

# **CR-TEC Engineering**

**Automated Valve Solutions**

## **Positioner and 3-Position Control Unit**

**positrol & positurn2**



Assembly, Mounting and Operating Instructions



Read these instructions carefully and keep them near to the device.

Read, understand and follow the safety instructions.

## In General:

These operating instructions are an integral part of the device. The operating instructions have to be kept with the device for the whole of its service life.

If there is a change of owner, then the operating instructions have to be handed over with the device.

In addition to these operating instructions, all generally valid, legal and other regulation & other relevant legislation – even in the operator's country – as well as valid environmental stipulations have to be adhered to!

Locally valid stipulations from the trade organisation or other governing bodies are always to be adhered to!

## Reference Documents:

These instructions, the so-called data and layout sheets, additional assembly and maintenance instructions as well as further information and advice – even in other languages.

# Operating Instructions

positurn2 and positrol

## Safety instructions and warnings:

Before commissioning, read these instructions carefully and follow all advice.

In this documentation we use different types of instructions for safety and warning signs:

### DANGER!



Indicates a real and near danger. To ignore this sign means possible death or serious injury as consequence.

### WARNING!



Indicates a threat of danger. To ignore this sign means possible serious injury or material damage as consequence.

### ATTENTION!



Indicates a possible danger. To ignore this sign means possible material damage as consequence.



Stands for advice and tips for a better understanding of instructions or a better handling of the unit.

### Scope of validity:

The afore-mentioned operating instructions are valid for positurn2 / positrol, a module of the new valve control system vacotrol. They are intended for the operator that means the person that works with the unit. This is not a technical handbook. For questions, arising from the contents of this documentation, please contact our customer service department.

### Copyright:

The unit and this documentation are protected by copyright. Their reproduction without written permission will be contested in court. We reserve all rights to these operating instructions and their contents thereof, also for their reproduction and/or duplication in whatever imaginable form, e.g. through photocopies, print, on whatever data carriers or in whatever translated form. The technical state at the time of delivery of the unit and instructions is a deciding factor, in case no other information is provided. We reserve the right to technical changes without special notice in advance. Earlier instructions lose their validity.

### Safety instructions and warnings:

#### Exemption from liability:

We guarantee the fault-free function of our product according to our advertising, the product information and this documentation issued by us. Further product features are not promised. We undertake no liability for economy and fault-free function, when the product is used for other purposes, as described in the section „Designated Usage“. Damages are generally excluded, except in the case of criminal intent or gross negligence committed by bar GmbH is proved, or in the case of promised product features being absent. If this product is exposed to non-prescribed environments, for which it is not suitable or does not correspond to the technical standard as stipulated therein, we cannot and will not be held responsible for the consequences.

We accept no liability for damages to systems and equipment in whatever form in the surrounding environment around the product, which result from a fault of the product or in this documentation. We are not responsible for injuries to patents and/or other third party rights outside the Federal Republic of Germany.

We cannot be held liable for damages, resulting from the incorrect operation and non-adherence to the instructions laid down in this documentation. We are not liable for losses in profit and resulting damage thereof from the non-adherence to safety

instructions and warnings. We undertake no liability for damage, resulting directly or indirectly from the use of accessories and/or consumable products, which have been neither delivered nor certified by bar GmbH. The products manufactured by bar GmbH are designed to give a long service life. They correspond to the state of the art for science and technology and are individually tested in all functions before dispatch. The electrical and mechanical construction corresponds to valid standards and guidelines.

**In case of faults and/or technical problems, please contact our service department. We can assure you, that immediate appropriate measures will be initiated.**

#### Designated Usage:

The positurn2 / positrol is a positioner for mounting onto pneumatic actuators of the series known as the actubar series or actuators according to VDI/VDE 3845 with a pivoting angle of max. 180°. With the help of external solenoid valves and compressed air, positurn2 or positrol converts analogue input signals

# Operating Instructions

positurn2 and positrol

## Safety instructions and warnings:

into actuator pivoting movements. Usage as a 3-position control unit with freely selectable middle position and binary control (without analog activation) is possible as an alternative, just as application as position indicator without any activation.

Any other application of this device is to be considered to be outside the designated use. If you have any questions, or would like to use the unit for another purpose, please contact our customer service department. We will be pleased to help with the necessary configurations.

## Obligation of Customer:

The owner/operator of this device has to ensure that only persons who:

- know the rules about safety at work and prevention of accidents
- have been instructed in the operation of this device
- have completely read and understood these instructions
- can use and operate this device.

Persons, who operate this device, are obliged:

- to observe all rules pertaining to safety at work and the prevention of accidents
- to read these instructions thoroughly.

## Authorized Personnel:

Persons to be seen as authorised, are those with a successfully concluded professional training, technical experience, as well as knowledge of the appropriate standards and guidelines, and who are in a position, to appreciate the tasks they are delegated, and lastly to recognise and act upon possible dangers arising.

# Operating Instructions

## positurn2 and positrol

### Safety instructions and warnings:

#### Operator of positurn/positrol:

Authorized persons are instructed how to operate bar-positurn and bar-positrol after they read and understood this instruction completely.

#### Operator for installation and service:

Authorized persons are instructed in all points of the positioner after they read and understood this instruction completely.

### Functional Description:

In its standard form, the positurn2 / positrol is designed and manufactured for actuators with a closing direction for valves in a clockwise manner (cw). The actuator undertakes the basic position with a closed valve. In the case of corresponding units, the basic position corresponds to so-called safety effect „current-free closed“. In the initialisation process, the positioner adjusts to the defined actuator pivoting range. The analog activation is triggered from the control point and effects the pro-

portional allocation of the defined pivoting angle to the set value (input) signal.

In a similar manner, the defined pivoting angle is allocated an analog positioning signal. Binary signals are formed additionally at the start and end of the pivoting range. Electrical connection is made at terminal blocks inside the unit.

Pneumatic connection is made directly at the external solenoid valves for positurn. The pneumatic connection of the positrol is made at the housing.

The positurn2 is mounted

- with a bracket onto actuators with interface acc. to VDI/VDE 3845
  - or directly onto actuators type actubar.
- Solenoid valves are fitted to standard interfaces with type-related material.

The positrol is mounted

- directly onto actuators with interface acc. to VDI/VDE 3845 with a maximum shaft diameter up to 70 mm and a shaft height of 30 mm.

### Overview of versions

| Product  | Version | Actuator type | In case of power failuer                    |
|----------|---------|---------------|---|
| positurn | PN2-D   | double acting | fail to stay                                |
| positrol | PL-D    | double acting | fail to stay                                |
| positurn | PN2-S   | double acting | fail to close / open                        |
| positrol | PL-S    | double acting | fail to close / open                        |
| positurn | PN2-E   | single acting | fail to close / open (depending of springs) |
| positrol | PL-E    | single acting | fail to close / open (depending of springs) |

# Operating Instructions

positurn2 and positrol

## Technical data:

| Device Type           |                     | positurn   | positrol                              |
|-----------------------|---------------------|--|---------------------------------------|
| Materials             | Housing             | GD-ALSi 10Mg (Aluminiumdruckguss)  |                                       |
|                       | Screws              | A2-70 (Edelstahl)  |                                       |
|                       | Viewing glass       | PMMA   |                                       |
|                       | Optical fibre       | TPE  |                                       |
|                       | Cable connection    | PA   |                                       |
| Pivoting angle        |                     | 10° to 190°  |                                       |
| Protection Type       |                     | IP65   | IP67                                  |
| Mounting position     |                     | random   |                                       |
| Ambient temperatur    |                     | -10°C to + 50°C  |                                       |
| Ambient humidity      |                     | 10–90%, non-condensing   |                                       |
| Weight                | Without valve       | ca. 0,65 kg  | /                                     |
|                       | Variant D           | Mini-valves: ca.1,0 kg<br>Midi-valves: ca. 1,1 kg  | ca. 1,2 kg                            |
|                       | Variant S           | Mini-valves: ca.1,2 kg<br>Mid-valves: ca. 1,4 kg   | ca. 1,3 kg                            |
|                       | Variant E           | Mini-valves: ca.1,2 kg<br>Midi-valves: ca. 1,4 kg  | ca. 1,3 kg                            |
| Analog control signal | Effective direction | reversible by sliding switch   |                                       |
|                       | Signal Type         | selectable 4–20 mA, 0–10 V, 0–20 mA, 2–10 V;<br>proportional to pivoting angle             |                                       |
| Dead-zone             |                     | ± 2% of nominal pivoting angle   |                                       |
| Travel speed          |                     | Adjustable by throttles on<br>solenoid valve   | Adjustable by throttles<br>on housing |
| Position signal       | Signal type         | selectable 4–20 mA, 0–10 V, 0–20 mA, 2–10 V nominal,<br>activ, proportional pivoting angle |                                       |
|                       | System              | 4,75 kOhm at 0–10 V or 2–10 V;<br>0 Ohm at 2–20 mA or 0–20 mA                              |                                       |
|                       | Resolution          | < 0,5% of nominal pivoting angle   |                                       |
| Limit feedback        | Voltage             | 21–24 VDC  |                                       |
|                       | Output power        | 0,3 mA at 1 kOhm load  |                                       |
|                       | System              | Opto-coupler, short-circuit-proof  |                                       |
|                       | Indication          | 3% of nominal pivoting angle before initiated end position                                 |                                       |
| Supply                |                     | 24 VDC   |                                       |

# Operating Instructions

## positurn2 and positrol

### Technical data:

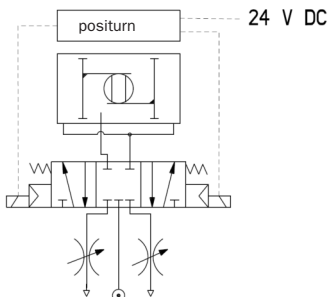
|                      |               |   |       |
|----------------------|---------------|---|-------|
| Power consumption    | Variant D     | Mini-valves: 1,8 W<br>Midi-valves: 3,6 W                | 1,8 W |
|                      | Variant S     | Mini-valves: 3,6 W<br>Midi-valves: 7,2 W                | 3,6 W |
|                      | Variant E     | Mini-valves: 3,6 W<br>Midi-valves: 7,2 W                | 3,6 W |
| Terminal strip       |               | Clamping range up to 0,75 mm <sup>2</sup>               |       |
| Cable to PCS         |               | Ø 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 according to DIN ISO 8573-1/Class 4        |       |

### Conformity:

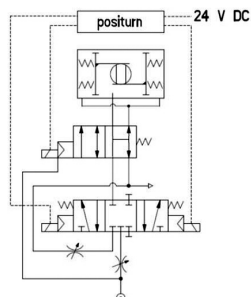
The products positrol and posi-turn are complying with the directives 2014/30/EU (EMC) and 2011/65/EU

(RoHS). The directive of conformity will be send on request.

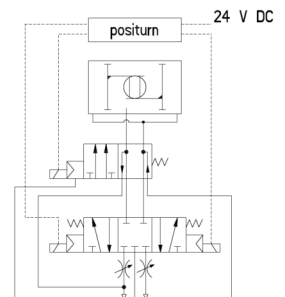
### Pneumatic Scheme:



Pneumatic scheme for positurn2 PN2-D



PN2-E (single-acting)



PN2-S (double-acting)

Pneumatic schemes for the safety-orientated bar-positurn2

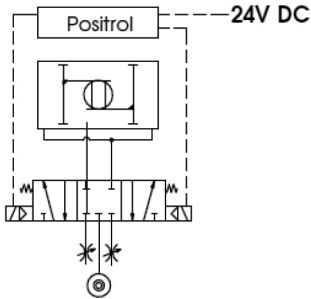
Please note the unit-specific safety descriptions.



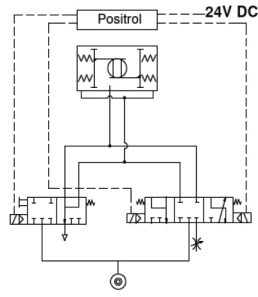
# Operating Instructions

positurn2 and positrol

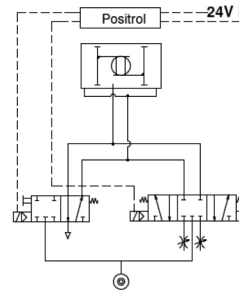
## Pneumatic Scheme:



Pneumatic scheme for positrol PL-D



PL-E (single-acting)



PL-S (double-acting)

Pneumatic schemes for the safety-orientated bar-positrol

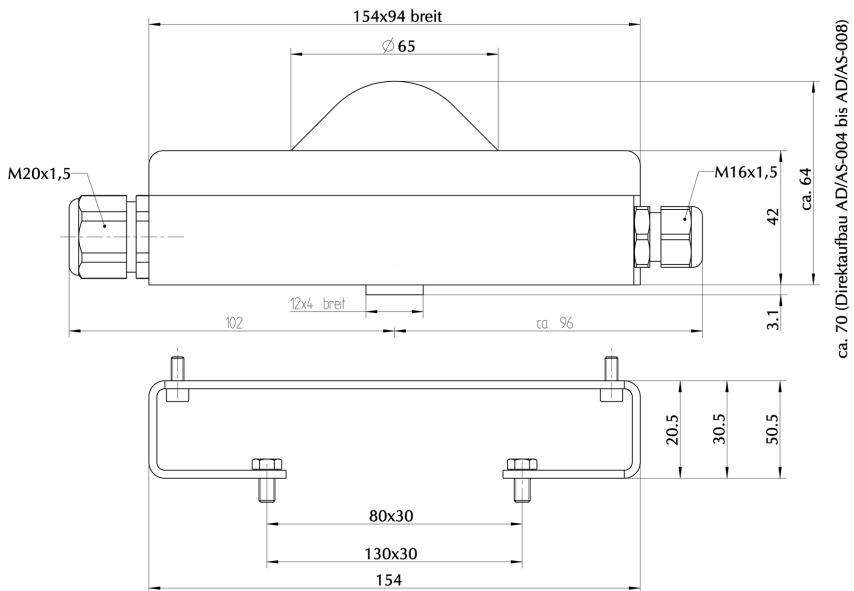
**Please note the unit-specific safety descriptions.**

# Operating Instructions

## positurn2 and positrol

### Mounting:

#### Mounting positurn



#### WARNING!



Mounting may only be carried out by suitably trained skilled persons. Otherwise there is the danger of an incorrect installation.

- Open the positurn2 and set it onto the actuator.
- Take special care to avoid the entry of dust, dirt and moisture getting into the open housing of the positurn2 during mounting and commissioning.
- Guide the base of the positioner into the corresponding groove at the actuator.

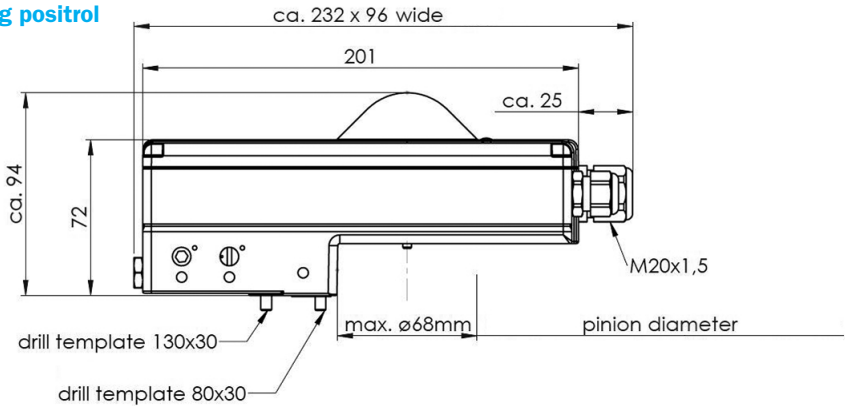
# Operating Instructions

## positurn2 and positrol

- Fix in position the positurn2 and solenoid valves by making use of the mounting materials supplied.
- Place the position indicator on top and take care to see that the symbol position coincides with the valve function.
- Take care to ensure the correct direction when assembling the housing cover. The flexible fibre-optic light guides must be free from sharp bends and enter the lead-throughs of the protective cover.

### Installation:

#### Mounting positrol



### WARNING!



Mounting may only be carried out by suitably trained skilled persons. Otherwise there is the danger of an incorrect installation.

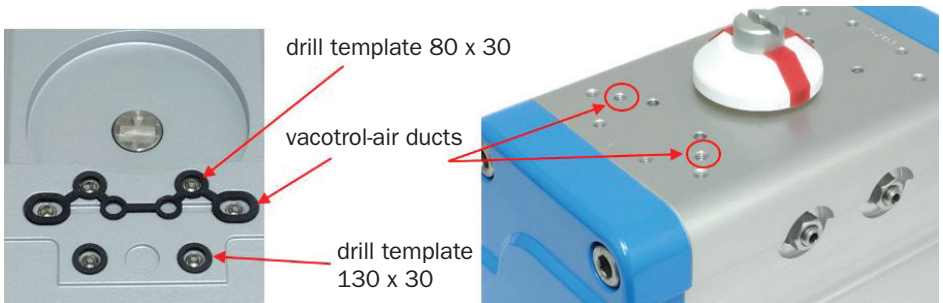


The positrol can be mounted onto quarter-turn actuators acc. VDI/VDE 3845 where the shaft including washer disk is not bigger than  $\varnothing 68\text{ mm}$ .

- Remove or mount the attached hexagon socket screw sealing plug acc. the required drill template on the bottom of the casing.
- If positrol should be mounted onto an actuator type actubar with vacotrol-surface please remove the screw sealing plugs of the air ducts.
- Remove the protective foil and glue the seal strip and the seal rings as shown in the picture. To achieve optimum adhesion please clean and degrease the contact surface.

## Operating Instructions

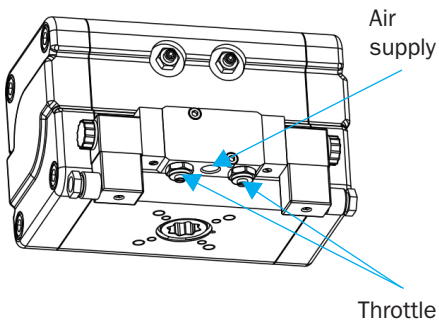
### positurn2 and positrol



- Open the positrol and set it onto the actuator.
- Take special care to avoid the entry of dust, dirt and moisture getting into the open housing of the bar-positrol during mounting and commissioning.
- Fastening the bar-positrol with the provided mounting material.
- Place the position indicator on top and take care to see that the symbol position coincides with the valve function.
- Take care to ensure the correct direction when assembling the housing cover. The flexible fibre-optic light guides must be free from sharp bends and enter the lead-throughs of the protective cover.

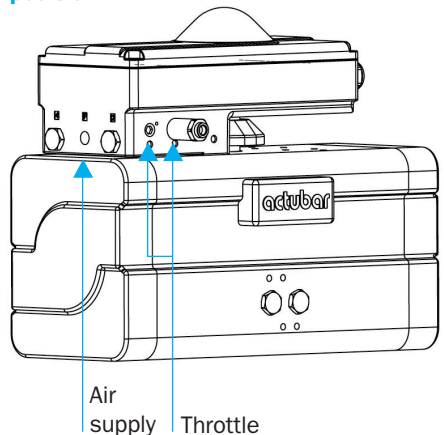
### Pneumatic connection:

#### positurn:



Air supply solenoid valve type M: G-1/4"  
 Air supply solenoid valve type S: G-1/8"

#### positrol:

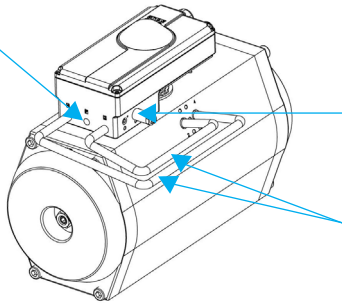


Positrol on actuator type actubar:  
 Air supply positrol G-1/8"

# Operating Instructions

positurn2 and positrol

Air supply



positrol on actuator type according to VDI/VDE 3845: Air supply positrol G-1/8"

Throttle

Connect working channels according to connection designation (2→2; 4→4).

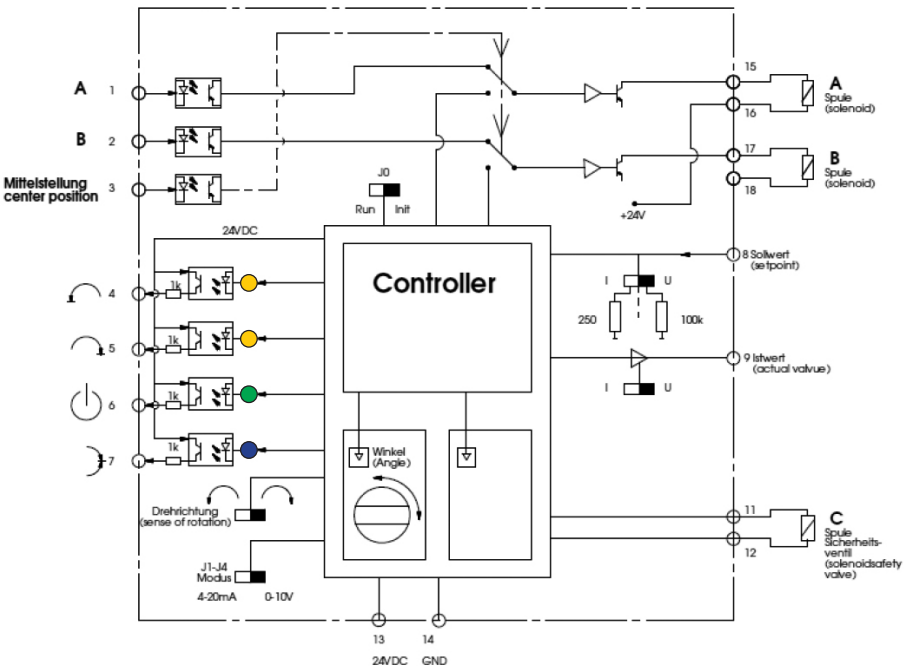
## Electric connection / Functional scheme:

### WARNING!

Electrical installation may only be carried out by suitable qualified & skilled persons.



Otherwise there is a real danger of electric shocks.



# Operating Instructions

## positurn2 and positrol

### Electrical Connection:

#### Positioner



Refeeding of clamps 1, 2, 3 and 8 results across clamp 14.

Please take care that there is a potential equalisation between voltage source for feed-in and signal source.

| <b>Electric Connections:</b>                  |    |  |
|---|----|--|
| <b>model positurn: PN2-D; PN2-E und PN2-S</b> |    |  |
| <b>model positrol: PL-D; PL-E und PL-S</b>    |    |  |
| Digital Inputs                                | 1  | Activate magnet A (counter-clockwise rotation)             |
|   | 2  | Activate magnet B (clockwise rotation)                     |
|   | 3  |  |
| Digital Outputs                               | 4  | Counter-clockwise end position reached                     |
|   | 5  | Clockwise end position reached                             |
|   | 6  | Stand by   |
|   | 7  |  |
| Analogue Inputs                               | 8  | Set value for pivoting angle (+)/(-) to clamp 14           |
| Analogue Outputs                              | 9  | Actual value pivoting angle (+)/(-) to clamp 14            |
|   | 10 | Actual value diff. press. (+) (optional) / (-) to clamp 14 |
| Activation Safety valve                       | 11 | Magnet C (+)   |
|   | 12 | Magnet C (-)   |
| Power supply                                  | 13 | 24 VDC   |
|   | 14 | GND (for Supply, analog signals and digital inputs)        |
| Activation Solenoid valve                     | 15 | Magnet A (+)   |
|   | 16 | Magnet A (-)   |
|   | 17 | Magnet B (+)   |
|   | 18 | Magnet B (-)   |
| Earthing                                      |    | Earthing point in the housing                              |

#### 3-position-controller



Refeeding of clamps 1, 2, 3 and 8 results across clamp 14.

Please take care that there is a potential equalisation between voltage source for feed-in and signal source.

| <b>Electric Connections:</b>                           |    |  |
|--|----|--|
| <b>Model positurn: PN2-3P-D; PN2-3P-E und PN2-3P-S</b> |    |  |
| <b>Model positrol: PL-3P-D; PL-3P-E und PL-3P-S</b>    |    |  |
| Digital Inputs   | 1  | Activate magnet A 24VDC (counter-clockwise rotation)       |
|  | 2  | Activate magnet B (clockwise Rotation) 24VDC               |
|  | 3  | Go to middle position 24VDC                                |
| Digital Outputs  | 4  | Counter-clockwise end position reached                     |
|  | 5  | Clockwise end position reached                             |
|  | 6  | Stand by   |
|  | 7  | Middle position reached                                    |
|  | 8  |  |
| Analogue Outputs                                       | 9  | Actual value pivoting angle (+)/(-) to clamp 14            |
|  | 10 | Actual value diff. press. (+) (optional) / (-) to clamp 14 |
| Activation Safety valve                                | 11 | Magnet C (+)   |
|  | 12 | Magnet C (-)   |
| Power supply   | 13 | 24 VDC   |
|  | 14 | GND (for Supply, analog signals and digital input)         |
| Activation Solenoid valve                              | 15 | Magnet A (+)   |
|  | 16 | Magnet A (-)   |
|  | 17 | Magnet B (+)   |
|  | 18 | Magnet B (-)   |
| Earthing   |    | Earthing point in the housing                              |

# Operating Instructions

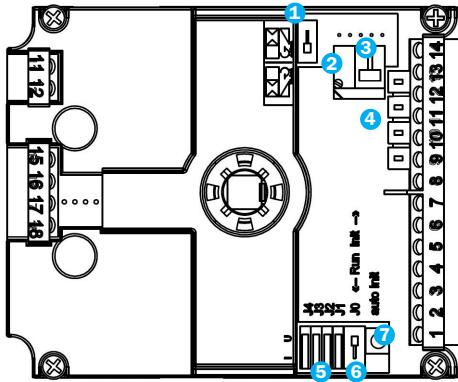
positurn2 and positrol

## Setting Options:

### ATTENTION!

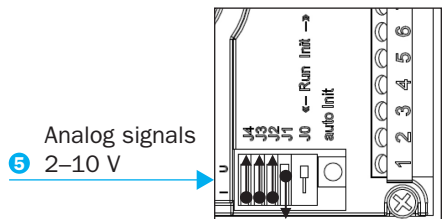
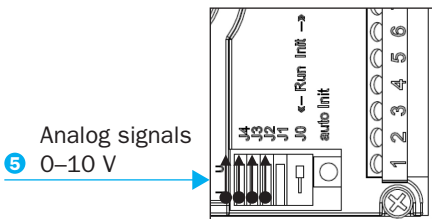
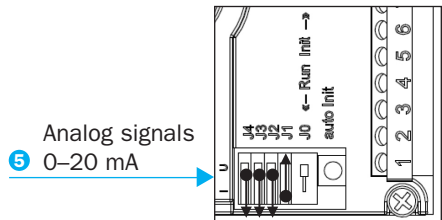
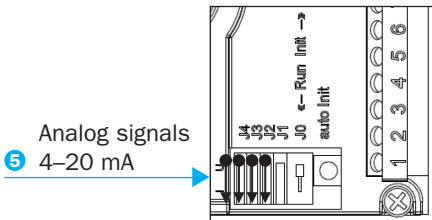


Do not damage switches!



- 1 Operating
- 2 Potentiometer
- 3 Program switch:  
analog = Positioner mode  
3P = 3-Position mode
- 4 LED indication
  - 
  - 
  - 
  -
- 5 Current / Voltage switches
- 6 Initialising switch
- 7 Button for automatic initialisation

5 Set current / voltage switches according to the signal type for the unit.

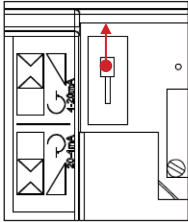


# Operating Instructions

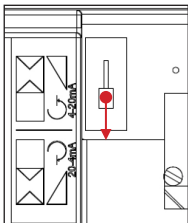
## positurn2 and positrol

### Individual Settings:

Set operating direction switch according to the direction of actuation for the valve actuator.



Left-rotating actuator in switch position ccw (**L**)  
Input and Output signal ccw increasing



Right-rotating actuator in switch position cw (**R**)  
Input and output signal cw increasing



When initialising, the operating direction switch **1** must be set in accordance with the operating direction of the valve actuator, in order to ascertain the real function correctly. In real operation, the operating direction switch may be adjusted when the increase in signal for special cases is to be changed.

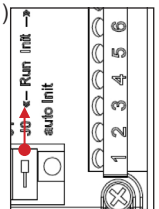
### Initialising / Commissioning:

Automatic initialisation of Positioner- and 3P-mode (Learning the end-positions and other specific values). The automatic initialising is recommended. If it is not satisfying, initiate the positioner manually.

1. Check whether the **1 operating direction switch** has been set in accordance with the operating direction of the actuator (L/ccw or R/cw).
2. Make the electrical connection according to the connection diagram.
3. Select program by the **3** program switch:

Choose between „analog“ or „3P“ (see also „individual settings“)

4. **5** Choose type of signal.
5. **6** Set the initialisation switch to „Init“.

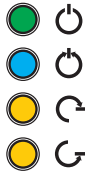




# Operating Instructions

positurn2 and positrol

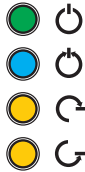
6. Establish power supply.



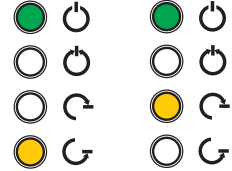
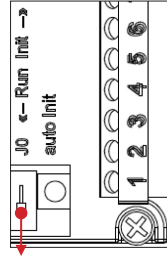
7. **7** Press the red button for the automatic initialisation longer than 2 seconds.

- ▶ Chaser light during the initialisation process
- ▶ Both end-positions will be reached two times automatically

8. Initialisation is completed successfully when all LEDs illuminate permanently



9. Start up by switching back the **6** Initialisation switch from „Init“ to „Run“.



10. Commissioning is completed.

## ATTENTION!



• Please note that all safety functions are immediately available when switching the initialisation switch from „Init“ to „Run“. This can cause an immediate switching of the actuator!

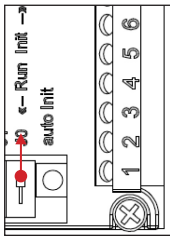
- In case of every (even accidental) switching to „Init“, the whole initialisation process must be carried out anew, because the previously learned values will have been lost.
- After every change of the end position and reassembling the actuator, do not forget to make a new initialisation.

# Operating Instructions

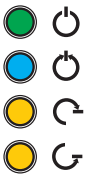
positurn2 and positrol

## Manual initialisation of Positioner mode (learning the positions and other specific values):

1. Check whether the **1** operating direction switch has been set in accordance with the operating direction of the actuator (L/ccw or R/cw).
2. Link electrical connections according to the connection diagram.
3. Select program by the **3** program switch: Choose „analog“ (see also „individual settings“).
4. **5** Choose type of signal.
5. **6** Set the initialisation switch to „Init“.



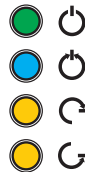
6. Establish power supply.
  - ▶ chaser light illuminates



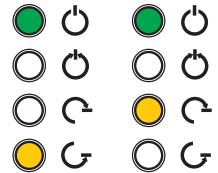
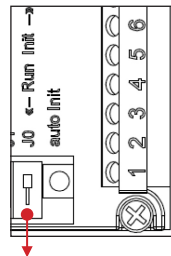
7. The actuator has to be driven to each end position at least two times by making use of the emergency manual override of the solenoid valve. Alternatively, terminals 1 and 2 can be connected alternately with terminal 13 (24 VDC). Terminal 1 and 2 have to be supplied

with power for more than 10 seconds after the end positions are reached.

8. Initialisation is completed successfully when all LEDs illuminate permanently.



9. Start up by switching back the **6** Initialisation switch from „Init“ to „Run“.



10. Commissioning is completed.

# Operating Instructions

positurn2 and positrol

## ATTENTION!

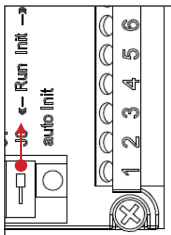


• Please note that all safety functions are immediately available when switching the initialisation switch from „Init“ to „Run“. This can cause an immediate switching of the actuator!

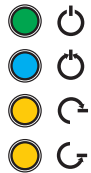
- In case of every (even accidental) switching to „Init“, the whole initialisation process must be carried out anew, because the previously learned values will have been lost.
- After every change of the end position and reassembling the actuator, do not forget to make a new initialisation.

## Manual Initialisation of 3-Position mode (learning end positions and other specific values):

1. Check whether the **operating direction switch** ① has been set in accordance with the operating direction of the actuator (L/ccw or R/cw).
2. Link electrical connections according to the connection diagram.
3. Select program by the ③ program switch: Choose „3P“ (see also „individual settings“).
4. ⑤ Choose type of signal.
5. ⑥ Set the initialisation switch to „Init“.

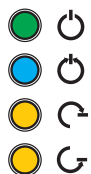


6. Establish power supply.  
▶ chaser light illuminates



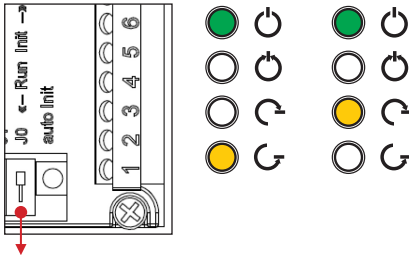
7. The actuator has to be driven to each end position at least two times by making use of the emergency manual override of the solenoid valve. Alternatively, terminals 1 and 2 can be connected alternately with terminal 13 (24 VDC). Terminal 1 and 2 have to be supplied with power for more than 10 seconds after the end positions are reached.

8. Initialisation is successfully completed when all LEDs are illuminating constantly.



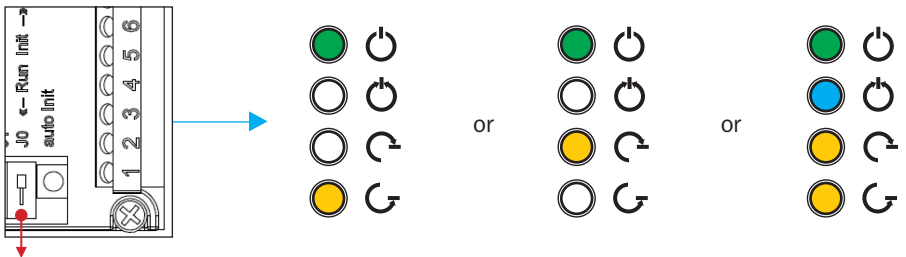
### Manual Initialisation of 3-Position mode (learning end positions and other specific values):

- Start up by switching back ⑥ initialisation switch from „Init“ to „Run“.



- Set the middle position by terminal 3 (24 VDC) and adjust via the ② Potentiometer.

- Subsequently drive to the desired end position.



- The green status-LED illuminates and a yellow LED illuminates depending on the particular end position.

- Commissioning is finished.

# Operating Instructions

positurn2 and positrol

## ATTENTION!



- Please note that all safety functions are immediately available when switching the initialisation switch from „Init“ to „Run“. This can cause an immediate switching of the actuator!
- In case of every (even accidental) switching to „Init“, the whole initialisation process must be carried out anew, because the previously learned values will have been lost.
- After every change of the end position and reassembling the actuator, do not forget to make a new initialisation.

### Explanation of digital signals an status-LEDs

| 6 | 7 | 5 | 4 | Digital output terminal no.            |  |
|---|---|---|---|--|--|
|   |   |   |   | Symbol                                 |  |
|   |   |   |   | Meaning                                |  |
|   |   |   |   | Operation                              |  |
|   |   |   |   | Clockwise end position reached         |  |
|   |   |   |   | Counter Clockwise end position reached |  |
|   |   |   |   | Intermediate position reached          |  |
|   |   |   |   | Initialisation                         |  |

### Description of Safety Functions:

#### Positioner mode 4–20 mA:

##### Unit type: PN2-D / PL-D

- Current supply Terminal 13 + 14 missing
  - Analog input Terminal 8 missing
  - Analog input Terminal 8 < 2 mA
- ▶ Valve persists in last position
  - ▶ Valve persists in last position
  - ▶ Valve persists in last position

##### Unit type: PN2-S / PL-S

- Current supply Terminal 13 + 14 missing
  - Analog input Terminal 8 missing
  - Analog input Terminal 8 < 2 mA
- ▶ Valve moves to safety position
  - ▶ Valve moves to safety position
  - ▶ Valve moves to safety position

##### Unit type: PN2-E / PLE

- Current supply Terminal 13 + 14 missing
  - Analog input Terminal 8 missing
  - Analog input Terminal 8 < 2 mA
- ▶ Valve moves to safety position
  - ▶ Valve moves to safety position
  - ▶ Valve moves to safety position

#### Positioner mode 0–10 V:

##### Unit type: PN2-D / PL-D

- Current supply Terminal 13 + 14 missing
  - Analog input Terminal 8 missing
- ▶ Valve persists in last position
  - ▶ Valve moves to 0 Volt-position

##### Unit type: PN2-S / PL-S

- Current supply Terminal 13 + 14 missing
  - Analog input Terminal 8 missing
- ▶ Valve moves to safety position
  - ▶ Valve moves to 0 Volt-position

##### Unit type: PN2-E / PLE

- Current supply Terminal 13 + 14 missing
  - Analog input Terminal 8 missing
- ▶ Valve moves to safety position
  - ▶ Valve moves to 0 Volt-position

# Operating Instructions

positurn2 and positrol

## Description of Safety Functions:

### Positioner mode 0–20 mA:

#### Unit type: PN2-D / PL-D

- Current supply Terminal 13 + 14 missing
- Analog input Terminal 8 missing
- ▶ Valve persists in last position
- ▶ Valve moves to 0 Volt-position

#### Unit type: PN2-S / PL-S

- Current supply Terminal 13 + 14 missing
- Analog input Terminal 8 missing
- ▶ Valve moves to safety position
- ▶ Valve moves to 0 Volt-position

#### Unit type: PN2-E / PL-E

- Current supply Terminal 13 + 14 missing
- Analog input Terminal 8 missing
- ▶ Valve moves to safety position
- ▶ Valve moves to 0 Volt-position

### Positionermodus 2–10 V:

#### Unit type: PN2-D / PL-D

- Current supply Terminal 13 + 14 missing
- Analog input Terminal 8 missing
- Analog input Terminal 8 < 1,5 V
- ▶ Valve persists in last position
- ▶ Valve persists in last position
- ▶ Valve persists in last position

#### Unit type: PN2-S / PL-S

- Current supply Terminal 13 + 14 missing
- Analog input Terminal 8 missing
- Analog input Terminal 8 < 1,5 V
- ▶ Valve moves to safety position
- ▶ Valve moves to safety position
- ▶ Valve moves to safety position

#### Unit type: PN2-E / PL-E

- Current supply Terminal 13 + 14 missing
- Analog input Terminal 8 missing
- Analog input Terminal 8 < 1,5 V
- ▶ Valve moves to safety position
- ▶ Valve moves to safety position
- ▶ Valve moves to safety position

### Description of Safety Functions:

#### 3-Positions mode:

##### Unit type: PN2-3P-D / PL-3P-D

- Digital input Terminal 1, 2 and 3 missing
- Current supply Terminal 13 + 14 missing
- ▶ Valve persists in last position
- ▶ Valve persists in last position

##### Unit type: PN2-3P-S / PL-3P-S

- Digital input Terminal 1, 2 and 3 missing
- Digital input Terminal 1, 2 and 3 missing longer than 3 seconds
- Current supply Terminal 13 + 14 missing
- ▶ Valve moves to safety position
- ▶ Valve moves to safety position
- ▶ Valve moves to safety position

##### Unit type: PN2-3P-E / PL-3P-E

- Digital input Terminal 1, 2 and 3 missing
- Digital input Terminal 1, 2 and 3 missing longer than 3 seconds
- Current supply Terminal 13 + 14 missing
- ▶ Valve moves to safety position
- ▶ Valve moves to safety position
- ▶ Valve moves to safety position

### Setting the End Positions and the Actuating Speed:

#### DANGER!



Danger of crushing by moving actuator and valve components! Set and secure the mechanical end positions of the actuator.



- If so required, shorten the cable in the solenoid valve wiring or coil it together in a tidy manner and bind together with cable ties.

Use throttles at the pneumatic valves to set the actuating speed of the actuator.

Standard setting: minimum 5 seconds pivoting time for 90° pivoting angle.



- Do not close the throttle completely; the consequence will be that no actuator function will follow.

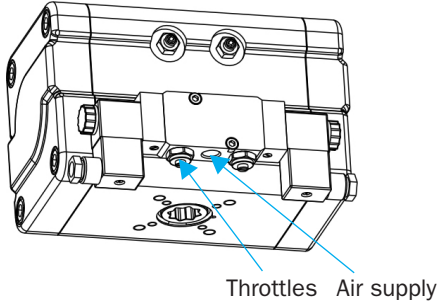


# Operating Instructions

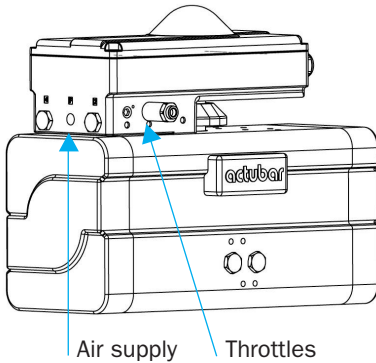
positurn2 and positrol

## Setting the End Positions and the Actuating Speed:

### positurn:



### positrol:



Use throttles at the pneumatic valves to set the actuating speed of the actuator. Standard setting: minimum 5 seconds pivoting time for 90° pivoting angle.

### ATTENTION!



- When using manual operation at the pneumatic valves you have to return them to the initial position afterwards.



- After every change in the end position and reassembling the actuator, do not forget to make a new initialization.



- Imminent danger by moving valve and actuator parts! Set and secure the mechanical end positions of the actuator.



- Do not close the throttle completely; the consequence will be that no actuator function will follow.



- When using manual operation at the pneumatic valves you have to return them to the initial position afterwards.



- After every change in the end position and reassembling the actuator, do not forget to make a new initialization.

# Operating Instructions

positurn2 and positrol

## Changing the safety position:

### positurn:

Only unit type  
PN2-S-S or PN2-S-M!

#### ACHTUNG!



- Before loosening any screws, make sure there is no more pressure on the valve!

In order to change the safety position, turn the valve-unit by 180° and fix it to the actuator. Afterwards a new initialisation is inevitable!

### positrol:

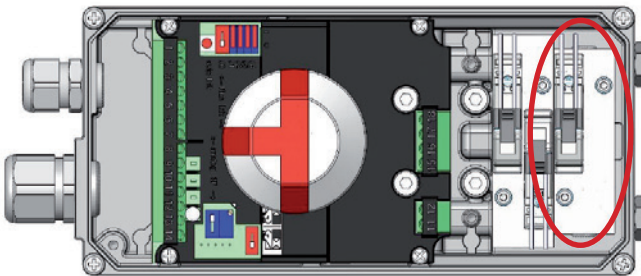
Only unit type  
PL-S!

#### ACHTUNG!



- Before loosening any screws, make sure there is no more pressure on the valve!

Canal 2 becomes vented in general. Therefore the safety position needs to be the basic position of the actuator, while using the actuator type actubar. If you want to change the safety position, flip the rear monostable safety valve by 180 degrees and fasten it again. Afterwards a new initialisation is inevitable.



In general the safety valve is mounted for venting the inner chamber.

# Operating Instructions

positurn2 and positrol

## Faults and their Correction:

| Description  | Possible Cause   | Correction  |
|--|--|---|
| Actuator does not move.  | <ol style="list-style-type: none"><li>1. Air supply not correctly connected</li><li>2. Solenoid valves not correctly connected</li><li>3. Control air inside actuator cannot escape; throttles closed too much</li></ol> | <ol style="list-style-type: none"><li>1. Check air pressure and supply line</li><li>2. Check valve connections.</li><li>3. Open throttles</li></ol> |
| End position not indicated   | Faulty initialisation of the unit  | Initialise anew   |
| Actuator moves to the wrong end position for safety position (just PN2-S and PL-S) | Solenoid valve block wrongly mounted.  | Loosen solenoid valve block, rotate 180° clockwise and re-tighten. Re-wire the coils.   |
| Unit oscillates around the set intermediate position.                              | Too-high actuating speed.  | Throttle-back actuating speed.  |
| Actuator reaches travel stop but valve stays in switch position and keeps venting. | Casing not mounted correctly leads to faulty initialisation of the unit.   | Check if pinion or shaft of the actuator have to much play to each other and initialise anew.   |

# Operating Instructions

positurn2 and positrol

## Cleaning and Maintenance:

### Cleaning:

#### ATTENTION!



- Never use aggressive cleaners or materials to clean the housing of the bar-positurn2. This can lead to damage to the viewing glass or paintwork.
- Clean the housing of the bar-positurn2 with a clean, slightly moistened cloth.
- In the case of hardened-on dirt, use a normal household cleaner according to the instructions on the packaging on the cleaner.

### Maintenance:

#### ATTENTION!

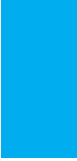



- Never open the protective cover above the delicate electronics. This can lead to damage to the unit and the loss of all warranty claims.
- positurn2 / positrol works maintenance-free.
- In case of defects, which take place inside the warranty time, remove the positioner, and after telephoning us, send it to the address as shown on the rear side.

# Operating Instructions

positurn2 and positrol

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# Operating Instructions

positurn2 and positrol

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The descriptions and photographs contained in this product specification sheet are supplied by way of information only and are not binding. CR-TEC Engineering, Inc. reserves the right to carry out any technical and design improvements to its products without prior notice.

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