

Limit switch box

**bar-positswitch**

Installation and operating manual



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## General information

This operating manual is a part of the unit. The operating manual must be kept over the entire lifetime of the unit. The operating manual must be passed to any subsequent owner of the unit.

In addition to this operating manual, the generally applicable, statutory and other regulations and legal provisions – as well as those of the operator's land – and all valid environmental protection regulations must also be observed! The locally applicable regulations of the professional association or other supervisory authorities must be always observed!

## Reference documents

This manual, the data mentioned and design data sheets, additional assembly and maintenance instructions as well as further information also in other language versions, can be obtained from:

bar pneumatische  
Steuerungssysteme GmbH

Auf der Hohl 1  
53547 Dattenberg

Tel.: +49 (0)2644-9607-0  
Fax: +49 (0)2644-960735

Email: bar-info@wattswater.com  
www.bar-gmbh.de

## Safety instructions and warnings

Read this operating manual carefully before the commissioning and follow all instructions. In this manual, various kinds of safety instructions and warnings are used:

### DANGER

... indicates an immediate danger. Failure to observe this instruction can result in death or serious injury.

### WARNING

... indicates a threatening danger. Failure to observe this instruction may result in serious injuries or property damage.

### CAUTION

... indicates a threatening danger. Failure to observe this instruction may result in serious injuries or property damage.

### NOTE

... indicates notes and tips for a better understanding of the instruction or an improved handling of the device.

## Scope of application

This operating manual applies to the bar-posiswitch, a module of Valve-Controlsystems bar-vacotrol. It is addressed to the user of the device, that is the person that works on and with the device. This is not a technical manual. For questions that go beyond the contents of this manual, please call our customer service.

## Copyright

The unit and this manual are protected by copyright. Reproduction without permission will be prosecuted. We reserve all rights to this operating manual, even the rights of reproduction and/or duplication in any imaginable way, e.g., by photocopying, printing, on any data recording media or in translated form. Reproduction of this manual is only permitted with the written authorization of bar GmbH.

The technical status at the time of delivery of the unit and manual is decisive, if no other information is given. We reserve the right to make technical changes without special announcement. Previous manuals become invalid. The general conditions of sales and delivery of bar GmbH are applicable.

## Exclusion of liability

We guarantee the faultless functioning of our product in accordance with our advertising, with the product information given by us and with these instructions. Further product properties are not guaranteed. We assume no liability for the efficiency and error-free operation if the product is used differently than described in the section „Intended use“.

Compensations for damages are generally excluded, unless the intent or gross negligence on the part of bar GmbH is proven, or if promised product features are not available. If this product is used in environments for which it is not appropriate or do not comply with the technical standards, then bar GmbH is not responsible for the consequences.

We accept no liability for damage to equipment and systems in the surroundings of the product, which is caused by a defect of the product or in this manual. We are not responsible for the infringement of patents and/or other rights of third parties outside the Federal Republic of Germany.

We are not liable for damages caused by improper operation and non-compliance with the instructions in this manual. We are not liable for lost profits and consequential damages caused by non-compliance with safety and warning notes. We accept no liability for damage caused by the use of accessories and/or wearing parts that have not been delivered or certified by bar GmbH.

The products of bar GmbH are designed for a long service life. They correspond to the state of the art in science and technology and were individually checked in all functions before delivery. The electrical and mechanical design meets the applicable standards and guidelines. bar GmbH performs constantly tests of the products and the market in order to stimulate the continuous development and improvement of their products.

In the event of faults or technical problems, please contact the customer service listed on the last page. Appropriate actions will be taken immediately. The warranty conditions of bar GmbH shall apply, which we would be pleased to send to you on request.

## Designated use

The end position indicator posiswitch is a device for the optical display and electrical feedback of end positions of rotary actuators that operate industrial valves. Shortly before reaching the end positions, an

electrical signal, e.g., for feedback to the process control center, is generated.

Any other use of this device is considered to be improper use. If you have questions, or want to use the device for any other purpose, please contact our customer service. We can help you with any possible necessary configurations.

## Warranty

The warranty conditions of bar GmbH shall apply, which we would be pleased to send to you on request in the frame of our general terms of business.

bar GmbH performs constantly studies of the products and the market in order to stimulate the continuous development and improvement of their products. The products of bar GmbH are designed for a long service life. They correspond to the state of the art in science and technology and were individually checked in all functions before delivery. The electrical and mechanical design meets the applicable standards and guidelines.

We guarantee the faultless functioning of our product in accordance with our advertising, with the product information published by us and with these instructions. Further product properties are not guaranteed. We assume no liability for the efficiency and error-free operation if the product is used differently than described in the operating manual.

For this device, we assume the guarantee for faultless quality for a period of twelve months as part of our warranty conditions. Wearing parts are excluded from this warranty. The claim expires if interventions are made by unauthorized persons who have

not been authorized for this purpose by bar GmbH. If this product is used in environments for which it is not appropriate or do not comply with the technical standards, then we are not responsible for the consequences.

Within the warranty period we repair damages or defects, without charge, which can be traced back to faulty manufacturing, if they are reported immediately to us after their discovery, at the latest however within twelve months after delivery. The service takes place at our discretion by free repair of defective parts or replacement by faultless parts.

Compensation for damages are generally excluded, unless the intent or gross negligence on the part of bar GmbH is proven, or if promised product features are not available.

If the purchaser is entitled to claim compensation for damages, it expires at the end of the applicable period of limitations. The same applies to claims from the customer in connection with measures to prevent damage (e.g., product recalls). In case of claims for damages under the Product Liability Act, the legal provisions for limitation periods apply.

bar GmbH accepts no liability for damage to equipment and systems in the surroundings of the product, which is caused by a defect of the product or in this manual. We are not responsible for the infringement of patents and/or other rights of third parties outside the Federal Republic of Germany.

In the event of faults or technical problems, please contact our customer service. We assure you that appropriate actions will be taken immediately.

Send the units for which a guarantee is claimed, freight prepaid, and with a copy of the invoice or delivery note to bar GmbH. Contact our customer service before returning.

## Obligations of the customer

The operator of this unit must ensure that only persons who

- know the rules of occupational safety and accident prevention
- have been trained in the operation of this unit
- have read and understood this manual completely

Persons who operate this unit are obliged

- to observe all the rules of occupational safety and accident prevention
- to read this manual completely.

## Authorised personnel

Persons are regarded as authorized, who have a completed professional training, technical experience, and knowledge of relevant standards and guidelines, and are able to assess the tasks assigned to them and to recognize dangers early.

## Operator of the posiswitch:

Persons are regarded as authorized, who were trained in the operation of the bar-posiswitch and have read and understood this manual completely.

## Personnel for installation and maintenance:

Persons are regarded as authorized, who were trained in all matters of the end position feedback and have read and understood this manual completely.

## Functional description

The opto-electrical position indicator bar-posiswitch is self-adjusting. The device was specially designed for direct installation.

The electrical connection is made to terminal strips inside the device.

With the posiswitch, the pneumatic connection is made directly to the external solenoid valves.

The posiswitch is built on the top of the drive

- with a bridge on drives with an interface according to VDI/VDE 3845
- or directly on the actubar drive type.

Solenoid valves are attached to the standardized drive interface with type-specific material.

## Technical data

Technical data	
Materials	<ul style="list-style-type: none"> <li>Housing: GD-AlSi 10 Mg (die-cast aluminum)</li> <li>Screws: A2-70 (stainless steel)</li> <li>Inspection window: PC</li> <li>Light guide: TPE</li> <li>Cable connection: PA</li> </ul>
Pivoting angle	up to 180°
Microswitch	<p>Voltage: Contacts: Switch function:</p> <p><b>Type M2</b> DC up to 120 Volt/4 A AC up to 250 Volt/16 A Silver/nickel coated CO-contact</p>
Inductive sensor	<p>Voltage: Switch function:</p> <p><b>Type D2</b>, direct switching, 3-wire connection 10 V – 36 V/DC PNP, N/O contact</p>
Mounting dimensions	80 x 30 mm (2xM5) or 130 x 30 (2xM5)
Protection type	IP65
Mounting position	any
Ambient temperature	-10 °C to +50 °C
Ambient humidity	10 – 90 %, not condensing
Weight	<ul style="list-style-type: none"> <li>without valve: approx. 0.52 kg</li> <li>with valves: minivalves – approx. 1.0 kg, midivalves – approx. 1.1 kg</li> </ul>
Cable entry	Cable gland: M20x1.5 ø 7–13 mm, 1.5 mm <sup>2</sup> , Any cable length
Pneumatic connection	Depending on the valve used
Operating pressure	Depending on the valve used
Air quality	Depending on the valve used

## Version overview

PH-	XX-	X-	X-	XX-	XXX
<b>Design</b> M2 = 2 microswitches, CO-contact D2 = 2 inductive sensors, 3-wire connection, PNP, N/O contact	<b>Mounting bridges</b> 0 = w/o (direct mounting) 1 = bridge 80 x 30 x 30 mm 2 = bridge 130 x 30 x 30 mm 5 = universal mounting bridge	<b>Drill template in device housing</b> 0 = w/o (mounting with mounting bridge) 1 = bridge 80 x 30 mm 2 = bridge 130 x 30 mm		<b>Integrated solenoid valve control</b> S1 = integrated solenoid valve control for magnetic coil (monostable control valve) S2 = integrated solenoid valve control for 2 magnetic coils (bistable control valve)	Pressure compensation membrane DAE DAE = Pressure compensation membrane DAE against internal condensation

## Conformity

The end position feedback bar-posiswitch conforms to the applicable European directives

- 2014/65/EU Niederspannungsrichtlinie / Low voltage directive
- 2011/63/EU Beschränkung bestimmter gefährlicher Stoffe / Restriction of certain hazardous substances (RoHS)

is provided with the CE mark. We will be happy to send you the full declaration of conformity on request.

# Delivery and unpacking

## Delivery check

The device is delivered by bar GmbH and transported by an appropriate transport company or parcel service. At the time of delivery to you, you must check:

- Does the number of delivered transport containers correspond to the delivery note of bar GmbH?
- Is the packaging free of visible damage?
- Are the unit and accessories free of visible damages?
- Are there evidences of not gentle handling during the transport (e.g., burns, scratches, colour)?

To have all the right for claim against the transport company, you have to document the possible transport damages (e.g., with photographs and a written protocol) before unpacking the unit. bar GmbH is not responsible for transport damages and can take over no liability for that.

## Scope of delivery

Carefully remove the transport packaging. Please observe all laws and regulations regarding the disposal of packaging materials.

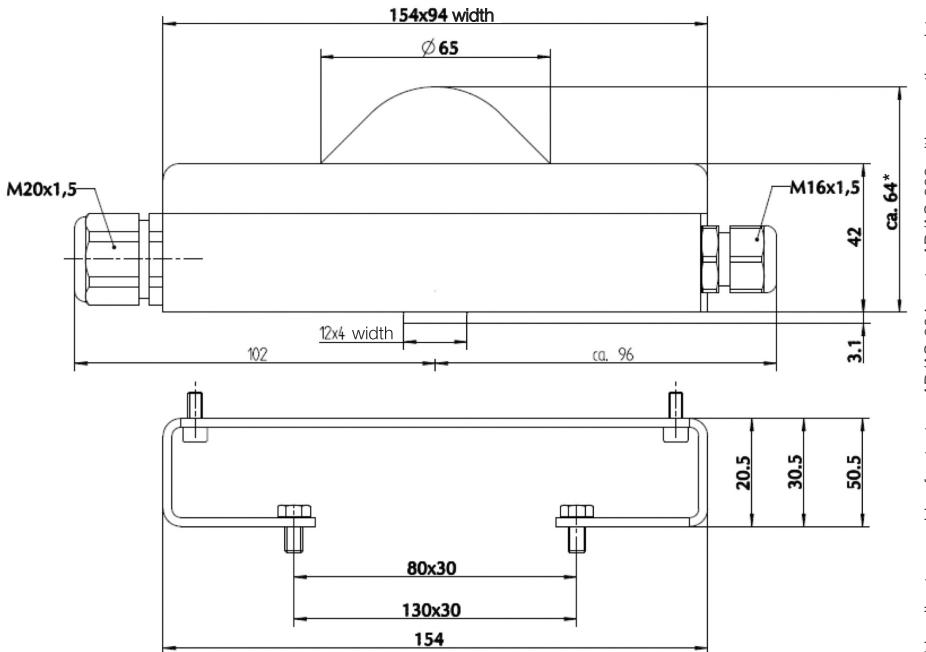
Check the delivery against the delivery note and the order documents. Report any differences immediately to bar GmbH. Later complaints with regard to incomplete delivery cannot be accepted.

# Installation, pneumatic connection, electrical connection and commissioning

## ⚠ WARNING

The installation must be carried out by qualified personnel. Otherwise there is a risk of incorrect installation.

### Installation of posiswitch



\* by direct assembly of actuators AD/AS-004 up to AD/AS-008 with mounting plate approx. 70

- Open the posiswitch and place it on the rotary actuator.
- Make sure that no dust, dirt and moisture can penetrate into the opened housing of the posiswitch during installation and commissioning.
- Insert the bar of the position indicator into the corresponding groove of the rotary actuator.
- Fix the posiswitch and solenoid valves using the supplied mounting material.
- Attach the position indicator and ensure that the symbols and the valve function match.
- When putting on the housing cover, note its installation direction.

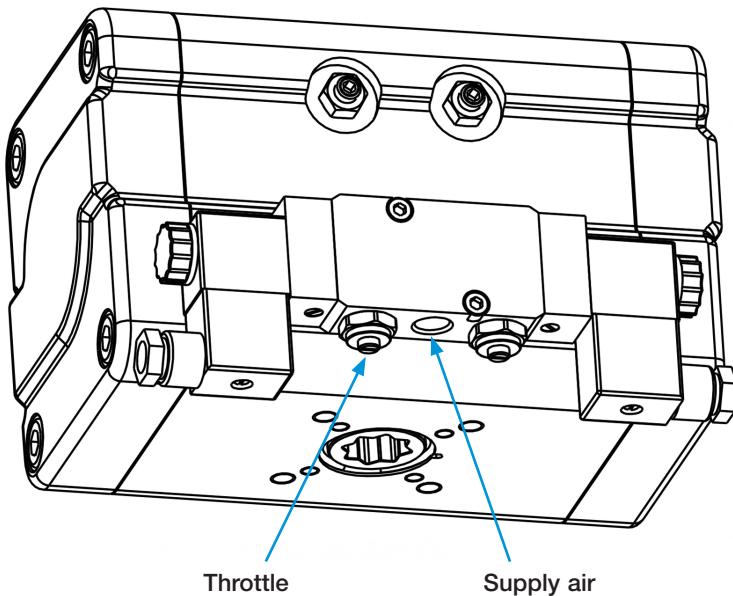
## Pneumatic connection

Supply air connection for valve type M:

G-1/4"

Supply air connection for valve type S:

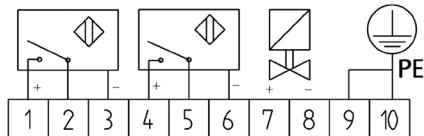
G-1/8"



## Electrical connection

### Function circuit diagram

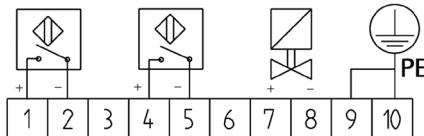
3-wire connection



valve  
closed

valve  
open

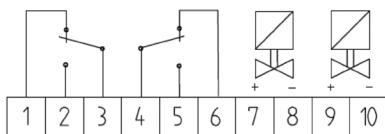
2-wire connection



valve  
closed

valve  
open

Microswitch



valve  
closed

valve  
open

### ⚠️ WARNING

The electrical installation may only be performed by qualified personnel. Otherwise there is a risk of electric shock.

## Commissioning

1. Open the lid of the bar-posiswitch.
2. Press the position indicator (a) with your thumbs and pull the plastic washer (b) upwards. The switching cams automatically swivel into the home position. The device is now ready for automatic self-adjustment.
3. Switch the rotary actuator 1 x in each direction.
4. The switching points are now set.
5. Check whether the position indicator corresponds to the valve position. If not, carefully pull the position indicator (a) up and out and put it back into the holder in the correct position.
6. Switch on the supply voltage.
7. Check electrically whether the signals are present at the terminals in the end positions of the drive. If not, repeat steps 1–6 and check all electrical connections.
8. Close the lid, check that the lid seal is correctly seated and tighten the fastening screws on the lid.
9. When all tests have been passed successfully, installation and commissioning are complete.

### ⚠ WARNING

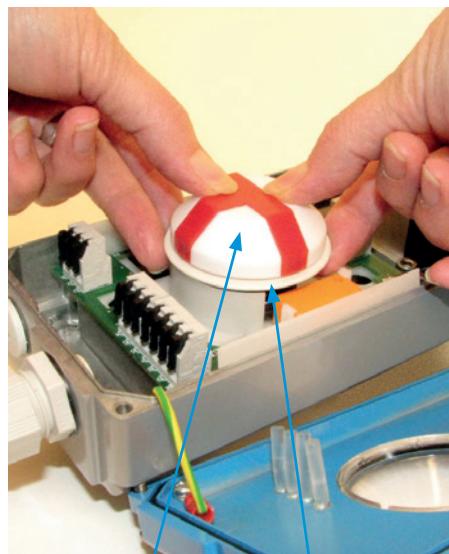
The installation must be carried out by qualified personnel. Otherwise there is a risk of incorrect installation.

### ⚠ WARNING

Check all screw connections (screw plugs, throttles and silencers) for tight fit before connecting a pressure line. Otherwise there is a risk of parts being thrown out.

### ⚠ CAUTION

After every change to the end positions and after modifications to the drive, steps 1–9 must always be carried out.



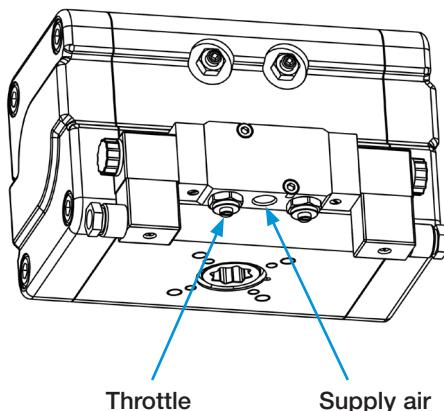
a: Position indicator

b: Plastic washer

## Setting the end positions and the actuating speed

### **DANGER**

The installation must be carried out by qualified personnel. Otherwise there is a risk of incorrect installation.



Set the actuating speed of the actuator with the throttles on the pneumatic valves.

Standard setting: at least 5 seconds swivel time for 90° actuating angle

### **NOTE**

Shorten the solenoid valve wiring cable if necessary.

### **NOTE**

Do not close the throttles completely, otherwise the drive cannot function.

### **CAUTION**

When using the manual override on the pneumatic valves, be sure to return them to the rest position.

### **CAUTION**

Each time the end positions are changed and after modifications to the drive, it must be reinitialized.

### **DANGER**

Risk of entrapment due to moving parts of the valve and the actuator! Set and secure the mechanical end positions of the valve.

## Troubleshooting

Error description	Possible cause	Troubleshooting
The actuator makes no movement	1. Pressure line not properly connected 2. Solenoid valves not properly connected 3. Control air in the drive cannot escape	1. Check the pressure line.  2. Check solenoid valve wiring.  3. Reduce the degree of throttling at the throttle screws.
End positions are not displayed	Incorrect initialization of the device	Reinitialize
In the fail-safe position, the drive moves to the wrong end position	Solenoid valve block mounted incorrectly	Loosen the solenoid valve block, turn clockwise by 180° and screw it on. Rewire coils.

## Cleaning and maintenance

Cleaning	Maintenance
<b>⚠ CAUTION</b>	<b>⚠ CAUTION</b>
Never use abrasive cleaners or substances to clean the housing of the posiswitch. This can cause damages to the inspection window or paint.	Only open the device for installation and adjustment purposes. Violations can cause damages to the device and the loss of any warranty claims.
Clean the casing of the posiswitch with a clean, slightly damp cloth.	The posiswitch is a maintenance-free device.
For persistent dirt, use a mild commercial household cleaners as instructed on the packaging of the cleaner.	For defects occurring within the warranty period, remove the posiswitch and send the device to the address specified at the end of the operating instructions after having arranged this via phone.



A **WATTS** Brand

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