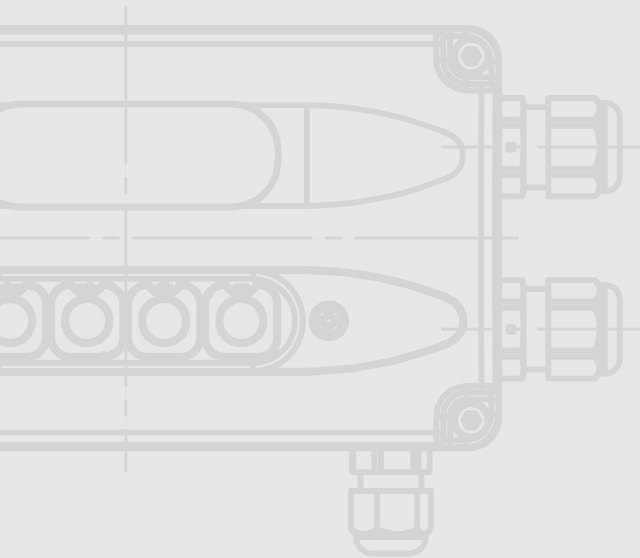


# Positioners and process controllers

for linear and quarter turn valves

Product overview and technical data





# The optimum positioner for trouble-free process control

## Notes for selecting positioners

The optimum function of a control system is not solely achieved by the selection of the positioner. All system components must be optimally adapted to each other.

If not achieved, poor positioning and control results will be observed. The greater the demands with regard to control accuracy, positioning ratio, cavitation and optimum operating and procurement costs, the more careful a selection must be made.

## Electro-pneumatic positioners

Electro-pneumatic positioners are most frequently used as positioners or as combined position and process controllers for control functions. Because of the more favourable procurement costs in comparison with motorized actuators, electro-pneumatic positioners are used wherever control air is already available. The combination of electro-pneumatic positioners and compressed air controlled valves is basically determined by the control task.

GEMÜ has developed a complete range of positioners for performing various different control tasks.

The electro-pneumatic positioner range comprises the GEMÜ 1434  $\mu$ Pos, GEMÜ 1435 ePos and GEMÜ 1436 cPos.

- GEMÜ 1434  $\mu$ Pos - a simple, low cost positioner for single acting linear actuators without display and setting keys.
- GEMÜ 1435 ePos and GEMÜ 1436 cPos are positioners for use in demanding applications.  
They can be adapted individually to the control task with the front keypad and display
- GEMÜ 1436 cPos as a process controller with integrated positioner

In addition, the relation between the air output of the positioner, required control pressure and the size of the valve actuator still plays a role. This relation determines the valve's operating time. Depending on the control task and range of the valve, shorter operating times and therefore higher flow volumes through the control valves in the positioners are necessary. The GEMÜ 1434  $\mu$ Pos positioner was specially developed for small linear actuators.

Normally the pilot pressure for a globe valve is controlled in a positioner and a certain valve opening set as a result. The GEMÜ 1436 cPos additionally offers an optional process control circuit for controlling the process. It can be used as a local process controller and thus relieves the load on the central control system.

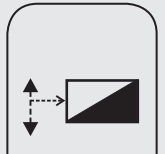
Independently of the correct valve design, the valve must be positioned with the positioner and the necessary sensors at the "right place" in the pipe system. Only then is an optimum function guaranteed. With electro-pneumatic positioners, for example, generally pressure and flow sensors should always be installed before the valve, temperature and pH value sensors after the valve.

## Electrical positioners and control actuators

GEMÜ offers several valve series with motorized actuators. These actuators are an optimum alternative in sterile environments or offer reduced "Total Costs of Ownership". The procurement costs for a motorized valve are a little higher but there may be a cost advantage in terms of total life cycle costs. The actuators are comparable with the electro-pneumatic positioners in their functionality. They are available with both integrated positioner and combined position and process controller.

For motorized actuators without integrated positioner the GEMÜ 1283 three-point controller is available.





In addition to the process parameters and the control system for which a positioner must be suitable, other technical functions and properties also play an important part in the selection of the right positioner.

To make your choice easier, we have placed the four GEMÜ positioners in a comparison based on important features.

**Electro-pneumatic positioners  
for pneumatic actuators**

**Three-point  
controller for  
motorized  
actuators**



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(p. 6/7)



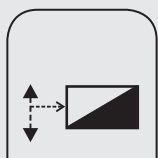
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Function / Features	1434 µPos	1435 ePos	1436 cPos	1283
<b>Controller type</b>				
Positioner	●	●	●	●
Process controller			●	
<b>Control air flow</b>				
Version 1	15 l/min	50 l/min	100 l/min	
Version 2		90 l/min	180 l/min	
<b>Operation</b>				
Local display / keypad		●	●	●
Status display	●	●	●	●
Web browser user			●	
Field bus option (Profibus DP, Device Net)			●	
<b>Signal</b>				
2-wire	●*			
24V DC / 3-wire	●	●	●	●
<b>Housing</b>				
Plastic	●		●	●
Aluminium		●		
<b>Functions</b>				
Automatic initialisation	●	●	●	●
Alarm / error outputs		●	●	
Min/max positions adjustable		●	●	●
<b>Mounting</b>				
Direct mounting to linear actuators	●	●	●	●
Remote mounting to linear actuators	●	●	●	●
Direct mounting to quarter turn actuators		●	●	
Remote mounting to quarter turn actuators		●	●	
<b>Control function of valve actuator</b>				
Control function 1, normally closed (NC)	●	●	●	
Control function 2, normally open (NO)	●	●	●	
Control function 3, double acting (DA)		●	●	
Motorized actuators				●

\* under development



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## GEMÜ 1434 µPos – Electro-pneumatic positioner

### The powerful, high-performance valve positioner – amazingly simple and small

The GEMÜ 1434 µPos Micro Positioner was specially developed for the position control of small globe and diaphragm valves.

The GEMÜ 1434 µPos is directly mounted on the process valve or, as an alternative, separately mounted with a separate travel sensor. The Speed-<sup>AP</sup> function minimises installation and commissioning time.

A control signal starts initialisation which runs automatically. The positioner then adapts itself to the valve.

With this positioner GEMÜ has succeeded in developing a totally digital positioner with very small dimensions.

PP (UV-stabilized)

Quick installation by push-in air connectors

Simple mounting to GEMÜ globe and diaphragm valves as well as other makes

Optical indication by four status LEDs

24 V DC signal starts automatic initialisation

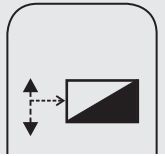
Simple electrical connection by M12 connector

Venting connection M5

Black anodized aluminium (stainless steel optional)

Original size shown





## Construction

The GEMÜ 1434  $\mu$ Pos digital positioner detects the valve position via its longlife travel sensor. It was specially designed for small linear valve actuators and has a light, solid plastic and aluminium housing.

## Features/Functions

- Automatic initialisation by 24 VDC signal
- Automatically optimises the valve control during initialisation
- No air consumption when idle
- Suitable for single acting linear actuators
- Push-in pneumatic air connectors

## Advantages

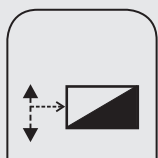
- Compact construction, small dimensions
- Remote mounting of positioner and travel sensor is possible
- Integrated potentiometer
- Low investment costs
- Low operating costs, no air consumption when idle
- Fast commissioning, no need to open the housing
- Simple operation
- Easy mounting to GEMÜ valves and other makes
- Simple electrical and pneumatic connection
- Speed-AP function



## Technical data - GEMÜ 1434 $\mu$ Pos

Air output:	15 l/min
Dimensions:	42 x 42 x 95 mm
Protection class:	IP 65
Integrated travel sensor:	10 mm, 30 mm
Electrical connection:	M12 connector
Pneumatic connection:	M5
Power supply:	24 VDC
Set value input:	4 - 20 mA (optional 0 - 20 mA, 0 - 10V)
Initialisation input:	24 VDC
Output signals:	optional 0 - 20 mA, 4 - 20 mA, 0 - 10V
Control air:	0 - 10 bar
Total error:	< 1%
Temperature range:	0°C to 60°C



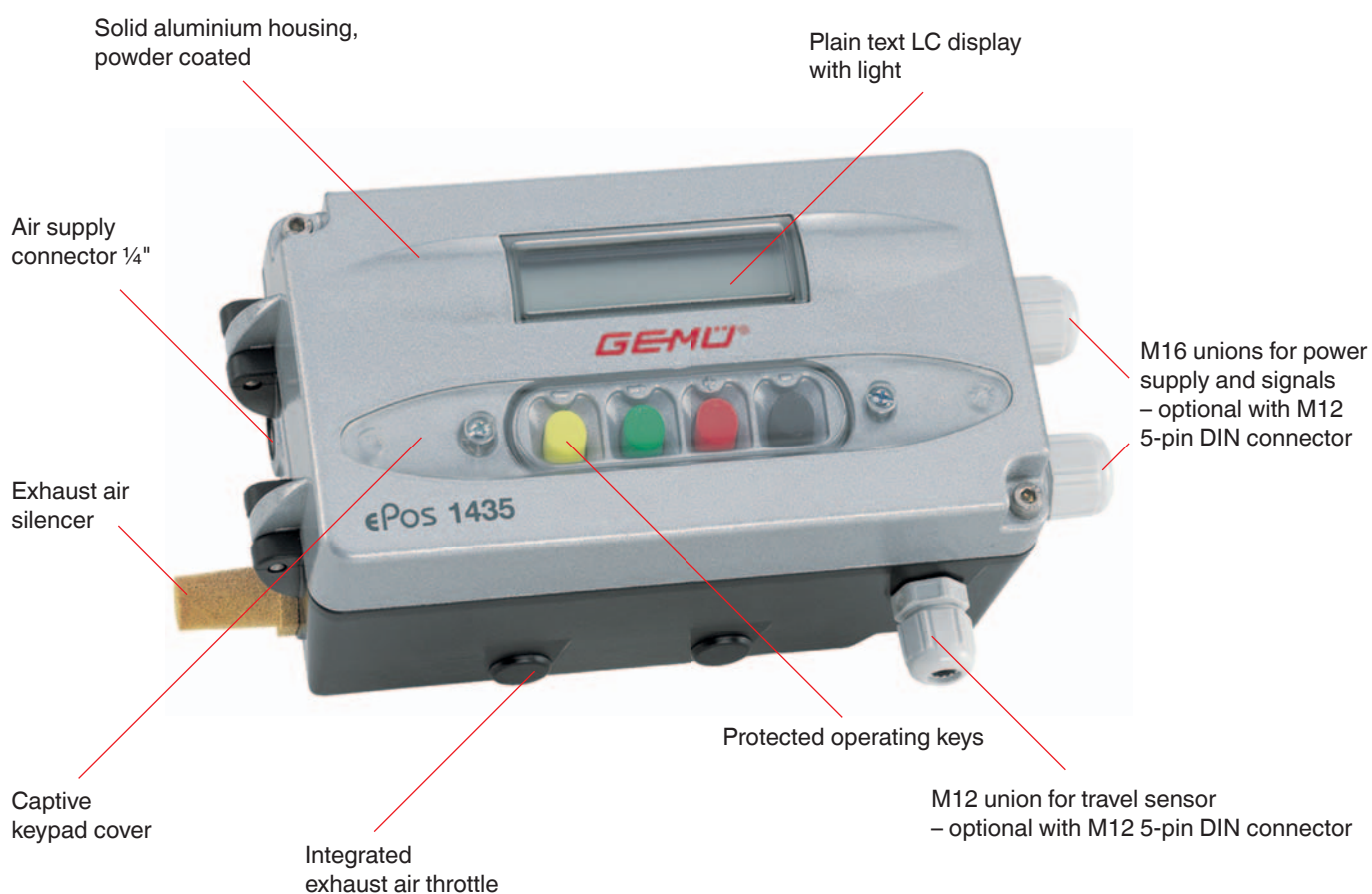


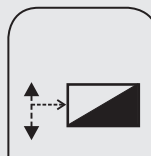
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## GEMÜ 1435 ePos – Electro-pneumatic positioner

### Control has never been easier – and so attractively priced

The GEMÜ 1435 ePos digital electro-pneumatic positioner detects the valve position via its longlife travel sensor. It has a solid metal housing with protected operating keys and an easy to read LC display with background light. The operating times can be set by integrated throttles.





## Features/Functions

- Simple, self-explanatory menu
- Automatic initialisation function
- Automatically optimises the valve control during initialisation
- Fail safe function in case of compressed air and power supply failure
- No air consumption when idle
- Adjustable digital outputs for limit values
- Adjustable alarm functions
- Operation by fascia keys
- Suitable for quarter turn or linear actuators
- Can be used for single and double acting actuators

## Advantages

- Remote mounting of positioner and travel sensor is possible
- Low operating costs, no air consumption when idle
- High air output for larger actuators
- Fast commissioning
- Simple operation
- Easy mounting to the valve
- Simple electrical connection by detachable terminals
- Speed-<sup>AP</sup> function



GEMÜ 620 with  
GEMÜ 1435 ePos



Quarter turn actuator  
GEMÜ SC with  
GEMÜ 1435 ePos  
NAMUR mounted

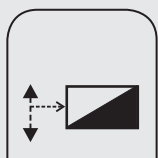


GEMÜ 650 with  
GEMÜ 1435 ePos  
remote mounting



## Technical data GEMÜ 1435 ePos

Air output:	50 l/min, 90 l/min
Connection:	3/4-wire
Power supply:	24 VDC $\pm 10\%$
Set value:	0/4 - 20 mA, 0 - 10 V
Actual value feedback:	0 - 10 V (4-20 mA optional)
Output signals:	24 VDC, digital output
Control air:	0 - 6 bar
Total error:	< 1%
Temperature range:	0°C to 60°C (-20°C to 60°C with heating element)



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## GEMÜ 1436 cPos – Electro-pneumatic positioner with optional integrated process controller

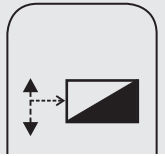
### The compact all rounder!

The GEMÜ 1436 cPos digital electro-pneumatic positioner with an integrated process controller is for the control of liquids, gases and steam.

The signals coming from the process sensor (e.g. flow, level, pressure, temperature) are detected by the optional process controller and adjusted according to the specified set value. The membrane keypad and the backlit display are arranged at the front. Pneumatic and electrical connections are at the rear. Integrated pneumatic throttles allow regulation of the control air to adapt the controller to different valve actuators and actuating speeds.





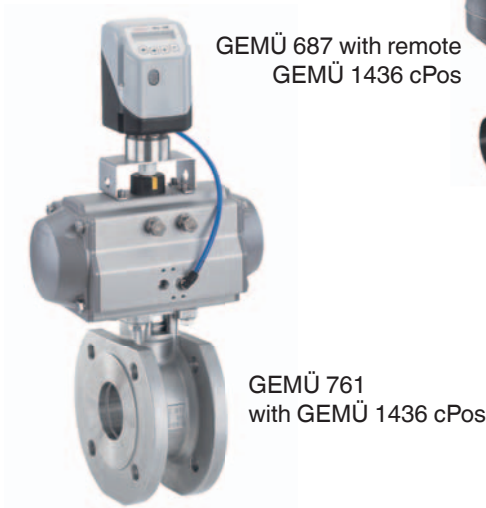


## Features/Functions

- PID process controller available
- Remote control
- Diagnostics, alarms, monitoring
- Integrated Web browser capability
- Parameter sets can be saved and reloaded
- User levels (access authorisation)
- Field bus: Profibus DP, Device Net
- Serial communication (notebook, industrial modem)
- Optional wireless communication via Bluetooth
- Simple, self-explanatory menu
- Automatically optimises the valve control during automatic initialisation
- Fail safe function in case of compressed air and power supply failure
- Optional digital inputs
- Freely configurable relay outputs

## Advantages

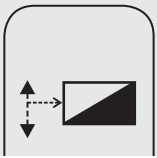
- Parameterization during operation
- Remote mounting of positioner and travel sensor is possible
- Low operating costs, no air consumption when idle
- High air output for larger actuators
- Fast commissioning
- Simple operation
- No air consumption when idle
- Easy mounting to the valve
- Speed-AP function
- e<sup>sy</sup>-com interface



## Technical data GEMÜ 1436 cPos

Air output:	100 l/min, 180 l/min
Connection:	4-wire
Power supply:	24 VDC ±10%
Set value input:	0/4 - 20 mA
Actual value input for positioner:	Potentiometer (travel sensor)
Actual value input for process controller:	0/4 - 20 mA
Output signals:	4 - 20 mA, 2x relay output
Interfaces:	RS 232, Profibus DP
Control air:	0 - 7 bar
Total error:	< 1%
Temperature range:	0°C to 60°C





## GEMÜ 1436 cPos – the e.<sup>sy</sup>-com interface

### Remote control - Diagnostics - Monitoring

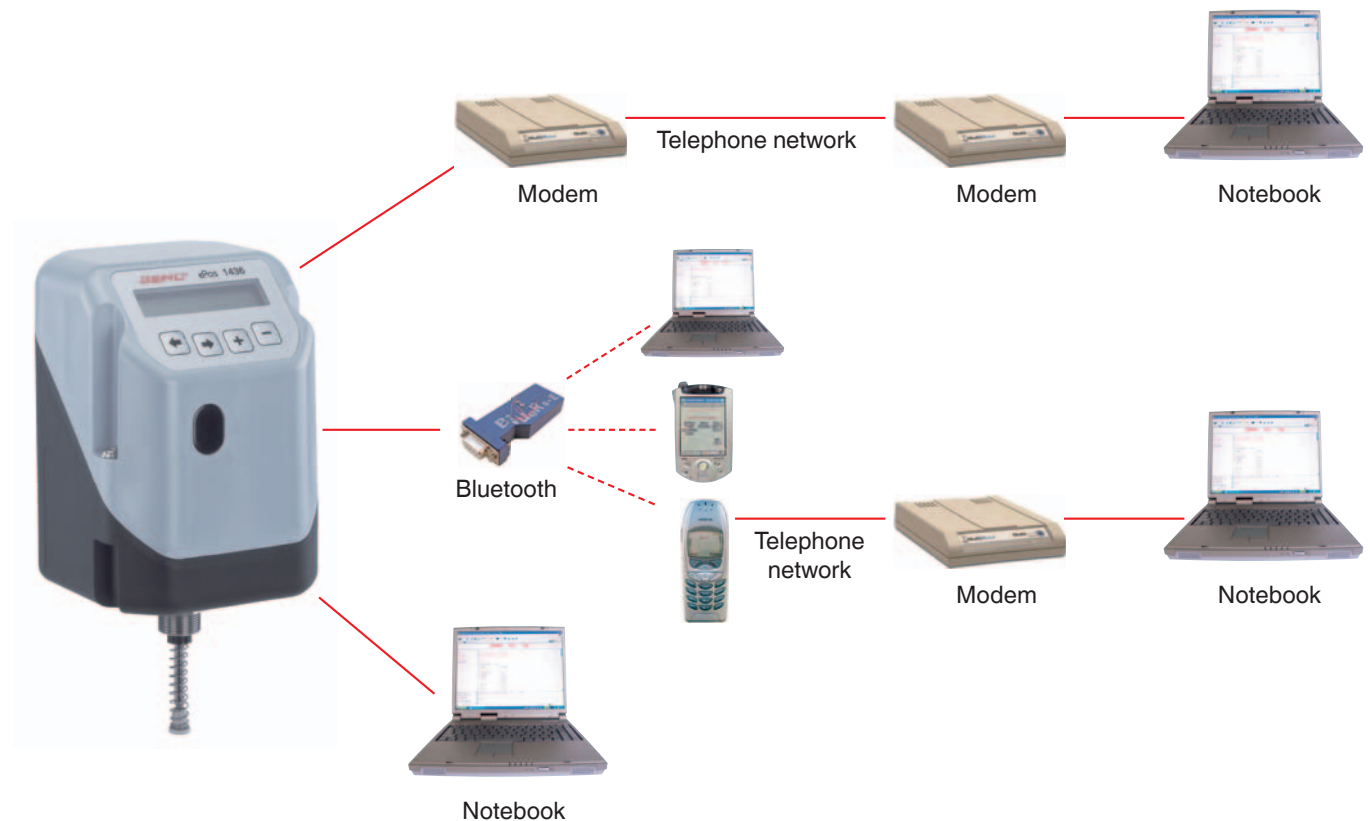
With the GEMÜ e.<sup>sy</sup>-com interface it is possible to connect different equipment with the GEMÜ 1436 cPos.

Thanks to the integrated web browser, a user-friendly environment was created that enables use without software installation, and it only requires a standard internet browser (Opera, Windows Explorer, Firefox).

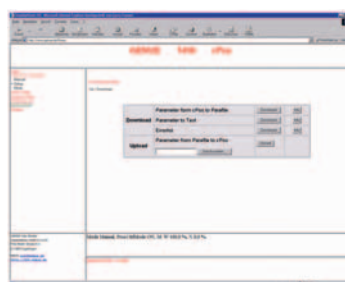
A number of different operating and monitoring possibilities for programming, evaluation and diagnostics are available to the user. The integration of graphical analysis in the software enables the representation of all relevant data for control in real time curves, supports the user in the exact analysis of

his position and process control and helps him to set the PID parameters.

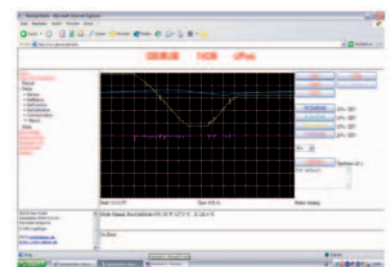
In addition, the e.<sup>sy</sup>-com interface gives the possibility to download all parameters of the GEMÜ 1436 cPos as a text file or as a parameter file and to save them on a PC or laptop. This parameter file can then be loaded on other controllers and accelerates the commissioning of identical plant or machine parts.



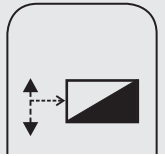
Intuitive operation



Upload and download function



Graphical analysis



## GEMÜ 1283 – 3-point controller

### 1, 2, 3 – Control is easy!

The GEMÜ 1283 is used for the manual or automatic setting or regulation of motorized valves, e.g. GEMÜ 563/568, 613/618 and 693/698. The 3-point controller compares the set value entered via the fascia keys or a 0/4 - 20 mA standard signal with the actual detected value from the motorized valve. The valve adjustment Open/Closed is initiated by relays. These are energized until the difference between the actual and set value is less than the switching hysteresis.

The switch points are adjustable with the fascia keys as an opening or closing stroke limit over the whole control range.



GEMÜ 9698  
with GEMÜ 1283

### Features/Functions

- Suitable for panel mounting or direct mounting to the valve
- Two relay outputs for valve control
- Readjustment of the valve position
- Easy to read 7-segment display
- Automatic setting of end position
- Adjustable opening or closing stroke limitation
- Automatic initialisation
- Optional process control via second actual value input for process variables

### Advantages

- Simple menu
- Adjustable dead zone
- Adjustable min/max limitation of stroke position
- Reliable electronic system for maintenance-free function
- Compact construction
- Direct or remote mounting to motorized valves
- Fast commissioning

### Technical data GEMÜ 1283

Connection:	4-wire
Power supply:	230 V AC
Set value input:	0/4 - 20 mA, 0 - 10 V optional
Actual value input 1 (motor position):	Potentiometer (travel sensor)
Output signals:	2x relay output
Total error:	< 1%
Temperature range:	0°C to 60°C
Actual value input 2 (optional actual value input for process variable):	0/4 - 20 mA



**GEMÜ®** VALVES, MEASUREMENT  
AND CONTROL SYSTEMS

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