

GEMÜ 1441 cPos-X

Intelligent electro-pneumatic positioner

EN

Operating instructions



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1 Quick commissioning

⚠ CAUTION



Hazardous situation

- ▶ Risk of injury or damage possible.
- For correct commissioning, the product must be calibrated to the process valve by means of 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 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 factory 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 using the mounting kit.
2. Connect the product pneumatically:
 - ⇒ Supply the connector **1** with pneumatic auxiliary power (max. 7 bar) (observe the process valve's max. control pressure).
 - ⇒ Connect the connector **2** to the process valve's control air connector (on double acting valves, connect connector **4** to the second control air connector on the process valve).
3. Connect the product electrically:
 - ⇒ Connect the set value signal ≥ 4 mA (simultaneously represents the power supply) – pin 1: Iw+; pin 2: Iw-
 - ⇒ Wait until the display indication switches from "Starting" to a normal operating status display
4. Start the automatic initialization (speed-AP function)¹⁾:
 - ⇒ Hold a magnet at the marked initialization position (INIT) until "Remove Magnet" is shown on the status display
 - ⇒ 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.
5. The product is ready for operation and responds to the current set value signal.

NOTICE

- ▶ The preconfiguration can be changed via the app, whereby you can adapt the configuration of the parameters to the individual control.

¹⁾Alternatively, the initialization can be carried out via the app – in this case, detailed status and results information is also displayed.

²⁾While the wireless connection is active (this can be seen on the connection status indicator in the status display), the magnetic trigger is deactivated. The magnetic trigger can also be permanently deactivated via the app.

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2 General information

2.1 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.
- For ProfiNet, Profibus DP and DeviceNet fieldbus variants, separate documents are available for the fieldbus-specific and relevant procedures.
General commissioning and basic operation have already been described in this document.

2.2 Symbols used

The following symbols are used in this document:

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

2.3 Definition of terms

Working medium

The medium that flows through the GEMÜ product.

Control function

The possible actuation functions of the GEMÜ product.

Control medium

The medium whose increasing or decreasing pressure causes the GEMÜ product to be actuated and operated.

Speed-^{AP}function

Speed Assembly and Programming, a particularly user-friendly commissioning function for fast mounting, automated setting and initialization of GEMÜ products. Dependent on type, activation uses an external impulse signal or existing precautions on the device (magnetic or housing switch). Changeover to normal operating mode takes place automatically after successful completion.

2.4 Warning notes

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

SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger <ul style="list-style-type: none"> ▶ Possible consequences of non-observance. ● Measures for avoiding danger.

Warning notes are always marked 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! <ul style="list-style-type: none"> ▶ Non-observance can cause death or severe injury.

⚠ WARNING	
	Potentially dangerous situation! <ul style="list-style-type: none"> ▶ Non-observance can cause death or severe injury.

⚠ CAUTION	
	Potentially dangerous situation! <ul style="list-style-type: none"> ▶ Non-observance can cause moderate to light injury.

NOTICE	
	Potentially dangerous situation! <ul style="list-style-type: none"> ▶ Non-observance can cause damage to property.

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

Symbol	Meaning
	Exhaust air and cycle duties generate noise

3 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 substances.

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.

4 Product description

4.1 Construction



Item	Name	Materials
1	Housing cover	Grivory PA 6.6
2	Inspection glass	PC
3	Housing base	Grivory PA 6.6
4	Pneumatic panel	Grivory PA 6.6
C	Conexo	

4.2 Displays

4.2.1 Status display

The status display shows the most important operating information for the product. Display state:

- Off – the product is not ready for operation (switched off or defective)
- On – the product is ready for operation
- Starting... – the product is starting (lasts for approx. 20 seconds)

4.3 Description

The GEMÜ 1441 cPos-X is an intelligent, digital electro-pneumatic positioner in 2-wire technology used to control pneumatically operated process valves. It can be combined with single acting or double acting linear actuators or quarter turn actuators. This means that it can be used, among other things, for diaphragm, globe and diaphragm globe valves as well as for ball valves and butterfly valves, for instance. The positioner has a robust housing with a covered LCD display for status information. The positioner can be operated remotely using a mobile device in order to configure settings and to view detailed information.

4.4 Function

The GEMÜ 1441 digital electro-pneumatic positioner is an intelligent digital positioner designed for mounting to pneumatic actuators. The product is directly mounted on the actuator as standard. The travel sensor is already integrated in the positioner. As an option, the product can be ordered for a remote mounting type, in which a separate travel sensor is connected using an M12 connector. The travel sensor measures the current position of the valve and reports it to the product's

electronic system. The electronic system then compares the actual value of the valve with the set value specified and readjusts the valve accordingly in the event of a control error. The optional passive actual value output provides the valve position that is currently determined (in the same direction according to the control diagram) as an analogue value 4–20 mA. For correct operation, the positioner must first be calibrated (initialized) to the connected process valve. This takes place via the automatic initialization function, which can be activated by placing one of the (standard bipolar) magnets on the marked (INIT) programming position (deactivated when the wireless connection is active). Once this has been carried out, the positioner automatically switches to the normal operating mode and responds to the specified external set value signal. Alternatively, the entire commissioning process can be carried out via the app

4.5 Fail safe function

The product has a fail safe function, which switches the outputs in a controlled manner if the pneumatic air supply or the electrical supply voltage fails (see “Fail safe functions”, page 21). This fail safe function does not replace the required plant-specific safety devices. The product is not a safety controller.

5 Correct use

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 with integrated pilot valves is designed for linear actuators, has a microprocessor-controlled intelligent position control as well as an analogue travel sensor system (potentiometer) and is connected in a force-locking way with the actuator spindle by means of a mounting kit (spring, operating bush). The valve position and the integrated travel sensor can be monitored via the electrical connections. The pneumatic actuator is directly operated and controlled by means of the pilot valves.

- Use the product in accordance with the technical data.

6 Technical data

6.1 Medium

Working medium:	Compressed air and inert gases
Dust content:	Class 4, max. particle size 15 µm, max. particle density 5 mg/m ³
Pressure dew point:	Class 4 (10 K below the ambient temperature)
Oil content:	Class 4, max. oil concentration 25 mg/m ³ Quality classes to DIN ISO 8573-1

6.2 Temperature

Ambient temperature:	-10 – 60 °C
Storage temperature:	-10 – 60 °C

6.3 Pressure

Operating pressure:	1.5 – 7 bar The applied pressure must not exceed the maximum control pressure of the process valve.
Flow rate:	115 NI/min (@ 25 °C; 6->5 bar)
Air consumption:	≤ 0.05 NI/min (when idle)

6.4 Product compliance

EMC Directive:	2014/30/EU Technical standards used: Interference emission: DIN EN 61000-6-3:2007/A1:2011/AC:2012 DIN EN 61326-1 (industry) (07/2013) Interference resistance: EN IEC 61000-6-1:2019 EN 61326-1:2013 (industry) Class: B Group: 1
Radio Equipment Directive (RED):	2014/53/EU Technical standards used: Standard regarding the use of radio frequencies: EN 300 328 V2.2.2 (2019-07) Electromagnetic compatibility (EMC) for radio devices and services: EN 301 489-1 V2.2.3 (2019-11) EN 301 489-17 V3.2.4 (2020-09) Electrical safety: EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019

6.5 Mechanical data

Installation position:	Optional
Weight:	Approx. 970 g
Travel sensor:	Integrated for direct mounting, remote mounting possible

	Travel sensor version
Detection range:	0–75 mm
Operating range:	0–75 mm
Resistance:	5 k Ω
Minimum travel sensor change:	3% (only relevant for initialization)
Correlation - Travel sensor spindle/valve position	Retracted (top) \pm 100% (valve open) Extended (bottom) \pm 0% (valve closed)

6.6 Acoustic data

Noise emission:	> 85 dB (A)
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6.7 Operating conditions

Ambient conditions:	Use in indoor spaces
Height:	Up to 2000 m (above sea level)
Relative air humidity:	Maximum 95%, non-condensing
Protection class:	IP 65 acc. to EN 60529
Degree of contamination:	3 (pollution degree)

6.8 Electrical data

6.8.1 Power supply/set value input

Supply voltage:	Via set value signal Note: A voltage of 30 V DC and an input current of 100 mA must not be exceeded. In total, a power of 1 W must not be exceeded.
Power consumption:	< 0.3 W
Short-circuit proof:	Yes
Duty cycle:	Continuous duty
Electrical protection class:	III
Set value input:	4 - 20 mA
Input type:	passive
Load impedance:	11.2 V DC (corresponds to 560 Ω at 20 mA)
Accuracy/linearity:	$\leq \pm 0.5\%$ of full flow
Temperature drift:	$\leq \pm 0.1\%$ of full flow
Resolution:	12 bit

Reverse battery protection:	Yes
Overload proof:	Yes (up to 30 V DC)

6.8.2 Analogue output

Accuracy:	$\leq \pm 1\%$ of full flow
Signal:	4 - 20 mA
Supply voltage:	10 – 30 V DC
Output type:	passive
Temperature drift:	$\leq \pm 0.5\%$ of full flow
Resolution:	0.1 %
Short-circuit proof:	Yes
Overload proof:	Yes (up to 30 V DC)

6.8.3 Digital input

Function:	Can be selected using software
Input type:	passive
Input voltage:	Typically 24 V DC (7–30 V DC)
Logic level "1":	7–30 V DC
Logic level "0":	0–5 V DC
Input current:	Typically. 6 mA DC

6.8.4 Digital output

Note:	Limit the current consumption to < 15 mA.
Function:	selectable using software
Supply voltage:	Typically 24 V DC (7–30 V DC)
Output type:	passive
Logic level "1":	conductive
Logic level "0":	disabled

6.8.5 Travel sensor input (for travel length code S01 – remote potentiometer)

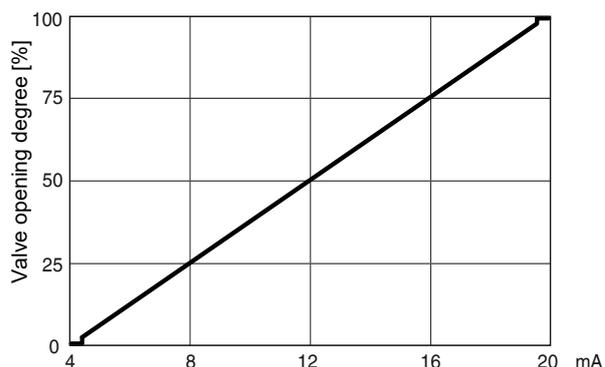
Note: Travel sensor input is not galvanically isolated from the supply voltage/set value input.

Input voltage range:	0 to U_{P+}
Supply voltage U_{P+}:	Typically 0.48 V DC
Resistance range of remote potentiometers:	1.8–6 k Ω (ideal 5 k Ω $\pm 20\%$)

6.8.6 Positioner data

Note: The following diagram is valid for valves with a standard assignment of the spindle position to the valve position (see "Mechanical data", page 9).

Control diagram: Default setting / The control characteristic is adjustable.



During initialization, the 1441 cPos-X positioner automatically detects the control function of the valve and is adjusted by default so that the valve is closed when the signal is 4 mA*.

The assignment can subsequently be changed using parameters. The close-tight function that is integrated as standard ensures that the valve is moved completely to the end position when the signal Open or Close valve is given.

* For double acting actuators, depends on the pneumatic actuator

Positioner information:	Control error:	1% default setting
	(Dead zone)	0.1–25.0% (can be set at fixed values) 0.1–25.0% (adaptive self-adjustment)
	Parameterization:	Via app or HART
	Initialization:	Automatic via magnetic switch, app, digital input or HART
	Close tight function:	Closed: $W \leq 0.5\%$ Open: $W \geq 99.5\%$ (can be changed via the app)

Interface:

	Bluetooth Low Energy	HART
Function	Parameterization, configuring, diagnostics	Parameterization, configuring, diagnostics
	Device status via app ¹⁾	Protocol Version 7 Device status via EDD
Prerequisite	Compatible smartphone/tablet with Android or iOS ¹⁾ - Apple iOS: Version 11 or higher - Android: Version 7.0 ("Nougat") or higher - Bluetooth 4.0 LE or newer	-

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

7 Manufacturer's information

7.1 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.

7.2 Transport

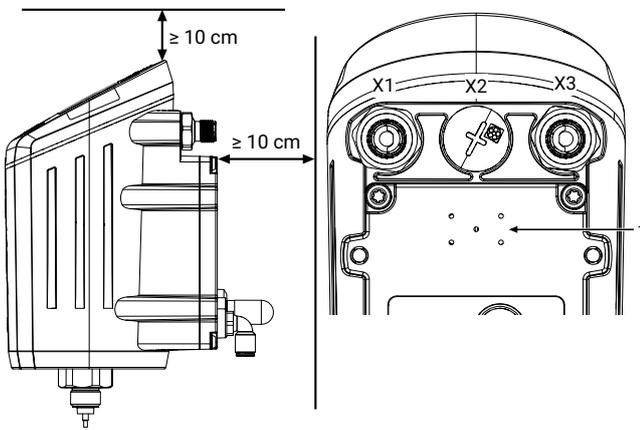
1. Only transport the product by suitable means. Do not drop. Handle carefully.
2. After the installation dispose of transport packaging material according to relevant local or national disposal regulations / environmental protection laws.

7.3 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.

8 Montage

8.1 Installation conditions

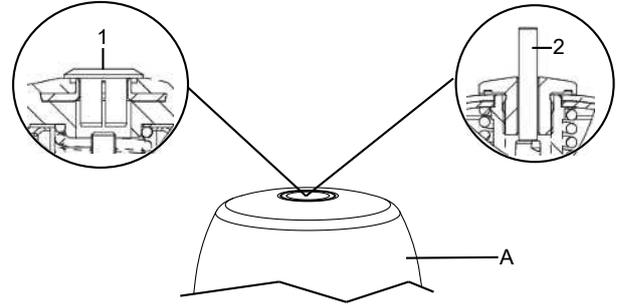


A clearance of 10 cm must be maintained at the rear of the device so that the electrical and pneumatic connections remain accessible. Furthermore, a vertical clearance of 10 cm must be maintained to ensure that the unit can be disassembled at any time.

The rear pressure balance openings (right-hand figures) 1 must be maintained (in the event of a malfunction, targeted venting of the housing is guaranteed by the pressure balance openings).

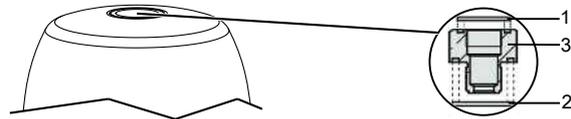
8.2 Preparations for mounting to the valve

1. Move the actuator **A** into zero position (actuator vented).
2. Remove optical position indicator **2** and / or protective cap **1** from the actuator top.



8.3 Assembling the adapter (linear actuator)

With some mounting kits it is necessary to install an adapter as well. This adapter is enclosed with the required mounting kits. Valves with a normally open and double acting control function (code 2+3) also include additional O-rings (1+2).



1. Move the actuator to the closed position.
2. Place O-rings **1** and **2** into adapter **3**.
3. Screw adapter **3** into the actuator opening as far as it will go and tighten.

8.4 Linear travel sensor mounting kit assembly for remote mounting

⚠ CAUTION

Pretensioned spring!

- ▶ Damage to the device.
- Slowly release the tension in the spring.

⚠ CAUTION

Do not scratch the spindle!

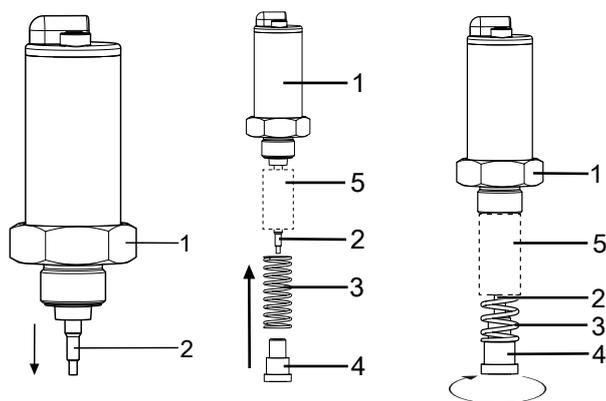
- ▶ A damaged spindle surface may cause failure of the travel sensor.

Item	Name
1	Travel sensor
2	Spindle
3	Spring
4	Operating bush
5	Guide bush*
6	Threaded adapter**

*Included depending on version

**If a threaded adapter is included, it must be screwed into the actuator top of the process valve

The process described below refers to the mounting kit mounting for direct and remote mounting. For direct mounting, the travel sensor that is shown is integrated in the housing of the positioner.



1. Pull the spindle **2** out of the travel sensor **1**.
2. If included, push the guide bush **5** taper over the spindle **2** first.
3. Push the spring **3** over the spindle **2** and secure with the operating bush **4**.
4. Tighten the operating bush **4** by turning it clockwise.
5. Push in the spindle **2** as far as it will go on the spring **3** and then slowly release the pressure on the spring **3**.

8.5 Direct mounting to linear actuators



1. Mount the travel sensor mounting kit (see "Linear travel sensor mounting kit assembly for remote mounting", page 12).
2. Move the actuator **3** to the open position.
3. Guide the product **1** as far as it will go into the actuator opening or the adapter, and screw it in a clockwise direction against the initial spring tension, and tighten it using a suitable **WAF27** open-ended spanner.
4. Connect the product's pneumatic supply and connect the product to the process valve.

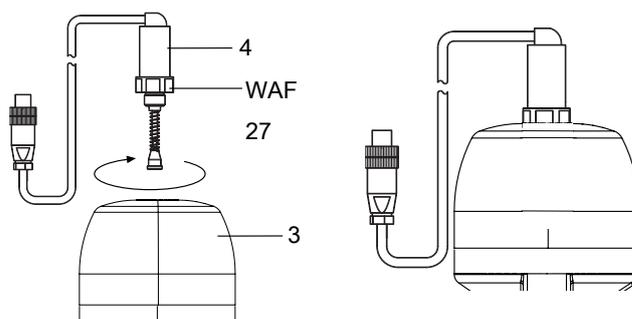
NOTICE

Damage to internal stop

- ▶ Do not mount the product by turning the internal stop.

If correctly mounted to the corresponding valve, the product can be turned 320°.

8.6 Remote mounting to linear actuators



1. Mount the travel sensor mounting kit (see "Linear travel sensor mounting kit assembly for remote mounting", page 12).
2. Move the actuator **3** to the open position.
3. Guide the travel sensor **4** as far as it will go into the actuator opening or the adapter, and screw in a clockwise direction against the initial spring tension, and tighten it using a suitable **WAF27** open-ended spanner.
4. Secure the product **1** in a suitable position.
5. The product offers two options for securing:
 - ⇒ Four fixing holes with threaded sleeves are located on the rear of the housing, using which the controller can be installed on holders/routes, etc.
 - ⇒ An attachment point for a mounting bracket is located on the underside of the housing. Two different variants are available as accessories for this. Depending on the version, the product can therefore be mounted on level surfaces or on walls.

NOTICE

Mounting bracket for wall mounting

- ▶ The GEMÜ 1441 000 ZMP mounting bracket, which is available separately, can be used for this.

NOTICE

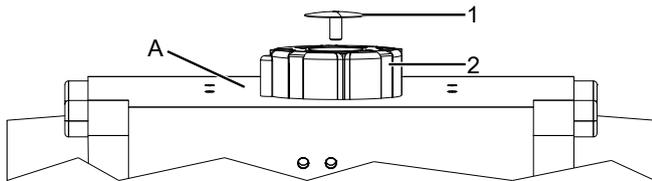
Mounting bracket for mounting on level surfaces

► The GEMÜ 1441 000 ZMB mounting bracket, which is available separately, can be used for this.

6. Electrically connect the travel sensor to the product.
7. Connect the product's pneumatic supply and connect the product to the process valve.

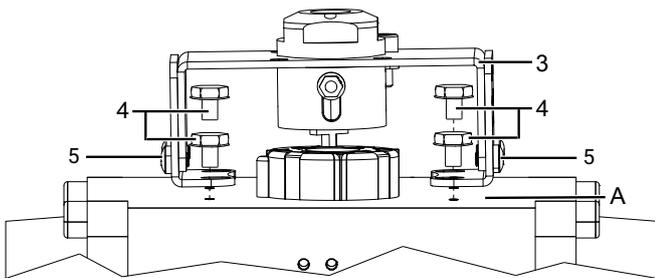
8.7 Preparations for installation of the valve (quarter turn actuator)

1. Move the actuator **A** into zero position (actuator vented).



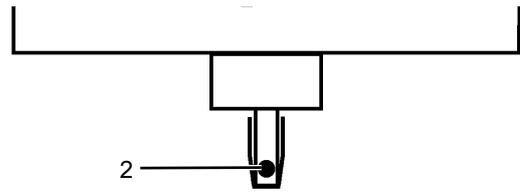
2. Remove the screw **1** from the trigger cam **2**.

8.8 Mounting kit assembly (quarter turn actuator) for direct mounting

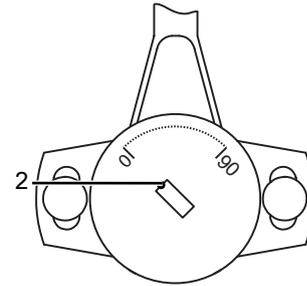


1. Adjust the mounting bracket to the required borehole pattern.
 - ⇒ To do this, loosen the side screws **5** and set the retaining feet onto the thread of the actuator, and install it using screws **4**.
2. Secure the bracket **3** to the retaining feet as shown. In doing so, the tap shaft must sit free of play in the shaft of the actuator.

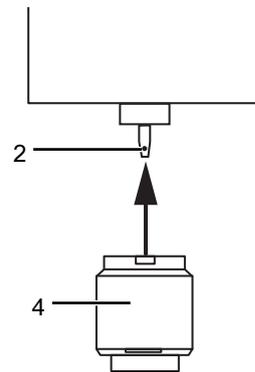
8.9 Mounting kit assembly (quarter turn actuator) for remote mounting



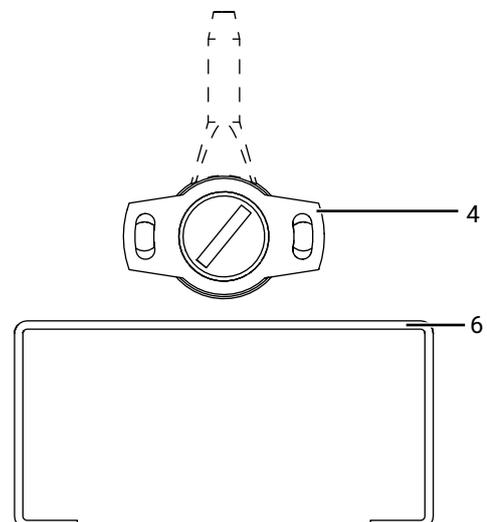
1. The shaft of the rotary travel sensor is provided with a marking **2**.



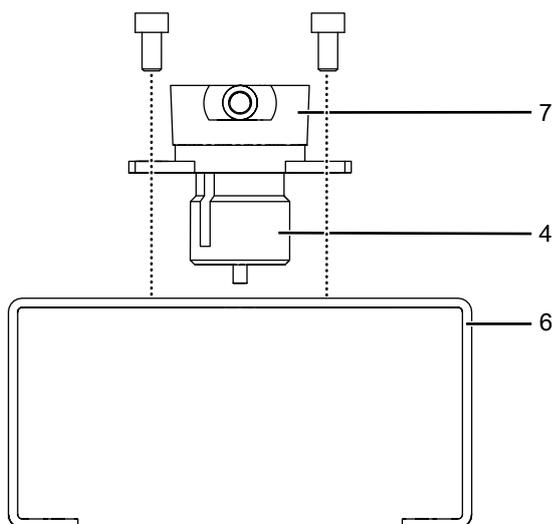
2. Set the marking **2** so that it is correctly aligned with the 0° position on the underside of the travel sensor housing. The 0° position is located on the left-hand side of the cable exit (the electrical operating range is located in the travel range between the 0° and 90° positions).



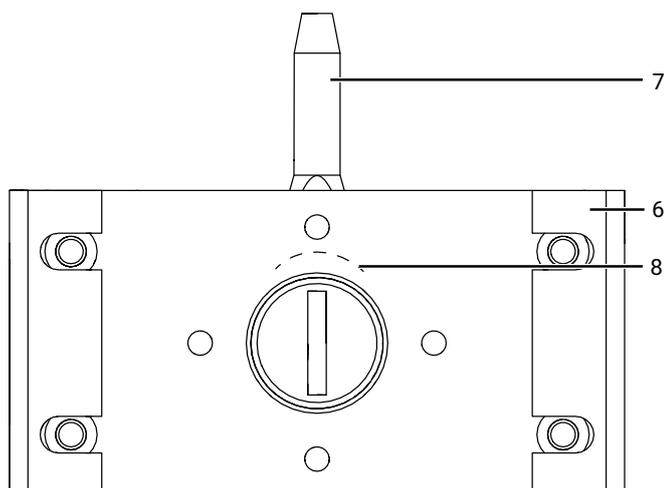
3. Place the adapter **4** onto the shaft of the rotary travel sensor **2** without twisting the shaft.



4. Mount the black housing of the rotary travel sensor **4** in parallel to the mounting bracket **6** in a longitudinal direction.



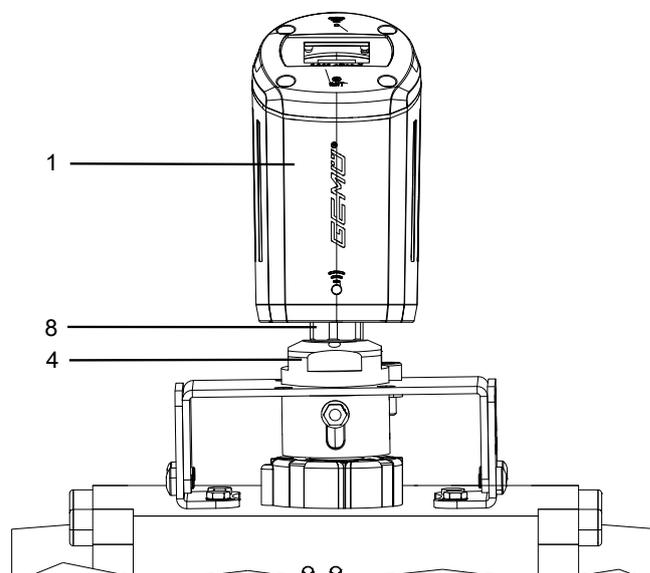
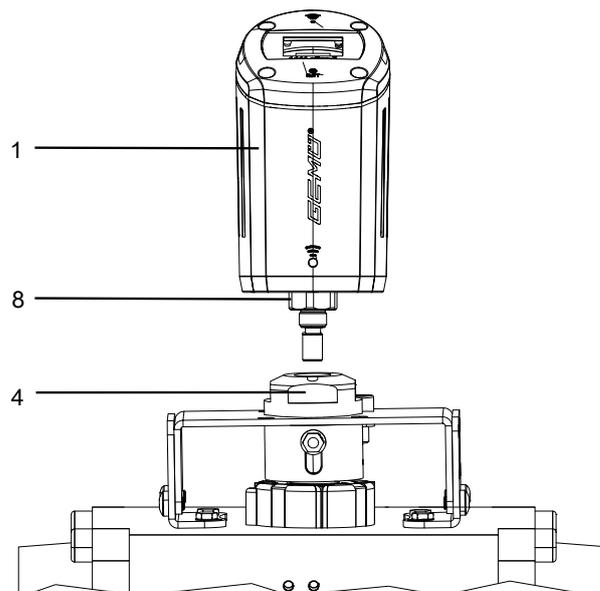
5. Mount the product **1** or the external rotary travel sensor **7** with the adapter **4** on the mounting bracket **6**.



6. Note the direction of the scale **8**.

⇒ View from below of the travel sensor **7** with mounting bracket **6**.

8.10 Direct mounting to quarter turn actuators



1. Mount the travel sensor mounting kit on the product (see "Linear travel sensor mounting kit assembly for remote mounting", page 12).
2. Use the mounted mounting kit to screw the product **1** onto the adapter **4**.
3. Use the spanner flat **8** (WAF 27) of the travel sensor to tighten the product **1**.
4. Turn the housing clockwise to align the pneumatic or electrical connections.
5. Connect the product's pneumatic supply and connect the product to the process valve.

8.11 Remote mounting to quarter turn actuators

NOTICE

- ▶ The travel sensor's cable exit protective coating is not UV-resistant and must therefore be protected against direct exposure to weather.

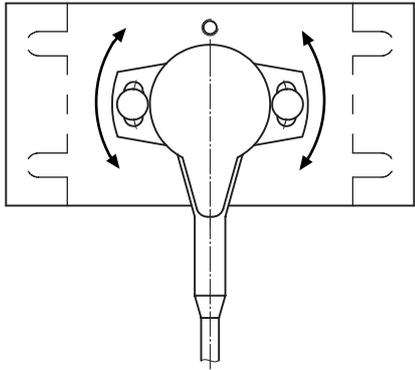


1. Mount the travel sensor mounting kit (see "Mounting kit assembly (quarter turn actuator) for remote mounting", page 14).
2. Place the travel sensor 7 with adapter 4 and mounting bracket 6 on the actuator 3.
 - ⇒ **Note:** The adapter lug 4 must engage in the actuator shaft groove.
3. Mount the mounting bracket 6 on the actuator 3 using the screws, washers and spring washers provided.

NOTICE

Note for the rotary travel sensor

- ▶ The slotted holes should be positioned in the centre on the screws. If the travel range is incorrect, (determined by checking the attachment), loosen the two screws slightly and twist the travel sensor. Set the travel up correctly and tighten the screws again.



4. Secure the product 1 in a suitable position.
5. The product offers two options for securing:
 - ⇒ Four fixing holes with threaded sleeves are located on the rear of the housing, using which the controller can be installed on holders/routes, etc.
 - ⇒ An attachment point for a mounting bracket is located on the underside of the housing. Two different variants are available as accessories for this. Depending on the desired version, the product can therefore be mounted on level surfaces or on walls.

NOTICE

Mounting bracket for wall mounting

- ▶ The GEMÜ 1441 000 ZMP mounting bracket, which is available separately, can be used for this.

NOTICE

Mounting bracket for mounting on level surfaces

- ▶ The GEMÜ 1441 000 ZMB mounting bracket, which is available separately, can be used for this.

6. Electrically connect the travel sensor to the product.
7. Connect the product's pneumatic supply and connect the product to the process valve.

8.12 Checking the mechanical mounting

1. Connect the product electrically (see "Electrical connection", page 19).
2. Connect the product pneumatically.
3. The display shows "Starting..." for approx. 20 seconds and then the following information:



4. The mounted actuator can be moved to the OPEN and CLOSED positions using the app connectivity. Alternatively, the valve actuator can be moved to the other end position by applying direct pressure on the compressed air connection.
5. **Important:** In this case, the displayed valve position ("POS") must be between 2% and 98%. If the display exits this area, check the mechanical mounting again (check the compatibility of the mounting parts) and, if required, readjust the direction of the rotary travel sensor.

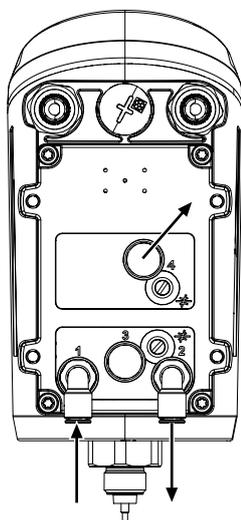
9 Pneumatic connection

⚠ CAUTION

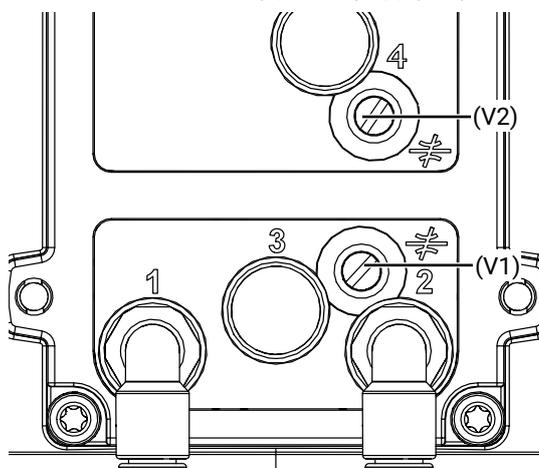
► Observe the maximum control pressure of the actuator!

Connection in accordance with DIN ISO 1219-1	Designation	Size
1	Supply connection	G1/8 female thread ¹⁾
3	Venting (with silencer)	G1/8 female thread
V1	Supply and exhaust air throttle for A1	-
V2 ²⁾	Supply and exhaust air throttle for A2	-
2	Working connection (1) for process valve (control function NC and NO)	G1/8 female thread ¹⁾
4 ²⁾	Working connection (2) for process valve (control function DA)	G1/8 female thread ¹⁾

- 1) The connections that are to be used are equipped with push-in fittings at the factory (depending on the order code for pneumatic lines 6/4 mm or 1/4").
- 2) Only available for the double acting action (code 3 or 6).



1. Establish the connection between the pneumatic output **2** (single acting) or connectors **2** and **4** (double acting) and the actuator's pneumatic control air connector.
2. Connect the auxiliary power (supply air) to the air supply connection **1** (max. 7 bar/101 psi).



* Figure shows throttling (V1 and V2) in the unthrottled position

Description for using throttles V1 and V2

The throttle screw **V1** regulates the working connection's flow rate **A1** in both directions.

The throttle screw **V2** (only the double acting version) regulates the working connection's flow rate **A2** in both directions.

3. Activate the throttle function:

- ⇒ Use a flathead screwdriver (maximum slot width 4 mm) to push the throttle in as far as it will go and turn clockwise by approx. 120° (slot vertical = throttle position).

4. Deactivate the throttle function:

- ⇒ Use a flathead screwdriver (maximum slot width 4 mm) to turn the throttle anticlockwise by approx. 120° and release (slot approx. 45° = unthrottled position).

We recommend only using the throttle during initialization. The throttle(s) should be activated if operating times of <1.0 seconds have been determined or the control result is not satisfactory (for example, the control oscillates → reinitialization with activated throttle). Experience has shown that operating times between 1 and 2 seconds lead to optimal control results.

9.1 General notes

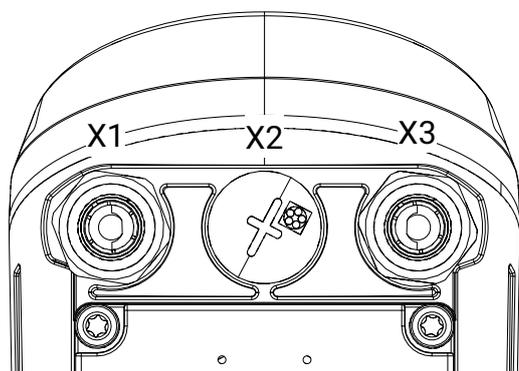
 CAUTION	
	<p>Exhaust air and cycle duties generate noise</p> <ul style="list-style-type: none"> ▶ Hearing damage ● Wear hearing protection

The exhaust air connection is equipped with a silencer as standard to reduce noise emissions. Other commercially available silencers with G1/8 male thread can also be fitted. Alternatively, the recessed G1/8 thread can be used to attach commercially available pneumatic screw connections in order to be able to discharge the exhaust air in a targeted manner.

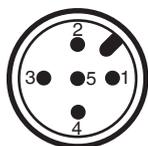
10 Electrical connection

10.1 Electrical connection with M12

Position of the connectors



Connection X1



5-pin M12 plug, A-coded

Pin	Signal name
1	Iw+ set value input (4–20 mA current loop)/opt. HART
2	Iw- set value input (4–20 mA current loop)/opt. HART
3	n.c.
4	Iout+, actual value output (4...20 mA / no internal supply; passive)
5	Iout-, actual value output (4...20 mA / no internal supply; passive)

Connection X3



5-pin M12 plug, B-coded

Pin	Signal name
1	DigIn +
2	DigIn -
3	n.c.
4	DigOut+
5	DigOut-

10.1.1 Order option with external actual value potentiometer, code S01

Connection X2



5-pin M12 built-in socket. A-coded

Pin	Signal name
1	UP+, output potentiometer supply voltage (+)
2	UP, input potentiometer wiper voltage
3	UP-, output potentiometer supply voltage (-)
4	n.c.
5	n.c.

10.2 Electrical connection with cable bushing

Note: On the version with an external actual value potentiometer (code S01), a connector is always attached at connection X2.

Connection X1/X3:

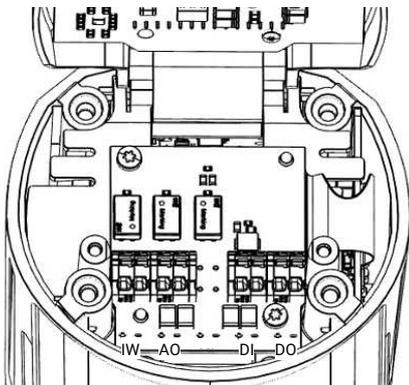
M16 cable gland

Recommended cable diameter:

EX-protected version (blue cable gland: 7–9 mm

Non-EX-protected version (black cable gland: 4–10 mm

Wire cross-section: 0.5–2.5 mm² / AWG 20 to 12



Terminal	Terminal label	Terminal name	Signal name
1	IW+	Iw+	Iw+, set value input (4–20 mA current loop)/opt. HART
2	IW-	Iw-	Iw-, set value input (4–20 mA current loop)/opt. HART
3	AO+	Iout+	Iout+, actual value output (4–20 mA/ no internal supply; passive)
4	AO-	Iout-	Iout-, actual value output (4–20 mA/ no internal supply; passive)
5	DI+	DigIn +	Digital input
6	DI-	DigIn	GND, digital input
7	DO+	DigOut+	Digital output
8	DO-	DigOut-	GND, digital output

11 Fail safe functions

Fail safe functions

Case	Error	Connection A1 (2)	Connection A2 (4)
1	Power supply failure	Single acting fail safe: Venting Single acting fail freeze: Blocking Double acting fail safe: Venting Double acting fail freeze: Blocking	Single acting: - (No connection available) Double acting fail safe: Venting Double acting fail freeze: Blocking
2	Compressed air supply failure	Single acting fail safe: Venting Single acting fail freeze: Blocking Double acting fail safe: Venting Double acting fail freeze: Blocking	Single acting: - (No connection available) Double acting fail safe: Venting Double acting fail freeze: Blocking
However, the fail safe function does not replace the plant-specific safety devices.			

Adjustable safety reactions

Error	Connection A1 (2)	Connection A2 (4)
Set value < 4 mA (range below the set value under I Min W can be adjusted 0–22 mA)	Single and double acting Adjustable function (Open, Close, Hold, Safe*)	Single acting: (Connection not available) Double acting: Adjustable function (Open, Close, Hold, Safe*)
Set value > 20 mA (range below the set value I max can be adjusted from 0–22 mA)	Single and double acting Adjustable function (Open, Close, Hold, Safe*)	Single acting: (Connection not available) Double acting: Adjustable function (Open, Close, Hold, Safe*)
* Safe = default setting. In this case, the valve actuator is moved to its safety position (undefined for double acting)		

12 Commissioning

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

CAUTION

Leakage

- ▶ Emission of dangerous materials.
- Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

CAUTION

Cleaning agent

- ▶ Damage to the GEMÜ product.
- The plant operator is responsible for selecting the cleaning material and performing the procedure.

CAUTION



Hazardous situation

- ▶ Risk of injury or damage possible.
- For correct commissioning, the product must be calibrated to the process valve by means of 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

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

Note

- ▶ Due to environmental influences on the system side (setting behaviour of elastomers, thermal influences) and configuration-specific infeed behaviour, which could impact the control characteristics, it is recommended that the self-calibration is carried out again by an initialization after commissioning in order to prevent incorrect error messages. If error messages occur which are attributable to the fact that the controller can no longer correctly approach or determine the end positions (for example, despite the positioning signal specification of 0%, the valve position is >1.0%¹⁾, it is recommended to also carry out the initialization again.
- ▶ ¹⁾Dependent on the dead zone setting and close tight function. If the close tight function is deactivated (Δ setting value = 0.0%), the valve is closed only within the set value of the dead zone

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 factory 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. 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 auxiliary power of max. 7 bar.
4. Connect the connection cable tension-free and without any bends or knots.
5. Switch on the energy supply via set value signal 4–20 mA DC.
 - ⇒ Wait until the status display switches from "Starting..." to a constant operating information display (this takes approx. 20 seconds).
6. Start the automatic initialization (speed-AP function)¹⁾:
 - ⇒ Hold a magnet at the marked initialization position (INIT) until "Remove Magnet" is shown on the status display ²⁾.
 - ⇒ 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.

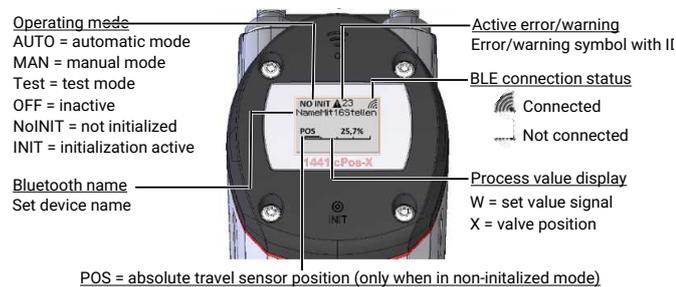
¹⁾ Alternatively, the initialization that is required for the commissioning can be started and carried out via the app. All of the results for each individual step are therefore also displayed in detail. In addition to the described options for activating the initialization, the digital input can also be used to start the process via an external signal (parameter setting: "Digital input function" – Start Init).

²⁾ While the wireless connection is active (this can be seen on the connection status indicator in the status display), the magnetic trigger is deactivated. The magnetic trigger can also be permanently deactivated via the app.

13 Operation

13.1 Operating and display elements

13.1.1 Status display information



13.1.2 Wireless interface

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 the current device status.
3. Display and evaluation of historic events.
4. Implementation of the initialization.
5. Moving the valve in manual mode.
6. Resetting the device to the default settings.
7. Activating the localization (device ID).
8. Security management (blocking access for a certain group of participants).

NOTE

- During an initialization process that is started by the magnetic trigger, no actions can be taken in the app. After ending the process, the app can be used again without restrictions.
- While the radio connection is active, starting the initialization via the magnetic trigger is deactivated.
- Only one end device can ever be simultaneously connected to the positioner. 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 device name that is shown on the display. When delivered, this corresponds to the serial number that is printed on the product label. The device name can be changed at any time after the connection is established (maximum 16 characters).

Safety notice

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

When delivered, the product is protected against unauthorized access using a unique connection password. The password matches the digital product label (QR code) that is affixed on the product. To enter the password, this can be read using the camera scan function on the smartphone/tablet or entered

manually. The password can be managed independently and set to any other password. By changing the original password, you lose the option to read this via the digital product label. 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 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 can be reset via the reset mechanism.

Caution! If one or both passwords for the reset mechanism is locked, 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 product label (QR code) can remove the password protection.

Reset mechanism

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

- Digital product label (QR code)

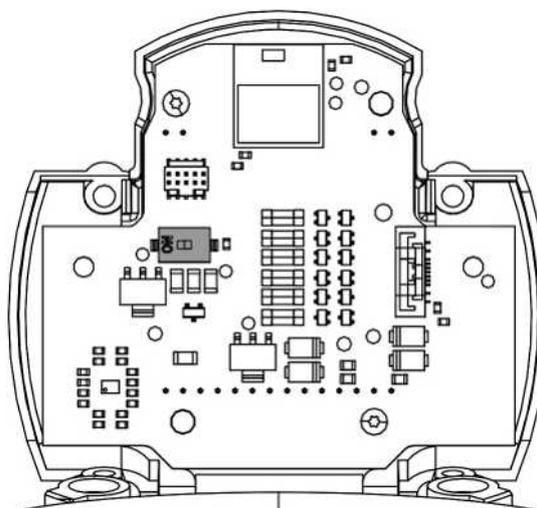
By scanning the QR code that is affixed to the product.

- RFID

The RFID chip that is integrated into the housing can be read by additional hardware (Conexo Pen) that is available separately and this can be used to reset the passwords.

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

Deactivating the wireless interface

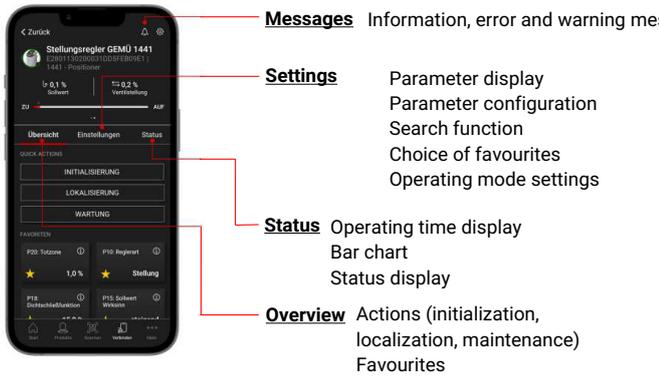


The wireless interface can be permanently deactivated by integrating a DIP switch inside the device. If the DIP switch is changed to the "Off" position, the radio module is disconnected from the power supply.

- To do this, remove the four housing cover screws (Tx 20) and the housing cover beforehand.

- Loosen the display holder by removing the two internal screws (Tx 10) and swivel it upwards/forwards.

13.1.3 Basic operation of the app



The GEMÜ app consists of several function modules that can be called up via the bottom navigation at the bottom of the display. The functions for operating the product are located in the "Connect" area. The figure above gives a rough overview of the structure. By selecting the tabs "Overview", "Settings" or "Status", it is possible to navigate within the "Connect" area. Important information, error or warning messages can be called up on all pages via the bell symbol.

13.1.4 Emergency operation

If there is a fault in the product and/or the wireless interface, the product has two internal buttons that can be used to perform the following actions. The buttons must first be exposed by removing the cover.

Status	Left-hand button	Right-hand button
Nolnit operating mode (not initialized)	Manual control of the valve actuator → Pneumatic connection 2 is vented	Manual control of the valve actuator → Pneumatic connection 2 is aerated
AUTO, MAN, OFF, TEST operating mode	Press and hold both buttons simultaneously for three seconds, → Delete the initialization and reset the device to the default setting*	

* The device is therefore simultaneously moved to the **Nolnit** operating mode and, as a result, allows the connected process valve to be controlled manually using the two buttons

14 Parameter list

Number	Parameter	Description	Settings	Initial setting
-	Local Bluetooth name	Locally used Bluetooth name		Serial number of the device
M02	Device functions	Device operating mode (positioner...)		

Number	Parameter	Description	Settings	Initial setting
M01	Operating mode	Device operating mode	OFF, AUTO, MANUAL, TEST	AUTO
S01	Switching cycle counter	Number of switching cycles can be reset by the customer	0 to 2147483600	0 (is adjusted automatically)
S02	Warning threshold switching cycles	Warning threshold switching cycles of the pilot valves	0 to 2,147,483,600	50,000,000
-	Switching cycles warning ratio	Indicator for valve wear on the pilot valve module	0.0 to 100.0%	0.0% (is adjusted automatically)
P26	Initialization quantity of calibration points	Quantity of calibration points when initializing	1 to 19	9
S09	Operating time OPEN	Operating time of the valve in open direction	0.0 to 99.9 s	0.0 s (is adjusted automatically)
S10	Operating time CLOSED	Operating time of the valve in closed direction	0.0 to 99.9 s	0.0 s (is adjusted automatically)
P21	Decay time D-component	Decay time of the D-component	1 to 5000 ms	100 ms
P22	Differential component	Amplifying the D-component	0.0 to 100.0	0.0
P23	Proportional amplification	P-amplification of the positioner	0.1 to 100.0	1.0 (is adjusted automatically)
P20	Dead zone	Setting the manual dead zone	0.1 to 25.0%	1.0%
P44	Dead zone value auto	Dead zone value auto	0.1 to 25%	1% (is adjusted automatically)

Number	Parameter	Description	Settings	Initial setting
P24	Dead zones function	Automatic dead zone adjustment	manual, auto	manual
	Set value, manual	Current set value for manual operation	0.0 to 100.0%	-
S06(.1)	Set value	Comparison of set value and valve position	0.0 to 100.0%	-
S06(.2)	Valve position	Comparison of actual value and valve position	0.0 to 100.0%	-
-	I set value input	Current target value signal	0.0 to 22.0 mA	-
-	I actual value output	Signal analogue output	0.0 to 22.0 mA	-
-	Position control deviation	Control deviation for positioner	-100.0 to 100.0%	-
S05(.1)	Absolute position init. (CLOSED)	Valve absolute position end positions	0.0 to 100.0%	- (is adjusted automatically)
S05(.2)	Absolute position init. (open)	Valve absolute position end positions	0.0 to 100.0%	- (is adjusted automatically)
-	Current absolute position	Current absolute position of the travel sensor	0.0 to 100.0%	-
P43	Travel sensor direction of action	Direction of action of the travel sensor	rise, fall	rise
P33	Analogue output min	Valve position at output signal of 4 mA	0 to 100%	0%
P34	Analogue output max	Valve position at output signal of 20 mA	0 to 100%	100%

Number	Parameter	Description	Settings	Initial setting
P16	Set value limit CLOSED	Lower range of the set value limit	0 to 100%	0%
P17	Set value limit OPEN	Upper range of the set value limit	0 to 100%	0%
P18	Close tight function CLOSED	Lower range of the close tight function	0.0 to 20.0%	0.5%
P19	Close tight function OPEN	Upper range of the close tight function	80.0 to 100.0%	99.5%
P01	Split range start	Starting point of the split-range function	0.0 to 90.0%	0.0%
P02	Split range end	End point of the split-range function	10.0 to 100.0%	100.0%
P15	Set value direction of action	Inversion of the target value signal	rise, fall	rise
P14	Control curve	The control curve is defined	Linear, 1:25, 1:50, free	Linear
P03	Characteristic curve point 0%	Calibration point 0 of the free characteristic	0.0 to 100.0%	0.0%
P04	Characteristic curve point 10%	Calibration point 10 of the free characteristic	0.0 to 100.0%	10.0%
P05	Characteristic curve point 20%	Calibration point 20 of the free characteristic	0.0 to 100.0%	20.0%
P06	Characteristic curve point 30%	Calibration point 30 of the free characteristic	0.0 to 100.0%	30.0%

Number	Parameter	Description	Settings	Initial setting
P07	Characteristic curve point 40%	Calibration point 40 of the free characteristic	0.0 to 100.0%	40.0%
P08	Characteristic curve point 50%	Calibration point 50 of the free characteristic	0.0 to 100.0%	50.0%
P09	Characteristic curve point 60%	Calibration point 60 of the free characteristic	0.0 to 100.0%	60.0%
P10	Characteristic curve point 70%	Calibration point 70 of the free characteristic	0.0 to 100.0%	70.0%
P11	Characteristic curve point 80%	Calibration point 80 of the free characteristic	0.0 to 100.0%	80.0%
P12	Characteristic curve point 90%	Calibration point 90 of the free characteristic	0.0 to 100.0%	90.0%
P13	Characteristic curve point 100%	Calibration point 100 of the free characteristic	0.0 to 100.0%	100.0%
P36	Error position	Valve position at error message	Close, Open, Hold, Safe	Close
P27	Control function	Control function of the process valve		
P37	Error time	Debounce time of error messages	0.2 to 100.0 s	0.2 s
P38	Set value I min	Switch-off limit for cable break recognition of the set value	0.0 to 22.0 mA	3.5 mA

Number	Parameter	Description	Settings	Initial setting
P39	Set value I max	Switch-off limit for excess current recognition of the set value	0.0 to 22.0 mA	20.5 mA
S03	Hardware version	Hardware version		
S04	Software version	Software version		
S11	Production number	Traceability number of the device		
-	Operating hours since last start	Operating hours at device start		
-	Total operating hours	Operating hours		
P29	Function digital input	Function of the digital input	OFF, OFF / ON, Safe / ON, Parm-SetB0, Poti, Start Init	OFF
S07	Status digital input	Signal applied at the digital input		
P30	Function digital output	Function of the digital output	no, P min, P max, P min/max, W min, W max, W min/max, X min, X max, X min/max, SSE min, SSE max, SSE min/max, Active, Error, Warning	no
P35	Logic digital output	Defines the logic of the digital output	NO, NC	NO
P40	Time delay digital output	Defines the time delay of the digital output	0.1 to 100.0 s	1.0 s

Number	Parameter	Description	Settings	Initial setting
P31	Digital output min	Lower switch point of the digital output	0.2 to 99.8%	10.0%
P32	Digital output max	Upper switch point of the digital output	0.2 to 99.8%	90.0%
S08	Status digital output	Status of digital output		
S12	Active parameter set	Displays the active parameter set	P1, P2	P1
P25	Copying parameter set	Copy to different memories	off, P1 <= W, P1 => P2, P1 <= P2	off
P28	Initialization start via magnet	Initialization option via magnet contact		
P41	Display orientation	Display orientation	0°, 180°	0°
P42	Full-screen display	Full-screen display	off, on	off
-	Location function	Device location function	off, on	off

The parameters without numbers cannot be located in the app via the "Parameters" menu.

15 Messages and troubleshooting

Message ID and type	Description	Cause and remedial measures
1 Error	Not calibrated	Device not calibrated. - Send to GEMÜ for repair.
2 Warning	Not initialized	Device not initialized. - Carry out initialization.
10 Error	Set value < 4 mA	The set value signal is lower than 4 mA. - Check the set value signal (if the minimum current signal is not reached, the device switches off).
11 Error	Set value > 20 mA	The set value signal is higher than 20 mA. - Check the set value signal.

Message ID and type	Description	Cause and remedial measures
22 Error	Pneumatic error	No change in the process valve position can be detected within the permitted time. - Ensure that there is adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Check that the valve is working correctly. - Check the mounting kit parts and that they are being used correctly and in their entirety.
23 Error	Leakage detected	A continuous change to the valve position without any action has been detected. - Check the pneumatic connection points.
30 Warning	No movement, or incorrect movement	No change in the process valve position can be detected within the permitted time. - Ensure that there is adequate compressed air supply. - Check the pneumatic connections. - Check the pneumatic connection points. - Check that the valve is working correctly. - Check the mounting kit parts and that they are being used correctly and in their entirety.
60 Error	Travel sensor error	It is no longer possible to read a valid signal from the travel sensor. - Check the electrical connection for the external travel sensor. - Ensure that the travel sensor spindle is not pushed as far as it will go or that it has not been removed. - Check the mounting kit parts and that they are being used correctly and in their entirety. - Ensure that the mechanical assembly on the valve is correct.

Message ID and type	Description	Cause and remedial measures
61 Warning	Button fault	While starting the device, one or both internal emergency buttons were pressed for longer than 60 seconds. - Check whether the housing cover actuates the buttons or whether the buttons are jammed.
70 Info	Switching cycles alarm threshold reached	The set number of switching cycles has been reached. - If required, replace the pilot module (then reset the switching cycle counter).
71 Info	Switching cycle counter reset	The switching cycle counter has been reset. The message is independently acknowledged after 30 seconds.
90 Warning	Control system quality restricted	The process valve cannot be moved and therefore regulated optimally.
200 Warning	Warning message memory	Internal memory error. - Send to GEMÜ for repair.

The behaviour of the positioner depends on the type of message

Error: The valve is moved to the safety position in a controlled manner (see "Fail safe functions", page 21). The cause of the error must be eliminated for continued operation.

Warning: A warning does not effect the positioner's operating mode; however, under certain circumstances, this may not carry out the required function. We recommend checking the cause and, if required, eliminating it.

Info: The status of a temporary function is displayed.

16 Inspection and maintenance

 **WARNING**

The equipment is subject to pressure!

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

 **CAUTION**

Use of incorrect spare parts!

- ▶ Damage to the GEMÜ product.
- ▶ Manufacturer liability and guarantee will be void.
- Use only genuine parts from GEMÜ.

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 examination of the products dependent on the operating conditions and the potential danger 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 plant operator's guidelines.
3. Shut off plant or plant component.
4. Secure the plant or plant component against recommissioning.
5. Depressurize the plant or plant component.
6. Actuate products which are always in the same position four times a year.

16.1 Spare parts

 **CAUTION**

Danger of explosion!

- ▶ Explosion-protected versions (special function: code X) must not be repaired. Any faulty explosion-protected versions must be replaced by a new device. The following spare parts are only permitted for use in **non** explosion-protected versions.

The following parts are available as spare parts:

Pilot valve module (four different versions: (single acting fail safe/single acting fail freeze/double acting fail safe/double acting fail freeze).

The pilot valve module must fit the device configuration in question (check the reference on the controller's order data or the details on the product label).

Action:

Code 1 = single acting fail safe
Designation: 1441000EVM 1, order number: 88789910

Code 3 = double acting fail safe
Designation: 1441000EVM 3, order number: 88789911

Code 5 = single acting fail freeze
Designation: 1441000EVM 5, order number: 88789912

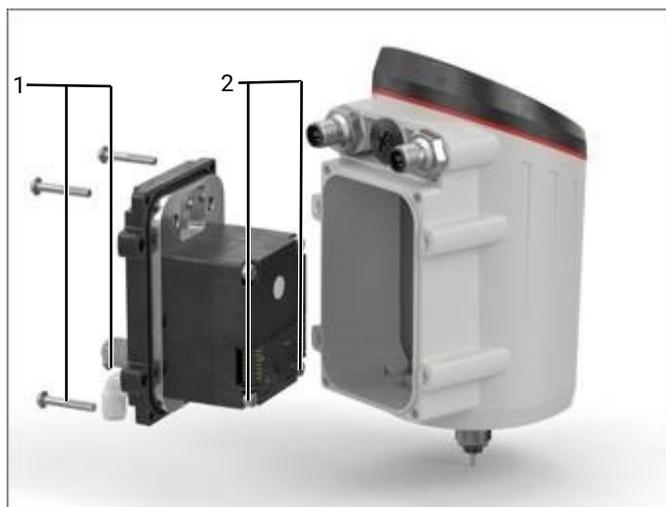
Code 6 = double acting fail freeze
Designation: 1441000EVM 6, order number: 88789913

It is recommended to replace the pilot valve module after a certain number of exceeded switching cycles.

The counter reading of the completed switching cycles can be viewed via parameter S01: "Switching cycle counter", and can be monitored via parameter S02: "Warning threshold switching cycles" (if the counter reading exceeds the set warning threshold, an alarm notification is generated).

Once the pilot valve module has been replaced, it is recommended to reset the switching cycle counter.

Replacing the spare part



1. Disconnect the product from the supply voltage.
2. Deactivate and disconnect the pneumatic connection.
3. Unscrew the four screws **1** in the rear black pneumatic panel (Torx Tx20).
4. Carefully pull the complete unit out backwards (**take care not to damage the connection cable**).
5. Loosen the plug-in contact to the side of the pilot valve module.
6. Remove the four screws **2** that hold the pilot valve module in place (Inbus Sw3).
7. Clean the support plate and check for faults.
8. Refit the replacement part in the reverse order.

16.2 Cleaning the product

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

17 Disassembly

1. Disassemble in reverse order to assembly.
2. Unscrew the electrical wiring.
3. Deactivate the control medium.
4. Disconnect the control medium line(s).
5. Disassemble the product. Observe warning notes and safety information.

18 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.

19 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.

20 Declaration of Incorporation according to 2006/42/EC (Machinery Directive)



Declaration of Incorporation

according to the EC Machinery Directive 2006/42/EC, Annex II, 1.B
for partly completed machinery

We, GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8
74653 Ingelfingen-Criesbach, Germany

declare that the following product complies with the essential requirements of the Machinery Directive 2006/42/EC.

Product: GEMÜ 1441
Product name: Intelligent electro-pneumatic positioner
From production date: 30.03.2021
Essential requirements of the Machinery Directive 2006/42/EC 1.1.6, 1.5.1, 1.5.2, 1.5.6, 1.5.8, 1.5.16, 1.6.1;
Technical standard used in parts: ISO 12100

We also declare that the specific technical documentation has been compiled in accordance with part B of Annex VII.

The manufacturer, or their authorised representative, undertakes to transmit, in response to a reasoned request, relevant documents on the partly completed machinery to the national authorities. This transmission takes place electronically.

Authorised documentation officer: GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8
74653 Ingelfingen-Criesbach, Germany

This does not affect the industrial property rights.

Important note! The product must only be commissioned in machinery that comply with the provisions of this Directive.

M. Barghoorn
Head of Global Technics

Ingelfingen, 30.03.2022

21 Declaration of conformity in accordance with 2014/53/EU (RED Directive)



Declaration of conformity

in accordance with 2014/53/EU (RED Directive)

We, GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8
74653 Ingelfingen-Criesbach, Germany

declare that the product listed below complies with the safety requirements of the RED Directive 2014/53/EU.

RED Directive 2014/53/EU

Product: GEMÜ 1441
Product name: Intelligent electro-pneumatic positioner

The Essential Safety and Health Requirements are met by compliance with the standards (used in parts) listed below that are applicable for the above mentioned product:

- EN 61326-1:2013
- EN IEC 61000-6-1:2019
- EN 61000-6-3:2007/A1:2011/AC:2012
- EN 61010-1:2010/A1:2019/AC:2019-04
- EN 300 328 V2.2.2: 2019-07
- EN 301 489-1 V2.2.3: 2019-11
- EN 301 489-17 V3.2.4: 2020-09

The sole responsibility for issuing this declaration of conformity lies with the company GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG.

M. Barghoorn
Head of Global Technics

Ingelfingen, 30.03.2022



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Subject to alteration

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