingers during disassembly/installation of the type E1B0 Bluetooth module in the slider cover or of the type E1B0 Bluetooth module with a slider cover in the housing
- Installation work must only be performed by trained personnel.
- Wear suitable protective gear.

CAUTION



Risk of cutting injuries!

- ▶ Risk of cutting injuries due to sharp edges, corners or protruding parts
- Installation and disassembly work must only be performed by trained personnel.
- Use suitable cutting protection.

NOTICE

Damage to the product!

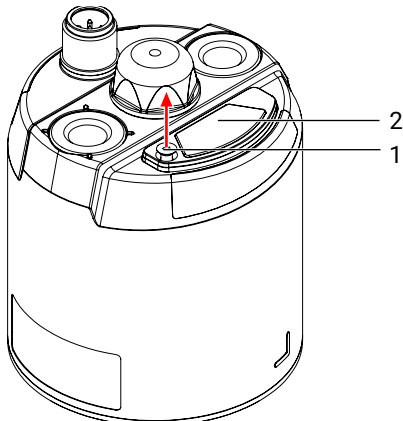
- Ensure that the module is installed/disassembled correctly and pay attention to any damage to the product.

NOTICE

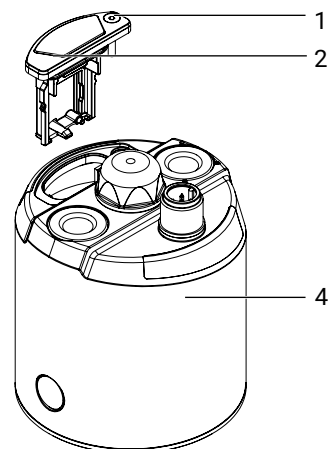
Electrostatic discharge!

- Destruction of electronic components.
- Take the necessary ESD safety precautions during installation of the product.

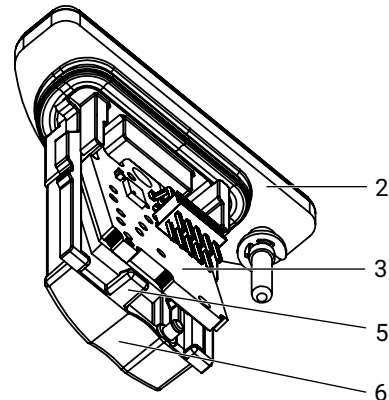
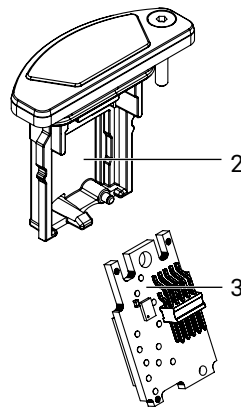
1. Check all parts for damage, contaminants and moisture prior to installation.
2. Installation work must only be performed by trained personnel.
3. Suitable precautionary measures must be provided for with regard to ESD in order to prevent damage.



4. Undo the screw **1** (hexagon socket, size 1.5) of the slider cover **2** (the screw is secured against falling out of the slider cover **2** by a circlip).



5. Remove the slider cover **2** with the screw **1** from the housing **4**.
 - ⇒ To accomplish this, carefully grip the screw head with small pliers (e.g. needle-nose pliers) and pull it out vertically upwards. Take care not to tilt or damage the part.



6. Insert the type E1B0 Bluetooth module **3** into the slider cover **2** until the snap hook **5** clicks into position.
7. Ensure that the type E1B0 Bluetooth module **3** is installed correctly!
 - ⇒ The pins of the type E1B0 Bluetooth module **3** in the slider cover **2** should be facing forwards and aligned towards the snap hook **5** and recessed handle **6**.
8. Reinstall the slider cover **2** with the type E1B0 Bluetooth module **3** fitted back into the housing **4** and tighten with a screw **1** (hand tight, maximum torque 0.4 Nm, size 1.5 hexagon socket).

10 Electrical connection

NOTICE

It is possible to touch the electronic system when the product is dismantled!

- When disassembling the product, disconnect the power supply.

NOTICE

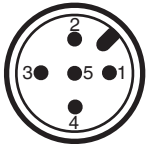
Risk of damage!

- Product failure
- Connector cannot be aligned.
- The connector must be protected from turning.

Please note: The functionality of the signal pins (pin 2, 4 and 5) is dependent on the configurable **device function** and immediately changes the internal interconnection if the relevant device function parameter is changed. This may automatically change the signal assignment of individual connections by changing the device function via parameters. For example, a connection previously used as an analogue output can therefore become a digital output with a 24 V DC output signal.

Before changing the parameters, check the connection assignment and external wiring!

10.1 General – see specific connection diagram below



Pin	General description
1	Uv+, 24 V DC, supply voltage
2	IO pin 1 ¹⁾ • OPEN/CLOSED actuation: 24 V DC digital output • Positioner: 4–20 mA set value input
3	Uv, signal GND*
4	IO pin 2 ²⁾ • OPEN/CLOSED actuation: 24 V DC digital output • Positioner: 4–20 mA actual value output
5	IO pin 3 ³⁾ • 24 V DC digital input

* Uv, signal GND: Common reference potential for supply voltage, digital inputs/outputs and analogue 4–20 mA signals.

¹⁾ In the OPEN/CLOSED actuation device function, the function of the digital output can be configured via the relevant parameter: **Standard IO pin 1 function**. Default setting = OPEN end position output

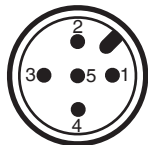
²⁾ In the OPEN/CLOSED actuation device function, the function of the digital output can be configured via the relevant parameter: **Standard IO pin 2 function**. Default setting = CLOSED end position output

³⁾ The function of the digital input can be changed via the relevant parameter: **Standard IO pin 3 function**. Default setting depending on the device function.

- OPEN/CLOSED actuation = Pilot valve 1 actuation
- Positioner = Initialization input

10.2 Connection for analogue/digital OPEN/CLOSED actuation device function

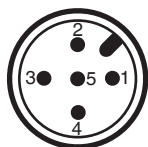
The specific connection assignment for the OPEN/CLOSED actuation device function and the default setting definition for IO pins 1, 2 and 3 are below.



Pin	Description of OPEN/CLOSED actuation device function in default setting
1	Uv+, 24 V DC, supply voltage
2	IO pin 1 (function can be changed via standard IO pin 1 parameter function) Default setting: 24 V DC OPEN end position digital output
3	Uv, signal GND*
4	IO pin 2 (function can be changed via standard IO pin 2 parameter function) Default setting: 24 V DC CLOSED end position digital output
5	IO pin 3 (function can be changed via standard IO pin 3 parameter function) Default setting: 24 V DC digital input pilot valve 1 actuation

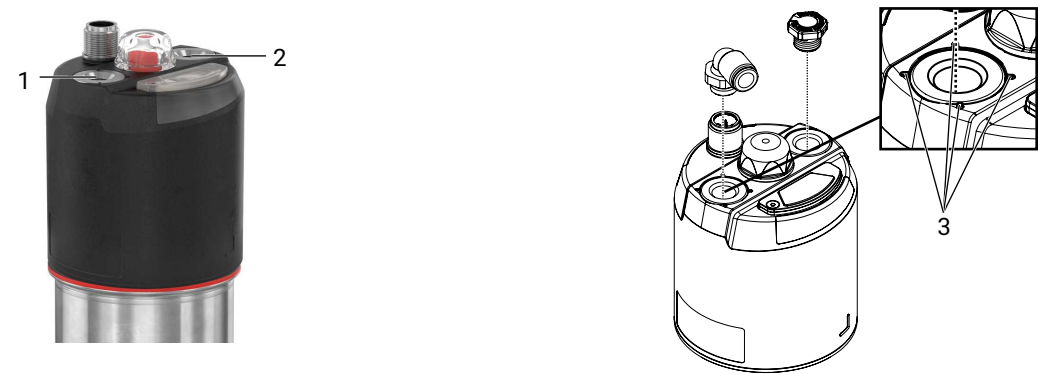
10.3 Analogue/digital connection positioner device function

The specific connection assignment for the positioner device function and the default setting definition for IO pin 3 are below.



Pin	Description of positioner device function in default setting
1	Uv+, 24 V DC, supply voltage
2	IO pin 1 4–20 mA set value input
3	Uv, signal GND*
4	IO pin 2 4–20 mA, actual value output
5	IO pin 3 (function can be changed via standard IO pin 3 parameter function) Default setting: 24 V DC initialization digital input

11 Pneumatic connection



Connection	Marking	Designation	Connection size
1	Marking on the connection	Air supply connection (with integrated control pressure detection)	Size 1 and size 2: G1/8 Size 3: G1/4
2	(without marking)	Venting connection and process valve spring chamber ventilation	Size 1 and size 2: G1/8 Size 3: G1/4

The product is supplied with two pneumatic connections (for commercially available 6x4 mm pneumatic tubing) and a venting plug as standard. These are provided as follows:

Control function of valve actuator	Connector 1	Connector 2
Single acting (NO or NC) (see figure at the top right)	Pneumatic connection	Venting plug*
* With piped air outlet: Pneumatic connection. The venting plug is not suitable for IP 67 and is not recommended for damp ambient conditions.		

11.1 Information for use in damp conditions

The following information is intended to help when installing and operating the product in damp conditions.

1. Cables and pipework must be laid so that condensate or rain water that remains on the pipework/cables cannot enter the screw fittings of the product's M12 plugs.
2. Check that all cable glands of the M12 plugs and the fittings are mechanically secured.
3. In case of doubt, the housing protection class should be increased with an exhaust air duct to areas free from moisture (only relevant for single acting process valves). To accomplish this, equip the provided venting connection (spring chamber ventilation) with suitable pneumatic connections to discharge the exhaust air in a targeted manner via a pneumatic line. Ensure that the ventilation line is always depressurized, that it is not operated with throttles, filters or similar components. The ventilation lines must be laid in such a way that moisture cannot flow back.

12 Error response

Error	Process valve
Electrical power supply failure or minimum supply voltage not reached	Vented
Pneumatic compressed air supply failure or minimum control pressure not reached	Vented
Malfunctions detected by the software in the Error category (see chapter "Troubleshooting")	Set error position ("Error position" parameter) is performed. - "Hold position", - "Open", - "Closed", - "Safety position" *, - or - "Free position"
Malfunctions detected by the software in the Error2 category (see chapter "Troubleshooting")	Vented
* Safety position = default setting. The actuator is vented in the process.	
These error responses are not a substitute for the required plant-specific precautions and safety facilities.	

13 Commissioning

WARNING



Possible risk of crushing by the indicator spindle!

- Injury possible, because the actuator must be pressurised in order to reach the flat (only NC drives).
- Do not reach into the operating range of the indicator spindle.

CAUTION



Hazardous situation!

- Risk of injury or damage
- For correct commissioning, the product must be calibrated to the process valve via the initialization process. Depending on the selected device function (OPEN/CLOSE actuation or positioner) and the specific configuration, this is done automatically the first time the valve moves or needs to be actively started.
- During this commissioning, the valve must be opened and closed by the application of compressed air on the actuator. It must therefore be ensured in advance that this does not lead to a dangerous situation.

NOTICE

Falsified position determination!

- Position determination uses Hall effect sensors and an integrated permanent magnet. External magnetic fields can disrupt and falsify the position determination.
- External magnetic fields, for example, permanent magnets near the device, must be completely avoided (wherever possible) or it must be ensured that they are kept at a maximum possible distance.

1. Use suitable connectors.
2. Connect the control medium lines tension-free and without any bends or knots.
3. Connect the pneumatic tubes and activate the pneumatic control air supply of max. 7 bar (observe the required control pressure for the process valve).
4. Connect the connection cable tension-free and without any bends or knots.
5. Switch on the 24 V DC supply voltage.
6. Connect control signals depending on the device function used or configured:

OPEN/CLOSE actuation:

1. Connect control input pin 5 to a compatible 24 V DC digital output.
2. Optionally connect the two pin 2 and 4 feedback outputs to a compatible 24 V DC digital input.

Positioner:

1. Connect pin 2 set value input to a compatible 4–20 mA analogue output.
 2. Optionally connect the pin 4 actual value output to a compatible 4–20 mA analogue input.
 3. Optionally connect the pin 5 digital input to a compatible 24 V DC digital output.
- Pin 3 is the joint GND for the supply voltage and all analogue and digital signals.

13.1 Initialization

NOTICE

Incorrect initialization!

- Always carry out initialization without operating medium pressure on the process valve. Carry out initialization of the process valve in neutral position (NO/NC).

NOTICE

- For delivery of the product assembled on a valve at the factory, the complete construction is already ready for operation at a control pressure of 5.5 to 6 bar without operating pressure. A reinitialization is recommended if the plant is operated with a different control pressure or if the mechanical end positions have been changed (e.g. seal replacement on the valve or actuator replacement). The initialization is retained even in the event of voltage cutoff.

NOTICE

Initialization depending on the device function

- OPEN/CLOSE actuation: Initialization takes place autonomously (provided that the "Autonomous detection of end positions" mode is active) (see "Autonomous end position process/end position tracking", page 30).
- Positioner: Initialization must be actively started (see "Classic initialization process", page 31).

If initialization has not been carried out beforehand, or if the CLOSED and OPEN end positions have not been detected, the product displays a warning (after a short start-up process) (high-visibility LEDs flash alternately orange/red).

The initialization of the end positions differs depending on the device function with which the device is operated:

OPEN/CLOSED actuation:

Initialization is dependent on the setting of the "Detection of end positions mode" parameter. The "Autonomous" mode is activated as standard, which means that the end positions are determined independently (see "Autonomous end position process/end position tracking", page 30).

NOTICE

Valve control without initialization

- The valve can be controlled directly via the process input without having carried out initialization (see "Operation", page 32).

Positioner:

Initialization must be carried out conventionally for normal operation (see "Classic initialization process", page 31).

NOTICE

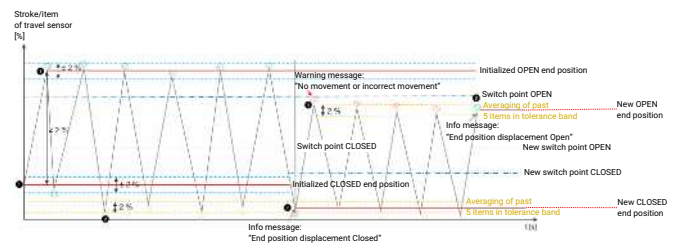
Valve control only with initialization

- In order for the valve to be controlled, initialization must first be carried out.

In the **autonomous detection of end positions mode** (default setting for OPEN/CLOSE actuation), the end positions are determined independently as soon as the valve moves. The valve is therefore ready for operation directly, reports the end positions back after an initial complete movement cycle (end position A to end position B and back to A) and shows these via the LED display.

In **classic mode** (generally for positioners), the end positions must be calibrated via the active triggering of the initialization process. If correct initialization has not been carried out, then the device is in a warning state (signalling via the corresponding high-visibility LEDs).

13.1.1 Autonomous end position process/end position tracking



Number 1 in diagram: Without previous end position values, the first two points that are absolutely spaced $\geq 2\%$ apart are calibrated as initialized end positions. Around the initialized OPEN and CLOSED end position values, there is a hysteresis of $\pm 2\%$ in which no action takes place. If the OPEN and/or CLOSED end position value is left at $> 2\%$ (positive or negative), the effect is dependent on the range

Number 2 in diagram: a) Within the switch point range: No message (warning) is sent. If a position in a tolerance band of 2% is approached 5x in succession, the mean value is calculated from this and applied as a new end position.

An info message that an end position displacement has occurred is sent.

Number 3 in diagram: b) Outside the switch point range: A warning message ¹⁾ "No movement or incorrect movement" is sent immediately. If a position in a tolerance band of 2% is approached 5x in succession, the mean value is calculated and applied as a new end position. The warning message is acknowledged and an info message that an end position displacement has occurred is sent

¹⁾ Diagnostic messages can also be deactivated via a parameter

* relative to the initialized stroke

The autonomous end position process or end position tracking is an intelligent function, with the help of which the end positions of a valve are independently determined (without external triggering). If this function is active, the end positions are automatically determined the first time the valve moves, and the product is ready for operation immediately. The end positions are continuously monitored and responded to accordingly in case of deviations.

Explanation of the functional principle:

In the autonomous end position tracking mode, a distinction is made between two different conditions, which have an influence on the behaviour of the function.

No initialization: The device observes whether two different end positions have been approached at a certain distance (see diagram). The first two end positions that comply with this condition are calibrated as reinitialized end positions.

Existing initialization: The function determines whether there is a displacement of the end positions over the operating time. If these displacements are outside a certain tolerance range and display a certain consistency (see diagram), the initialized end positions are overwritten by the adjusted initialization values. If this process is triggered, this is indicated by a corresponding message.

A **classic initialization** can also be carried out with autonomous end position tracking activated. This is recommended after a seal replacement or the like, in order to prevent faulty messages regarding end position changes. If the initialization is successful here, then the currently calibrated end positions are overwritten and the tracking operates against these updated end positions. If the actively triggered initialization process is not successful here, then the most recently calibrated initialization positions are deleted.

13.1.2 Classic initialization process

NOTICE

- The initialization must be repeated every time that the process valve is changed (for example, seal replacement or operator replacement).

NOTICE

- During initialization, the device checks whether all the necessary conditions are complied with. If all conditions are complied with, the initialization is automatically completed and a confirmation is displayed.
- If a condition is not complied with, the initialization is aborted with a corresponding error message.

13.1.2.1 Implementation via magnetic switch

NOTICE

- If there is an existing app connection, starting initialization via the magnetic switch is disabled.

NOTICE

- If the magnet is applied for too long, initialization is not started.

NOTICE

- It is also possible to disable the option for initializing via the magnetic switch. This can be done via the "Initialization via magnetic switch" parameter.

NOTICE

- GEMÜ recommends using an axially magnetized magnet. This is because other magnets (depending on the magnetic strength) cannot be reliably detected.

The initialization can be started by a magnet that can be held at the position marked with "INIT" on the housing cover, provided that the activation sequence is followed correctly

Procedure:

1. Connect the supply voltage to the device.
2. Hold the magnet at the marked position for > 500 ms (LED display is lit white).
3. If the LED display turns yellow, the magnet can be removed again within 2 seconds.
 - ⇒ The initialization process is automatically started. LED display indicates "Initialization active" (flashes alternately yellow/white).
 - ⇒ The initialization phase lasts for a few minutes, during which the process valve is opened and closed several times. The initialization process is ended automatically.
4. After the initialization process is successfully ended, the process valve is directly moved into the specified valve position by the analogue or digital control signal (depending on device function).
 - ⇒ The current valve position is indicated by the LED display (lit green or orange) and electronically reported back.
 - ⇒ Note: In the positioner device function, if there is a missing 4–20 mA set value signal, this is indicated via a red flashing LED display: Apply a set value signal ≥ 4 mA.
5. The valve can be controlled via the corresponding signals depending on the set device function.

13.1.2.2 Implementation via GEMÜ App

The initialization process must be actively started after establishing a connection with the **GEMÜ App** via the **Initialization** quick-action button.

- Call up and start the **Initialization** menu.

⇒ Initialization is carried out automatically and ends automatically. The operating mode (automatic) must then be set for normal operation (the app automatically directs you to this).

13.1.2.3 Implementation via digital signal

NOTICE

- The digital input is only configured at the factory as an initialization input in the positioner device function. In the OPEN/CLOSED actuation device function, the digital input is configured at the factory as a control input. The function can be changed via the "Standard IO pin 3 function" parameter.

Initialization can be started via a brief 24 V DC signal at standard IO pin 3 (corresponds to pin 5 of the M12 connector). To do this, the "Standard IO-Pin 3 function" parameter must be set to the "Initialization input" setting value. In the positioner device function, this corresponds to the default setting.

In the OPEN/CLOSE device function, this function cannot be used by default (to do so it is necessary to change the configuration beforehand).

Procedure:

- At IO pin 3 (corresponds to pin 5 of the M12 connector), briefly (>100 ms) apply 24 V DC.
- The initialization process is automatically started. LED display indicates "Initialization active" (flashes alternately yellow/white).
 - ⇒ The initialization phase lasts for a few minutes, during which the process valve is opened and closed several times. The initialization process is ended automatically.
- After the initialization process is successfully ended, the process valve is directly moved into the specified valve position by the analogue or digital control signal (depending on device function). The current valve position is indicated by the LED display (lit green or orange) and electronically reported back.
 - ⇒ Note: In the positioner device function, if there is a missing 4–20 mA set value signal, this is indicated via a red flashing LED display: Apply a set value signal ≥ 4 mA.
- The valve can be controlled via the corresponding signals depending on the set device function.

13.2 Commissioning the type E1B0 Bluetooth module**NOTICE****Electrostatic discharge!**

- Damage to the product.
- Ensure that ESD safety precautions are taken.

Please note: The module must be installed and commissioned by an electrician.

- Make sure that the housing protection of the product is still ensured after installing the type E1B0 Bluetooth module (visually inspecting seals, checking that the type E1B0 Bluetooth module with slider cover is seated correctly, etc.).
- After installation, the type E1B0 Bluetooth module is automatically supplied with power via the product as soon as it is connected to a power supply.
- Where there is an existing power supply, the product can be connected to the GEMÜ app.

14 Operation**WARNING****Hot product!**

- Danger of burns, as the product heats up at the maximum permissible ambient temperature.
- Wear protective gloves.

NOTICE**Faulty sealing rings or O-rings!**

- Sudden pressure increase in the product housing due to leakage at the stud bolt sealing ring or pressure sensor O-ring
- Carry out product maintenance regularly and pay attention to the integrity of the sealing rings.

Depending on the device function, the product is operated via digital 24 V DC signals or analogue 4–20 mA signals, which can be used to influence or monitor the valve position. The valve position can be influenced differently and monitored depending on the selected device function.

OPEN/CLOSE actuation device function control:

The integrated pilot valve can be controlled via a 24 V DC control signal, which pneumatically activates the process valve with compressed air. The IO pin 3 (corresponds to pin 5 of the M12 connector) is set up for this as standard.

OPEN/CLOSED actuation			
Connection	Digital signal **	Pneumatic actuator	Process valve
IO pin 3 = Pin 5 (in the OPEN/CLOSED actuation device function and factory configuration)*	0 V DC	Vented	Process valve in neutral position
	24 V DC	Pressurized	Process valve in actuated position

* The function of the connection can be changed via the relevant "Standard IO pin 3 function" parameter. For the described function, the setting value must be "Pilot valve 1 actuation".

** The logic can be changed via the relevant "Standard IO pin 3 logic" parameter. For the described function, the setting value must be "Active High".

OPEN/CLOSE actuation end position feedback device function:

The valve end positions can (in the standard configuration) be monitored via the electrical interface (IO pins 1 and 2).

- IO-Pin 1: Reports if the valve is in the OPEN end position

- IO-Pin 2: Reports if the valve is in the CLOSE end position

By evaluating the logic of the two signals (both active), errors and warnings that have occurred in the device can be read out.

The function of the IO pins 1 and 2, as well as the error signalling using the two active signals, can be reconfigured or deactivated via corresponding parameters.

OPEN/CLOSE actuation end position feedback		
Connection	Digital signal ***	Process valve
IO pin 1 = Pin 2	0 V DC	Process valve not in OPEN position

OPEN/CLOSE actuation end position feedback		
Connection	Digital signal ***	Process valve
(in the OPEN/CLOSED actuation device function and factory configuration)*	24 V DC	Process valve in OPEN position
IO pin 2 = Pin 4 (in the OPEN/CLOSED actuation device function and factory configuration)**	0 V DC	Process valve not in CLOSED position
	24 V DC	Process valve in CLOSED position

* The function of the connection can be changed via the relevant parameter "Standard IO pin 1 function". For the described function, the setting value must be "OPEN feedback".

** The function of the connection can be changed via the relevant parameter "Standard IO pin 2 function". For the described function, the setting value must be "CLOSED feedback".

*** The logic can be changed via the relevant parameter "Standard IO pin 1 logic" or "Standard IO pin 2 logic". For the described function, the setting value must be "Active High".

Control positioner device function:

The set valve position can be specified via an external 4–20 mA analogue signal to IO pin 1 (corresponds to pin 2 of the M12 connector). Depending on the signal, the process valve is therefore controlled between a valve stroke of between 0.0 and 100.0%.

Position control			
Connection	Analogue signal	Pneumatic actuator	Process valve
IO pin 1 = Pin 2 (in positioner device function)	4–20 mA	Depending on signal	Set valve position between 0.0 and 100.0%

Position feedback positioner device function:

The actual valve position can be read out and monitored via a 4–20 mA analogue output signal to IO pin 2 (corresponds to pin 4 of the M12 connector).

Position feedback		
Connection	Analogue signal	Process valve
IO pin 2 = Pin 4 (in positioner device function)	4–20 mA	Actual valve position between 0.0 and 100.0%

App operation:

An app operating option is also available, allowing the process valve to be operated manually in both device functions.

Note: Operation is possible without restriction, regardless of whether an app connection is available or not. External analogue and digital control signals for control are ignored in the "Manual" operating mode. In this case, the process valve can be manually operated using the app.

14.1 Bluetooth interface

Note: Only possible when using the type E1B0 Bluetooth module.

Using an integrated Bluetooth Low Energy interface, the following functions can be used in conjunction with the **GEMÜ app**:

1. Changing the device configuration (parameter settings).
2. Reading out the current device status.
3. Displaying and evaluating historic events.
4. Implementing the initialization.
5. Moving the valve in manual operation.
6. Resetting the device to the default settings.
7. Activating the localization (device detection).
8. Security management (blocking access for a certain group of participants).

NOTICE

- Only one end device can ever be simultaneously connected to the product. For additional participants, this device is not visible during this period.

After starting the app, all compatible GEMÜ products within range are displayed in the connection list. The product that is to be connected can be referenced via the Bluetooth name. In the condition as supplied to the customer, this corresponds to the last four digits of the 12-digit serial number printed on the digital product label (8977 in the following example). The Bluetooth name can optionally be changed at any time after the connection is established (maximum 16 characters).

NOTICE

- The default state of the Bluetooth interface is activated and it is ready for connection immediately after the product has been electrically commissioned.

NOTICE

Note on Bluetooth!

- The product can be used via the GEMÜ app in its default state as follows:
 - **Bluetooth name** = last four digits of the serial number on the digital name plate.
 - **Bluetooth connection password** = 12-digit serial number or QR code on the digital name plate.
 - It is recommended that both features are changed to any independent information during commissioning in order to increase access protection! Otherwise, anyone with physical access to the product and the digital name plate has access to the above-listed functions!

Digital name plate



In the condition as supplied to the customer, the product is protected against unauthorized access using a unique connection password. The password corresponds to the 12-digit printed serial number or the QR code.

To enter the password, this can optionally be read via the camera scan function on the smartphone/tablet or entered manually. The password can be managed independently and set to any other password (it is recommended that this is done directly after commissioning).

By amending the original password, you lose the option to read this via the digital name plate. The connection password function can be deactivated, but we do not recommend this. Furthermore, a configuration lock can be set up for the product using a separate optional password, providing the product with additional protection. If this function is activated, you cannot implement any changes to the settings without first entering the password (read-only mode).

There is an option to reset both passwords if you forget these. The user can define whether one, both or none of the passwords are reset via the reset mechanism.

Caution! If you forget your passwords and one or both passwords for the reset mechanism are disabled, the product can only be unlocked by GEMÜ.

Caution! If one or both passwords for the reset mechanism are enabled, anyone with access to the digital name plate (QR code) can remove the password protection.

Reset mechanism:

The following options are available for resetting one of the two passwords (connection or configuration lock password). Both passwords can/must be reset separately from each other.

9. Digital product label (QR code):

⇒ By scanning the QR code that is affixed to the product.

NOTICE

- A setting parameter can be used to block the reset of one or both passwords.

14.2 Basic operation of the app



Messages Information, error and warning me

Menu Password management
Parameter management and factory res
Firmware update

Settings Parameter display
Parameter configuration
Search function
Favourite selection
Operating mode settings

Status Operating time display
Bar chart
Sensor values
Status display

Overview Actions (initialization, localization, maintenance)
Favourites

The GEMÜ app comprises multiple function modules that can be accessed via the bottom navigation at the bottom edge of the display. The functions for operating the product can be found in the "Connect" area. All available GEMÜ products within range are displayed in the connection list. The connection is established by tapping a selected product (usually the connection password must also be entered). The figure above provides a rough overview of the construction after a connection with a product has been established. You can navigate within the "Connect" area by selecting the "Overview", "Settings" or "Status" tabs. Important info, error or warning messages can be accessed on all pages via the bell icon. On the overview page, the initialization of the product can be started and executed, among other functions. The menu can be opened via the gear icon. Here, you can change the password settings, reset the product to default settings or update the firmware.

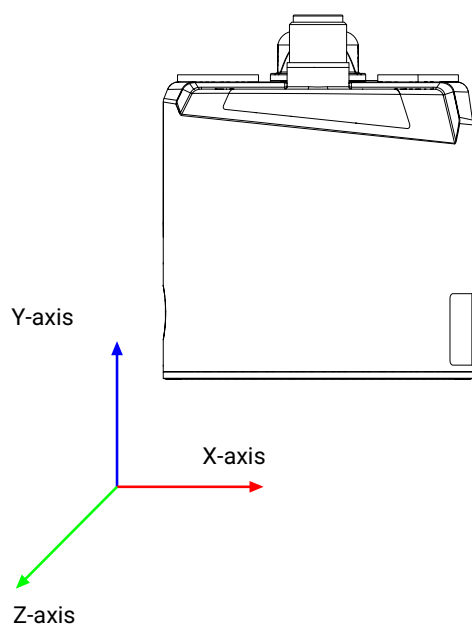
14.3 Sensor system for status monitoring

Various sensors are installed on the device which make it possible to diagnose the status. The measured values can only be viewed via the Bluetooth interface in the app. For each relevant measured value, warning thresholds are defined that generate a warning or error message when they are not reached or are exceeded. This means that unacceptable influences that would damage the device or reduce its service life can be reacted to in a timely manner.

The following measured values are detected internally:

- Internal temperature
- Internal humidity
- Internal pressure
- Control air supply pressure
- Installation position (in two directions)
- Acceleration (in three axes)
- Current consumption
- Supply voltage

The axes for evaluating the acceleration in the X, Y and Z directions are defined in accordance with the visualisation below.



The following correlation is provided in the details of the mounting angles:

- The frontal inclination angle corresponds to the Z axis.
- The side inclination angle corresponds to the X axis.

14.4 Integrated diagnostic functions

14.4.1 Integrated diagnostic functions (OPEN/CLOSE actuation device function)

In the OPEN/CLOSE actuation device function, GEMÜ 44A0 has integrated diagnostic functions that provide information early on about irregularities in the switch characteristics of pneumatically operated process valves. These diagnostic functions continuously monitor the movements of the actuator and detect deviations from normal operating behaviour.

Operating principle:

During operation, the travel times for each switching movement (Open/Closed) are continuously measured and evaluated. If there is a valid initialization and an activated diagnostic notification (parameter: "Diagnostic messages"), the system automatically detects deviations from typical movement profiles.

This can generate the following messages:

- **"No movement or incorrect movement in the Open/Closed direction":**
Indicates that no or incomplete movement has taken place (e.g. due to no or insufficient control pressure or mechanical blockage). It was detected that an actuation signal for an end position movement was issued, but the expected end position was not reached after the alarm time had elapsed and the position did not change plausibly in this direction.
- **"Duration error in the Open/Closed direction":**
Indicates an above-average switching time, e.g. in the event of a pressure drop or mechanical resistance. It was detected that an actuation signal for an end position movement

was issued, but the expected end position was not reached within the alarm time. However, the position continued to change in the direction of the expected end position.

- **"Undefined change in position in the Open/Closed direction":**

Indicates unexpected movements without valid actuation (e.g. for leakages or uncontrolled pressure changes). It was detected that the position changes in the opposite direction to the actuation signal.

The alarm time for the error detection is calculated dynamically using the determined travel time (formula: Current travel time x 2 + 1000 ms). This allows a reliable distinction to be made between normal and faulty conditions. The travel times are continuously recorded during operation. If these are within a comparable percentage range for the same direction (open or closed), the current open and closed travel times are determined or updated from this sequence of travel time measurements.

The end position always refers to the switch point range of the respective end position. The switch points can be changed or set via the parameter: "Switch point Open/Closed".

Active warning messages are automatically acknowledged as soon as the movements are carried out without fault again or the "Diagnostic messages" parameter is deactivated.

14.4.2 Integrated diagnostic functions (positioner device function)

In the positioner device function, GEMÜ 44A0 has integrated diagnostic functions that provide information early on about irregularities in the control characteristics of pneumatically operated process valves. These diagnostic functions continuously monitor the movements of the actuator and detect deviations from normal operating behaviour.

Operating principle:

The movement profile of the valve is determined during initialization. If there is a valid initialization and an activated diagnostic notification (parameter: "Diagnostic messages"), the system automatically detects deviations from the expected movement profile.

This can generate the following messages:

- **"No movement or incorrect movement":**
Indicates that no or incomplete movement has taken place or the valve position does not correspond to the specified target variable (e.g. due to no or insufficient control pressure or mechanical blockage). It was detected that the valve position specified by the target variable cannot be adjusted.

Active warning messages are automatically acknowledged as soon as the movements are carried out without fault again, the "Diagnostic messages" parameter is deactivated, the device is restarted, the initialization is deleted (perform factory reset) or a new initialization is started.

If these diagnostic messages are generated incorrectly or by known, unchangeable external influences, they can be deactivated via the "Diagnostic messages" parameter using IO link or

the app. However, it is recommended to perform a new initialization first if the previous one was some time ago or a number of operating hours ago.

15 Parameter list (GEMÜ app)

GEMÜ app parameter number	GEMÜ app access	Parameter name	Parameter description	Default setting	Selection values		Description	GEMÜ app menu
S11	RO	Serial number			"RRRRRRRR / IIII" (traceability number and index)		Serial number of the device	Device status Other values
S03	RO	Hardware revision			"xxxx/xx yyyy/yy zzzz/zz" depending on the quantity of circuit boards Spaces are added in front of the contents		0x0016	Device status Other values
S04	RO	Firmware revision			"Vx.x.x.x" Spaces are added in front of the contents		0x0017	Device status Other values
		Device configuration						Settings Device configuration
M03	RW	Device function ²⁾	Defines the device function in which the device should be operated	0 (OPEN/CLOSED actuation)	0	OPEN/CLOSED actuation	The valve is moved to the CLOSED or OPEN end position depending on the active signal	
					1	Extended OPEN/CLOSED actuation	Currently identical to OPEN/CLOSED actuation	
					2	Positioner ³⁾	The valve position specified by the set value signal is approached	
M01	RW	Operating mode	Defines the operating mode	1 (Automatic)	0	Off ¹⁾	No response to signal change	
					1	Automatic	Control via external signal	
					2	Manual	Manual control possible	
		Error configuration						Settings Error functions
P37	R/W	Error time	Defines the debounce time in the event of error detection	0.1 s	1 to 1000 (0.1 to 100.0 s)		Defines the debounce time in the event of error detection	
P36	R/W	Error position	Defines the valve position in the event of error detection	3 (Safety position)	0	Hold position	Valve remains in its current position	
					1	Open	The valve is moved to the OPEN position	
					2	Closed	The valve is moved to the CLOSED position	
					3	Safety position	Valve is vented	
P86	R/W	Diagnostic messages	Defines whether a warning message needs to be output for time-based diagnostic functions	1 (Activated)	0	Deactivated	Diagnostic messages inactive	
					1	Activated	Diagnostic messages active	
P52	R/W	Free error position	Defines the valve position to be approached if an error is detected	0.0%	0 to 1000 (0.0 to 100.0%)		Defines the valve position to be approached if an error is detected	
		Basic settings						Settings Display settings

GEMÜ app parameter number	GEMÜ app access	Parameter name	Parameter description	Default setting	Selection values		Description	GEMÜ app menu
P56	R/W	Inversion of LED colours	Activates/deactivates the inversion of LED colours for the end position display	0 (Deactivated)	0	Deactivated	OPEN position (green), CLOSED position (orange), moving towards OPEN (flashing green), moving towards CLOSED (flashing orange)	
					1	Activated	OPEN position (orange), CLOSED position (green), moving towards OPEN (flashing orange), moving towards CLOSED (flashing green)	
P43	R/W	Inversion of the travel sensor signal	Activates/deactivates inversion of the travel sensor signal	0 (Deactivated)	0	Deactivated	Standard direction of the travel sensor signal	Settings Initialization settings
					1	Activated	Inversed direction of the travel sensor signal	
P51	R/W	Detection of end positions mode ⁴⁾	Defines the detection of end positions mode	1 (Autonomous)	0	Classic	Detection of end positions via initialization	Settings Initialization settings
					1	Autonomous	Intelligent detection of end positions with autonomous tracking (recommended)	
-	-	Bluetooth interface	Activates/deactivates the Bluetooth interface	1 (Activated)	0	Deactivated	Bluetooth interface inactive	-
					1	Activated	Bluetooth interface active	
P55	R/W	High visibility position indicator	Activates/deactivates the visual end position display	1 (Activated)	0	Deactivated	High visibility LED for position feedback inactive	Settings Display settings
					1	Activated	High visibility LED for position feedback active	
					2	Dimmed	High visibility LED for position feedback dimmed	
		End position feedback					Configuring the switch points	Settings Inputs/outputs
P53	R/W	Switch point OPEN	Defines switch point OPEN	75%	10.0 to 100.0%		The value must be at least 10.0% larger than the set value for switch point CLOSED	
P54	R/W	Switch point CLOSED	Defines switch point CLOSED	12%	0.0 to 90.0%		The value must be at least 10.0% smaller than the set value for switch point OPEN	
		Initialized end positions						Device status Other values
S05	RO	Absolute travel sensor position OPEN	Displays the valve absolute position for the OPEN end position	0	0 to 1000 (0.0 to 100.0%)			
		Absolute travel sensor position CLOSED	Displays the valve absolute position for the CLOSED end position	0	0 to 1000 (0.0 to 100.0%)			
		Absolute valve position						Device status Other values
S60	RO	Current absolute position	Displays the absolute position of the travel sensor	0	0 to 1000 (0.0 to 100.0%)		Current valve position in % relative to the total stroke	
		Counter					Switching cycle counter	Device status Other values
S21	R/W	User switching cycle counter	Displays the number of user switching cycles counted	0	0 to 2,147,483,647		The counter reading can be reset (using the app)	

GEMÜ app parameter number	GEMÜ app access	Parameter name	Parameter description	Default setting	Selection values	Description	GEMÜ app menu
S23	RO	Total switching cycle counter	Displays the total number of switching cycles counted	0	0 to 2,147,483,647	The counter reading cannot be reset. To do so, instead use parameter "Valve actuations user counter"	
S22	R/W	Warning threshold for user switching cycles	Defines the warning threshold for user switching cycles	5,000,000	1 to 21,47,483,647	This parameter relates to the parameter "User switching cycle counter".	
S01	RO	Valve actuations user counter	Displays the number of user valve actuations counted	0	0 to 2,147,483,647	The counter reading can be reset (using the app)	
S13	RO	Valve actuations total counter	Displays the total number of valve actuations counted	0	0 to 2,147,483,647	The counter reading cannot be reset. To do so, instead use parameter "Valve actuations user counter"	
S02	R/W	Warning threshold for valve actuations user counter	Defines the warning threshold for the user counter for valve actuations	5,000,000	1 to 21,47,483,647	This parameter relates to the parameter "Valve actuations user counter".	
S61	RO	Valve actuations warning ratio	Displays the relative degree of wear on the pilot valve module	0.0%	0 to 1000 (0.0 to 100.0%)	This parameter shows only the percentage ratio of the counted valve actuations in relation to the defined warning threshold, and can thus display a relative degree of wear. The warning threshold must be set based on empirical values or other specifications, so as to be able to read off a sensible degree of wear.	
S20	RO	Device starts counter	Displays the number of product starts	0	0 to 2,147,483,647		Device status Operating hours
		Operating hours				Operating hours counter	
S70	RO	Total operating hours	Displays the total operating hours	0	0–2,147,483,647 s		
S71	RO	Operating hours since last start	Displays operating hours at/since the last start	0	0–2,147,483,647 s		Maintenance
		Maintenance indicator				Maintenance information	
S73	R/W	User time stamp maintenance	Defines the time stamp for when maintenance was carried out	2025-01-01 00:00:00.000	YYYY-MM-DD HH:MM:SS.SSS	The entry must be actively made by the user. This means that the time of the most recently performed maintenance can be stored.	
S74	R/W	User maintenance information	Defines additional information about the maintenance performed	***	UTF-8	The entry must be actively made by the user. This means that additional information about the most recently performed maintenance can be stored (e.g. what specifically was maintained and by whom).	
	RO	Valve information					Settings Initialization settings
S19	RO	Control function	Displays the determined control function of the valve	0	0 undefined 1 NC 2 NO	No control function recognised Normally closed (NC) control function detected Normally open (NO) control function detected	
		Operating times				Operating times	
							Device status Other values

GEMÜ app parameter number	GEMÜ app access	Parameter name	Parameter description	Default setting	Selection values		Description	GEMÜ app menu
S09	RO	Operating time OPEN	Displays the duration of opening the valve	0	0 to 999 (0.0 to 99.9 s)			
S10	RO	Operating time CLOSED	Displays the duration of closing the valve	0	0 to 999 (0.0 to 99.9 s)			
	R/W	Preferred direction ¹⁾						Settings Error functions
P97	R/W	Preferred direction	Defines the preferred direction which will be approached in case of implausible signals	3 (error position)	0	Hold position	While implausible signals are active, the valve remains in the current position	
					1	Open	While implausible signals are active, the valve is moved to the OPEN position	
					2	Closed	While implausible signals are active, the valve is moved to the CLOSED position	
					3	Error position	The action specified in the "Error position" parameter is performed (as long as implausible signals are present)	
		Status sensor system					Environment and status sensor system	Device status Sensor system
S40	RO	Internal temperature	Indicates the measured internal temperature	0	-400 to 1000 (-40.0 °C to 100.0 °C)			
S41	RO	Internal pressure	Indicates the measured internal pressure	0	260 to 1260 (260 mbar to 1260 mbar)			
S47	RO	Laterally inclined installation position	Laterally inclined installation position	0	-180 to 180 (-180° to 180°)			
S46	RO	Frontally inclined installation position	Frontally inclined installation position	0	-180 to 180 (-180° to 180°)			
S48	RO	Acceleration in X axis	Acceleration in X axis	0	-15,696 to 15,696 (-156.96 m/s² to 156.96 m/s²)			
S49	RO	Acceleration in Y axis	Acceleration in Y axis	0	-15,696 to 15,696 (-156.96 m/s² to 156.96 m/s²)			
S50	RO	Acceleration in Z axis	Acceleration in Z axis	0	-15,696 to 15,696 (-156.96 m/s² to 156.96 m/s²)			
S44	RO	Supply voltage	Indicates the measured supply voltage	0	0 to 3600 (0.00 V to 36.00 V)			
S45	RO	Current consumption	Indicates the measured current consumption	0	0 to 375 (0 mA to 375 mA)			
S43	RO	Internal humidity	Indicates the measured relative internal humidity	0	0 to 1000 (0.0 to 100.0%)			
S42	RO	Control air supply pressure	Indicates the measured supply pressure of the control air	0	0 to 300 (0.0 bar to 30.0 bar)			
S51	RO	Actuator chamber pressure	Indicates the measured chamber pressure of the connected actuator	0	0 to 300 (0.0 bar to 30.0 bar)			
		Sensor value warning thresholds					Sensor value alarm threshold	Settings Diagnostics settings

GEMÜ app parameter number	GEMÜ app access	Parameter name	Parameter description	Default setting	Selection values	Description	GEMÜ app menu
P89	R/W	Alarm threshold for min. internal temperature	Defines the threshold from which an alarm signal will be generated to indicate the internal temperature is too low	-12.0 °C	-400 to 1000 (-40.0 °C to 100.0 °C)	The value must be at least 10.0 °C lower than the set value for the max. alarm threshold.	
P90	R/W	Alarm threshold for max. internal temperature	Defines the threshold from which an alarm signal will be generated to indicate the internal temperature is too high	70.0 °C	-400 to 1000 (-40.0 °C to 100.0 °C)	The value must be at least 10.0 °C higher than the set value for the min. alarm threshold.	
P91	R/W	Alarm threshold for min. internal humidity	Defines the threshold from which an alarm signal will be generated to indicate the internal humidity is too low	0.0%	0 to 1000 (0.0 to 100.0%)	The value must be at least 5.0% smaller than the set value for the max. alarm threshold.	
P92	R/W	Alarm threshold for max. internal humidity	Defines the threshold from which an alarm signal will be generated to indicate the internal humidity is too high	100.0%	0 to 1000 (0.0 to 100.0%)	The value must be at least 5.0% larger than the set value for the min. alarm threshold.	
P95	R/W	Alarm threshold for high oscillations	Defines the threshold above which an alarm signal will be generated to indicate the oscillations are too high	0.0%	0 to 1000 (0.0 to 100.0%)		
P93	R/W	Alarm threshold for min. internal pressure	Defines the threshold from which an alarm signal will be generated to indicate the internal pressure is too low	500 mbar	260 to 1260 (260 mbar to 1260 mbar)	The value must be at least 100 mbar smaller than the set value for the max. alarm threshold.	
P94	R/W	Alarm threshold for max. internal pressure	Defines the threshold from which an alarm signal will be generated to indicate the internal pressure is too high	1230 mbar	260 to 1260 (260 mbar to 1260 mbar)	The value must be at least 100 mbar larger than the set value for the min. alarm threshold.	
P96	R/W	Alarm threshold for min. control pressure	Defines the threshold below which an alarm signal will be generated to indicate the control air supply pressure is too low	1.0 bar	0 to 100 (0.0 bar to 10.0 bar)	The value must be at least 0.5 bar lower than the set value for the max. alarm threshold.	
P95	R/W	Alarm threshold for max. control pressure	Defines the threshold above which an alarm signal will be generated to indicate the supply pressure of the control air is too high	7.1 bar	0 to 100 (0.0 bar to 10.0 bar)	The value must be at least 0.5 bar greater than the set value for the min. alarm threshold.	
		Control parameters ¹⁾					Settings Controller settings
P23	RW	Proportional amplification¹⁾	Defines the proportional amplification of the positioner	1.0	1 to 1000 (0.1 to 100.0) (Setting value is redetermined and adjusted with each initialization)	The optimal value is automatically determined during initialization.	
	RW	Dead zone ¹⁾					Settings Controller settings

GEMÜ app parameter number	GEMÜ app access	Parameter name	Parameter description	Default setting	Selection values		Description	GEMÜ app menu
P20	RW	Manual dead zone ¹⁾	Defines the permissible system deviation of the dead zone	1.0%	1 to 250 (0.1 to 25.0%)			
P44	RO	Automatic dead zone ¹⁾	Shows the automatically determined dead zone	1.0%	1 to 250 (0.1 to 25.0%)			
P24	RW	Dead zone adjustment ¹⁾	Activates/deactivates the automatic dead zone adjustment	0 (manual)	0 Manual		Manual adjustment with the parameter "Manual dead zone"	
					1 Auto		Automatic adjustment of the height based on the measured initialization operating times	
	RW	Close tight function ¹⁾						Settings Controller settings
P19	RW	Close tight function OPEN ¹⁾	Defines the lower range of the close tight function	99.5%	800 to 1000 (80.0 to 100.0%)		The function is deactivated with a setting of 100.0.	
P18	RW	Close tight function CLOSED ¹⁾	Defines the upper range of the close tight function	0.5%	0 to 200 (0 to 20.0%)		The function is deactivated with a setting of 0.0.	
	RW	Split range ¹⁾						Settings Controller settings
P01	RW	Split range start ¹⁾	Defines the starting point of the split-range function	0.0%	0 to 900 (0 to 90.0%)		The value must be at least 10.0% lower than "Split range end"	
P02	RW	Split range end ¹⁾	Defines the end point of the split-range function	100%	100 to 1000 (10.0 to 100.0%)		The value must be at least 10.0% higher than "Split range start"	
	RW	Position limitation ¹⁾						Settings Application settings
P17	RW	Opening limiter ¹⁾	Defines the upper valve position as a limitation in the OPEN direction	100.0%	100 to 1000 (10.0 to 100.0%)		The value must be at least 10.0% higher than "Seal adjuster"	
P18	RW	Seal adjuster ¹⁾	Defines the lower valve position as a limitation in the CLOSED direction	0.0%	0 to 900 (0 to 90.0%)		The value must be at least 10.0% lower than "Opening limiter"	
	RW	Set value direction of action ¹⁾						Settings Controller settings
P15	RW	Set value direction of action	Defines the direction of action of the set value signal	0 (rising)	0	Rising	Valve opens when signal rises	
					1	Falling	Valve closes when signal rises	
		Characteristic ¹⁾					Characteristic curve setting	Settings Controller settings
P03	RW	Characteristic curve point 0% ¹⁾	Defines the calibration point at 0% set value of the free characteristic	0.0%	0 to 1000 (0 to 100.0%)		Assignment of the freely definable calibration points	
P04	RW	Characteristic curve point 10% ¹⁾	Defines the calibration point at 10% set value of the free characteristic	10.0%	0 to 1000 (0 to 100.0%)			
P05	RW	Characteristic curve point 20% ¹⁾	Defines the calibration point at 20% set value of the free characteristic	20.0%	0 to 1000 (0 to 100.0%)			
P06	RW	Characteristic curve point 30% ¹⁾	Defines the calibration point at 30% set value of the free characteristic	30.0%	0 to 1000 (0 to 100.0%)			
P07	RW	Characteristic curve point 40% ¹⁾	Defines the calibration point at 40% set value of the free characteristic	40.0%	0 to 1000 (0 to 100.0%)			

GEMÜ app parameter number	GEMÜ app access	Parameter name	Parameter description	Default setting	Selection values		Description	GEMÜ app menu
P08	RW	Characteristic curve point 50% ¹⁾	Defines the calibration point at 50% set value of the free characteristic	50.0%	0 to 1000 (0 to 100.0%)			
P09	RW	Characteristic curve point 60% ¹⁾	Defines the calibration point at 60% set value of the free characteristic	60.0%	0 to 1000 (0 to 100.0%)			
P10	RW	Characteristic curve point 70% ¹⁾	Defines the calibration point at 70% set value of the free characteristic	70.0%	0 to 1000 (0 to 100.0%)			
P11	RW	Characteristic curve point 80% ¹⁾	Defines the calibration point at 80% set value of the free characteristic	80.0%	0 to 1000 (0 to 100.0%)			
P12	RW	Characteristic curve point 90% ¹⁾	Defines the calibration point at 90% set value of the free characteristic	90.0%	0 to 1000 (0 to 100.0%)			
P13	RW	Characteristic curve point 100% ¹⁾	Defines the calibration point at 100% set value of the free characteristic	100.0%	0 to 1000 (0 to 100.0%)			
P14	RW	Control characteristic ¹⁾	Defines the control characteristic	0 (linear)	0	Linear	Linear control characteristic	
					1	Free characteristic	Free control characteristic. The control characteristic can be specified via eleven adjustable calibration points, which define the correlation between the set value and valve position. A linear curve is used for control between the calibration points.	
P46	RW	Analogue output direction of action ¹⁾	Defines the direction of action of the analogue output signal	Rising	Rising		Output signal rises with rising valve position (valve position 0% = output signal 0% / valve position 100% = output signal 100%).	Settings Inputs/outputs
					Falling		Output signal falls with rising valve position (valve position 0% = output signal 100% / valve position 100% = output signal 0%).	
P57	RW	Analogue output error signalling ¹⁾	Defines whether error signalling takes place via the analogue output	Activated	Deactivated		Error signalling via analogue output inactive	Settings Error functions
					Activated		Error signalling via analogue output active	
S63	RO	I Actual value output ¹⁾	Indicates the signal at the analogue output	0	0.0–22.0 mA			Device status
P34	RW	Max. valve position ¹⁾	Defines the valve position at output signal of 20 mA	0.0%	0.0 to 100.0%			Settings Inputs/outputs
P33	RW	Min. valve position ¹⁾	Defines the valve position at output signal of 4 mA	0.0%	0.0 to 100.0%			Settings Inputs/outputs
P65	RW	Standard IO pin 3 logic	Defines the logic of standard IO pin 3	Active High	Active High		The selected function (parameter: "Standard IO pin 3 function") is activated via a high level at the input.	Settings Inputs/outputs
					Active Low		The selected function (parameter: "Standard IO pin 3 function") is activated via a low level at the input.	
S15	RO	Standard IO pin 3 status	Indicates the status of standard IO pin 3	Low	Low		Checkbox empty: No active signal	Device status

GEMÜ app parameter number	GEMÜ app access	Parameter name	Parameter description	Default setting	Selection values	Description	GEMÜ app menu
					High	Checkbox ticked: Active signal	
P64	RW	Standard IO pin 3 function	Defines the function of standard IO pin 3	OPEN/CLOSE actuation device function: Pilot valve 1 actuation Positioner device function: Initialization input	Deactivated	No function	Settings Inputs/outputs
					Actuation of pilot valve 1 ⁴⁾	Pilot valve 1 is actuated if this signal is active.	
					Initialization input	Initialization is activated if this signal is active.	
					Localization input	The location function is activated if this signal is active.	
					On/off error position	If there is no active signal, the valve is moved to the defined position via the "Error position" parameter. If this signal is active, operation is performed in accordance with the set operating mode.	
					Break/Normal control ¹⁾	If there is no active signal, the current position is maintained. If there is an active signal, there is reaction to the set value setting.	
					Open until OPEN travel stop ¹⁾	If the signal is open, the valve is fully opened. The value in the "Working point OPEN" parameter is ignored.	
					Close until CLOSED travel stop ¹⁾	If the signal is open, the valve is fully closed. The value in the "Working point CLOSED" parameter is ignored.	
P38	RW	Set value I Min ¹⁾	Defines the switch-off limit for cable break recognition of the set value	3.5 mA	0.0–22.0 mA		Settings Error functions
P39	RW	Set value I Max ¹⁾	Defines the switch-off limit for excess current recognition of the set value	20.5 mA	0.0–22.0 mA		Settings Error functions
S62	RO	I Set value input ¹⁾	Indicates the applied set value signal	0 mA	0.0–22.0 mA		Device status
¹⁾ The parameter is only relevant in the positioner device function							
²⁾ The device is restarted automatically when the device function is changed. The process valve is vented for the duration of the restart.							
³⁾ Adjustment facility only possible with positioner device version order version (code C)							
⁴⁾ Only OPEN/CLOSE actuation device function							

16 Troubleshooting

Three different message categories are distinguished between in the device, which suggest faults due to internal or external influences. These are made visible by the high-visibility LEDs and output via the electrical interfaces.

Error: The device can no longer properly carry out its functionality. It is imperative that the cause of the error be corrected for continued operation. The set error position ("Error position" parameter) is performed.

Error2: The device can no longer properly carry out its functionality. It is imperative that the cause of the error be corrected for continued operation. The process valve is vented.

Warning: A warning does not affect the operating mode of the device; however, under certain circumstances, it may not carry out the required function. We recommend checking the cause and, if necessary, correcting it.

Information: The status of a temporary function is displayed.

Error message	Cat-egory	"Message ID GEMÜ app"	Relevant error time*	Diagnostic message**	Description	Description of measures
Not calibrated	Error	1	No	No	The product is not calibrated.	Please send the product to GEMÜ for repair work. To accomplish this, contact your GEMÜ contact person. Further information on this can be found via the product overview in the GEMÜ app under 'Maintenance'.
Not initialized	Warning	2	No	No	The product is not initialized.	- Carry out initialization. - During activated autonomous detection of end positions, both valve end positions must be approached once. - In the classic detection of end positions mode, initialization must be started manually. This can, for instance, be carried out via the button on the product overview in the GEMÜ app. Alternatively, please observe the information in the "Commissioning" chapter of the operating instructions.
End position displacement OPEN	Information	3	No	No	Autonomous detection of end positions recognizes and updates a displacement of the OPEN end position.	No measures required.
End position displacement CLOSED	Information	4	No	No	Autonomous detection of end positions recognizes and updates a displacement of the CLOSED end position.	No measures required.
Set value input not calibrated	Error	9	No	No	The analogue input for the set value is not calibrated	Send the product to GEMÜ for repair. To accomplish this, contact a GEMÜ contact person. For further information, see the product overview or under "Maintenance" in the GEMÜ app.
Set value < 4 mA	Error	10	No	No	The set value signal is lower than 4 mA.	Check set value signal

Error message	Cat-egory	"Message ID GEMÜ app"	Relevant error time*	Diagnostic message**	Description	Description of measures
Set value > 20 mA	Error	11	No	No	The set value signal is higher than 20 mA.	Check set value signal
Stroke movement error during initialization	Error	22	No	No	An adequate change in the process valve position could not be detected during initialization.	- Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve. - Check the mounting kit parts and that they are being used correctly and in their entirety.
Leakage error during initialization	Error	23	No	No	A continuous change to the valve position was detected during initialization.	Check the pneumatic connection points.
Duration error	Warning	27	No	Yes	The set position of the process valve was not reached within the expected time (diagnostic message).	- Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve.
Duration error in the OPEN direction	Warning	28	No	Yes	The OPEN end position of the process valve has been reached, but not within the expected time	- Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve.
Duration error in the CLOSED direction	Warning	29	No	Yes	The CLOSED end position of the process valve has been reached, but not within the expected time	- Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve.
No movement, or incorrect movement	Warning	30	No	Yes	No change in the process valve position can be detected within the permissible time	- Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve.

Error message	Cat- egory	"Message ID GEMÜ app"	Relevant error time*	Diagnostic message**	Description	Description of measures
No movement or incorrect movement in the OPEN direction	Warning	31	No	Yes	The OPEN end position of the process valve is not reached.	- Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve.
No movement or incorrect movement in the CLOSED direction	Warning	32	No	Yes	The CLOSED end position of the process valve is not reached.	- Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve.
Undefined position change in the OPEN direction	Warning	33	No	Yes	The position of the process valve changes to an undefined position, without actuation in the OPEN direction (diagnostic message).	- Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve.
Undefined position change in the CLOSED direction	Warning	34	No	Yes	The position of the process valve changes to an undefined position, without actuation in the CLOSED direction (diagnostic message).	- Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve.
Undefined position change without actuation	Warning	35	No	Yes	The position of the process valve changes to an undefined position without any actuation (diagnostic message).	- Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve.

Error message	Cat-egory	"Message ID GEMÜ app"	Relevant error time*	Diagnostic message**	Description	Description of measures
Travel sensor error	Error2	60	No	No	It is not possible to read in a valid signal from the travel sensor.	- Ensure that the mechanical assembly on the valve is correct. - Check all connecting components (e.g. mounting kits, etc.) between the valve and product to ensure that they are being used correctly and in their entirety. - If errors persist, please send the product to GEMÜ for repair work. To accomplish this, contact your GEMÜ contact person. Further information on this can be found via the product overview in the GEMÜ app under 'Maintenance'.
Travel sensor maximum value exceeded	Warning	62	No	No	The travel sensor delivers values above the maximum valid range.	- Ensure that the mechanical assembly on the valve is correct. - Check all connecting components (e.g. mounting kits, etc.) between the valve and product to ensure that they are being used correctly and in their entirety.
Travel sensor minimum value not reached	Warning	63	No	No	The travel sensor delivers values below the minimum valid range.	- Ensure that the mechanical assembly on the valve is correct. - Check all connecting components (e.g. mounting kits, etc.) between the valve and product to ensure that they are being used correctly and in their entirety.
Valve activations alarm threshold reached	Warning	70	No	No	The number of valve actuations set in the "Valve activations user counter warning threshold" parameter has been reached	- Check the condition of the wearing parts of the valve. Further information on this can be found via the product overview in the GEMÜ app under "Maintenance". - If the condition is faultless, the warning threshold in the "Valve activations user counter warning threshold" parameter can be adapted as an alternative.
Valve actuations counter reset	Information	71	No	No	The counter for the valve actuations has been reset. The message is independently acknowledged after 30 seconds.	No measures required.
Switching cycles alarm threshold reached	Warning	72	No	No	The number of switching cycles set in the "User switching cycles warning threshold" parameter has been reached.	- Check the condition of the wearing parts of the valve. Further information on this can be found via the product overview in the GEMÜ app under "Maintenance". - If the condition is faultless, the warning threshold in the "User switching cycles warning threshold" parameter can be adapted as an alternative.

Error message	Cat-egory	"Message ID GEMÜ app"	Relevant error time*	Diagnostic message**	Description	Description of measures
Switching cycle counter reset	Information	73	No	No	The user switching cycle counter has been reset. The message is independently acknowledged after 30 seconds.	No measures required.
Automatic control system quality restricted	Warning	90	No	No	The process valve cannot be optimally moved and therefore controlled.	- Check the pneumatic connections. - Check the pneumatic connection points. - Check control air quality. - Check the counter reading on the switching cycle counter and replace the pilot valve module if necessary.
Control air supply pressure exceeded	Error2	100	No	No	The maximum permissible control pressure has been exceeded	Reduce the control air supply pressure on the product. Unacceptably high control pressures can permanently damage or destroy the product.
Control pressure alarm threshold exceeded	Warning	101	Yes	No	The maximum control pressure as set in the "Max. control pressure alarm threshold" parameter has been reached or exceeded.	Reduce the applied control air supply pressure. Alternatively, check the maximum permissible control pressure of the process valve. If this is above the set value in the "Max. control pressure alarm threshold" parameter, this can be increased.
Control pressure alarm threshold not reached	Warning	102	Yes	No	The minimum control pressure as set in the "Min. control pressure alarm threshold" parameter has been reached or undershot	Increase the applied control air supply pressure. Alternatively, check the minimum permissible control pressure of the process valve. If this is below the set value in the "Min. control pressure alarm threshold" parameter, this value can be decreased.
Minimum control pressure not reached	Error2	103	No	No	The minimum permissible control air supply pressure has not been reached	Check the control air supply line and the pneumatic connection.
Critical supply voltage	Error	109	No	No	The maximum permissible supply voltage has been exceeded	Check the power source to ensure that the output voltage has been selected and set correctly. Ensure the power supply is within the permissible range.
Supply voltage exceeded	Warning	110	Yes	No	The maximum permissible supply voltage will be exceeded soon	Check the power source to ensure that the output voltage has been selected and set correctly. Ensure the power supply is within the permissible range.

Error message	Cat-egory	"Message ID GEMÜ app"	Relevant error time*	Diagnostic message**	Description	Description of measures
Supply voltage not reached	Error	111	No	No	The minimum permissible supply voltage has not been reached	Check the power source to ensure that the output voltage has been selected and set correctly. Ensure the power supply is within the permissible range.
Internal temperature exceeded	Error	118	No	No	The maximum permissible internal temperature has been exceeded	Reduce the ambient temperature at the product's installation site or establish cooler conditions.
Internal temperature has not been reached	Error	119	No	No	The minimum permissible internal temperature has not been reached	Increase the ambient temperature at the product's installation site or establish warmer conditions.
Internal temperature alarm threshold exceeded	Warning	120	Yes	No	The maximum temperature as set in the "Max. internal temperature alarm threshold" parameter has been reached or exceeded.	Reduce the ambient temperature at the product's installation site or establish cooler conditions. Alternatively, check the maximum permissible temperature range of the product. If this is above the set value in the "Max. internal temperature alarm threshold" parameter, this can be increased.
Internal temperature alarm threshold has not been reached	Warning	121	Yes	No	The minimum temperature as set in the "Min. internal temperature alarm threshold" parameter has been reached or undershot.	Increase the ambient temperature at the product's installation site or establish warmer conditions. Alternatively, check the minimum permissible temperature range of the product. If this is below the set value in the "Min. internal temperature alarm threshold" parameter, this can be reduced.
Internal humidity alarm threshold exceeded	Warning	122	Yes	No	The maximum humidity as set in the "Max. internal humidity alarm threshold" parameter has been reached or exceeded.	- Check that the product housing is fully intact and sealed and that all seals are seated correctly. - Reduce the humidity at the product's installation site or establish dryer conditions. Alternatively, check the maximum permissible humidity range of the product. If this is above the set value in the "Max. internal humidity alarm threshold" parameter, this can be increased.
Internal humidity alarm threshold not reached	Warning	123	Yes	No	The minimum humidity as set in the "Min. internal humidity alarm threshold" parameter has been reached or undershot.	Increase the humidity at the product's installation site or establish more humid conditions. Alternatively, check the minimum permissible humidity range of the product. If this is below the set value in the "Min. internal humidity alarm threshold" parameter, this value can be decreased.

Error message	Cat-egory	"Message ID GEMÜ app"	Relevant error time*	Diagnostic message**	Description	Description of measures
Internal pressure alarm threshold exceeded	Warning	124	Yes	No	The maximum internal pressure as set in the "Max. internal pressure alarm threshold" parameter has been reached or exceeded.	- Check the product for internal leakages. - Check the height above sea level at the product's installation site. Alternatively, check the maximum permissible internal pressure/ height above sea level of the product. If this is above the set value in the "Max. internal pressure alarm threshold" parameter, this can be increased.
Internal pressure alarm threshold not reached	Warning	125	Yes	No	The minimum internal pressure as set in the "Min. internal pressure alarm threshold" parameter has been reached or undershot.	Check the height above sea level at the product's installation site. Alternatively, check the minimum permissible internal pressure/ height above sea level of the product. If this is below the set value in the "Min. internal pressure alarm threshold" parameter, this can be reduced.
Vibration alarm threshold exceeded	Warning	130	Yes	No	The maximum vibration level as set in the "Alarm threshold for high oscillations" parameter has been reached or exceeded.	- Check the product's installation conditions, specifically for loose screws, fastening components and pipeline fixture mounts. - Check the flow velocity in the piping and, if possible, reduce it. - Check the suitability of the process valve for the prevailing operating parameters.
Warning message memory	Warning	200	No	No	The memory currently cannot be accessed.	Please send the product to GEMÜ for repair work. To accomplish this, contact your GEMÜ contact person. Further information on this can be found via the product overview in the GEMÜ app under 'Maintenance'.
Internal device error	Error	201	No	No	An error has occurred in the unit.	Please send the product to GEMÜ for repair work. To accomplish this, contact your GEMÜ contact person. Further information on this can be found via the product overview in the GEMÜ app under 'Maintenance'.

Error message	Cat- egory	"Message ID GEMÜ app"	Relevant error time*	Diagnostic message**	Description	Description of measures
Initialization error	Informa- tion	250	No	No	During initialization, an error occurred which caused it to be terminated	- Ensure that the mechanical assembly on the valve is correct. - Check all connecting components (e.g. mounting kits, etc.) between the valve and product to ensure that they are being used correctly and in their entirety. - Ensure that there is an adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Test the performance of the valve.
* For error time-relevant messages, a delay time can be set between error detection and response using the "Error time" parameter. ** Diagnostic messages can be activated/deactivated together using the associated "Diagnostic messages" parameter.						

17 Inspection and maintenance

WARNING



The equipment is subject to pressure!

- ▶ Risk of severe injury or death
- Depressurize the plant or plant component.
- Completely drain the plant or plant component.

NOTICE

Faulty sealing rings or O-rings!

- ▶ Sudden pressure increase in the product housing due to leakage at the stud bolt sealing ring or pressure sensor O-ring
- Carry out product maintenance regularly and pay attention to the integrity of the sealing rings.

NOTICE

Exceptional maintenance work!

- ▶ Damage to the GEMÜ product
- Any maintenance work and repairs not described in these operating instructions must not be performed without consulting the manufacturer first.

The operator must carry out regular visual examinations of the products, depending on the operating conditions and the potentially hazardous situations, in order to prevent leakage and damage.

1. Have servicing and maintenance work performed by trained personnel.
2. Wear appropriate protective gear as specified in the plant operator's guidelines.
3. Disconnect from power supply.
4. Shut off plant or plant component.
5. Secure plant or plant component against recommissioning.
6. Depressurize the plant or plant component.
7. Actuate products that are always in the same position four times a year.

17.1 Spare parts

No spare parts are available for this product. If it is faulty, please return it to GEMÜ for repair.

17.2 Cleaning the product

- Clean the product with a damp cloth.
- Do **not** clean the product with a high pressure cleaning device.

18 Disassembly

18.1 Combi switchbox disassembly

WARNING



Possible risk of crushing by the indicator spindle!

- ▶ Injury possible, because the actuator must be pressurised in order to reach the flat (only NC drives).
- Do not reach into the operating range of the indicator spindle.

NOTICE

- ▶ Do not unscrew the stud bolts 3 and 8 too far or pull them upwards because the sealing washers 5 could come loose and fall down.
- Unscrew the stud bolts alternately (left/right) until the product can be removed from the actuator.

NOTICE

It is possible to touch the electronic system when the product is dismantled!

- When disassembling the product, disconnect the power supply.

NOTICE

The pneumatic connections also act as a fixture to the actuator!

- Before performing any work on the product, depressurize the pneumatic connection.

1. Disassemble in reverse order to assembly.
2. Unscrew the electrical wiring.
3. Disassemble the product. Observe warning notes and safety information.

18.2 Type E1B0 Bluetooth module disassembly

Observe the separate documentation for the type E1B0 Bluetooth module.

CAUTION



Hot components!

- ▶ Burns from heated components in conjunction with the ambient temperature
- Only work on a plant that has cooled down or with appropriate protective gear.

⚠ CAUTION**Risk of crushing!**

- ▶ Pinching of fingers during disassembly/installation of the type E1B0 Bluetooth module in the slider cover or of the type E1B0 Bluetooth module with a slider cover in the housing
- Installation work must only be performed by trained personnel.
- Wear suitable protective gear.

⚠ CAUTION**Risk of cutting injuries!**

- ▶ Risk of cutting injuries due to sharp edges, corners or protruding parts
- Installation and disassembly work must only be performed by trained personnel.
- Use suitable cutting protection.

⚠ CAUTION**Minor or moderate injury from a falling product!**

- ▶ The type E1B0 Bluetooth module may fall out of the housing if, for example, the snap-in function is defective and the product is installed overhead.
- Check all parts for visual damage.
- If necessary, take safety measures and wear appropriate protective gear.
- Cordon off the work area in the plant to ensure that no one can pass through below the product.

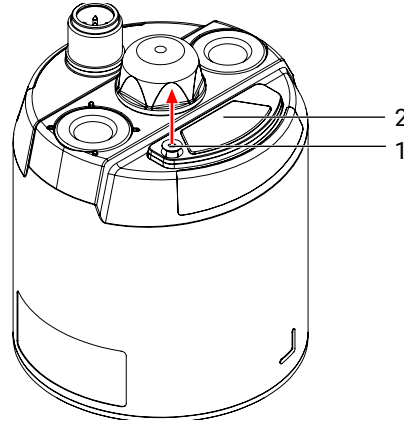
NOTICE**Damage to the product!**

- Ensure that the module is installed/disassembled correctly and pay attention to any damage to the product.

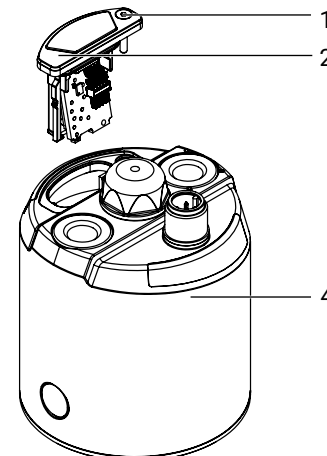
1. Disassemble in reverse order to assembly.
2. Disassemble the product. Observe warning notes and safety information.

18.2.1 Removing the type E1B0 Bluetooth module

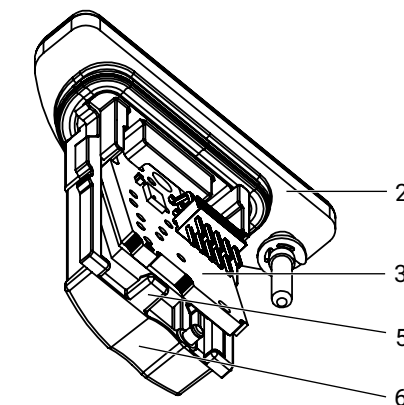
Check all parts for damage, contaminants and moisture prior to disassembly.



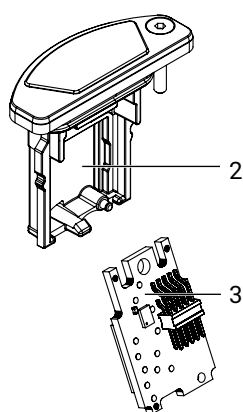
1. Undo the screw 1 (hexagon socket, size 1.5) of the slider cover 2 (the screw is secured against falling out of the slider cover 2 by a circlip).



2. Remove the slider cover 2 with the screw 1 from the housing 4.



3. Undo the snap hook 5 of the slider cover 2 and use your index finger to pry the type E1B0 Bluetooth module 3 through the recessed handle 6 and out of the slider cover 2 (do not use a tool as this may cause damage!).



4. Remove the type E1B0 Bluetooth module **3** from the slider cover **2**.
5. Reinstall the slider cover **2** in order to seal the housing of the device **4** (size 1.5 hexagon socket, maximum torque 0.4 Nm/hand tight).
6. Store or dispose of the type E1B0 Bluetooth module properly.

19 Disposal

1. Pay attention to adhered residual material and gas diffusion from penetrated media.
2. Dispose of all parts in accordance with the disposal regulations/environmental protection laws.
3. Dispose of electronic components separately.

20 Returns

Legal regulations for the protection of the environment and personnel require that the completed and signed return delivery note is included with the dispatch documents. Returned goods can be processed only when this note is completed. If no return delivery note is included with the product, GEMÜ cannot process credits or repair work but will dispose of the goods at the operator's expense.

1. Clean the product.
2. Request a return delivery note from GEMÜ.
3. Complete the return delivery note.
4. Send the product with a completed return delivery note to GEMÜ.

21 EU Declaration of Conformity



Version 1



EU-Konformitätserklärung EU Declaration of Conformity

Wir, die Firma

We, the company

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Gert-Müller-Platz 1
74635 Kupferzell
Deutschland

erklären hiermit in alleiniger Verantwortung, dass die nachfolgend bezeichneten Produkte den Vorschriften der genannten Richtlinien entspricht.

hereby declare under our sole responsibility that the below-mentioned products complies with the regulations of the mentioned Directives.

Produkt: GEMÜ 44A0

Product: GEMÜ 44A0

Produktname: Multifunktionale Ventilansteuerung

Product name: Multi-functional valve actuation

Richtlinien/Verordnungen:

Directives/Regulations:

EMC 2014/30/EU

Folgende harmonisierte Normen (oder Teile hieraus) wurden angewandt:

The following harmonized standards (or parts thereof) have been applied:

(Code IO, 00):

(Code IO, 00):

EN 61000-6-3:2007/A1:2011/AC1:2012; EN 61000-6-2:2005/AC:2005

(Code A5):

(Code A5):

EN 62026-2:2013+A1:2019

(Code 00):

(Code 00):

EN 61326-1:2013

Weitere angewandte Normen:

Further applied standards:

(Code IO, 00):

(Code IO, 00):

EN IEC 61000-6-3:2021; EN IEC 61000-6-2:2019

(Code IO):

(Code IO):

EN IEC 61131-9:2022

(Code 00):

(Code 00):

EN IEC 61326-1:2021

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