

GEMÜ 1436 eco cPos

Intelligent electro-pneumatic positioner



Features

- No air consumption when idle
- Simple mounting to various actuators
- Simple commissioning due to automatic initialization
- Speed^{AP} function for fast mounting and initialization
- Easy operation due to balanced preconfiguration
- High flow rate

Description

The GEMÜ 1436 eco cPos digital electro-pneumatic positioner is used to control pneumatically operated process valves with single acting linear or quarter turn actuators. The positioner, travel sensor, switching valves and status LEDs are integrated into the robust and compact housing. Due to factory preconfiguration, this product does not require a display with operating keys. The pneumatic and electrical connections are arranged in one mounting direction to save space and enable easy access. All these features make this positioner a cost-effective solution for control tasks with basic requirements.

Technical specifications

- **Ambient temperature:** 0 to 60 °C
- **Operating pressure :** 1.5 to 7 bar
- **Mode of action:** Single acting
- **Flow rate:** 100 NL/min | 84 NL/min
- **Measuring range:** Max. 30 mm, linear | Max. 50 mm, linear | Max. 75 mm, linear | Max. 90°, radial
- **Supply voltage:** 24 V DC
- **Electrical connection types:** M12 connector
- **Conformity:** EAC | UL listed

Technical data depends on the respective configuration



further information
webcode: GW-1436 eco



Product line

						
		GEMÜ 1434 μPos	GEMÜ 1436 eco cPos	GEMÜ 1435 ePos	GEMÜ 1436 cPos	GEMÜ 1441 cPos-X
Controller type						
Positioner	●	●	●	-	●	-
Positioners and process controllers	-	-	-	-	●	-
Ambient temperature	0 Up to 60 °C	0 Up to 60 °C	-20 Up to 60 °C	0 Up to 60 °C	-10 Up to 60 °C	
Supply voltage						
24 V DC	●	●	●	●	●	-
Via set value signal	-	-	-	-	-	●
Flow rate	15 NI/min	100 NI/min 84 NI/min	50 NI/min 90 NI/min	100 NI/min 172 NI/min 84 NI/min	115 NI/min	
Measuring range						
Max. 30 mm, linear	●	●	●	●	●	-
Max. 50 mm, linear	-	●	●	●	●	-
Max. 75 mm, linear	-	●	●	●	●	●
Max. 90°, radial	-	●	●	●	●	●
Electrical connection type						
M12 cable gland	-	-	●	-	-	-
M12 connector	●	●	●	●	●	-
M16 cable gland	-	-	-	-	-	●
M12 plug	-	-	-	-	-	●
Programmable outputs						
No	●	●	-	-	-	-
Yes	-	-	●	●	●	●
Input option						
No	●	●	-	-	-	●
Yes	-	-	●	●	●	-
Conformity						
ATEX	-	-	-	-	-	●
EAC	●	●	●	●	●	-
FCC	-	-	-	-	-	●
HART	-	-	-	-	-	●
IECEx	-	-	-	-	-	●
UL listed	-	●	-	-	-	●
UL Recognized	-	-	-	-	-	●

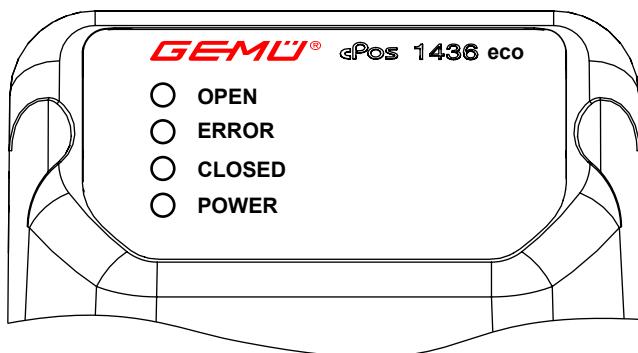
Product description

Construction



Item	Name	Materials
1	Display elements	Polyester film
2	Housing cover	PSU
3	Housing base	PP 30
4	Mounting kit, valve specific	Materials, parts valve specific

Status LEDs



LED	Colour	Function
OPEN	Yellow	Process valve is opening/in OPEN position
ERROR	Red	Error
CLOSED	Orange	Process valve is closing/in CLOSED position
POWER	Yellow	Power

The function of the LED can differ in the case of an active ERROR LED (see operating instructions).

GEMÜ CONEXO

The interaction of valve components that are equipped with RFID chips and an associated IT infrastructure actively increase process reliability.



Thanks to serialization, every valve and every relevant valve component such as the body, actuator or diaphragm, and even automation components, can be clearly traced and read using the CONEXO pen RFID reader. The CONEXO app, which can be installed on mobile devices, not only facilitates and improves the "installation qualification" process, but also makes the maintenance process much more transparent and easier to document. The app actively guides the maintenance technician through the maintenance schedule and directly provides him with all the information assigned to the valve, such as test reports, testing documentation and maintenance histories. The CONEXO portal acts as a central element, helping to collect, manage and process all data.

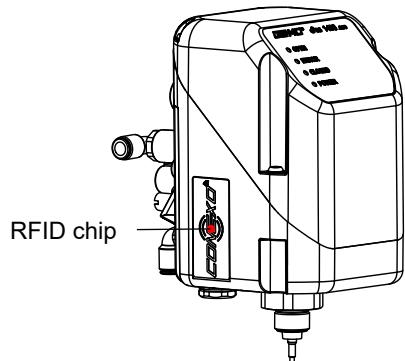
For further information on GEMÜ CONEXO please visit:

www.gemu-group.com/conexo

Ordering

GEMÜ Conexo must be ordered separately with the ordering option "CONEXO".

Installing the RFID chip



Order data

The order data provide an overview of standard configurations.

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

Note: Pneumatic connecting components (union and compressed air tube) for the connection between the process valve and positioner are included with each positioner.

Note: A valve specific mounting kit is required for assembly. For designing the mounting kit, the valve type, nominal size, control function and actuator size must be stated.

Order codes

1 Type	Code	8 Travel sensor length	Code
Positioner, electro-pneumatic cPos	1436	Potentiometer, 30 mm length	030
2 Fieldbus	Code	Potentiometer, 50 mm length	050
Without	000	Potentiometer, 75 mm length	075
3 Accessory	Code	Potentiometer, 90° travel	090
Accessory	Z	Remote potentiometer, M12 connector	S01
4 Action	Code	9 Type of design	Code
Single acting	1	Standard	
5 Device version	Code	Dead zone presetting 2%	2442
Positioner Economy	ECON	Dead zone presetting 5%	2443
6 Option	Code	Inversed direction, for quarter turn valves control function NO (2)	6960
Without	00		
Pneumatic connections for 1/4" tube	US		
7 Flow rate	Code	10 Special version	Code
150 l/min	01	UL approval	U
200 l/min	02		
8 Travel sensor length		11 CONEXO	Code
Potentiometer, 30 mm length		Without	
Potentiometer, 50 mm length		Integrated RFID chip for electronic identification and traceability	C
Potentiometer, 75 mm length			
Potentiometer, 90° travel			
Remote potentiometer, M12 connector			

Order example

Ordering option	Code	Description
1 Type	1436	Positioner, electro-pneumatic cPos
2 Fieldbus	000	Without
3 Accessory	Z	Accessory
4 Action	1	Single acting
5 Device version	ECON	Positioner Economy
6 Option	00	Without
7 Flow rate	01	150 l/min
8 Travel sensor length	030	Potentiometer, 30 mm length
9 Type of design		Standard
10 CONEXO		Without

Technical data

Medium

Working medium:	Compressed air and inert gases
Dust content:	$\leq 10 \text{ mg/m}^3$ /particle size $\leq 40 \mu\text{m}$ (class 7)
Pressure dew point:	Class 4, max. pressure dew point $+3^\circ\text{C}$
Oil content:	Class 4, max. oil concentration 5 mg/m^3 Quality classes to DIN ISO 8573-1

Temperature

Ambient temperature:	$0 - 60^\circ\text{C}$
Storage temperature:	$0 - 60^\circ\text{C}$

Product conformity

EMC Directive:	2014/30/EU
Technical standards used:	
Interference emission:	DIN EN 61000-6-4 (09/2011) EN 61000-6-3 : 2007 + A1 2011 IEC 61000-6-3 + A1 2012 DIN EN 61326-1 (industry) (10/2006)
Interference resistance:	DIN EN 61000-6-2 (03/2006) EN 61000-6-2 : 2005 IEC 61000-6-2 : 2005 DIN EN 61326-6-2 (industry) (7/2013)
Class:	B
Group:	1
UL approval:	UL listed for Canada and USA Certificate: E515574

Pressure

Operating pressure:	$1.5 - 7 \text{ bar}$
The applied pressure must not exceed the maximum control pressure of the process valve.	

Flow rate:	Flow rate (code)	Specification l / min ¹⁾	Specification NI / min ²⁾
	Code 01	150 l/min	84 NI/min
	Code 02	200 l/min	100 NI/min

1) Reference condition: 6 → 0 bar at 25°C
2) Reference condition: 6 → 5 bar at 25°C

Air consumption:	0 NI/min (when idle)
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Mechanical data

Installation position:	Optional
Protection class:	IP 65 acc. to EN 60529
Weight:	600 g

Travel sensor: Integrated for direct mounting

	Linear design			Quarter turn design
Detection range:	0 - 30 mm	0 - 50 mm	0 - 75 mm	Angle of rotation 0 - 93°
Operating range:	0 - 30 mm	0 - 50 mm	0 - 75 mm	Angle of rotation 0 - 93°
Resistance R:	3 kΩ	5 kΩ	5 kΩ	3 kΩ
Minimum travel sensor change:	≥ 1 % (only relevant for initialisation)			
Correlation - Travel sensor¹⁾ spindle/valve position	Retracted (top) ≤ 100 % (valve open)			90° ≤ 100 % (valve open)
	Extended (bottom) ≤ 0 % (valve closed)			0° ≤ 0 % (valve closed)

1) Type of design code 6960: Inversed mode of action compared with description (Travel sensor signal inverted). For valves with inverted correlation.

Operating conditions

Ambient conditions: Use in indoor spaces
(only relevant for UL)

Acoustic data

Noise emission: > 80 dB (A)

Electrical data

Power supply

Supply voltage:	24 V DC (-5/+10%)
Power consumption:	≤ 3.5 W
Reverse polarity protection:	Yes
Duty cycle:	Continuous duty
Electrical protection class:	III
Electrical connection type:	X1: Connector (A-coded), 1 x 5-pin M12 X4*: Plug (A-coded), 1 x 5-pin M12 * Only for travel sensor version with remote potentiometer (code S01).

Analogue inputs

Set value input:	4–20 mA
Input type:	passive
Input resistance:	50 Ω (+ approx. 0.7 V voltage drop due to reverse battery protection)
Accuracy/linearity:	≤ ±0.3% of full flow
Temperature drift:	≤ ±0.3% of full flow
Resolution:	12 bit
Reverse battery protection:	Yes
Overload proof:	Yes (up to ± 24 V DC)

Analogue output

Actual value output:	4–20 mA
Output type:	Active
Load resistor:	Max. 600 Ω
Accuracy:	≤ ±1% of full flow
Temperature drift:	≤ ±0.5% of full flow
Resolution:	12 bit
Short-circuit proof:	Yes
Overload proof:	Yes (up to ± 24 V DC)

Programming input initialization (speed-AP function)

Input voltage:	24 V DC
Input current:	1.3 mA at 24 V DC

High level: >14 V DC

Low level: < 8 V DC

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

Note: Travel sensor input galvanically isolated from supply voltage, not galvanically isolated from the set value/actual value inputs and actual value output.

Input voltage range: 0 to U_{P+}

Supply voltage U_{P+} : Typically 10 V DC

Resistance range of remote potentiometers: 1 to 10 k Ω

Input resistance: 330 k Ω

Accuracy/linearity: $\leq \pm 0.3\%$ of full flow

Temperature drift: $\leq \pm 0.3\%$ of full flow

Resolution: 12 bit

Short-circuit proof: Yes

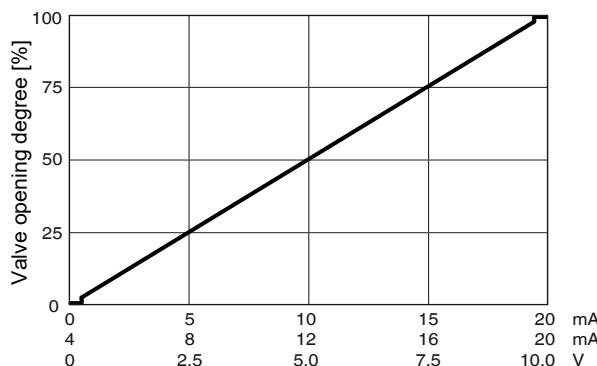
Overload proof: Yes (up to ± 24 V DC)

Positioner data

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:



During initialization the product automatically detects the control function of the valve, Normally Open (NO) or Normally Closed (NC) and adjusts itself by default so that the valve is closed when the signal is 4 mA.

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

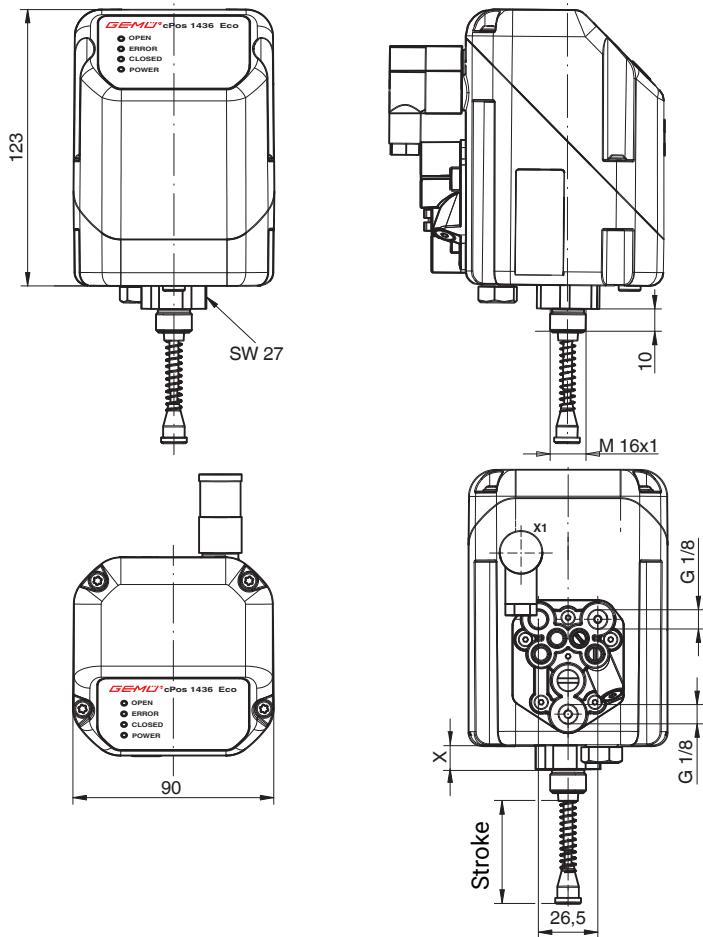
System deviation (dead zone): 1 % default setting
 $\leq 2.0\%$ (preset, K-no. 2442)
 $\leq 5.0\%$ (preset, K-no. 2443)

Initialization: Automatic via 24 V DC signal

Close tight function: Closed: $W \leq 0.5\%$
 Open: $W \geq 99.5\%$

Dimensions

Positioner dimensions

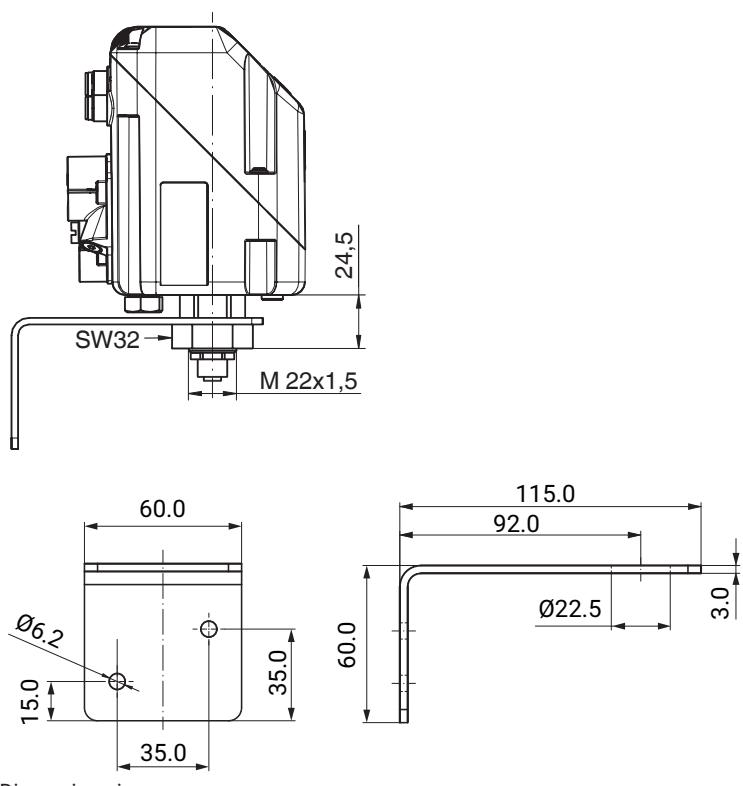


Travel length Code	X
030	10.3
050	32.5
075	57.5

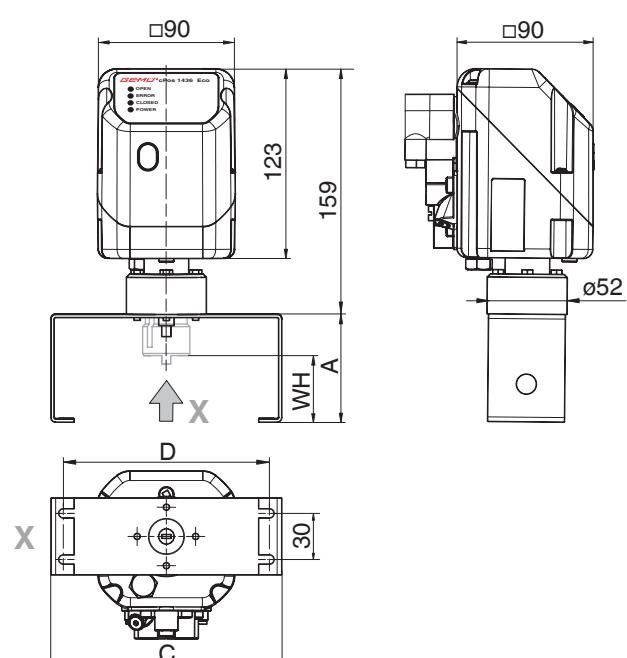
Dimensions in mm

Remote mounting with mounting bracket

The product with separately available mounting bracket GEMÜ 1436 000 ZMP



Direct mounting to quarter turn actuators



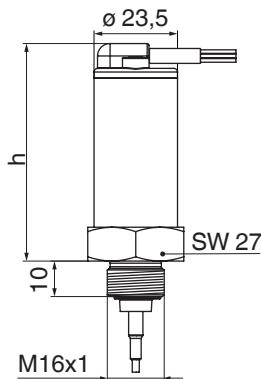
Shaft height WH	Hole spacing D	A	C
20	80	40	100
30	80	50	100
50	130	70	150

Dimensions in mm

Accessory dimensions

GEMÜ 4232 travel sensor

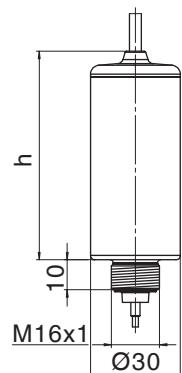
Housing material aluminium



Travel sensor length (code)	h
030	62.2
050	84.2
075	109.2

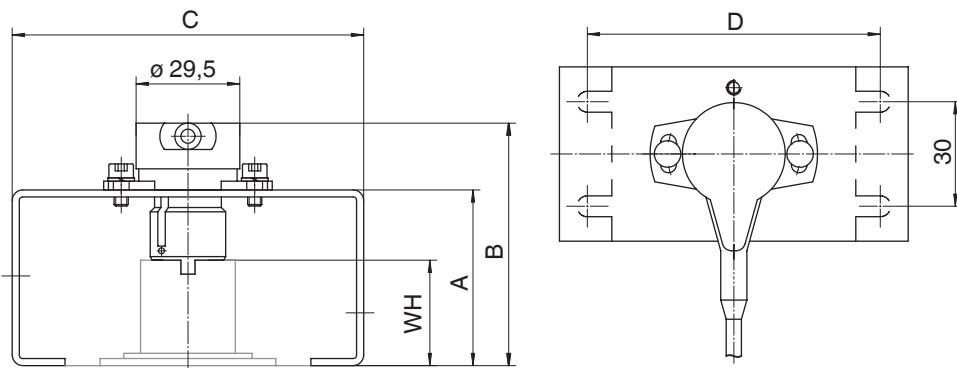
Dimensions in mm

Housing material PVDF or PP



Travel sensor length (code)	h
030	69.6
050	91.6
075	116.6

Dimensions in mm

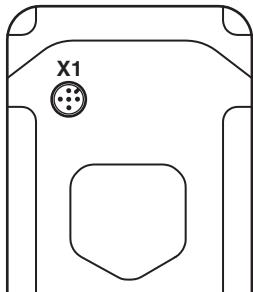
GEMÜ 4231 travel sensor with mounting bracket

WH Shaft height	D Hole spacing	A	B	C
20.0	80.0	40.0	59.0	100.0
30.0	80.0	50.0	69.0	100.0
50.0	130.0	70.0	89.0	150.0

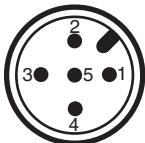
Dimensions in mm

Electrical connection

Position of the connectors



Connection X1

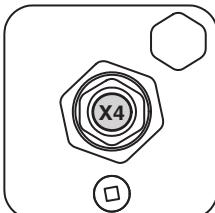


Pin	Signal name
1	Uv, 24 V DC supply voltage
2	I+, set value input 4–20 mA
3	Uv, I-, GND
4	I+, position feedback 4-20 mA
5	U, initialization 24 V DC, started by an impulse signal $t > 100$ ms (Speed - AP - function)

Version with external actual value potentiometer

Note: Ordering option Travel sensor version code S01

Position of the connectors



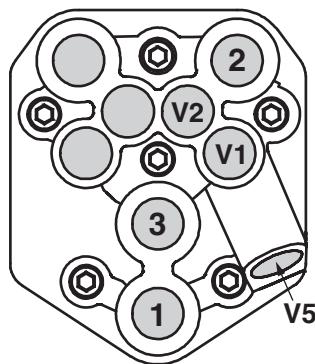
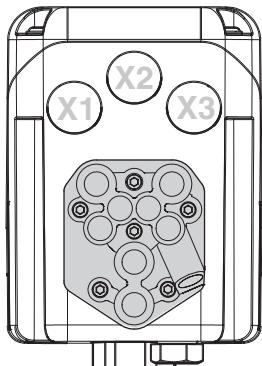
Connection X4



Five-pin M12 built-in socket, A-coded

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

Pneumatic connection



DIN ISO 1219-1	Designation	Size
1	Air supply connection P	G1/8 ¹⁾
3	Venting connection R with silencer	G1/8 ¹⁾
V1	Supply air throttle for A1 (connector 2)	-
V2	Exhaust air throttle for A1 (connector 2)	-
V5	Check valve	-
2	Working connection A1 for process valve (control function 1 and 2)	G1/8 ¹⁾

1) As standard, the connection is equipped with a pneumatic screw connection for commercially available pneumatic tubing 6x4 mm.

Fail safe function	
Error	Working connection A1 (2)
Electrical power supply failure	vented
Pneumatic supply failure	vented
This fail safe function is not a substitute for specific plant safety requirements.	

Safety reaction	
Error	Effect
Set value < 4.0 mA	Process valve will be closed
Set value > 20 mA	

Mounting options

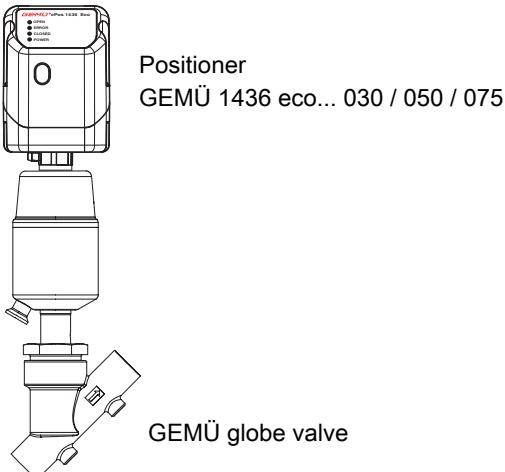
Mounting the positioner to linear actuators

Direct mounting

For direct mounting of the positioner on a valve with linear actuator, you need the following components

- GEMÜ 1436...ECON positioner in travel sensor version code 030, 050 or 075 (dependent on the stroke of the valve used)
- GEMÜ 1436 S01 Z... valve specific mounting kit for mounting the positioner

(At the time of ordering, specify the valve type with nominal size and control function)



Remote mounting

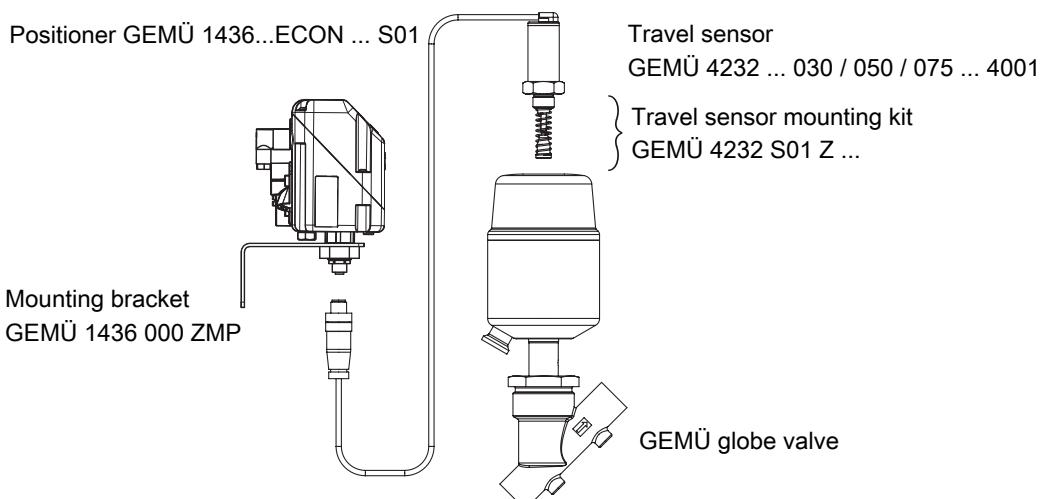
For remote mounting of the positioner on a valve with linear actuator, you need the following components

- GEMÜ 1436...ECON positioner in travel sensor version code S01 (remote potentiometer)
- Travel sensor GEMÜ 4232 ... 030, 050 or 075 ... 4001

Travel sensor version dependent on the valve used, cable length dependent on the required distance between the valve and positioner

- GEMÜ 4232 S01 Z... valve specific mounting kit for mounting the travel sensor
- GEMÜ 1436 000 ZMP mounting bracket (optional) for fixing the positioner

(At the time of ordering, specify the valve type with nominal size and control function and the required distance to the mounting location of the positioner)



By using remote mounting and additional, deviating components, the valve can also be used in potentially explosive areas (provided that this is approved). In this case, the positioner must be installed outside the potentially explosive area and the connection with the travel sensor established via safety barriers.

The electrical connection and the installation must be carried out in accordance with the specifications in the operating instructions.

Applicable area (zone) dependent on the type of ignition protection of the valve or travel sensor.

The following deviating, supplementary components are to be used for this type of operation:

- Travel sensor in explosion-protected design GEMÜ 4232 ... 030/050/075 ... 0000 ... X
Travel sensor version dependent on the valve used, cable length dependent on the distance between the critical (potentially explosive) and safe zone
- Connector between travel sensor and positioner, GEMÜ 1219000Z0300SG00M0M125A, order number: 88208779
- Safety barrier A two-channel, safety barrier P626, order number: 99014203 *
- Safety barrier B one-channel, safety barrier P630, order number: 99014207 *

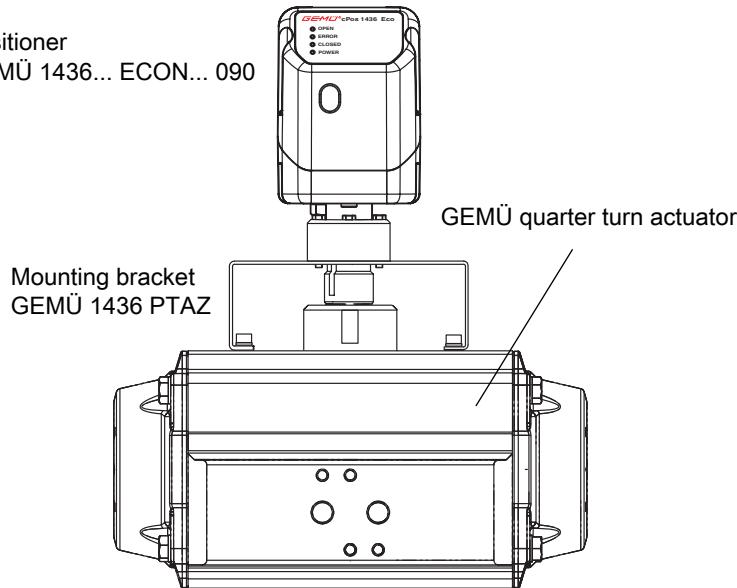
* Alternative safety barriers with similar characteristics can be used on-site – technical properties available on request

Mounting the positioner to quarter turn actuators

Direct mounting

For direct mounting of the positioner on a valve with quarter turn actuator, you need the following components

- Positioner GEMÜ 1436 ... ECON ... 090
- GEMÜ 1436 PTAZ ... 090 000 valve specific mounting kit for mounting the positioner
(When ordering, specify valve type with actuator flange size)

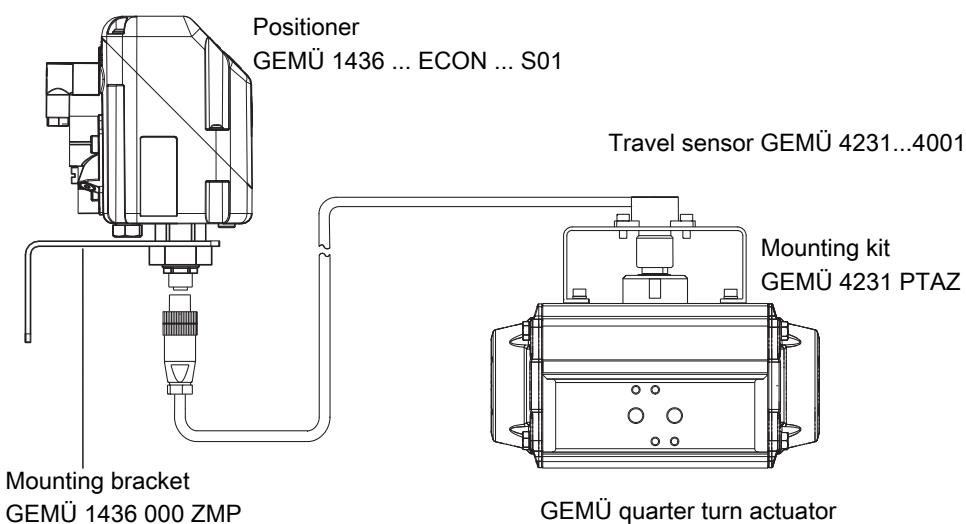


Remote mounting

For remote mounting of the positioner on a valve with quarter turn actuator, you need the following components

- GEMÜ 1436...ECON positioner in travel sensor version code S01 (remote potentiometer)
- GEMÜ 4231...4001 travel sensor (cable length dependent on the required distance between the valve and positioner)
- 4231PTAZ... ...090 000 valve specific mounting kit for mounting the travel sensor
- GEMÜ 1436 000 ZMP mounting bracket (optional) for fixing the positioner

(At the time of ordering, specify the actuator flange size and the required distance to the mounting location of the positioner)



By using remote mounting and additional, deviating components, the valve can also be used in potentially explosive areas (provided that this is approved). In this case, the positioner must be installed outside the potentially explosive area and the connection with the travel sensor established via safety barriers.

The electrical connection and the installation must be carried out in accordance with the specifications in the operating instructions.

Applicable area (zone) dependent on the type of ignition protection of the valve or travel sensor.

The following deviating, supplementary components are to be used for this type of operation:

- GEMÜ 4231 ... 0000 travel sensor
cable length dependent on the required distance between critical (potentially explosive) and safe zone
- Connector between travel sensor and positioner, GEMÜ 1219000Z0300SG00M0M125A, order number: 88208779
- Safety barrier A two-channel, safety barrier P626, order number: 99014203 *
- Safety barrier B one-channel, safety barrier P630, order number: 99014207 *

* Alternative safety barriers with similar characteristics can be used on-site – technical properties available on request

Accessories



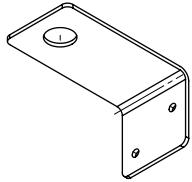
GEMÜ 1219

Cable socket / cable plug M12

The GEMÜ 1219 is a connector (cable socket / cable plug) M12, 5-pin. Straight and/or 90° angled plug type. Defined cable length or with threaded connection without cable. Various materials available for the threaded ring.

Suitable for electrical connection of the connector X1

Description	Length	Order number
5-pin, straight	without cable	88205544
	2 m cable	88205542
	5 m cable	88205543
	10 m cable	88270972
	15 m cable	88346791
5-pin, angle	without cable	88205545
	2 m cable	88205534
	5 m cable	88205540
	10 m cable	88210911
	15 m cable	88244667



GEMÜ 1436 000 ZMP

Mounting bracket for external wall mounting

Mounting bracket for wall mounting

Designation	Order number
1436 000 ZMP	88246672

