

# RSDE10 / RSDE20 / RSDE50 (Contrac)

## Electrical linear actuator



Electric linear actuator in explosion-proof design for operating final control elements.

Rated force

10 to 50 kN (2250 to 11000 lbf)

—  
RSDE10  
RSDE20  
RSDE50

### Introduction

Actuator for the operation of final control elements with preferably linear movement. The thrust rod transfers the force directly to the final control element.

A continuous electronic unit controls the actuators. The special electronic unit serves as the interface between actuator and control system.

### Additional Information

Additional documentation on RSDE10 / RSDE20 / RSDE50 (Contrac) is available for download free of charge at [www.abb.com/actuators](http://www.abb.com/actuators). Alternatively simply scan this code:



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# 1 Safety

## General information and instructions

These instructions are an important part of the product and must be retained for future reference.

Installation, commissioning, and maintenance of the product may only be performed by trained specialist personnel who have been authorized by the plant operator accordingly. The specialist personnel must have read and understood the manual and must comply with its instructions.

For additional information or if specific problems occur that are not discussed in these instructions, contact the manufacturer.

The content of these instructions is neither part of nor an amendment to any previous or existing agreement, promise or legal relationship.

Modifications and repairs to the product may only be performed if expressly permitted by these instructions.

Information and symbols on the product must be observed.

These may not be removed and must be fully legible at all times.

The operating company must strictly observe the applicable national regulations relating to the installation, function testing, repair and maintenance of electrical products.

## Warnings

The warnings in these instructions are structured as follows:

### **DANGER**

The signal word '**DANGER**' indicates an imminent danger. Failure to observe this information will result in death or severe injury.

### **WARNING**

The signal word '**WARNING**' indicates an imminent danger. Failure to observe this information may result in death or severe injury.

### **CAUTION**

The signal word '**CAUTION**' indicates an imminent danger. Failure to observe this information may result in minor or moderate injury.

### **NOTICE**

The signal word '**NOTICE**' indicates possible material damage.

#### **Note**

'**Note**' indicates useful or important information about the product.

## ... 1 Safety

### Intended use

Control actuators are used exclusively for operating final control elements (valves, valve flaps, etc.).

They may only be operated using a suited Contrac electronic unit for field installation or mounting rack installation.

In addition to this operating instruction, the relevant documentation for the electronic unit and software tool must be observed.

### Improper use

The following are considered to be instances of improper use of the device:

- For use as a climbing aid, for example for mounting purposes.
- For use as a bracket for external loads, for example as a support for piping, etc.
- Material application, for example by painting over the housing, name plate or welding/soldering on parts.
- Material removal, for example by spot drilling the housing.

### Notes on data safety

This product is designed to be connected to and to communicate information and data via a network interface.

It is operator's sole responsibility to provide and continuously ensure a secure connection between the product and your network or any other network (as the case may be).

Operator shall establish and maintain any appropriate measures (such as but not limited to the installation of firewalls, application of authentication measures, encryption of data, installation of anti-virus programs, etc.) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and / or theft of data or information.

ABB Automation Products GmbH and its affiliates are not liable for damages and / or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and / or theft of data or information.

### Warranty provisions

Using the device in a manner that does not fall within the scope of its intended use, disregarding this manual, using underqualified personnel, or making unauthorized alterations releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

### Manufacturer's address

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Germany

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#### Customer service center

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Email: [automation.service@de.abb.com](mailto:automation.service@de.abb.com)

## 2 Use in potentially explosive atmospheres

### Note

Technical modifications to the actuator or motor cancel the explosion protection.

- Before installing the actuator, review the information on the name plate regarding device class, Ex category, Ex zone and temperature class to make sure the actuator is approved for operation in the relevant hazardous area. In the event of deviations, the actuator may not be put into operation.
- Check the oil level and mounting position prior to commissioning the device in explosive atmospheres.

Explosion proof Contrac actuators are classified as type II devices for operation in potentially explosive atmospheres for days and device category 2.

They are designed for use in Ex zones 1 and 21.

Can of course also be used in zones 2 and 22 (for gas and dust atmosphere).

### Ex marking

#### Actuator components

|                          |   |
|--------------------------|---|
| Full identification      | II 2 GD ck Ex de [ib] ib II B T4<br>or<br>IP6x T=130 °C ZELM 04 ATEX 0209 X |
| Motor with brake         | II GD Ex de IIB T4  |
| Gearing                  | II 2GD ck T4  |
| Position sensor          | II 2G Ex [ib] ib IIC T4   |
| Anti-condensation heater | II 2G Ex d II C   |
| Connection areas         | II 2G/D Ex e II B T4  |

### Standards

#### Applicable standards

|             |                  |
|-------------|------------------|
| • EN 50 014 | • EN 50 0281-1-1 |
| • EN 50 018 | • EN 13 463-1    |
| • EN 50 019 | • EN 13 463-5    |
| • EN 50 020 | • EN 13 463-8    |

### Thermal motor monitoring

In Contrac control actuators for use in potentially explosive atmospheres, additional independent monitoring of motor temperature is required.

Monitoring can be performed using the ABB SD241-B monitoring unit or a comparable certified tripping unit for thermistor temperature sensors.

The motor temperature monitoring unit interrupts the power supply as soon as the motor temperature up-scales the permissible limit value.

### Operation via frequency transformer

- The frequency converter may not be installed or used within the Ex area.
- Check whether the actuator is connected to the right electronic unit, see section **Device designs** on page 10.
- Check whether the associated electronic unit has been configured using the correct actuator parameters. To do this, check the relevant information on the name plate of the actuator and the electronic unit with respect to actuator type, ambient temperature range of actuator, and NL number, if applicable.
- On delivery, the positioning time-out function of the electronic unit associated with the actuator is activated. Deactivating this setting is not permitted.
- Rapid traverse mode is not allowed to be used on Ex actuators. Therefore, it is not possible to select it via the user interface.
- Activating the breakaway function is not permitted.
- Activating the "Position dependent switch-off" function with 2 × torque/force is not permitted.
- The Contrac electronic unit must be upstream of the motor temperature monitoring unit SD241-B or a similar, certified tripping unit.

### Preventing electrostatic charging

Due to the possibility of impermissible electrostatic charging of the housing occurring, the effects of high-voltage sources on the equipment must be prevented. Electrostatic charging can also occur if the device is wiped with a dry cloth or if large amounts of dust flow around the device in dusty environments. To prevent charging of this type from occurring, the device may only be cleaned using a damp cloth. Dust flowing round the device should be prevented by installing a flow restrictor or partition.

## ... 2 Use in potentially explosive atmospheres

### Overview

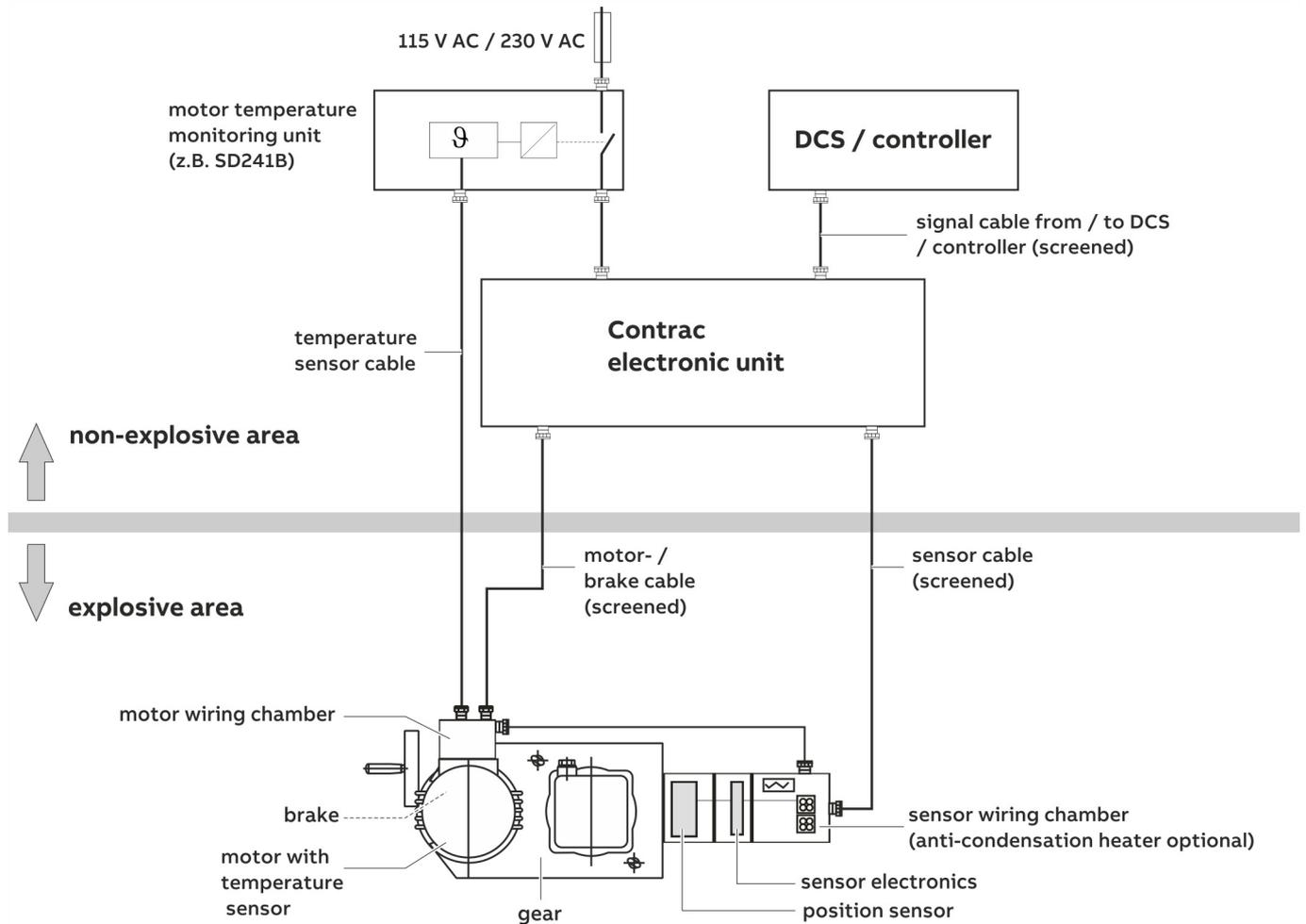


Figure 1: Allocation of the Contrac components when using in potentially explosive atmospheres (example)

## Technical data for the cable set (for Ex-relevant range)

|   | Motor connection                | Motor temperature monitoring   | Signal terminal (option)                           |
|---|---------------------------------|--------------------------------|--|
| Wire conductor  | 8 × 1.5                         | 2 × 1.5                        | 8 × 0.5  |
| Mat.-No.  | 9280271                         | 9280272                        | 9280183  |
| Manufacturer  | Huber + Suhner                  | Huber + Suhner                 | Bröckskes (Helu-Kabel)                             |
| Type  | RX125 S2 B 8g1.5 mm2 BK         | RX125 S2 2×1.5 mm2 BK          | So-LTG-PUR-8 × 0.5<br>(HK-So-Li12YC11Y-OB-8 × 0.5) |
| Sheathing diameter  | 14.3 ±0.4 mm<br>(0.56 ±0.02 in) | 8.0 ±0.4 mm<br>(0.31 ±0.02 in) | 8.5 ±0.4 mm<br>(0.33 ±0.02 in)                     |
| Nominal voltage U <sub>o</sub> / U<br>(U <sub>o</sub> also applies to wire / shielding) | 600 / 1000 V                    | 600 / 1000 V                   | 300 / 500 V  |
| Wire / wire test voltage  | 3.5 kV                          | 3.5 kV                         | 1.2 kV   |

| Temperature range | Motor connection               | Motor temperature monitoring   | Signal terminal (option)       |
|-------------------|--------------------------------|--------------------------------|--------------------------------|
| Moving            | -25 to 125 °C (-13 to 257 °F)  | -25 to 125 °C (-13 to 257 °F)  | -40 to 90 °C -40 to 194 °F)    |
| Not moving        | -40 to 125 °C (-40 to 257 °F)  | -40 to 125 °C (-40 to 257 °F)  | -50 to 90 °C (-58 to 194 °F)   |
| Protective earth  | GNYE                           |                                |                                |
| Environment       | UV-resistant and weather-proof | UV-resistant and weather-proof | UV-resistant and weather-proof |

|                      | Motor connection  | Motor temperature monitoring     | Signal terminal (option) |
|----------------------|---|----------------------------------|--------------------------|
| Cable gland          | 13.5 to 18 / M25 × 1.5 Exe  | 4 to 8.5 / M20 × 1.5 Exe         |                          |
| Mat.-No.             | 9287589   | 9287588                          |                          |
| Manufacturer         | Rabe-System-Technik   | Rabe-System-Technik              |                          |
| Type                 | CMDEL-T   | ADE 1F                           |                          |
| Article no.          | 00222574  | 00816674                         |                          |
| Cable diameter       | 13.5 to 18 mm<br>(0.53 to 0.71 in)  | 4 to 8.5 mm<br>(0.16 to 0.33 in) |                          |
| Material             | Brass, nickel-plated  | Brass, nickel-plated             |                          |
| Standard seal insert | Neoprene  | Neoprene                         |                          |
| O-ring               | Perbunan  | Neoprene                         |                          |
| Temperature range    | -40 to 100 °C (-40 to 212 °F)   | -40 to 100 °C (-40 to 212 °F)    |                          |
| IP rating            | IP 68 - 10 bar (140.04 psi)   | IP 68 - 5 bar (72.52 psi)        |                          |
| Certificate          | LCIE 97 ATEX 6005 X / 01  | LCIE 97 ATEX 6008 X / 03         |                          |
| Marking              |  II 2 G D<br>Ex e II / Ex tD | Ex II 2 G D, Exe II              |                          |

## ... 2 Use in potentially explosive atmospheres

### ... Technical data for the cable set (for Ex-relevant range)

| Option            | Motor connection   | Motor temperature monitoring  | Signal terminal (option) |
|-------------------|--|---|--------------------------|
| Manufacturer      | Pflitsch   | Pflitsch  |                          |
| Type              | blue globe ATEX  | blue globe ATEX   |                          |
| Diameter          | M25 × 1.5 KAD20-16/16-11   | M20 × 1.5 KAD14-9/9-5   |                          |
| Article no.       | bg225 msex   | bg220 msex  |                          |
| Temperature range | -40 to 115 °C (-40 to 239 °F)  | -40 to 115 °C (-40 to 239 °F)   |                          |
| IP rating         | IP 68  | IP 68   |                          |
| Certificate       | PTB 06 ATEX 1036 X   | PTB 06 ATEX 1036 X  |                          |
| Marking           |  II 2 G Ex e II |  II 2 D Ex tD A21 IP68 |                          |

#### Note

If the specified cable harness does not meet all safety-relevant requirements, the proper installation material must be used.

## 3 Design and function

### Design



- ① Control motor
- ② Handwheel
- ③ Thrust rod

Figure 2: RSDE (illustrations may differ from actual installation)

### Principle of operation

Actuator for the operation of final control elements with preferably linear movement. The thrust rod transfers the force directly to the final control element.

A special electronic unit controls the actuators. The special electronic unit serves as the interface between actuator and control system.

During continuous positioning, the electronic unit varies the motor torque steplessly until the actuator force and the control valve force are balanced. High response sensitivity and high positioning accuracy with short positioning time ensure an excellent control quality and a long actuator life.

## ... 3 Design and function

### Device designs

|                                    | RSDE10 / RSDE20 / RSDE50 (Contrac)   |
|------------------------------------|--|
| Operating mode                     | S9; stall-proof as per IEC 60034-1 / EN 60034-1  |
| IP rating                          | IP 66 acc. to IEC 60529 / EN 60529; Ex protection IP6x acc. to EN 60079-31   |
| Humidity                           | ≤ 95% annual average; condensation not permitted   |
| Ambient temperature                | -20 to 60 °C (-4 to 140 °F)<br>(reduced operating speed at rated load and below -10 °C (14 °F))  |
| Transport and storage temperature  | -20 to 60 °C (-4 to 140 °F)  |
| Long-term storage temperature      | -20 to 40 °C (-4 to 104 °F)  |
| Mounting position                  | IMV 1; IMV 3; IMB 5; preferably IMV 1 acc. to IEC 60034-7 / EN 60034-7<br>RSDE10 / RSDE20 The mounting position IMB 5 (handwheel down) is not permitted in the case of applications in Zones 21 and 22.<br>RSDE50 Mounting position IMV 3 is not permissible for RSDE50 120 mm stroke. |
| Coating                            | 2-layer component epoxy (RAL 9005, black)  |
| Anti-condensation heater           | Motor winding: directly from electronic unit.<br>Signal space: separate heating resistor; separate power supply or power feed from Contrac electronic unit   |
| Electrical connection              | Terminals in explosion e area; separately for motor and signals<br>Connection cable for electronic unit – actuator available as an option (see ordering information for electronic unit)   |
| Power supply for motor and sensors | Via Contrac electronic unit only   |

|                                   | RSDE10-5.0   | RSDE10- <del>\$</del> 110.0           | RSDE20-5.0   | RSDE20- <del>\$</del> 17.5           |
|-----------------------------------|--|---------------------------------------|--|--------------------------------------|
| Rated force                       | 10 kN (2200 lbf) (adjustable to 0.5 / 0.75 or 1 × rated force)   |                                       | 20 kN (4400 lbf) (adjustable to 0.5 / 0.75 or 1 × rated force) |                                      |
| Starting force                    | 1.2 × rated force (break-away torque in end positions for short time 2 × rated force)  |                                       |  |                                      |
| Rated operating speed, adjustable | 0.1 to 5.0 mm/s<br>(254 to 5 s/in)   | 0.1 to 10.0 mm/s<br>(254 to 2.5 s/in) | 0.1 to 5.0 mm/s<br>(254 to 5 s/in)                             | 0.1 to 7.5 mm/s<br>(254 to 3.4 s/in) |
| Stroke                            | min.: 0 to 15 mm (0 to 0.59 in) / max. 0 to 100 mm (0 to 4 in)<br>or min.: 0 to 50 mm (0 to 1.97 in) / max. 0 to 300 mm (0 to 11.8 in) |                                       |  |                                      |
| Weight (100 mm stroke)            | Approx. 57 kg (126 lb)   | Approx. 57 kg (126 lb)                | Approx. 57 kg (126 lb)   | Approx. 60 kg (132 lb)               |
| Weight (300 mm stroke)            | Approx. 82 kg (181 lb)   | Approx. 82 kg (181 lb)                | Approx. 82 kg (181 lb)   | Approx. 85 kg (187 lb)               |
| Associated electronic unit        | For field mounting: EBN853<br>For rack installation: EBS852  |                                       |  |                                      |
| Thermal motor monitoring          | With motor temperature monitoring equipment SD241B or similarly certified tripping unit for thermistor temperature sensors.            |                                       |  |                                      |
| Motor                             | BD 80 K-4B   | BD 80 K-4B                            | BD 80 K-4B   | BD 80 L-4B                           |
| Sensors                           | Position transmitter and temperature sensor always available   |                                       |  |                                      |

|                                   | <b>RSDE50-3.0</b>  | <b>RSDE50-10.0</b>  |
|-----------------------------------|--|---|
| Rated force                       | 50 kN (11000 lbf) (adjustable to 0.5 / 0.75 or 1× rated force)   |   |
| Starting force                    | 1.2 × rated force (break-away torque in end positions for short time 2 × rated force)  |   |
| Rated operating speed, adjustable | 0.1 to 3.0 mm/s (254 to 8.5 s/in)  | 0.1 to 10.0 mm/s (254 to 2.5 s/in)                          |
| Stroke                            | min.: 0 to 15 mm (0 to 0.59 in) / max. 0 to 120 mm (0 to 4.7 in)<br>or min.: 0 to 60 mm (0 to 2.36 in) / max. 0 to 300 mm (0 to 11.8 in) |   |
| Weight (120 mm stroke)            | Approx. 130 kg (287 lb)  | Approx. 146 kg (322 lb)                                     |
| Weight (300 mm stroke)            | Approx. 155 kg (342 lb)  | Approx. 171 kg (377 lb)                                     |
| Associated electronic unit        | For field mounting: EBN853<br>For rack installation: EBS852  | For field mounting: EBN861<br>For rack installation: EBS862 |
| Thermal motor monitoring          | With motor temperature monitoring equipment SD241B or similarly certified tripping unit for thermistor temperature sensors               |   |
| Motor                             | BD 90 L2-4B  | BD 100 L2-4B  |
| Sensors                           | Position and temperature sensor always available   |   |

## 4 Product identification

### Name plate

|   |  |                |                |
|---|--|----------------|----------------|
| ① | Antrieb/ Actuator CONTRAC ...  |                |                |
| ② | F-Nr./No   | NL -/-         |                |
| ③ | F=   | Jahr/Year      | CE<br>0044     |
| ④ | Ta =   | IP 66          |                |
| ⑤ | s = min. .... max. ....  | v = ..... mm/s |                |
| ⑥ | Öl / Oil:  |                | II 2G<br>II 2D |
| ⑦ | für/for Elektronik/Electronics EBN.../EBS...   |                |                |
| ⑧ | II 2G ck Ex d e [ib] ib IIB T4 Gb, II 2D ck Ex tb IIIC T130°C                        |                |                |
| ⑨ | PTZ 16 ATEX 0017X  |                |                |
| ⑩ |  |                |                |
|   | ABBAutomationProducts GmbH<br>Schillerstraße 72<br>D-32425 Minden<br>Made in Germany |                |                |

- |   |  |
|---|--|
| ① Full type designation   | ⑥ Filled oil types                       |
| ② Manufacturing number / NL-no.<br>(In the case of a non-listed design)                                 | ⑦ Associated Contrac electronic unit     |
| ③ Rated force / Year of manufacture   | ⑧ Explosion protection degree            |
| ④ Permissible ambient temperature / IP-rating / CE mark with information about the monitoring authority | ⑨ Approval body and inspection no.       |
| ⑤ Min., max. stroke / max. operating speed / heating (optional)   | ⑩ Free for customer-specific information |

Figure 3: RSD name plate

## 5 Transport and storage

### Inspection

Check the devices immediately after unpacking for possible damage that may have occurred from improper transport. Details of any damage that has occurred in transit must be recorded on the transport documents. All claims for damages must be submitted to the shipper without delay and before installation.

### Transporting the device

#### Safety instructions

#### DANGER

##### **Danger to life due to falling or toppling loads.**

Risk of death or serious injury due to the device falling down or toppling over!

- Standing under suspended loads is prohibited.
- Do not detach the hoisting equipment until installation is complete.
- Only use the dedicated load pick-up devices (eyebolts) for suspending the components.

Consider the following items during transport:

- Pay attention to the device weight details.
- Do not expose the device to humidity during transport. Pack the device accordingly.
- Pay attention to the permissible transportation temperatures for the device.

### Returning devices

For the return of devices, follow the instructions in **Repair** on page 33.

## Storing the device

### Note

The storage data provided below assumes that the devices are fully closed and thus comply with the IP rating stated in the specification.

When devices are supplied, their IP rating is guaranteed. If the devices have been tested or commissioned, the IP rating needs to be guaranteed before they are put into storage.

The devices may be stored under moist and corrosive conditions for a short time. The equipment is protected against external corrosive influences. However, direct exposure to rain, snow, etc., must be avoided.

The permissible storage and transport temperatures must be observed.

Devices equipped with a heater are also protected by desiccant, which is placed in the following locations where condensation may be a problem:

|                  |                                  |
|------------------|----------------------------------|
| Position sensor: | In connection chamber            |
| Electronic unit  | In electrical connection chamber |

The desiccant guarantees sufficient protection for approximately 150 days. It can be regenerated at a temperature of 90 °C (114 °F) within 4 h.

Remove the desiccant prior to commissioning the actuator or the electronics.

If you intend to store or transport the device for a prolonged period (> 6 months), we recommend that you wrap it in plastic film and add desiccant.

Protect uncovered metallic surfaces with an appropriate long-term corrosion inhibitor.

The relevant long-term storage temperatures must be observed.

## 6 Installation

### Safety instructions

#### **DANGER**

##### **Danger to life due to falling or toppling loads.**

Risk of death or serious injury due to the device falling down or toppling over!

- Standing under suspended loads is prohibited.
- Do not detach the hoisting equipment until installation is complete.
- Only use the dedicated load pick-up devices (eyebolts) for suspending the components.

Please observe the following safety instructions

- Only qualified specialists may mount and adjust the control actuator, and make the electrical connection.
- When working on the actuator or the electronics always observe the locally valid accident prevention regulations and the regulations concerning the construction of technical installations.
- Switch off the supply voltage and take precautions to prevent unintentional switch-on.

### Mounting

#### **Actuator check**

Before you start to install the actuator make sure that the delivery status corresponds to the ordered status and to the intended use.

- Check the oil level when installing the device in positions other than IMV 1. Add oil if necessary.
- Once the actuator is installed, fasten the vent valve in the uppermost oil hole.
- Prior to commissioning the device, make sure that the motor and the connection chambers are free of dirt, humidity and corrosion.
- Make sure adequate actuator travel is provided for the valve stroke.

## ... 6 Installation

### ... Mounting

#### Installation instructions

- Make sure that no process forces are exerted on the final control element.
- Do not lift the actuator by the motor or handwheel.
- The load pick-up device (eyebolt) attached to the actuator may only be loaded in the vertical direction. Only use the load pick-up device to lift / lower the actuator (without final control element mounted).
- Make sure that the actuator is accessible from all sides so that convenient handwheel operation, electrical connection, or exchange of assemblies is possible.
- Select the installation location such to avoid direct exposure to rain, snow and other environmental influences.
- During operation, an increase in the surface temperature caused by heat transfer via the interface to the valve on the actuator flange and on the thrust rod must not exceed 100 °C (212 °F). This surface temperature must be checked.
- The control actuators can withstand vibration loadings in accordance with EN 60068-2-6, Table C.2 to 150 Hz and max. 2 g. In the IMB 5 mounting position, vibration loading is not permitted. If the operating conditions do not allow you to make a clear assessment as to whether the vibration loading remains significantly below the proven contingent throughout the equipment's service life, the maintenance intervals must be reduced accordingly so that any oil leaks which may occur can be identified in good time.
- Make sure that the actuator elements (thrust rod and valve stem) do not introduce any additional vibration loading. This can be done by decoupling the linear actuator from the vibrations by using suitable measures (e.g., spring couplings or vibration absorbers between valve stem and thrust rod).
- The substructure should be designed to be level and torsion-resistant.
- When mounting the actuator close to heat sources use an insulating layer or shielding.
- Make sure that the maximum ambient temperature is not up-scaled. If required, provide a sunshield to protect against direct sunlight.
- The internal stroke limiter prevents the actuator thrust rod from leaving the housing. Make the mechanical adjustment so that in the end position there is still a 3% gap to its internal counterpart.

#### Valve design requirements

- The force in the end position can be up to 2.5 times higher than the rated force.

### Mounting position

#### RSDE10 / RSDE20 / RSDE50

The spur gears of the RSDE10 / RSDE20 and RSDE50 (Contrac) actuators are oil lubricated. When delivered, the actuator is filled at the factory with the oil volume in accordance with IMV 1. Once the actuator is installed replace the uppermost check plug by the separately supplied venting plug. The mounting position IMB 5 (handwheel down) is not permitted in the case of applications in Zones 21 and 22.

The mounting positions shown in **Figure 4** and **Figure 5** are permissible. To facilitate mounting and maintenance, however, it is recommended to use orientation IMV 1. For each mounting position, you should check the specified oil level before commissioning, see **Filling volumes** on page 32.

#### Note

Maintain a minimum distance of 80 mm (3.15 in) to ensure sufficient cooling air supply and for possible module replacement.

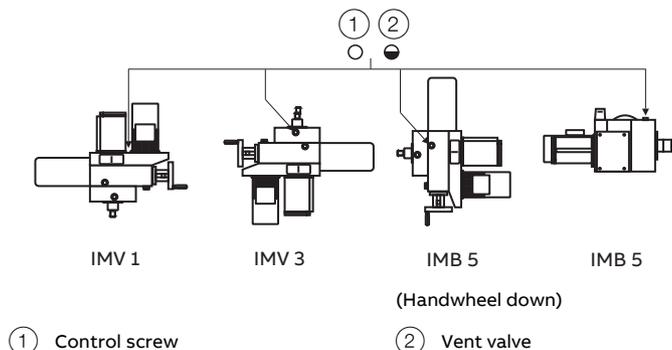


Figure 4: Mounting positions RSDE10 / RSDE20

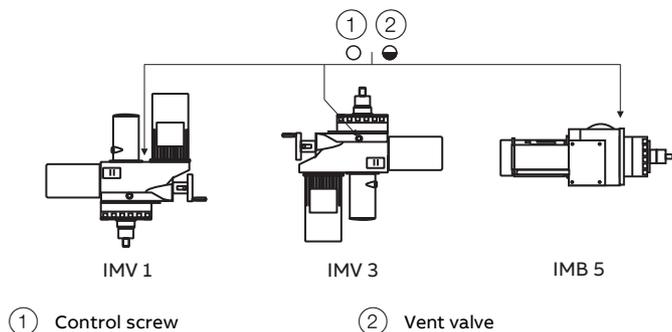
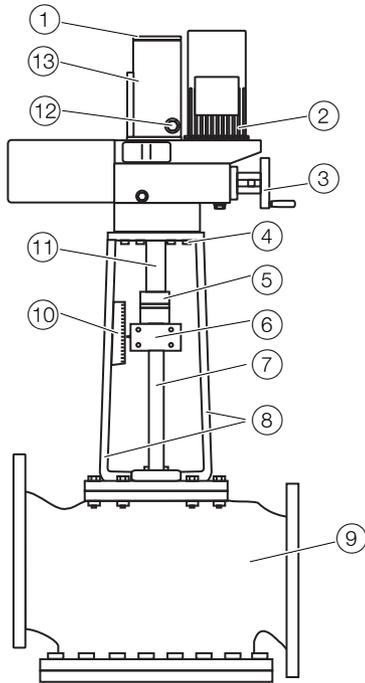


Figure 5: Mounting positions RSDE50

## Mounting examples



- |                        |                                  |
|------------------------|----------------------------------|
| ① Cover for thrust rod | ⑧ Valve yoke                     |
| ② Control motor        | ⑨ Valve                          |
| ③ Handwheel            | ⑩ Mechanical position indication |
| ④ Fixing screws (8.8)  | ⑪ Thrust rod                     |
| ⑤ External limit stop  | ⑫ Screw plug for stop adjustment |
| ⑥ Coupling             | ⑬ Thrust rod cover               |
| ⑦ Valve stem           |                                  |

Figure 6: Mounting example

## ... 6 Installation

### Adaptation of actuator stroke to the valve stroke

The factory-set actuator stroke corresponds to the stroke named on the ID-label +1 mm (0.04 in). If an application requires stroke adjustment, proceed as follows (comply with min. / max. stroke; see **Device designs** on page 10):

#### Note

With a mounting position other than IMV 1, drain the oil until the oil level is below the thrust rod cover (see **Figure 6**, ⑬).

1. Drive the thrust rod completely out with the handwheel. The internal limit stop should now be touching the driving sleeve.
2. Loosen the screws of the thrust rod cover and remove the cover.
3. Open the screw plug in the thrust rod cover.
4. Both Allen clamping screws are accessible through the opening. Loosen the screws.
5. Use the handwheel to drive in the thrust rod until the actuator stroke matches the required valve stroke.
6. Turn the internal limit stop (slotted ring nut) with a screwdriver clockwise until it is touching the drive sleeve. Finally, turn it back approx. 1 turn.
7. Tighten both Allen screws to the required torque 26 Nm (19.18 lbf-ft).
8. Reattach the cover for the thrust rod.
9. Screw in the lateral screw plug.
10. Fill the oil according to mounting position.

### Assembly with the final control element

1. Retract the thrust rod fully and place the actuator onto the valve yoke.
2. Make sure the valve stem is aligned with the center of the bore and at right angles to the actuator seat (permissible parallel deviation < 0.1 mm (0.009 in) in relation to the total stroke).
3. Fasten the actuator on the valve yoke using slightly oiled screws of property class 8.8 (tensile strength 800 N/mm<sup>2</sup> (116,032 lbf/in<sup>2</sup>) Fasten to yield strength 640 N/mm<sup>2</sup> (93550 lbf/in.<sup>2</sup>)).

#### Note

Observe the fastening torques and thread dimensions in the actuator flange!

| Actuator        | Tightening torque      | Flange thread |
|-----------------|------------------------|---------------|
| RSDE10 / RSDE20 | 175 Nm (129.07 lbf-ft) | M16-20 deep   |
| RSDE50          | 340 Nm (250.77 lbf-ft) | M20-25 deep   |

4. Use the handwheel to extend the thrust rod; link the rod with the valve stem via the coupling.
5. Manually retract the thrust rod to check whether or not the external limit stop of the actuator is on the housing flange before the valve cone touches the cover.
6. If required, adjust with the coupling (only possible within certain limits!).

## Dimensions

### Control actuator RSDE10 / RSDE20

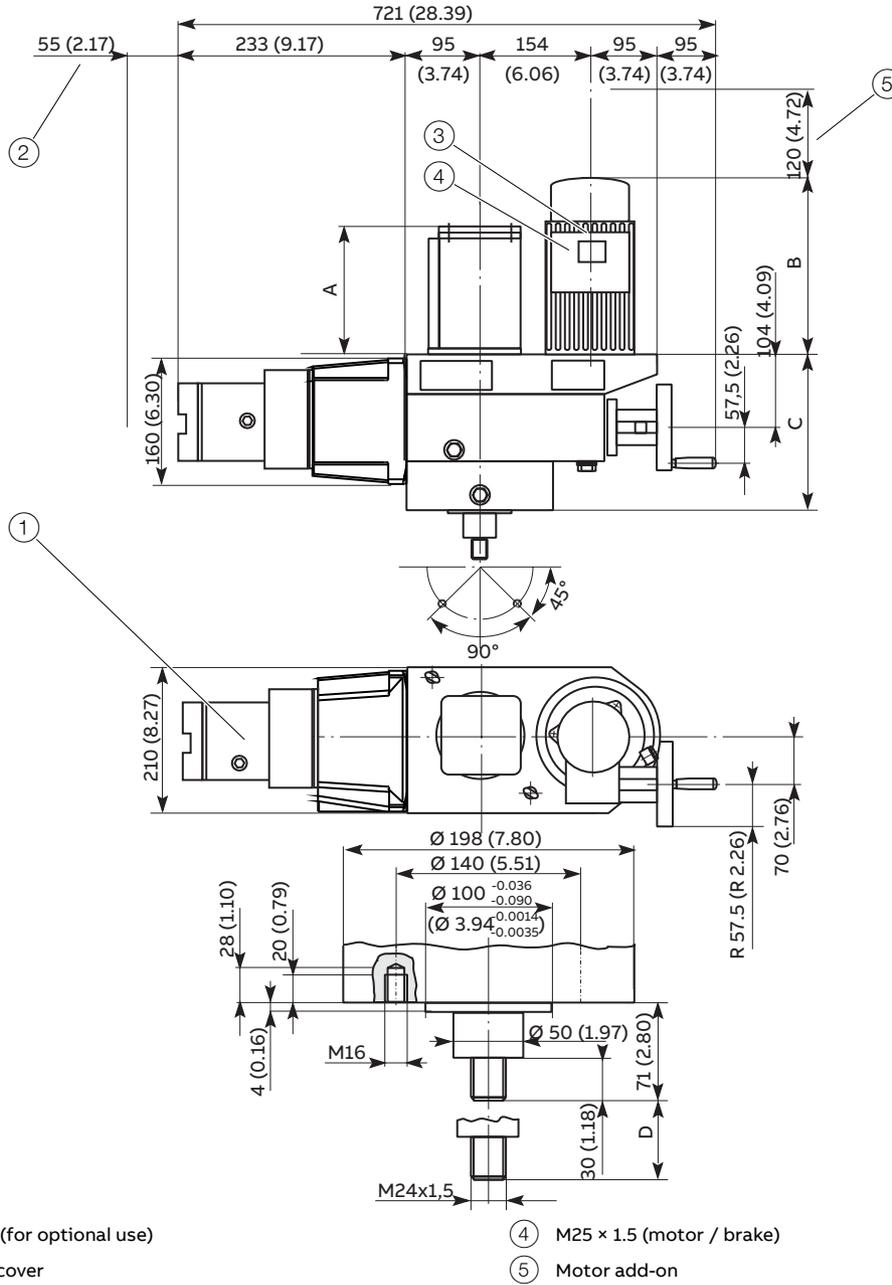


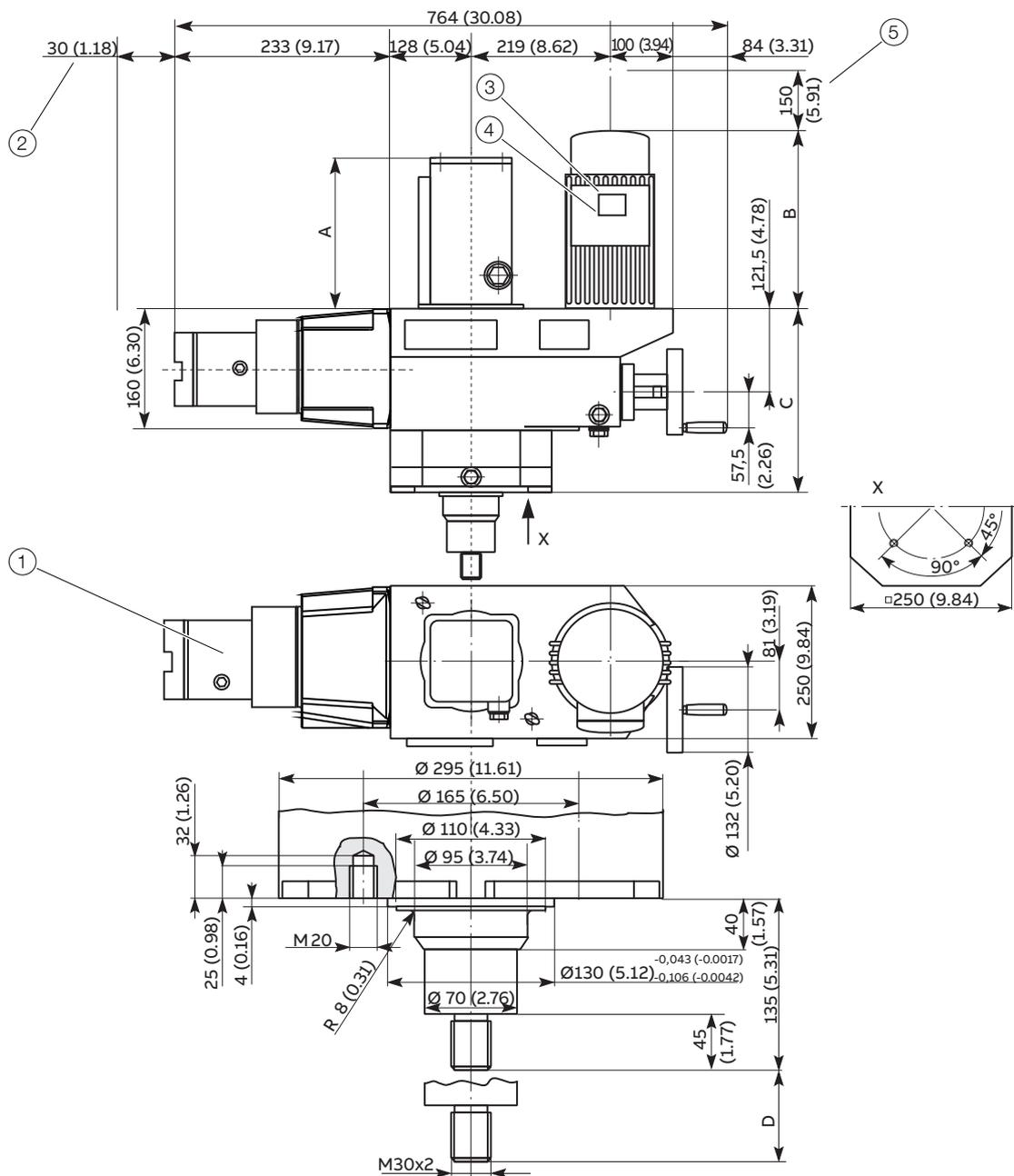
Figure 7: Dimensions in mm (in)

| Rated actuator travel (mm / in) | A           |                 | B                           | C           | D           |
|---------------------------------|-------------|-----------------|-----------------------------|-------------|-------------|
| 100 (3.94)                      | 210 (8.27)  | Max. 235 (9.25) | RSDE20-7.5: Max.280 (11.02) | 248 (9.76)  | 100 (3.94)  |
| 300 (11.81)                     | 410 (16.14) |                 |                             | 448 (17.64) | 300 (11.81) |

# ... 6 Installation

## ... Dimensions

### Control actuator RSDE50



- ① 2 × M20 x 1.5 for signals (for optional use)
- ② Space for removing the cover
- ③ M20 × 1.5 (temperature sensor)
- ④ M25 × 1.5 (motor / brake)
- ⑤ Motor add-on

Figure 8: Dimensions in mm (in)

| Rated actuator travel (mm / in) | A           |                  |                  | B           | C | D           |
|---------------------------------|-------------|------------------|------------------|-------------|---|-------------|
| 120 (4.72)                      | 239 (9.41)  | RSDE50-3.0:      | RSDE50-10.0:     | 299 (11.77) |   | 120 (4.72)  |
| 300 (11.81)                     | 422 (16.61) | Max. 380 (14.96) | Max. 415 (16.34) | 479 (18.86) |   | 300 (11.81) |

## 7 Electrical connections

### Safety instructions

#### WARNING

##### Risk of injury due to live parts!

Risk of death or serious injuries due to electricity and unexpected machine movements. In automatic mode the motor is always under power, even at standstill.

- When working on the actuator or the related subassembly, switch off the supply voltage for the electronic unit and separate anti-condensation heater (option), and take precautions to prevent unintentional switch-on.

The electrical connection may only be established by authorized specialist personnel.

Notices on electrical connection in this instruction must be observed; otherwise, electric safety and the IP-rating may be adversely affected.

Safe isolation of electric circuits which are dangerous if touched is only guaranteed when the connected devices fulfill the requirements of EN 61140 (basic requirements for secure separation).

To ensure safe isolation, install supply lines so that they are separate from electrical circuits which are dangerous if touched, or implement additional isolation measures for them.

Each actuator requires a suited Contrac electronic unit with installed actuator-specific software. Observe the information in the operating instruction. The specifications on the name plates of the electronic unit and actuator must match to guarantee correct hardware and software allocation.

### Conductor cross-section on control actuator

#### Screw terminals

|             |                                   |
|-------------|-----------------------------------|
| Motor/brake | max. 2.5 mm <sup>2</sup> (14 AWG) |
| Signals     | max. 2.5 mm <sup>2</sup> (14 AWG) |

### Conductor cross-section on electronic unit

#### Note

Detailed information on separate electronic units can be found in the corresponding data sheets.

#### EBN853 – Screw terminals

|             |   |
|-------------|---|
| Motor/brake | rigid: 0.2 to 6 mm <sup>2</sup> (24 to 10 AWG)      |
|             | flexible: 0.2 to 4 mm <sup>2</sup> (24 to 12 AWG)   |
| Mains       | rigid: 0.5 to 6 mm <sup>2</sup> (20 to 10 AWG)      |
|             | flexible: 0.5 to 4 mm <sup>2</sup> (20 to 12 AWG)   |
| Signals     | rigid: 0.5 to 4 mm <sup>2</sup> (20 to 12 AWG)      |
|             | flexible: 0.5 to 2.5 mm <sup>2</sup> (20 to 14 AWG) |

#### EBN861 – Screw terminals

|               |   |
|---------------|---|
| Motor / brake | rigid: 0.2 to 6 mm <sup>2</sup> (24 to 10 AWG)      |
|               | flexible: 0.2 to 4 mm <sup>2</sup> (24 to 12 AWG)   |
| Mains         | rigid: 0.5 to 6 mm <sup>2</sup> (20 to 10 AWG)      |
|               | flexible: 0.5 to 4 mm <sup>2</sup> (20 to 12 AWG)   |
| Signals       | rigid: 0.5 to 4 mm <sup>2</sup> (20 to 12 AWG)      |
|               | flexible: 0.5 to 2.5 mm <sup>2</sup> (20 to 14 AWG) |

#### EBS852 – Clamping connection

|                      | Suited for cable Ø | Terminals for conductor cross-section |
|----------------------|--------------------|---------------------------------------|
| Mains cable          | 13 mm (0.51 in)    | max. 4 mm <sup>2</sup> (12 AWG)       |
| Signal cable (DCS)   | 8 mm (0.31 in)     | max. 1.5 mm <sup>2</sup> (16 AWG)     |
| Transmitter (option) | 8 mm (0.31 in)     | max. 1.5 mm <sup>2</sup> (16 AWG)     |
| Motor cable          | 13 mm (0.51 in)    | max. 4 mm <sup>2</sup> (12 AWG)       |
| Sensor cable         | 8 mm (0.31 in)     | max. 1.5 mm <sup>2</sup> (16 AWG)     |

#### EBS862 – Clamping connection

|                      | Terminals for conductor cross-section |
|----------------------|---------------------------------------|
| Mains cable          | max. 6 mm <sup>2</sup> (10 AWG)       |
| Signal cable (DCS)   | max. 4 mm <sup>2</sup> (12 AWG)       |
| Transmitter (option) | max. 4 mm <sup>2</sup> (12 AWG)       |
| Motor cable          | max. 6 mm <sup>2</sup> (10 AWG)       |
| Sensor cable         | max. 4 mm <sup>2</sup> (12 AWG)       |

## ... 7 Electrical connections

### ... Conductor cross-section on electronic unit

#### Cable glands

#### DANGER

##### Risk of explosion!

Risk of explosion due to the use of unsuitable cable glands.

- The cable glands used must be approved for type of protection 'Ex e – increased safety'.
- The cable glands used must guarantee correct contact of the cable shielding.

The actuators and electronic units are supplied without cable glands. Suited cable glands must be installed on site.

#### Tap holes for cable glands

|                    | metric         | optional adapters for* |               |
|--------------------|----------------|------------------------|---------------|
| Signals            | M20 × 1.5 (2×) | PG 16 (2×)             | NPT ½ in (2×) |
| Motor              | M25 × 1.5 (1×) | PG 21 (1×)             | NPT ¾ in (1×) |
| Temperature sensor | M20 × 1.5 (1×) | PG 16 (2×)             | NPT ½ in (2×) |

\* Adapter for PG or NPT thread must be ordered separately

#### Selection of suited connection cables

Please observe the following information when selecting cables:

- Use suited cables only for the electric connection between the Contrac control actuator in potentially explosive atmospheres and the components outside of the potentially explosive atmospheres.
- Use shielded cables for the motor / brake cable, the sensor cable, and the signal cable to the control system / controller.
- Connect the shielding of the motor / brake cable and the sensor cable on both sides (to the actuator and to the Contrac electronic unit).
- For the connection between the motor and motor temperature monitoring unit and for the power supply, shielded cables are not required.

#### Installation information on the cable harness for actuators in Ex design

The electrical connection between the Contrac electronic unit and the Contrac actuator can be established using the cable set (order code 695). The cable harness is not part of the Ex prototype test certificate and must therefore be tested for safety-relevant functionality within the complete installation by the installer or operator.

If the specified cable harness does not meet all safety-relevant requirements, the proper installation material must be used. For the specified motor connection cable, the shielding must be connected at both ends and connected with protective ground.

Please observe the following information when installing the cable set:

- The specific regulations governing the installation of electric systems in potentially explosive atmospheres must be observed during electric installation work. The provisions in accordance with EN 60079-14 must be observed, particularly in respect of installing the shield bonding and potential equalization between the actuator, electronic unit, and motor protection equipment, see **Connection of cable shielding** on page 21.
- The motor and position sensor may only be connected using IP 66 Ex cable glands in accordance with EN 60079 ff with EU type examination certificate in accordance with Directive 2014/34/EU.
- Use a cable lug or a solid wire, bended to a 'U', to connect the motor cable
- Make sure that sufficient strain relief measures are in place for all cable connections.
- Protect all cables in the connection chambers sufficiently against contact with metal components. Guarantee a gap of at least 6 mm (0.24 in) between all conductive components.
- Remove the desiccant in the connection chamber of the motor and position sensor.
- Do not change the factory-set installation position of the motor junction box.
- Close off any cable entries that are not required using ATEX-certified IP 66 sealing plugs.

## Connection of cable shielding

### Sensor-connection chamber

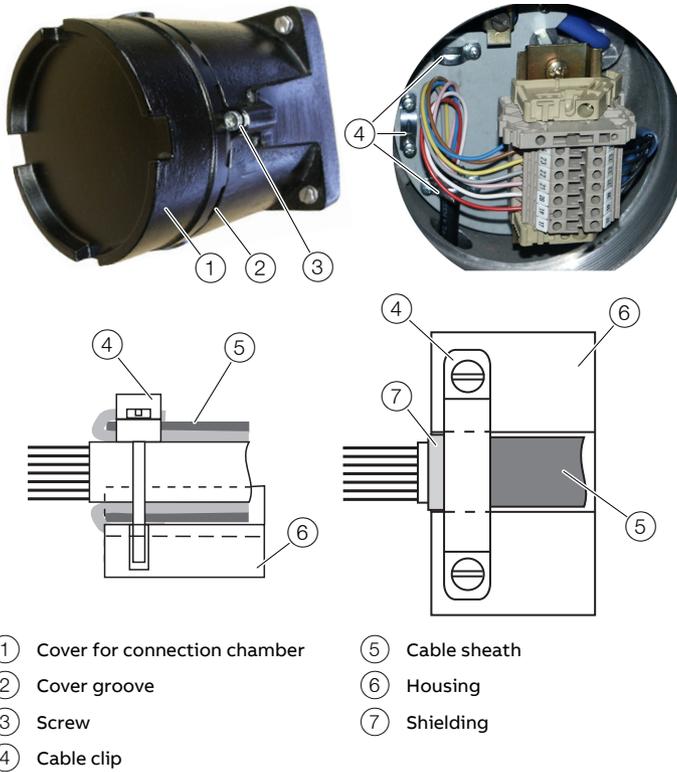


Figure 9: Connection of the cable shielding in the sensor connection chamber

1. Insert screw.
2. Unscrew the cover for the connection chamber
3. Cut the cable sheath to the required length.
4. Separate the cable shield and pull it back over the outer sheath
5. Push the cable through the cable gland and fasten it with the cable clip
6. Make sure that the cable shield is in contact with the clip and the housing.
7. Connect cable in accordance with **Electrical connections** on page 19.
8. Check the cable connections for tight fit and fasten the cable gland.
9. Screw the cover of the connection chamber back on tight.
10. Loosen the screw to the point where until it is pressing against the cover ①. Make sure that the screw is fully inserted in a groove in the cover ②.

#### Note

When installing the cover for the connection area, take care not to damage the sealing ring. If the sealing ring is damaged, contact the manufacturer.

#### Motor connection chamber

Apply the cable shield to the motor in a suited manner.

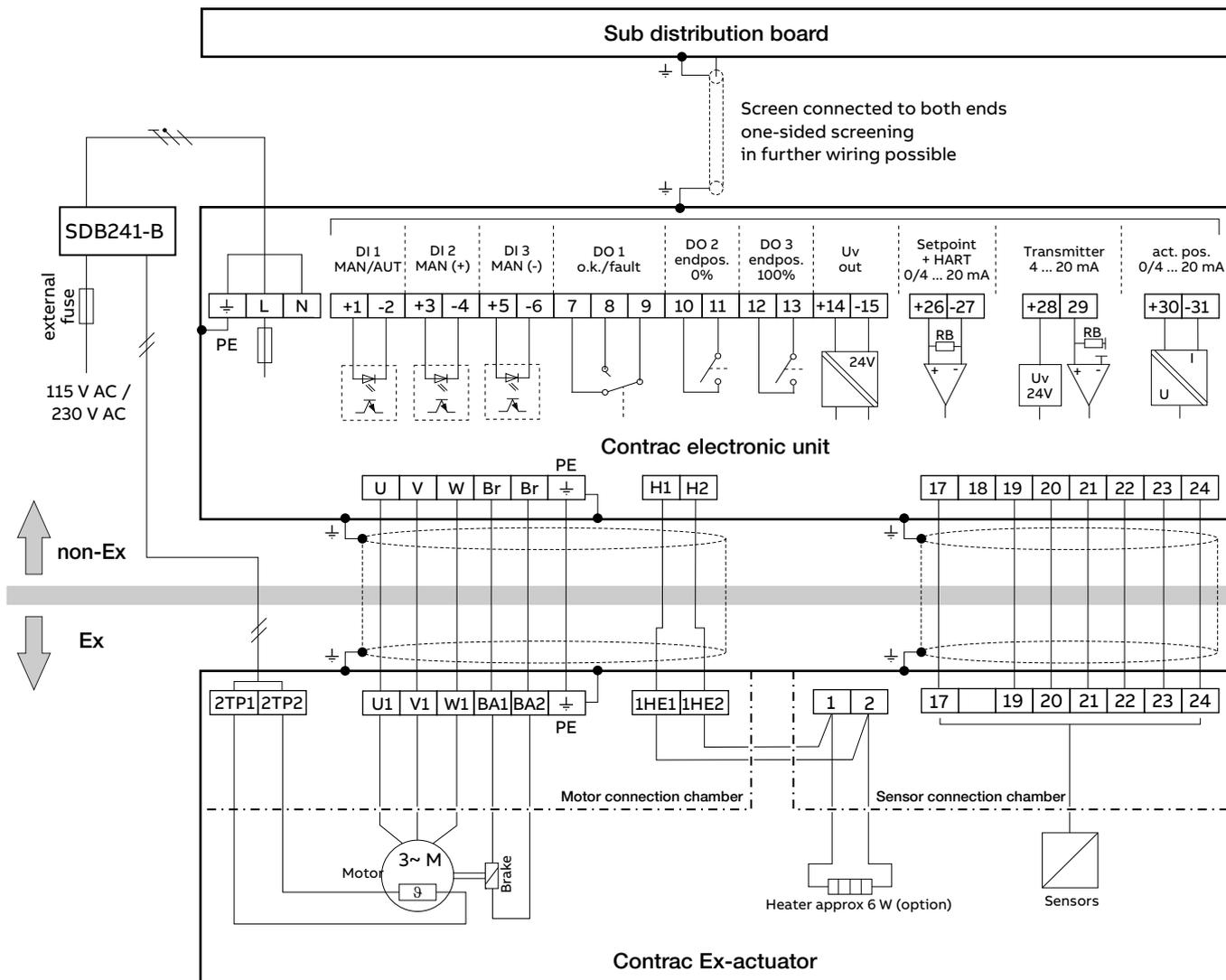
# ... 7 Electrical connections

## Electronic Unit EBN853 (Contrac)

### Analog / Digital

**Note**

The electrical connection is established via screw terminals on the control actuator and on the electronic unit.



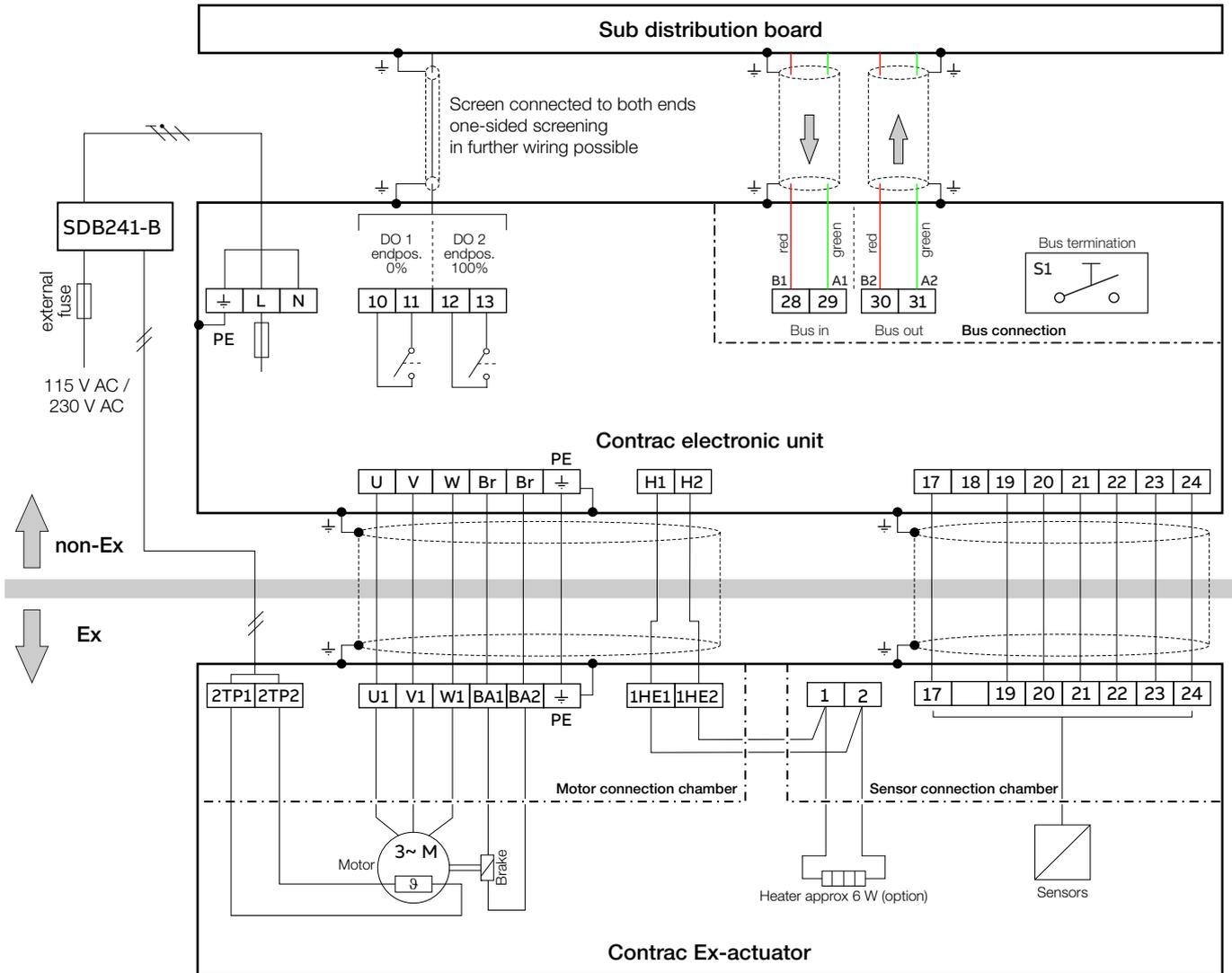
DI = digital input  
DO = digital output

Figure 10: Control via analog input 0/4 to 20 mA, HART® communication or digital inputs

**PROFIBUS DP®**

**Note**

The electrical connection is established via screw terminals on the control actuator and on the electronic unit.



DO = digital output

Figure 11: Control via fieldbus PROFIBUS DP®

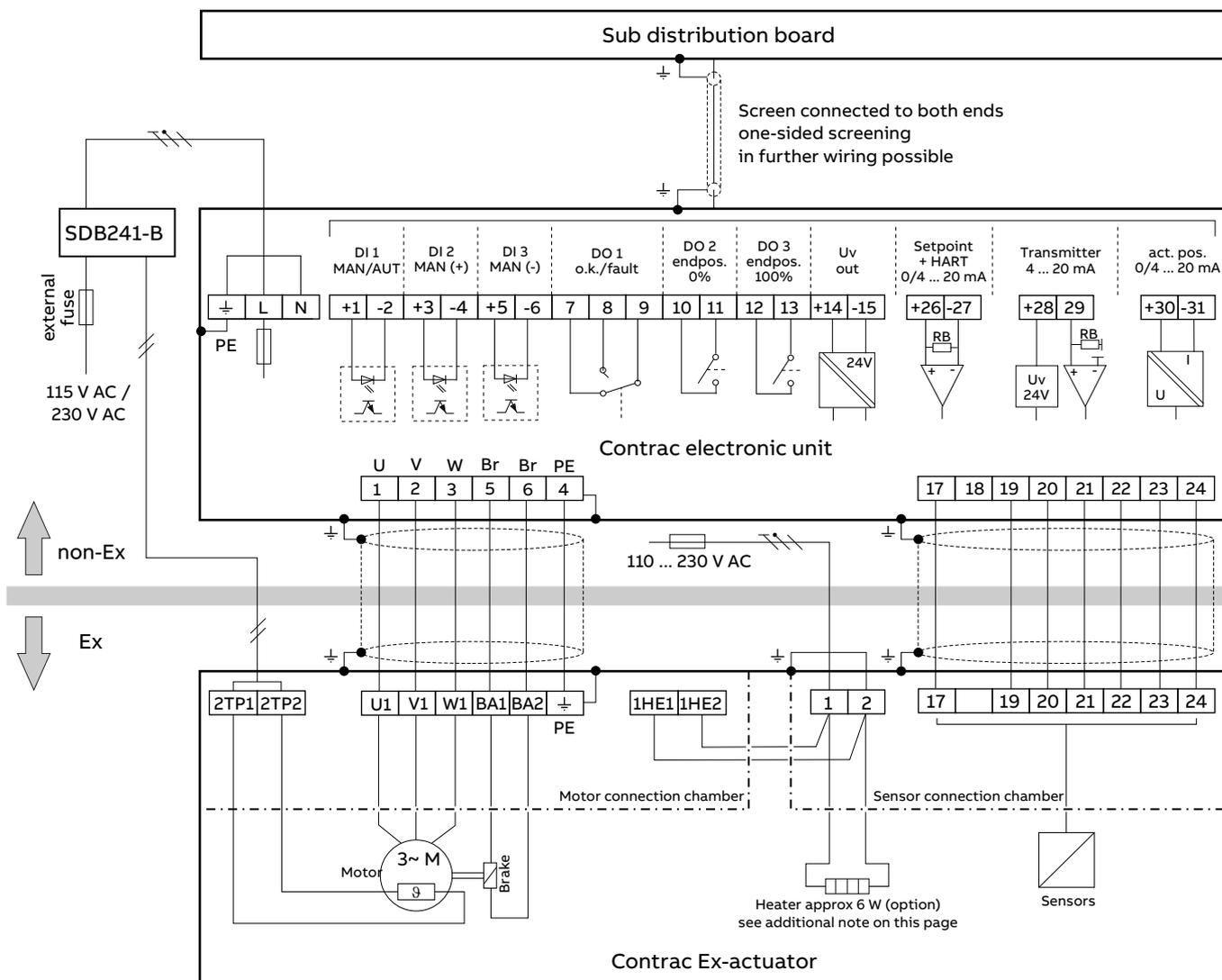
## ... 7 Electrical connections

### Electronic Unit EBN861 (Contrac)

#### Analog / Digital

**Note**

- The electrical connection is established via screw terminals on the control actuator and on the electronic unit.
- If you are using a separate heat supply, the heater must be protected with a 2 to 6 A medium time-lag fuse (e.g. NEOZED D01 E14).



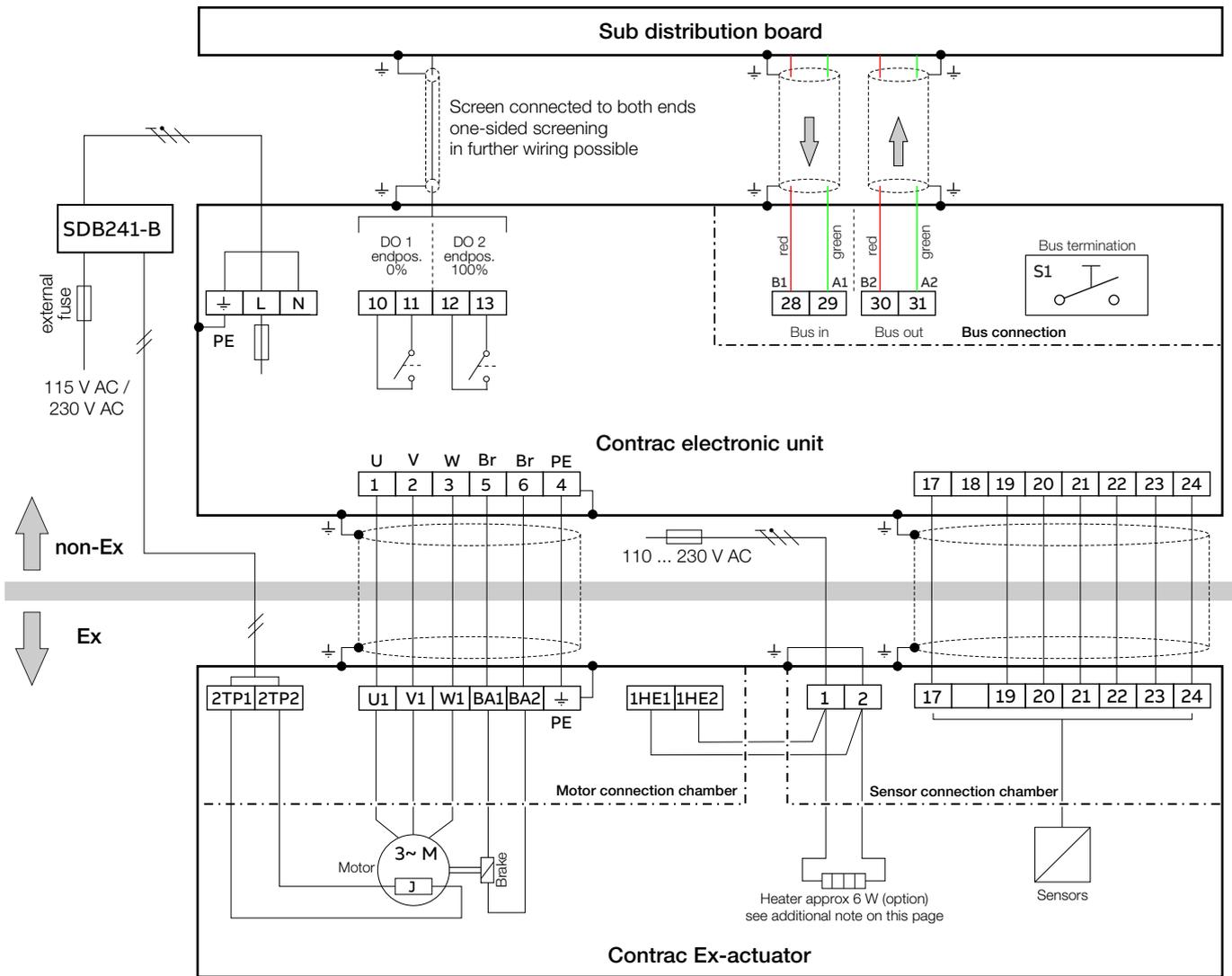
DI = digital input  
 DO = digital output

Figure 12: Control via analog input 0/4 to 20 mA, HART® communication or digital inputs

**PROFIBUS DP®**

**Note**

- The electrical connection is established via screw terminals on the control actuator and on the electronic unit.
- If you are using a separate heat supply, the heater must be protected with a 2 to 6 A medium time-lag fuse (e.g. NEOZED D01 E14).



DI = digital output

Figure 13: Control via fieldbus PROFIBUS DP®

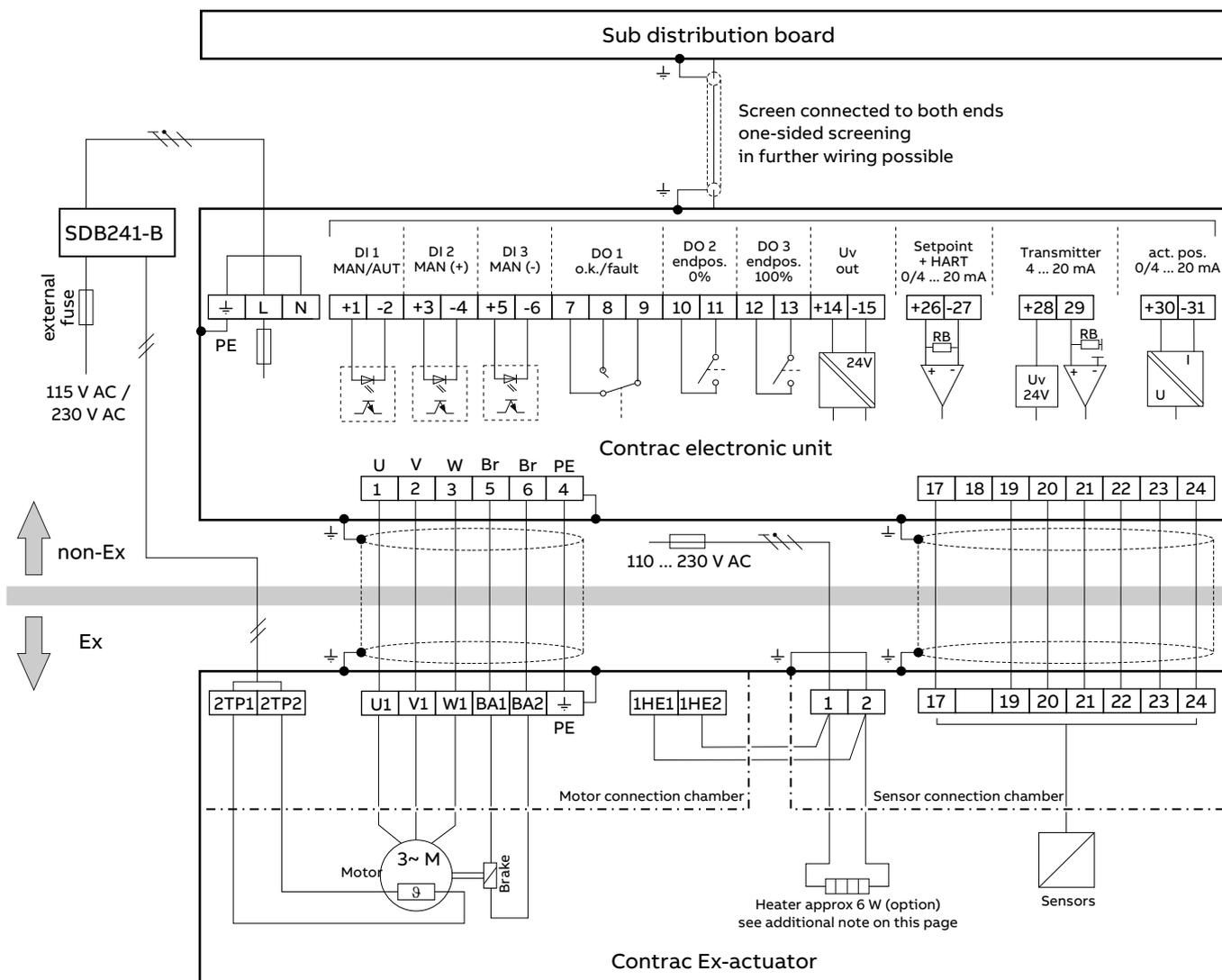
## ... 7 Electrical connections

### Electronic unit EBS852 (Contrac) / EBS862 (Contrac)

#### Analog / Digital

**Note**

- The electrical connection is established via screw terminals on the control actuator and on the electronic unit.
- If you are using a separate heat supply, the heater must be protected with a 2 to 6 A medium time-lag fuse (e.g. NEOZED D01 E14).



DI = digital input  
 DO = digital output

Figure 14: Control via analog input 0/4 to 20 mA, HART® communication or digital inputs

## 8 Commissioning

### Note

It is imperative that you observe the operating instruction of the corresponding electronic unit for the commissioning of the actuator.

## 9 Operation

### Safety instructions

#### **⚠ DANGER**

##### **Danger to life due to unexpected movement of the actuator!**

Unexpected movement of the actuator may lead to very serious injuries or to death.

- Make sure that the actuator can move without posing a danger to people!

#### **⚠ WARNING**

##### **Danger of crushing between external limit stop and valve yoke / actuator housing!**

- Do not reach into the danger zone.

### Note

Positioning loop monitoring in the electronic unit must always be active, it is set as default at the factory and cannot be deactivated nor changed afterwards.

- Before power-up, make sure that the ambient conditions specified in the data sheet are complied with and that the power supply corresponds with the information specified on the name plate of the electronic unit.
- If it can be assumed that safe operation is no longer possible, take the unit out of operation and secure against unintended startup.
- When the actuator is installed in work or traffic areas that may be accessed by unauthorized persons, the operator must put appropriate protective measures in place.
- Switch off the power supply to the motor before handwheel operation.

## Automatic operation

#### **⚠ WARNING**

##### **Risk of injury due to live parts!**

Risk of death or serious injuries due to electricity and unexpected machine movements. In automatic mode the motor is always under power, even at standstill.

- When working on the actuator or the related subassembly, switch off the supply voltage for the electronic unit and separate anti-condensation heater (option), and take precautions to prevent unintentional switch-on.

The motor triggered by the electronic unit controls the axially fixed drive sleeve /nut assembly via oil-lubricated spur gears. A ball bearing screw that is radially fixed by an anti-twist arrester converts the rotary motion into a linear one (**Figure 15**). The screw is the upper part of the thrust rod and has an adjustable mechanical limit stop (RSD, only).

A position sensor detects the current thrust rod position via mechanical reduction gearing without backlash.

The brake integrated in the motor carries out the stop function if the supply voltage is switched off.



Figure 15: Ball bearing screw with nut, cross-section

## ... 9 Operation

### Manual operation

Handwheel mode allows you to move the actuator when the supply voltage is switched off.

#### CAUTION

##### **Risk of injury!**

Risk of injury due to unexpected movement of the handwheel. When pressing the handwheel unlock, the handwheel can unexpectedly move due to the reset force of the valve.

- Hold the handwheel in place with your free hand when pressing the handwheel unlock.

1. Remove cotter pin.
2. Press the handwheel unlocking catch.

##### **Note**

Turning the handwheel clockwise causes the thrust rod to extend.

3. Turn the handwheel to move the valve stem to the desired position.
4. Release the unlocking catch.
5. Insert the cotter pin.

### Handwheel operation in combination with positioning loop monitoring

The positioning loop monitoring of the electronic unit monitors actuator behavior. It monitors whether the travel commands trigger the corresponding processes.

When the supply voltage is switched off, the positioning time-out function is disabled and handwheel operation is no longer monitored. If the actuator is moved via the handwheel while the supply voltage is switched on, the positioning loop monitoring recognizes this state as 'travel without travel command'. A corresponding signal is output.

There are several options for resetting this positioning loop error:

- Resetting via the commissioning and service field
- Resetting via the graphical user interface
- Changing the setpoint signal by at least 3 % for more than 1 s
- Wiring of digital inputs BE2 or BE3 (not with step controller)

In the case of actuators with an Ex design, the positioning time-out function may not be deactivated.

## 10 Diagnosis / error messages

This chapter only covers hardware-related errors. For additional troubleshooting information, refer to the online help for the operator interface.

| Error   | Possible cause   | Troubleshooting the Instrument   |
|---|--|--|
| Valve cannot be moved by actuator.  | Failure either on the actuator or the final control element (e.g. packed gland too tight). | Disconnect actuator from valve.<br>If the actuator moves, the valve is the possible cause.<br>If the actuator does not move, the actuator is the possible cause.   |
| The actuator does not respond.  | Incorrect electronic unit or incorrect data set.   | Compare information on name plates for actuator and electronic unit.   |
|   | Incorrectly configured electronic unit.  | Check / change.<br>Change the settings via the parameterization software.  |
|   | No communication with the control system.  | Check wiring.  |
|   | Incorrect wiring between actuator and electronic unit.                                     | Check wiring.  |
|   | Motor / brake defective.   | Check the winding resistance of the motor and brake.<br>Check the brake lock.  |
|   | Binary inputs on the electronic unit are not wired.  | Make connection.   |
|   | Brake does not release (no mechanical 'click')   | Check the brake air gap (approx. 0.25 mm (0.010 in)) and electrical connection to the brake.<br>Check winding resistance of the brake coil.  |
| Actuator does not run in automatic mode, although automatic mode is selected in the user interface. | Digital input 1 (BE 1) not wired.  | Make connection.<br>Check the software settings for the digital inputs.  |
| Actuator does not respond to control (LED 5 flashing at 1 Hz) (software version 2.00 and higher).   | Actuator in manual mode (MAN) through commissioning and service field.                     | Switch actuator to automatic mode (AUT).   |
| LEDs in the commissioning and service panel (ISF) are flashing synchronously.                       | Actuator is not adjusted properly.   | Adjust actuator.   |
| LEDs flash alternately.   | Electronic unit / drive malfunction.   | Drive the actuator beyond the adjusted end position, either manually or using the buttons on the commissioning and service field; (if necessary disconnect from final control element first).<br>Drive the actuator back into the operating range and connect it to the valve.<br>Readjust the actuator for the operating range. |
| Malfunction when approaching the end position.  | Actuator in limit range of positioning sensor.   |  |

## Electrical test values

The specified resistance values for the motor refer to measurements between the external conductors.

|        | BD 80 K-4B    | BD 80 L-4B    | BD 90 L2-4B   | BD 100 L2-4B  |
|--------|---------------|---------------|---------------|---------------|
| Motor* | 18.2 $\Omega$ | 8.04 $\Omega$ | 3.88 $\Omega$ | 2.57 $\Omega$ |
| Brake* | 910 $\Omega$  | 910 $\Omega$  | 648 $\Omega$  | 575 $\Omega$  |

\* Specified winding resistance  $\pm 5\%$  at 20 °C (68 °F)

# 11 Maintenance

## Safety instructions

### WARNING

#### Risk of injury due to live parts!

Risk of death or serious injuries due to electricity and unexpected machine movements. In automatic mode the motor is always under power, even at standstill.

- When working on the actuator or the related subassembly, switch off the supply voltage for the electronic unit and separate anti-condensation heater (option), and take precautions to prevent unintentional switch-on.

#### Notice on auxiliary and operating materials

- Observe the manufacturer's regulations and safety data sheets!
- Mineral oil and grease can contain additives that, under special conditions, may lead to adverse effects.
- Skin contact with oil or grease may cause skin damage (skin irritations, inflammations, allergies). Avoid long-term, excessive or repeated skin contact. If lubricants contact your skin, immediately wash with water and soap! Do not allow lubricants to get in contact with open wounds!
- If lubricant splashes into the eye, rinse with plenty of water for at least 15 minutes and then consult a doctor!
- When handling lubricants use suited skin protection and care products or wear oil-resistant gloves.
- Lubricants that dripped to the floor are a potential source of danger, due to the slip hazard created. Spread sawdust or use oil adsorbent to bind and remove the lubricants.

Repair and maintenance activities may only be performed by authorized customer service personnel.

When replacing or repairing individual components, use original spare parts.

## General

Contrac actuators feature a robust construction. As a result, they are highly reliable and require minimal maintenance. The maintenance intervals depend upon the effective load and are therefore not specified here.

The built-in microprocessor evaluates the actual load factors (e.g. torques, forces, temperatures, etc.) and derives the remaining operating time until the next routine maintenance is required.

Use the configuration program to view this information.

## Inspection and overhaul

- Only use genuine spare parts for maintenance of the actuators (e.g., ball bearings, gaskets, and oil).
- Maintenance work needs to be performed after the life cycle has expired.
- Inspection / maintenance is due once the intervals specified have passed, at the very latest.
- The replacement intervals of the thrust rod sealing ring (**Figure 16/①**), associated O-ring (**Figure 16/②**); Scraper ring (**Figure 16/③**) and (flange) O-ring (**Figure 16/④**) are to be fitted in within the limits named in the table.

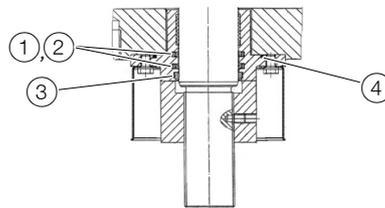


Figure 16: Illustration of the thrust rod gasket (pos. ④ not applicable in the case of RSDE10 / RSDE20)

## Maintenance plan

| Interval   | Measures  |  |
|--|---|--|
| 1 × per year   | Visual check of the gaskets for leaks. Remove and replace if leaks are present.                                 |  |
| Every 2 years  | Functional check: drive the actuator 2 × through the entire stroke range and check for correct speed reduction. |  |
| Every 4 years  | Check oil level   |  |
| max. every 10 years,<br>preferably after the expiry<br>of the calculated<br>remaining service time | Replace oil, roller bearings, and gaskets on motor  | Check gear wheels for wear; replace if necessary.          |
| Thrust rod sealing ring,<br>associated O-ring,<br>scraper ring, and (flange)<br>O-ring             | Replace after<br>5 years<br>10 years  | At surface temperature<br>100 °C (212 °F)<br>20 °C (68 °F) |

Make sure that no chippings or other materials get into the gears during maintenance work.

Do not move the actuator during the oil level check.

If the actuators are used within a category II2D area, the surfaces must be cleaned regularly to prevent dust deposits of more than 5 mm (0.20 in). In order to avoid electrostatic charging, the device must be cleaned with a damp cloth.

## Removing the motor and adjusting the brakes

### WARNING

#### Risk of injury!

The actuator position may be changed accidentally by the repelling power of the valve when the motor is removed or the brake is released.

- Make sure that process forces are not exerted on the thrust rod.

In automatic mode, the brake is nearly not exposed to any mechanical wear, since it is permanently released. Any readjustment is not necessary. Use the test function of the configuration software to check the brake.

## Oil change

### Note

Oils for different temperature ranges may not mixed.

During an oil change, thoroughly remove any oil that may have escaped to avoid accidents.

Dispose of old oil according to local regulations. Make sure that the oil does not enter the water cycle. Make sure that any oil leaking from the device cannot come into contact with hot components.

### Proceed as follows to drain or change the oil:

1. Provide a collecting vessel capable of holding the expected oil quantity in accordance with **Filling volumes** on page 32.
2. Open and release the vent valve, see **Figure 4** on page 14.
3. Unscrew the lowermost drain plug to drain the oil.
4. Collect the oil in the collection vessel.
5. Make sure all of the oil has been removed from the actuator housing.
6. Screw the drain plug back in.
7. Refill with the proper volume of oil in accordance with **Filling volumes** on page 32 and securely tighten the vent valve.

## RSDE oil types

| Ambient temperature         | Oil types<br>(used at factory and present on delivery) |
|-----------------------------|--|
| -20 to 60 °C (-4 to 140 °F) | Mobil SHC 629 – DIN 51517 / ISO 12925-1                |

## ... 11 Maintenance

### ... Oil change

#### Filling volumes

#### Note

The specified oil quantities are estimates. The minimum oil level below the inspection plug must be observed at all times!

| <b>RSDE10 / RSDE20</b>  |                    |                    |                            |                    |
|---|--------------------|--------------------|----------------------------|--------------------|
| Mounting position   | IMV 1              | IMV 3              | IMB 5*<br>(Handwheel down) | IMB 5              |
| Minimum oil level l (gal)**   |                    |                    |                            |                    |
| Max. stroke 100 mm (4 in)   | Approx. 3.8 (1.01) | Approx. 5.4 (1.43) | Approx. 3.8 (1.01)         | Approx. 3.8 (1.01) |
| Max. stroke 300 mm (11.8 in)  | Approx. 6.4 (1.69) | Approx. 8.8 (2.33) | Approx. 6.4 (1.69)         | Approx. 6.7 (1.77) |
| Minimum oil level below inspection plug when thrust rod retracted mm (in) | 40 (1.57)          | 0 (0)              | 28 (1.10)                  | 75 (2.95)          |

| <b>RSDE50</b>   |                   |                            |                          |                   |
|---|-------------------|----------------------------|--------------------------|-------------------|
| Mounting position   | IMV 1             | IMV 3***                   |                          | IMB 5             |
| Minimum oil level l (gal)**   |                   |                            |                          |                   |
| Max. stroke 120 mm (4.72 in)  | Approx. 7 (1.85)  |                            | –                        | Approx. 7 (1.85)  |
| Max. stroke 300 mm (11.8 in)  | Approx. 10 (2.65) | Approx. 13 (3.43)          |                          | Approx. 12 (3.17) |
| Minimum oil level below inspection plug when thrust rod retracted mm (in) | 49 (1.93)         |                            | –                        | 35 (1.26)         |
|   |                   | Max. stroke 300<br>(11.81) | Max. stroke 90<br>(3.54) |                   |

\* Mounting position IMB 5 is not permitted in the case of applications in Zones 21 and 22!

\*\* US liquid gallon

\*\*\* IMV 3 not permitted for 120 mm stroke!

## 12 Repair

Repair and maintenance activities may only be performed by authorized customer service personnel.  
When replacing or repairing individual components, use original spare parts.

## Returning devices

Use the original packaging or a secure transport container of an appropriate type if you need to return the device for repair or recalibration purposes.

Fill out the return form (see **Return form** on page 35) and include this with the device.

In accordance with the EU Directive governing hazardous materials, the owner of hazardous waste is responsible for its disposal or must observe the following regulations for shipping purposes:

All devices delivered to ABB must be free from any hazardous materials (acids, alkalis, solvents, etc.).

Please contact Customer Center Service acc. to page 4 for nearest service location.

## 13 Recycling and disposal

### Note



Products that are marked with the adjacent symbol may **not** be disposed of as unsorted municipal waste (domestic waste).

They should be disposed of through separate collection of electric and electronic devices.

This product and its packaging are manufactured from materials that can be recycled by specialist recycling companies.

Bear the following points in mind when disposing of them:

- As of 8/15/2018, this product will be under the open scope of the WEEE Directive 2012/19/EU and relevant national laws (for example, ElektroG - Electrical Equipment Act - in Germany).
- The product must be supplied to a specialist recycling company. Do not use municipal waste collection points. These may be used for privately used products only in accordance with WEEE Directive 2012/19/EU.
- If there is no possibility to dispose of the old equipment properly, our Service can take care of its pick-up and disposal for a fee.

## Notice on RoHS II-Directive 2011/65/EU

As of 7/22/2019, the products provided by ABB Automation Products GmbH fall within the scope of regulations on hazardous substances with restricted uses or the directive on waste electrical and electronic equipment in accordance with ElektroG.

### Note

Detailed information on the RoHS Directive is available in the ABB download area.

[www.abb.com/actuators](http://www.abb.com/actuators)

## 14 Approvals and certifications

### CE mark



The version of the device as provided by us meets the requirements of the following EU directives:

- ATEX Directive 2014/34/EU
- EMC directive 2014/30/EU
- Machinery Directive 2006/42/EC / 2006/42/EG
- Low Voltage Directive 2014/35/EU
- RoHS II Directive 2011/65/EU (as of 7/22/2019)

## 15 Additional documents

### Note

All documentation, declarations of conformity and certificates are available in ABB's download area.

[www.abb.com/actuators](http://www.abb.com/actuators)

# 16 Appendix

## Return form

### Statement on the contamination of devices and components

Repair and/or maintenance work will only be performed on devices and components if a statement form has been completed and submitted.

Otherwise, the device/component returned may be rejected. This statement form may only be completed and signed by authorized specialist personnel employed by the operator.

#### Customer details:

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Contact person: \_\_\_\_\_

Telephone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

#### Device details:

Type: \_\_\_\_\_

Serial no.: \_\_\_\_\_

Reason for the return/description of the defect: \_\_\_\_\_

#### Was this device used in conjunction with substances which pose a threat or risk to health?

Yes

No

If yes, which type of contamination (please place an X next to the applicable items):

biological

corrosive / irritating

combustible (highly / extremely combustible)

toxic

explosive

other toxic substances

radioactive

Which substances have come into contact with the device?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

We hereby state that the devices/components shipped have been cleaned and are free from any dangerous or poisonous substances.

\_\_\_\_\_  
Town/city, date

\_\_\_\_\_  
Signature and company stamp

## ... 16 Appendix

### Installation declaration



#### EINBAUERKLÄRUNG für eine unvollständige Maschine DECLARATION OF INCORPORATION FOR AN INCOMPLETE MACHINE

|  |  |
|--|--|
| <b>Hersteller / Manufacturer:</b>            | ABB Automation Products GmbH<br>Minden   |
| <b>Anschrift / Address:</b>                  | Schillerstraße 72<br>D-32425 Minden  |
| <b>Produktbezeichnung:<br/>Product name:</b> | Elektrischer Regelantrieb CONTRAC und CONTRAC Ex<br>Electrical Actuator CONTRAC and CONTRAC Ex |

**Typ / Type:**

**Fabriknummer / Serial number:**

**Herstelldatum / Date of manufacture:**

#### Einbauerklärung im Sinne der EG-Maschinenrichtlinie (2006/42/EG) Anhang II B

*Declaration of incorporation as defined by EG-Machinery Directive (2006/42/EG) annex II B*

Die bezeichneten Produkte halten die grundlegenden Anforderungen der EG-Maschinenrichtlinie 2006/42/EG Anhang I, Ziffer 1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.6, 1.3.1, 1.3.7, 1.7.1, 1.7.4 ein. Sie sind ausschließlich zum Einbau in eine Maschine bestimmt. Die Inbetriebnahme darf erst vorgenommen werden, nachdem die Konformität des Endproduktes mit den oben genannten Richtlinien festgestellt wurde. Die Sicherheitshinweise der mitgelieferten Dokumentation sind zu beachten. Der Hersteller verpflichtet sich, die Unterlagen zur unvollständigen Maschine einzelstaatlichen Stellen auf begründetes Verlangen zu übermitteln.

*The designated products follow the basic requirements of the EC Machinery Directive 2006/42/EC Annex I, paragraph 1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.6, 1.3.1, 1.3.7, 1.7.1, 1.7.4. These products are determined exclusively for installation on a machine. The introduction may only be carried out after the conformity of the final product with the abovementioned guidelines was found. The safety remarks of the supplied documentation have to be observed. The manufacturer must undertake to forward the documents to the partly completed machinery on a reasoned request by national authorities.*

**Dokumentationsbevollmächtigter:** Wolfgang Lasarzik

*Authorised person for documentation:*

**Anschrift / Address:** Siehe Anschrift des Herstellers/ Refer to address of manufacturer

#### Die Sicherheitshinweise der mitgelieferten Dokumentation sind zu beachten.

*The safety remarks of the supplied documentation have to be observed.*

16.10.2013

Datum  
Date

ppa. Björn Mösko  
Standortleiter Minden  
Head of Location Minden

i. V. Tilo Merlin  
Leiter R&D  
Head of R&D

## Trademarks

HART is a registered trademark of FieldComm Group, Austin, Texas, USA

PROFIBUS and PROFIBUS DP are registered trademarks of PROFIBUS & PROFINET International (PI)

## Notes

## Notes



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**[abb.com/actuators](http://abb.com/actuators)**

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