

Positioner and 3-position control unit  
for part-turn actuators



## Objective

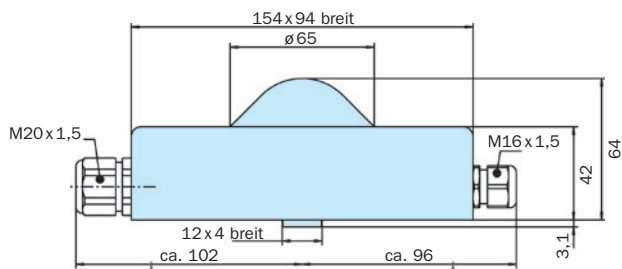
Positurn2 is an electro-pneumatic positioner and simultaneously a 3-position control unit specially designed for pneumatic part-turn actuators. It is an economical and robust modular component of the Valve-Control-System, known as vacotrol. Positurn2 can be mounted onto all actuators of the actubar-Series as well as onto all actuators with NAMUR interface according to VDI/VDE 3845.

## Deployment range

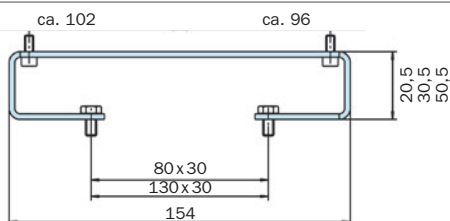
Typical applications for Positurn2 are:

- Butterfly valves, ball-valves and plug-valves with a regulating function such as deployed in filter technology and water treatment plants as well as in general industrial applications.
- Flue-gas dampers, which usually find use in combustion plant or exhaust gas systems
- Ventilation dampers in air-conditioning and similar applications
- Dosing valves which are required for bulk material handling
- 3-way valves with three switching positions in general industrial applications

## Measures

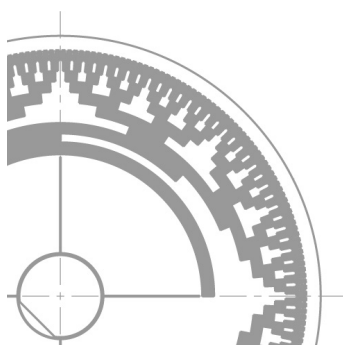


## Assembly via mounting bracket



Further measures result from the according pneumatic module.

## Function



Optical rotation-angle measurement system

Positurn 2 is a 3-point positioner in 4-wire technology. The voltage supply is 24V DC. Position regulation takes place – depending on safety requirements – via special control valves, which are mounted onto the NAMUR interface. Pivoting angle is measured by a digital opto-electronic position sensor. The set point value is specified as an analog signal. The processor compares set point and actual values and drives the solenoid valve. In the steady state condition, the actuator is blocked pneumatically.

Momentary operating mode of positurn2 is indicated by reading-off the easy-to-read four LED's on the cover. The valve position is recognisable through the visual indicator dome.

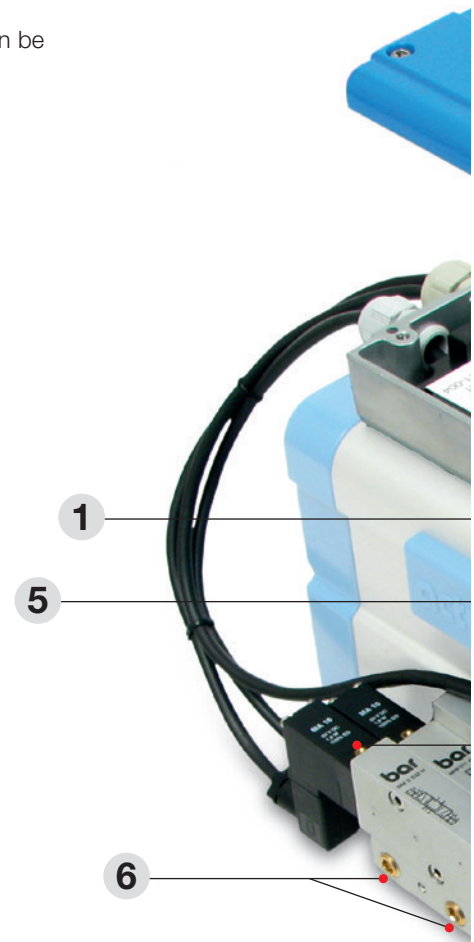
## Technical data

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Materials	Housing: GD -AlSi 10Mg (Aluminium press-cast) Screws: A2-70 (stainless steel) Viewing: Glass PMMA Optic fibre: TPE Cable connection: PA
Pivoting angle	10° to 190°
Protection Type	IP 65
Mounting position	random
Ambient temperature	-20°C to +70°C
Ambient humidity	10 – 90 %, non-condensing
Weight	Without valve ca. 0,65 kg Variant D: Mini-valves: ca.1,0 kg / Midi-valves: ca. 1,1 kg Variant S: Mini-valves: ca.1,2 kg / Midi-valves: ca. 1,4 kg Variant E: Mini-valves: ca.1,2 kg / Midi-valves: ca. 1,4 kg
Analog control signal Actuating signal	Effective direction: reversible by sliding switch Signal type: selectable 4–20 mA, 0–10 V, inverse polarity protection, proportional to pivoting angle Pre-resistor: > 1 kOhm at 0–10 V; < 500 Ohm at 20mA
Dead-zone	± 2% of nominal pivoting angle
Travel speed	Adjustable by throttles in solenoid valves
Position signal	Signal type: selectable 4–20 mA, 0–10 V, nominal, active, inverse polarity protection, proportional pivoting angle Resolution: < 0,5% of nominal pivoting angle
Limit feedback	Voltage: 22–24 VDC System: Opto-coupler, short-circuit-proof; 1 kOhm series & 10 kOhm parallel resistance fitted Indication: 3 % of nominal pivoting angle before initiated end position
Supply	24 VDC (21 to 28 VDC), inverse polarity protection
Power consumption	Variant D: Mini-valves: 1,8 W / Midi-valves: 4,2 W Variant S: Mini-valves: 3,6 W / Midi-valves: 7,2 W Variant E: Mini-valves: 3,6 W / Midi-valves: 7,2 W
Terminal strip	Clamping range up to 0,75 mm <sup>2</sup>
Cable to PCS	7 to 13 mm, 0,5 mm <sup>2</sup> , random cable length
Binary input signals	ON/OFF valves / < 10 V for „0“; / > 18 V for „1“
Operating pressure	2,5 to 8 bar
Air Quality	Filtered air acc. to DIN ISO 8573 -1/Class 4

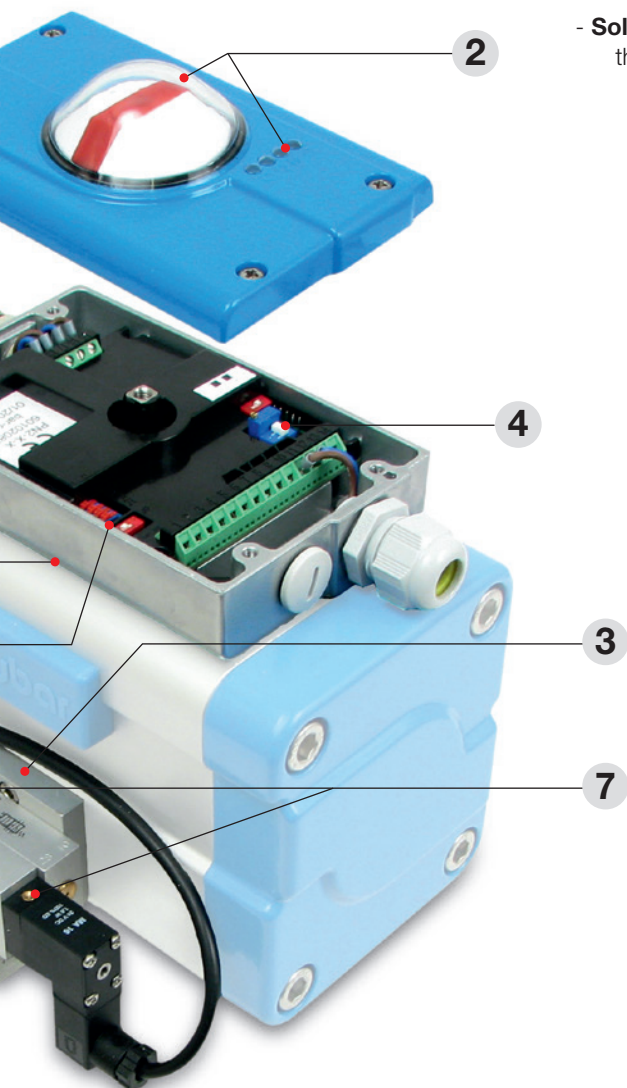
## Vorteile

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- 1 Direct mounting – positurn2** is distinguishable firstly through its flat construction and secondly because it can be directly mounted onto the pneumatic actuator actubar®. This arrangement leads to the most compact form of layout for a positioner onto a pneumatic actuator. The direct interface greatly improves the cleaning of components, as there is no space where dirt and dust can collect. The danger of injury to persons is reduced, because there are no more openly rotating connecting shafts.
- 2 Visual position indication with indicator and LED** – The easily-visible position indicator enables continuous visual control of the valve condition. Operational readiness as well as end and even intermediate positions in 3-Position mode are additionally signalled per LED displays.
- 3 Direct solenoid valve assembly** – Through the assembly of the solenoid valve onto the actuator itself, there is no need anymore for complex compressed air hoses or pipework. Switching of the control medium directly at the actuator avoids additional volumes of air. This hereby increases the control characteristics and the decrease in junctions reduces the risk of leaks.
- 4 Mode selection (Posi or 3-position) by means of selector switch** – **positurn2** combines positioning and 3-position mode in one device. Using an integrated selector switch, it is possible to easily interchange between both modes. The 3-position function enables the user to drive a standard 2-position actuator to an additional user-configurable intermediate position. Here, there is no need for generating a complicated analogue signal but just a binary 24V signal.
- 5 Selectable signal type (4-20mA or 0-10V)** – The type of analog input and output signal can be selected and adapted to 4-20mA or 0-10V with the use of a selector switch.
- 6 Integrated speed regulation** – Pivoting speed of the valve can be regulated through integrated thru-flow throttles. Opening and closing speeds can be adjusted independently.
- 7 Simple on-site operation in case of voltage/signal loss** – Knobs for manual operation fitted to the pneumatic module enable comfortable on-site operation in case of voltage/signal loss.



- **Assembly to all actuators with interfaces according to VDI/VDE 3845 (NAMUR)** – Many advantages of **positurn2** are applicable to pneumatic actuators from other manufacturers by using the according adaptation bracket. The bracket is supplied ready mounted.
- **Easy to mount** – Mounting **positurn2** takes place with only 6 screws. All necessary material for mounting onto the actuator comes ready supplied. Time-consuming hosing or pipework as well as additional components for fixing are no longer required.
- **Pivoting angle 10° to 190°** – With the generous pivoting angle, **positurn2** in its standard version already covers almost all applications, without having to supplement with additional options.
- **Output signals open/closed as well as position feedback fitted as standard** – Signals for open/closed indication as well as analog position signal are integrated into the device. No additional optional modules are required.
- **Three safety variations** – The flexibility of the pneumatic module enables that all safety-related variations can be realized:
  - Single-acting
  - Double-acting normally open / normally closed
  - Double-acting fail to stay
- **Simple parameterization** – Parameterization is very simple and can be carried out within few steps. The process needs less than one minute. The positioner learns all technical values during parameterization and is then immediately ready for operation.



- **Solenoid valve flow rate adapted to the actuator volume** – By simply exchanging the pneumatic subassembly, it is possible to generate various flow rates. Thus, regulating characteristic and actuating speed are adapted to the actuator volume.

- **No air consumption in steady state condition** – A special construction of the pneumatic subassembly means that the **positurn2** does not consume any control medium in steady state condition. The valve remains locked in position as a result of the enclosed compressed air in the actuator chambers.

- **Wear-free optical measurement of rotation angle** – The integrated optical rotation angle measurement functions without physical contact rendering it absolutely wear-free.

## Type-code

PN2-	XX-	X-	X-	X-	X
<b>Model</b> PN2 = positurn2	<b>Special models:</b> 3P = delivery condition: 3-position-controller	<b>Valve-funktion</b> D = double-acting (fail to stay in case of voltage- or signal-failure)  S = double-acting (fail to close/open in case of voltage- or signal-failure)  E = single-acting (fail to close/open in case of voltage-, signal- or pneumatic-failure)	<b>Valve-version</b> S = valve-version for actuator sizes AD/S-004 up to AD/S-076 resp. for air volume up to ~ 5l per double-stroke  M = valve-version for actuator sizes AD/S-110 up to AD/S-750 resp. for air volume from ~ 5l per double-stroke	<b>Mounting brackets</b> 0 = none 1 = mounting bracket 80 x 30 x 30 mm 2 = mounting bracket 130 x 30 x 30 mm 3 = mounting bracket 80 x 30 x 20 mm 4 = mounting bracket 130 x 30 x 50 mm 5 = universal mounting bracket	<b>Hole pattern in control-box</b> 0 = none (assembly via mounting bracket) 3 = actubar-direct-mounting (size AD/S-011 to AD/S-750) 4 = actubar-direct-mounting (size AD/S-004 to AD/S-008)

## Examples of use

PN2-	D-	S-	1-	0
	double-acting (fail to stay)	valve-version with low flowrate (small actuators)	mounting bracket 80 x 30 x 30 mm	no hole pattern (assembly via mounting bracket)

PN2-	S-	M-	0-	3
	double-acting (fail to close/open)	valve-version with medium flowrate (medium sized actuators)	no mounting bracket	actubar-direct-mounting (size AD/S-011 or bigger)

PN2-	3P-	E-	S-	3-	0
	3-position-controller	single-acting	valve-version with low flowrate (small actuators)	mounting bracket 80 x 30 x 20 mm	no hole pattern (assembly via mounting bracket)