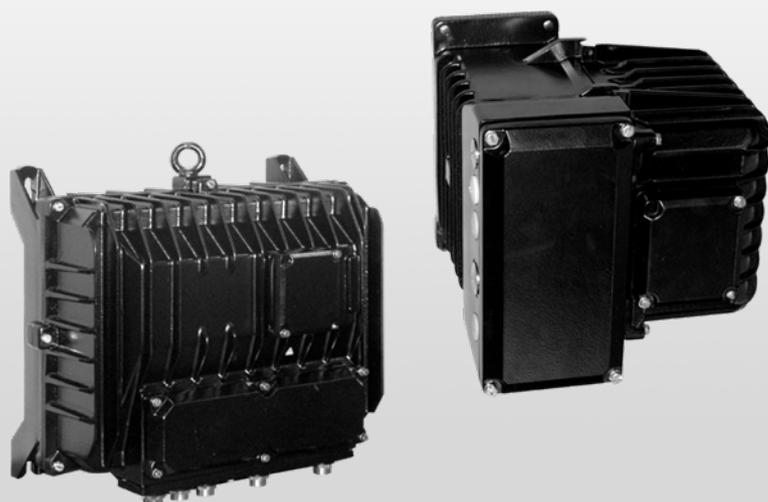


EBN853 / EBN861

Electronic unit for field installation (Contrac)



For the control of Contrac control actuators in potentially explosive atmospheres

—
EBN853
EBN861

Introduction

The electronic unit builds the interface between the actuator and the control system. During continuous positioning, the electronic unit varies the motor torque continuously 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.

Additional Information

Additional documentation on EBN853 / EBN861 is available for download free of charge at 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

The electronic units of type EBN853 / EBN861 interconnected as illustrated in this operating instruction are used exclusively to control the RHDE... or RSDE... series control actuators.

The electronic unit must only be installed or commissioned outside of potentially explosive atmospheres.

Using these actuators for any other purpose will introduce a risk of personal injury and can also damage or impair the device's operational reliability.

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

ABB Automation Products GmbH Measurement & Analytics

Schillerstr. 72

32425 Minden

Germany

Tel: +49 571 830-0

Fax: +49 571 830-1806

Customer service center

Tel: +49 180 5 222 580

Email: automation.service@de.abb.com

2 Use in potentially explosive atmospheres

DANGER

Explosion hazard due to improper installation!

An explosion hazard is present when installing the electronic unit in potentially explosive atmospheres.

The electronic unit must only be installed and operated outside of potentially explosive atmospheres.

Before the commissioning of the electronic unit, observe the following points:

- The electronic unit must not be installed or commissioned in an Ex area.
- Check whether the actuator is connected to the right electronic unit, see section **Electrical data for inputs and outputs** on page 27.
- 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 $2 \times$ 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.

Cable harness for the connection of the actuator to the electronic unit

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.

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.

... 2 Use in potentially explosive atmospheres

... Cable harness for the connection of the actuator to the electronic unit

Specification

	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 (HK-So-Li12YC11Y-OB-8 × 0.5)
Sheathing diameter	14.3 ±0.4 mm (0.56 ±0.02 in)	8.0 ±0.4 mm (0.31 ±0.02 in)	8.5 ±0.4 mm (0.33 ±0.02 in)
Nominal voltage U _o / U (U _o 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 (0.53 to 0.71 in)	4 to 8.5 mm (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 Ex e II / Ex tD	Ex II 2 G D, Exe II	

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.

... 2 Use in potentially explosive atmospheres

Overview

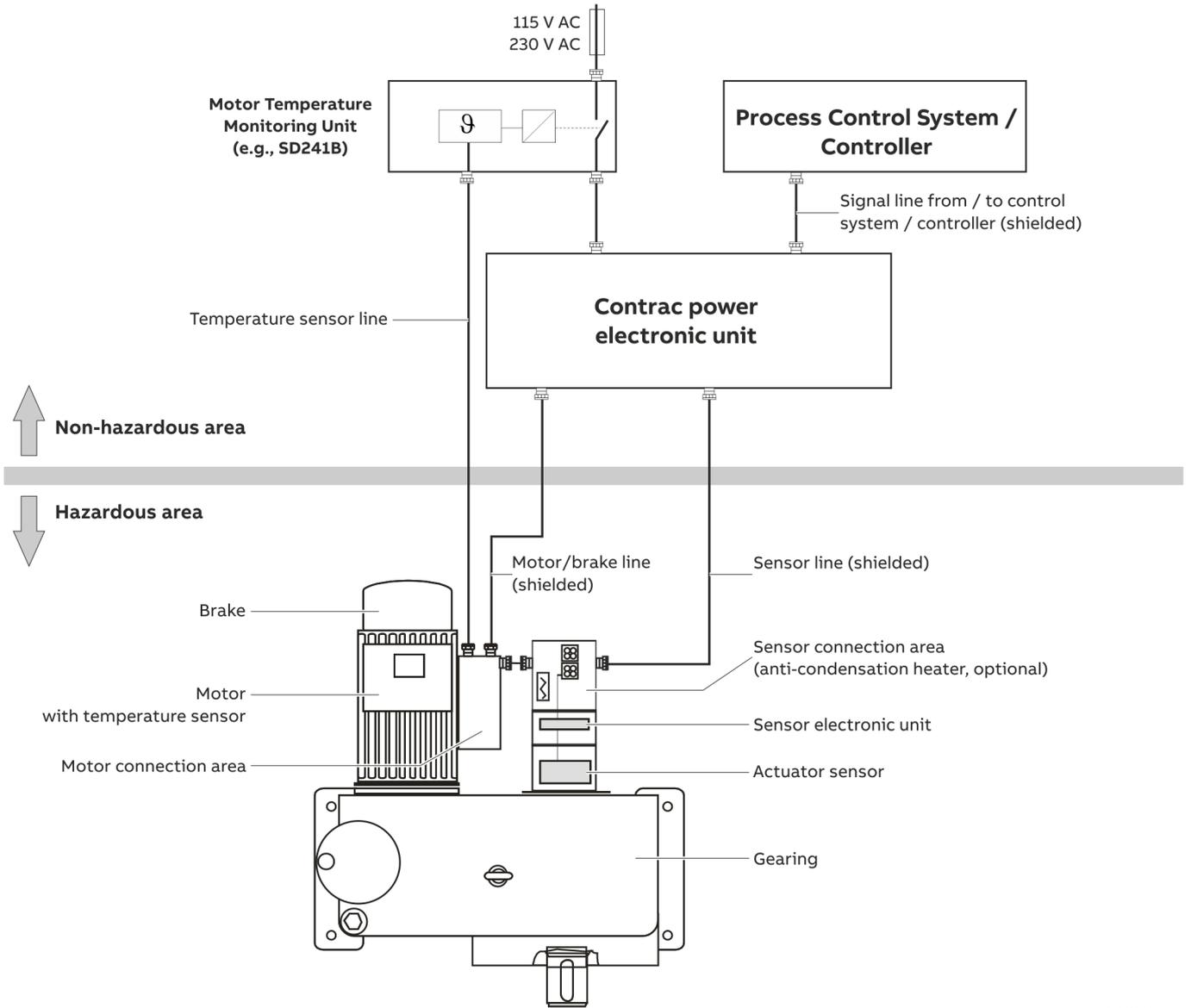


Figure 1: Allocation of the Contrac components when using in potentially explosive atmospheres (example)

3 Design and function

Design

The electronic units EBN853 and EBN861 consist of two housing halves, one holding the connection components and the transformer, the other holding the electronics and the commissioning and service field (ISF) for 'local operation' of the actuator.

EBN853

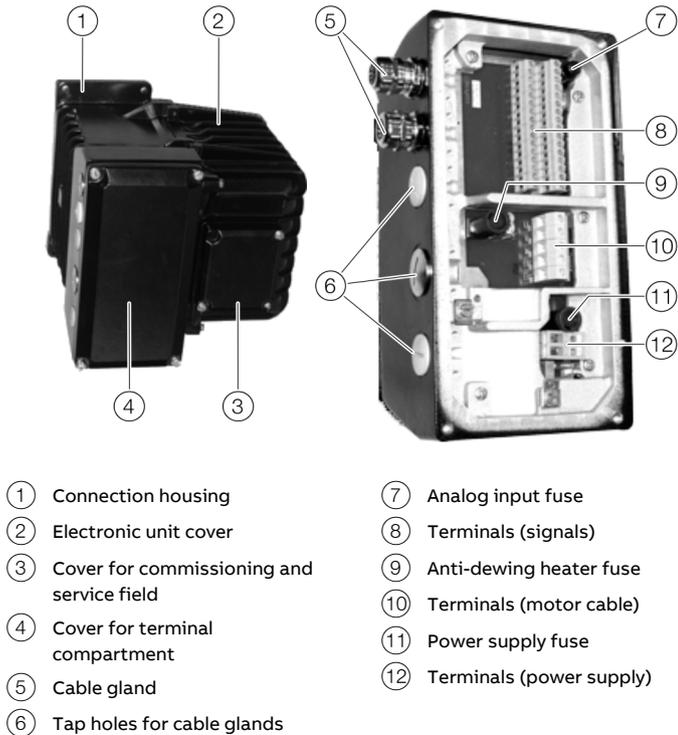


Figure 2: Presentation terminal compartment

EBN861

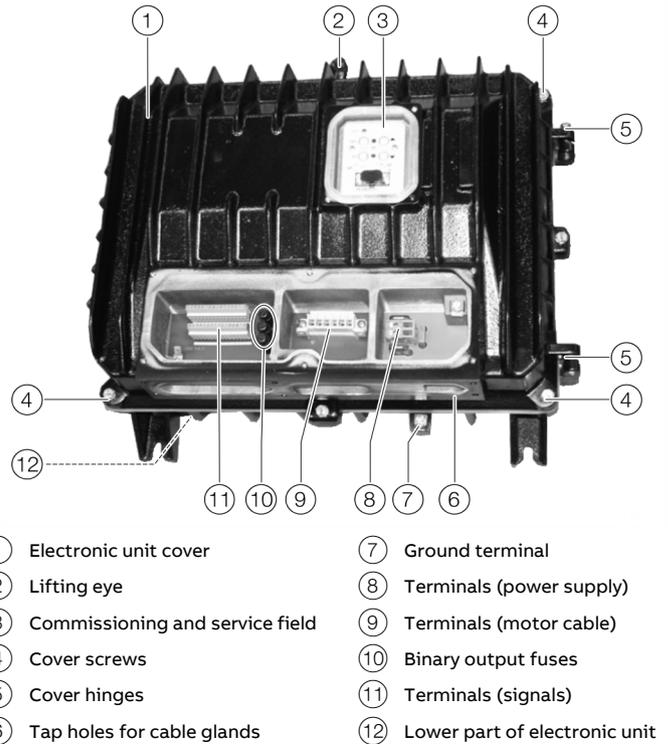


Figure 3: Presentation without cover for terminal compartment

The electronic unit is made up of two housing halves (electronic cover / electronic unit lower part) which can be separated for easier assembly.

... 3 Design and function

Principle of operation

The electronic unit builds the interface between the actuator and the control system.

During continuous positioning, the electronic unit varies the motor torque continuously 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.

Electronic units are available for assembly in the field near the actuator, remotely in a mounting rack or for integrated assembly (smallest actuator type). In addition to the terminals, the electronic unit contains the microprocessor, frequency converter for motor control, analog and binary inputs and outputs, PROFIBUS® or HART® communication interfaces, the commissioning and service field and a plug connection to connect a PC.

No matter what the motor power of the respective actuator is, all electronic units are supplied single-phase by 230 V or 115 V mains supply (50 Hz or 60 Hz).

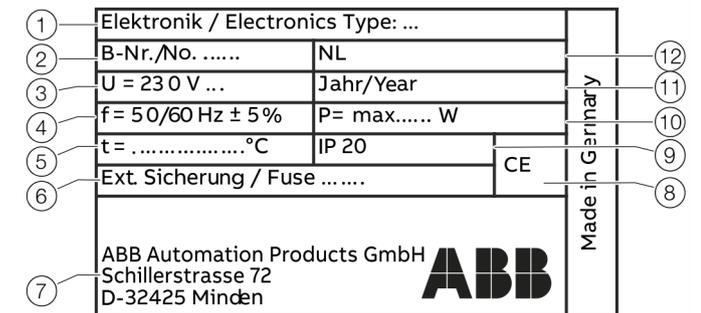
The commissioning and service field enables the end positions and direction of rotation to be set on the actuator. Moreover, status information is displayed using LEDs. Push buttons can be used to operate the actuator and set the operating mode (Automatic, Out of Service).

Device designs

EBN853	
IP rating	IP 66 in accordance with IEC 60529 / EN 60529 NEMA 4X in accordance with CAN / CSA22.2 No. 94
Humidity	≤ 95% annual average; condensation not permitted
Ambient temperature	-25 to 55 °C (-13 to 131 °F)
Transport and storage temperature	-25 to 70 °C (-13 to 158 °F)
Long-term storage temperature	-25 to 40 °C (-13 to 104 °F)
Mounting position	On vertical mounting plate, lateral cable gland, left
Vibration stress	Maximum 150 Hz: acceleration: 1 g (in accordance with EN 60068-2-6, Table C.2)
Paint	2-layer component epoxy (RAL 9005, black)
Electrical connection	Mains supply via screw terminals; all other connections made via screw-type plug connectors Connection cable between electronic unit and actuator tightly fastened to the electronic unit, from the actuator side using a connector to the connection to the actuator. Maximum cable length 100 m (328 ft). In actuators in explosion-proof design, the connection cable is tightly fastened to the actuator without a connector through the screw terminals. Optional, loose cable set supplied acc. to length requirements
Weight	11 kg (24 lbs)

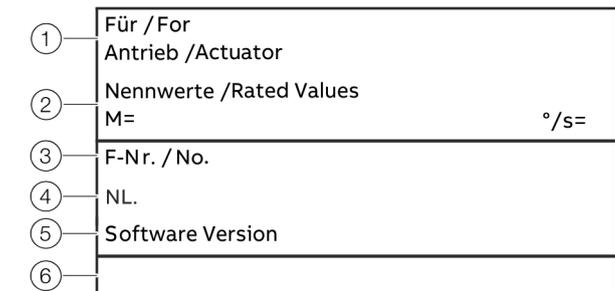
EBN861	
IP rating	IP 66
Humidity	≤ 95% annual average; condensation not permitted
Ambient temperature	-25 to 55 °C (-13 to 131 °F)
Transport and storage temperature	-25 to 70 °C (-13 to 158 °F)
Long-term storage temperature	-25 to 40 °C (-13 to 104 °F)
Mounting position	On vertical mounting plate, cable gland at the bottom
Vibration stress	Maximum 150 Hz: acceleration: 1 g (in accordance with EN 60068-2-6, Table C.2)
Paint	2-layer component epoxy (RAL 9005, black)
Electrical connection	Mains supply via screw terminals; all other connections made via screw-type plug connectors Connection cable between electronic unit and actuator tightly fastened to the electronic unit, from the actuator side using a connector to the connection to the actuator. Maximum cable length 100 m (328 ft). In actuators in explosion-proof design, the connection cable is tightly fastened to the actuator without a connector through the screw terminals. Optional, loose cable set supplied acc. to length requirements
Weight	40 kg (88 lbs)

4 Product identification



- ① Full type designation
- ② Manufacturing number
- ③ Power supply
- ④ Permissible mains frequency
- ⑤ Ambient temperature range
- ⑥ Specifications for external fuse protection
- ⑦ Manufacturer address
- ⑧ CE mark
- ⑨ IP rating
- ⑩ Maximum power consumption
- ⑪ Year of manufacture
- ⑫ NL no. (for no-list design)

Figure 4: Hardware name plate (example)



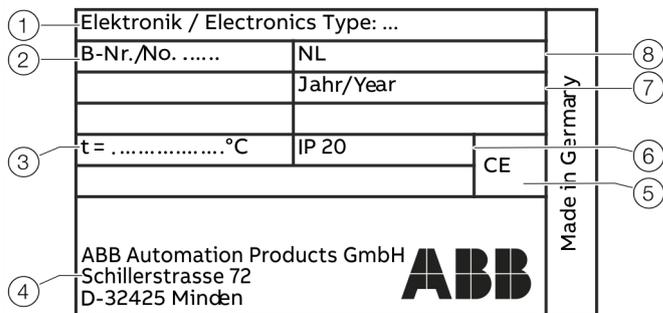
- ① Associated Contrac control actuator
- ② Nominal torque or rated actuator strength / set speed
- ③ Manufacturing number
- ④ NL no. (for no-list design)
- ⑤ Installed software version
- ⑥ Free for customer-specific information

Figure 5: Software name plate (example)

Note

In electronic units which can be separated for assembly, the name plate for the hardware is located on the lower part of the electronic unit (Figure 1). The name plate for the software (Figure 2) and an additional name plate for the hardware (Figure 3) are located on the electronic unit cover.

The lower part of the electronic unit and the electronic cover are independent assemblies, therefore the respective manufacturing numbers can differ.



- ① Full type designation
- ② Manufacturing number
- ③ Ambient temperature range
- ④ Manufacturer address
- ⑤ CE mark
- ⑥ IP rating
- ⑦ Year of manufacture
- ⑧ NL no. (for no-list design)

Figure 6: Additional name plate for hardware (example)

Scope of delivery

- Metric tap holes for cable entries with IP 66 sealing plugs.

Delivery status

The individual actuator configuration may vary from the standard setup above. This information can be displayed via the user interface.

Unless otherwise specified by the user, the electronic units are delivered with the following standard configuration:

Conventional communication	
Parameter	Setting
Function selection	Positioner, parameter: set point
Set point function	Analog set point
Set point range	4 to 20 mA
Set point characteristic	Linear; set point = position value
Actual value range	4 to 20 mA
Nominal torque / rated force in \pm direction	100 %
Automatic speed in \pm direction:	100 %
Action in 0 % / 100 % end position	Keep leak-tight with nominal torque / rated force
Digital inputs	Digital input 1 Manual / Automatic switching, Digital input 2 / 3 Travel command \pm
Digital outputs	Digital output 1 ready for operation / error message, Digital output 2 / 3 end position signaling 0 % / 100 %
Brake Away Function	Deactivated
Shut-off function	Deactivated
Positioning loop monitoring	Deactivated
Set point monitoring	Deactivated
Alarm Type	Deactivated
Action after restoration of power	Switch to Automatic
Working range of actuator	Not set

PROFIBUS DP® communication

Parameter	Setting
Function selection	Positioner, parameter: set point
Set point function	Digital
Set point range	4 to 20 mA
Set point characteristic	Linear; set point = position value
Actual value range	Digital
Nominal torque / rated force in \pm direction	100 %
Automatic speed in \pm direction:	100 %
Action in 0 % / 100 % end position	Keep leak-tight with nominal torque / rated force
Digital outputs	Digital output 1 / 2 end position signal 0 % / 100 %
Brake Away Function	Deactivated
Shut-off function	Deactivated
Positioning loop monitoring	Deactivated
Communication monitoring	PROFIBUS DP® / V0: Activated Lock in last position PROFIBUS DP® / V1: Activated After delay time has elapsed (standard configuration 5 s) Lock in last position
Alarm Type	Deactivated
Action after restoration of power	Switch to Automatic
Working range of actuator	Not set

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 **Returning devices** on page 39.

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

Mounting

NOTICE

Damage to components!

Damage to components caused by ingress of foreign bodies or humidity.

- Keep all housing covers and terminal compartments closed during installation to prevent the ingress of foreign bodies such as drilling shavings, liquids or dust.

The electronic unit is installed in the vicinity of the drive outside the hazardous area. Screw-type terminals are used to connect the two modules on the actuator side and on the electronics side.

The cables are connected to the actuator through two terminal compartments:

- Motor connection compartment (Ex d)
- Sensor terminal compartment (through Ex e terminals)

The SD241-B motor temperature monitoring unit or a similar, certified tripping unit must be connected to the power supply of the electronic unit.

The motor temperature monitoring unit must be installed outside of the potentially explosive atmosphere.

When installing the electronic unit, observe the following points:

- You must be able to activate the power supply of the electronic unit on-site.
- All signal cables and the motor cable between the actuator and electronic unit must be shielded.
- The cable shield must be placed on both housings when connecting the electronic unit and the actuator.
- The maximum vibration load must be observed during installation, see **Device designs** on page 11.
- When mounting the electronic unit in work and traffic areas that may be accessed by unauthorized persons, the operator is required to take suited protective measures.

EBN853

1. Fasten the electronic unit to a vertical mounting plate using grade 8.8 screws. Tensile strength 800 N/mm² (116032 pounds/square in.), yield strength 640 N/mm² (92826 pounds/square in.).
2. Provide adequate room for installation and ensure easy access.
3. The cable entries must be directed to the left.

EBN861

Note

The total weight of the electronic unit is 40 kg (88 lbs). For this reason, the electronic unit is equipped with a load-bearing eyelet.

If, for technical reasons, the load-bearing eyelet cannot be used, the two halves of the housing can be installed separately.

Separating the housing halves

1. Place the electronic unit on a horizontal surface.
2. Unscrew the cover screws (**Figure 3**).
3. Flip open the electronic unit cover.
4. Disconnect the internal plug connection between the housing halves.
5. Close the electronic unit cover.
6. Unscrew the hinge screw (**Figure 3**).
7. Flip the electronic unit cover forward while lifting it up and off the hinge pin. Precisely guide the cover of the electronic unit cover in the process.

Mounting

1. Fasten the electronic unit or the lower part of the electronic unit to the vertical mounting rail of the mounting rack using grade 8.8 screws. Tensile strength 800 N/mm² (116032 pounds/square in.), yield strength 640 N/mm² (92826 pounds/square in.).
2. Provide adequate room for installation and ensure easy access.
3. The cable entries must be directed down.

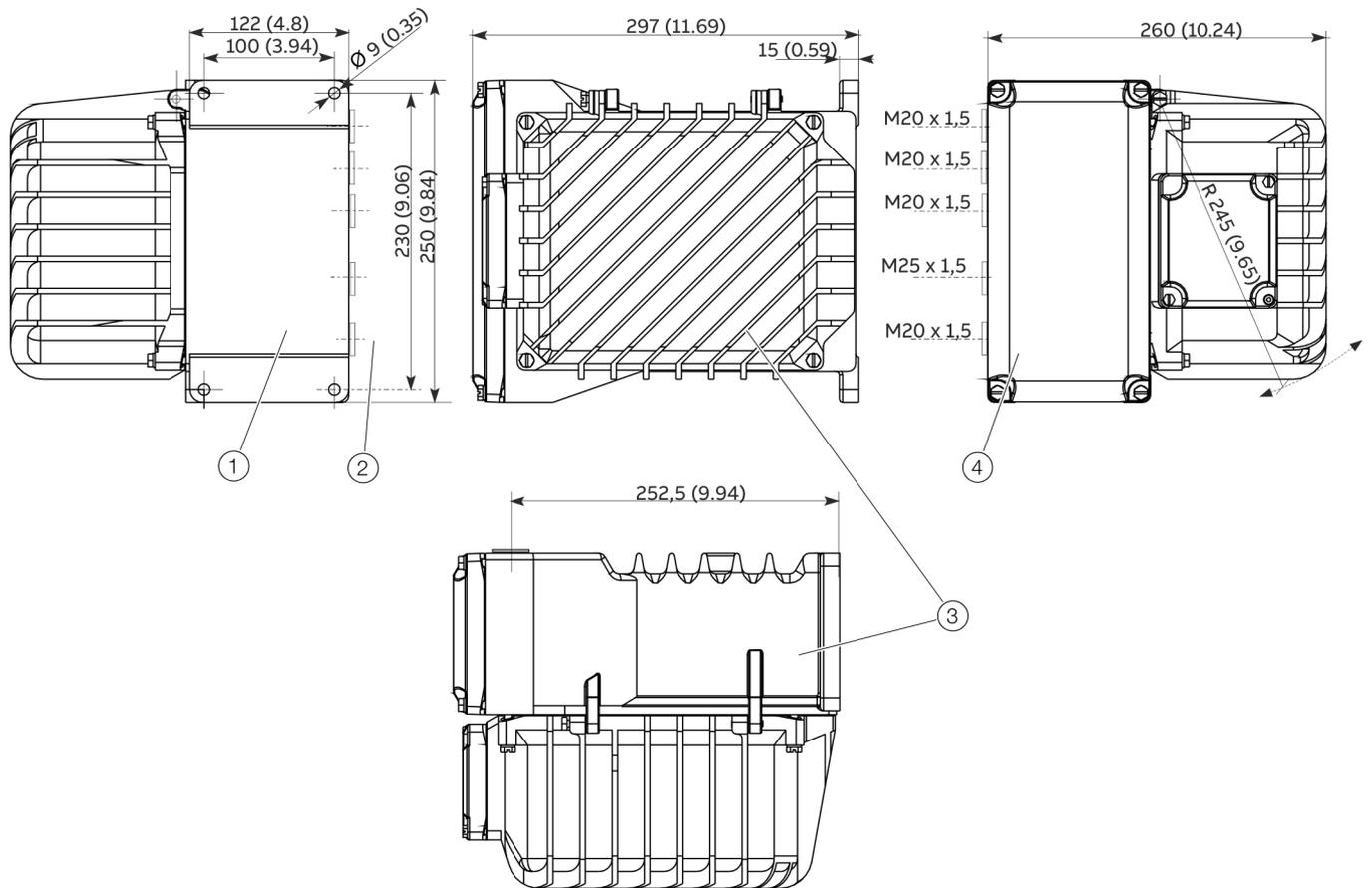
Mounting the housing halves

1. Set the electronic unit cover down on the hinge pin and screw in the hinge screw. Precisely guide the cover of the electronic unit cover in the process.
2. Reconnect the internal plug connection.
3. Close the electronic unit cover and screw in the cover screws (**Figure 3**).

... 6 Installation

Dimensions

Electronic unit EBN853 (Contrac)



① Back view

② Leave at least 100 mm (3.94 in) distance for the cable gland and cable radius

③ Side view

④ Front view

Figure 7: Dimensions in mm (in)

7 Electrical connections

Safety instructions

WARNING

Risk of injury due to live parts!

When the housing is open, contact protection is not provided and EMC protection is limited.

- Before opening the housing, switch off the power supply.

WARNING

Danger due to electric current!

Danger of electric shock by residual voltage at the terminals after switching off the power supply.

- Before opening the terminal compartment, switch off the power supply and wait for > 2 minutes.

NOTICE

Damage to the device due to improper handling!

- When replacing the defective safety fuses, only fuses with types and characteristics should be used (see **Fuses** on page 40).

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.

General

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.

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 30.
- 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.

Conductor cross-section on control actuator

Screw terminals

Motor/brake	max. 2.5 mm ² (14 AWG)
Signals	max. 2.5 mm ² (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 ² (24 to 10 AWG)
	flexible: 0.2 to 4 mm ² (24 to 12 AWG)
Mains	rigid: 0.5 to 6 mm ² (20 to 10 AWG)
	flexible: 0.5 to 4 mm ² (20 to 12 AWG)
Signals	rigid: 0.5 to 4 mm ² (20 to 12 AWG)
	flexible: 0.5 to 2.5 mm ² (20 to 14 AWG)

EBN861 – Screw terminals

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

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*	
Signal cable	M20 × 1.5 (2 ×)	PG 16 (2 ×)	NPT ½ in (2 ×)
Motor cable	M25 × 1.5 (1 ×)	PG 21 (1 ×)	NPT ¾ in (1 ×)

* Adapter for PG or NPT thread must be ordered separately

... 7 Electrical connections

... Conductor cross-section on electronic unit

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:

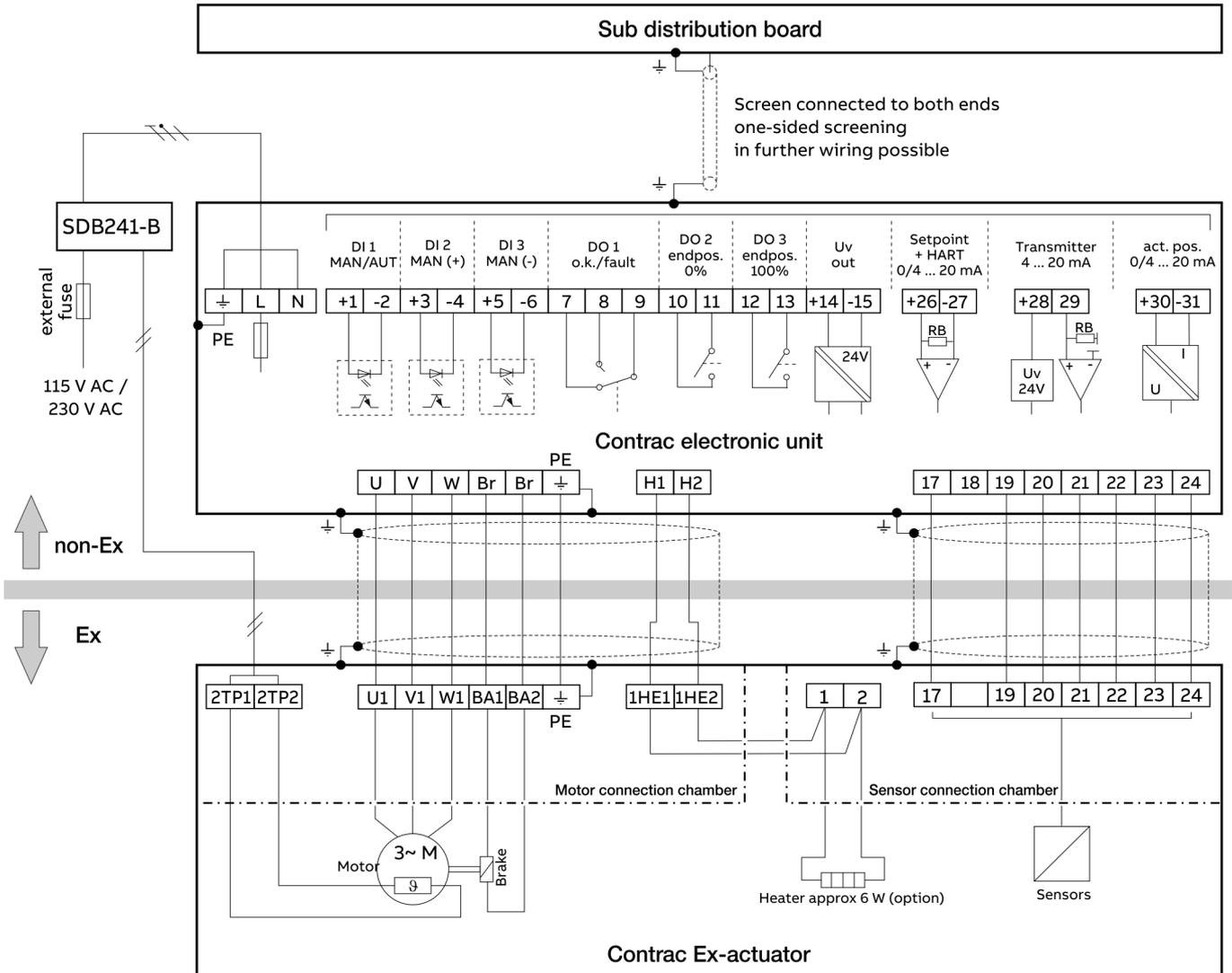
- The specific regulations governing the installation of electric systems in potentially explosive atmospheres must be observed during electric installation work. The provisions in accordance with EN 60079-14 must be observed, particularly in respect of installing the shield bonding and potential equalization between the actuator, electronic unit, and motor protection equipment, see **Connection of cable shielding** on page 30.
- 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.

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

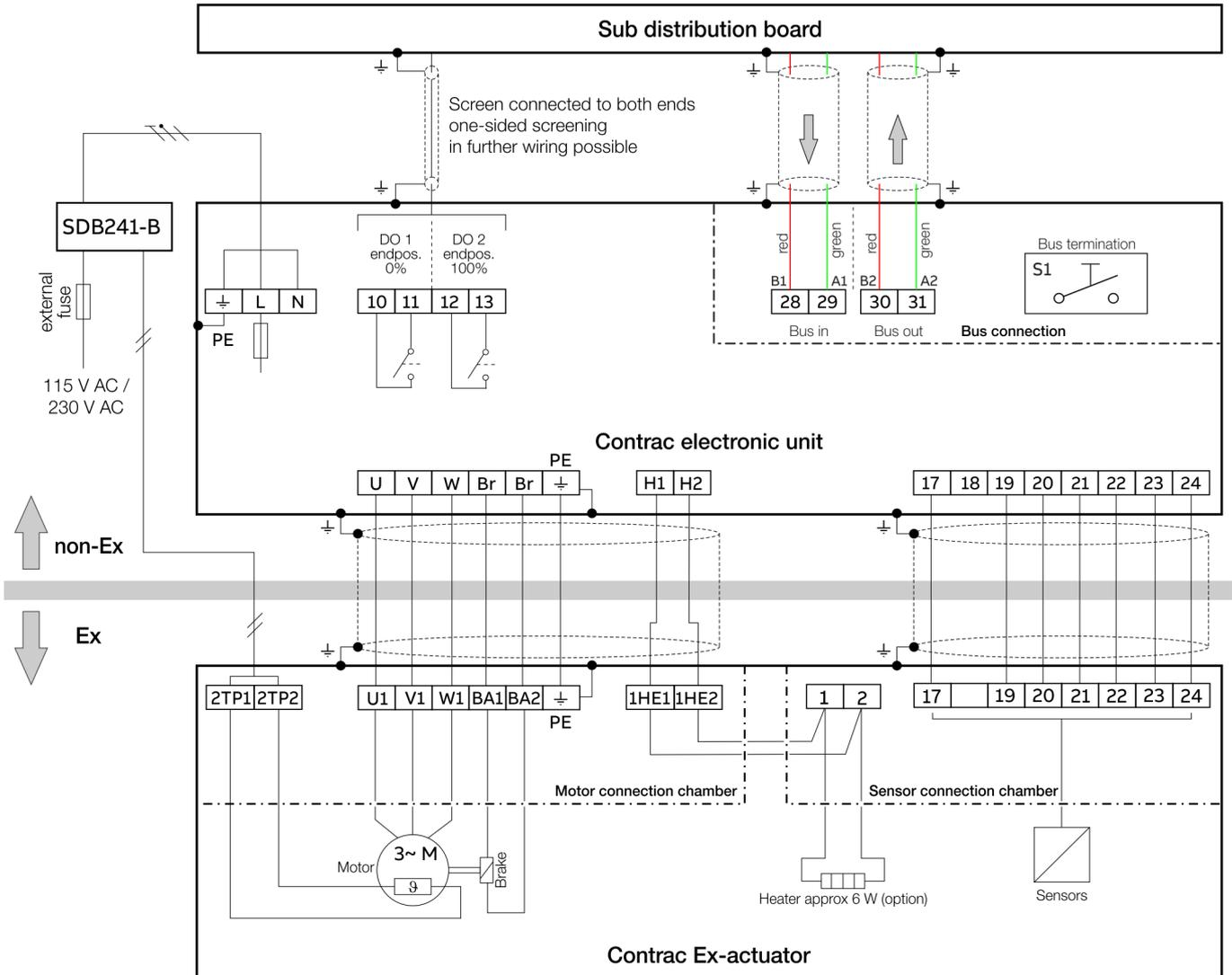
... 7 Electrical connections

... Electronic Unit EBN853 (Conrac)

PROFIBUS DP®

Note

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



DO = digital output

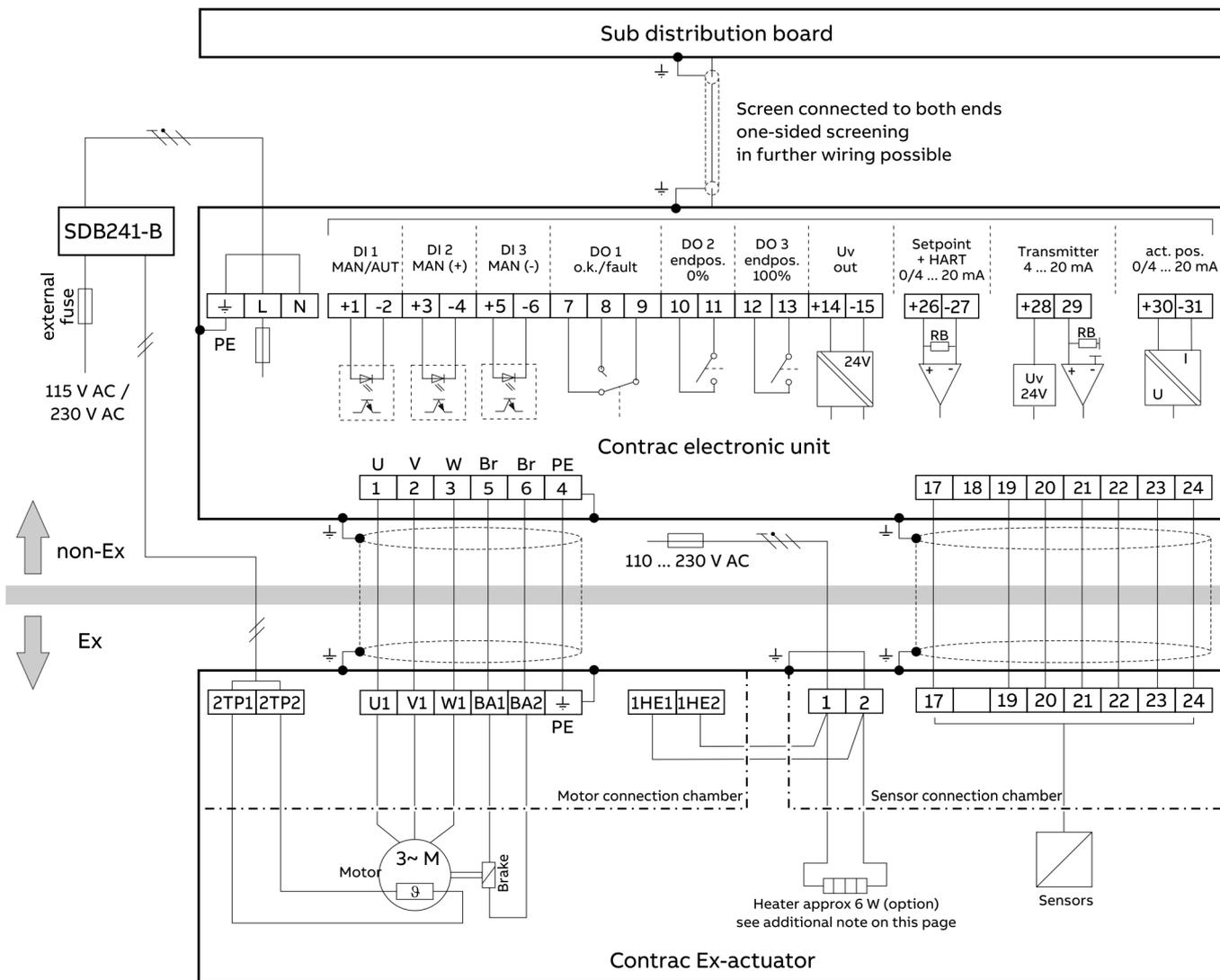
Figure 10: Control via fieldbus PROFIBUS DP®

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).



BE = digital input
 BA = digital output

Figure 11: Control via analog input 0/4 to 20 mA, HART® communication or digital inputs

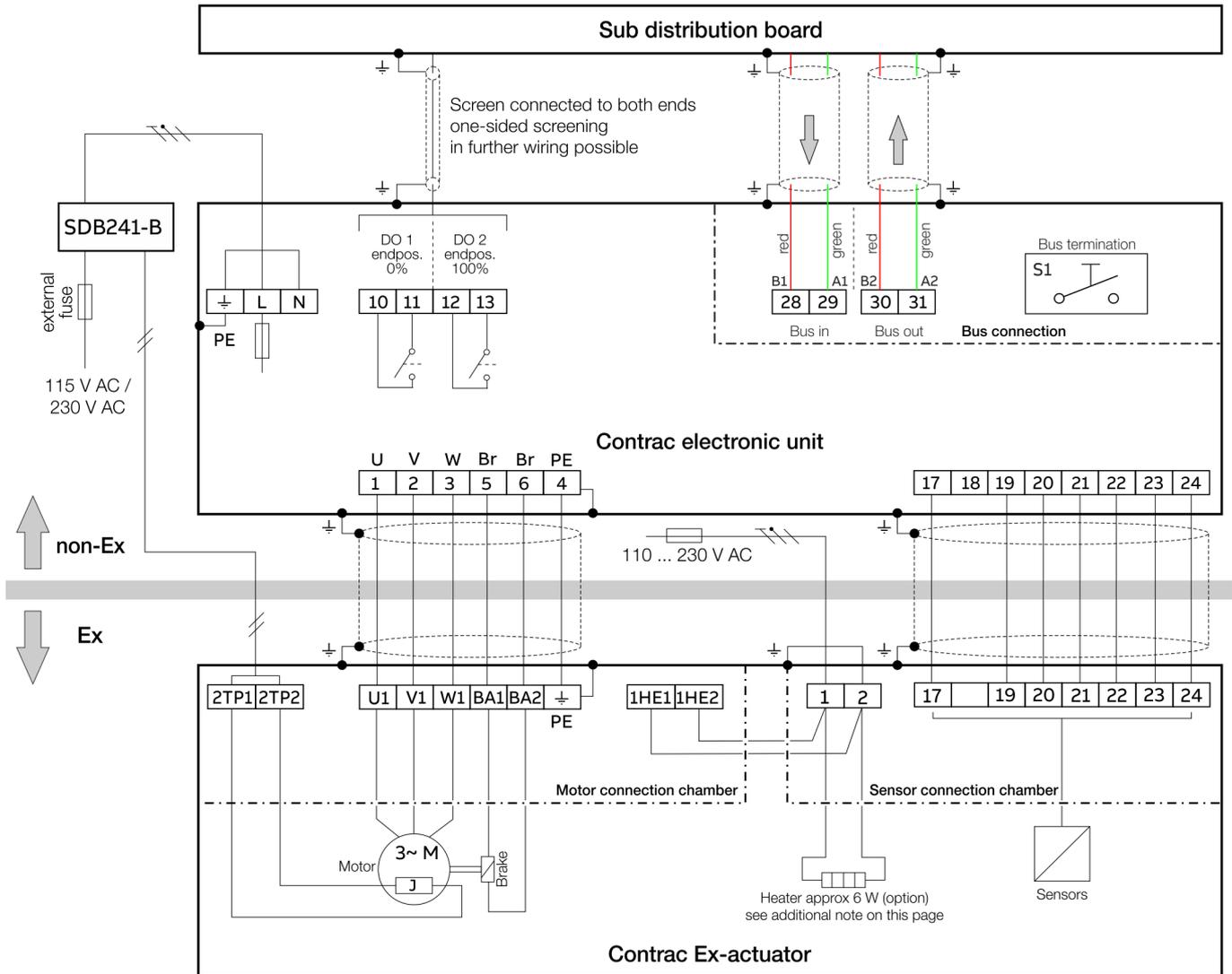
... 7 Electrical connections

... Electronic Unit EBN853 (Contrac)

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).



BA = digital output

Figure 12: Control via fieldbus PROFIBUS DP®

Connection examples

Operation following a continuous set point (standard)

In the standard configuration, the binary inputs are configured as 'MANUAL OPERATION'.

To switch the actuator to automatic mode (AUT), the following conditions must be met:

- The binary input 1 must be connected with +24 V DC (automatic operation).
- The 'AUT' operating mode must be selected through the graphic user interface.

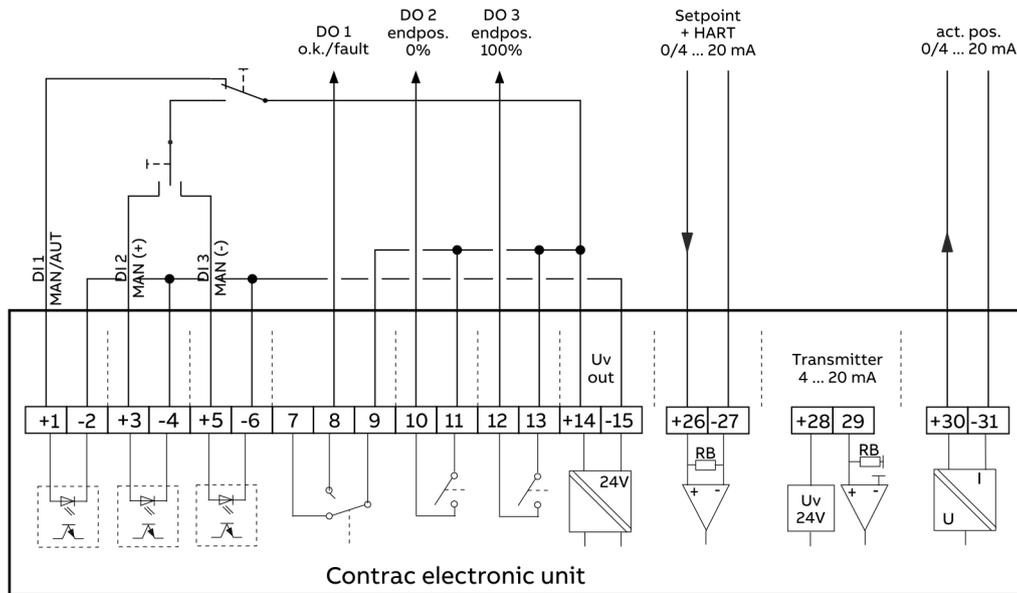


Figure 13: Connection example for operation following a continuous set point (standard configuration)

... 7 Electrical connections

... Connection examples

Operation downstream from step controller

Contrac actuators can be driven using step controller pulses instead of an analog setpoint. The following conditions must be fulfilled in order to implement the step controller pulses:

- The binary inputs must be configured using the 'STEP CONTROLLER' function.
- The binary input 1 must be connected with +24 V DC (automatic operation).
- The 'AUT' operating mode must be selected through the graphic user interface.

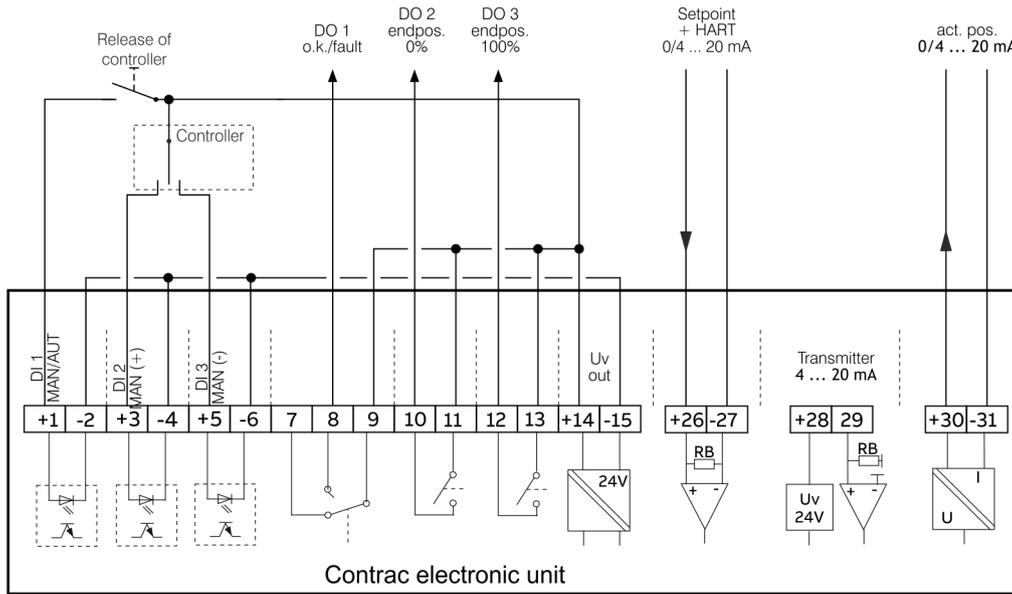


Figure 14: Connection example for operation downstream from a step controller

Electrical data for inputs and outputs

Power supply

EBN853				
Supply voltage (standard actuators)	115 V AC (94 to 130 V) or 230 V AC (190 to 260 V); 47.5 to 63 Hz; single-phase			
Supply voltage (Ex actuators)	115 V AC (94 to 127 V) or 230 V AC (190 to 253 V); 47.5 to 63 Hz; single-phase			
Current consumption at the electronic unit (AC 115 V / AC 230 V)	Actuator	I_{\max} at 115 V	I_{\max} at 230 V	I_{pos} (115 V + 230 V): approx. 40 to 50 % of I_{\max}
	RHD(E)250-10	1.8 A	0.9 A	
	RHD(E)500-10	2.2 A	1.1 A	
	RHD(E)800-10	5.0 A	2.5 A	
	RHD(E)1250-12	5.0 A	2.5 A	
	RHD(E)2500-25	5.0 A	2.5 A	
	RHD(E)4000-40	5.8 A	2.7 A	
	RHD(E)8000-80	5.0 A	2.5 A	
	RSD(E)10-5,0	2.2 A	1.1 A	
	RSD(E)10-10,0	3.6 A	1.8 A	
	RSD(E)20-5,0	3.6 A	1.8 A	
	RSD(E)20-7,5	4.8 A	2.4 A	
	RSD(E)50-3,0	5.0 A	2.5 A	
	RSD100-1.5	5.0 A	2.5 A	
	RSD200-0.7	5.0 A	2.5 A	
External fuse for electronic unit	16 A; time-lag			

EBN861				
Supply voltage (standard actuators)	230 V AC (190 to 260 V); 47.5 63 Hz; single-phase			
Supply voltage (Ex actuators)	230 V AC (190 to 253 V); 47.5 63 Hz; single-phase			
Current consumption at the electronic unit (AC 230 V)	Actuator	I_{\max} at 230 V	I_{pos} (230 V): approx. 40 to 50 % of I_{\max}	
	RHD(E)2500-10	5.3 A		
	RHD(E)4000-10	10.0 A		
	RHD8000-12	8.0 A		
	RHDE8000-15	8.0 A		
	RHD(E)16000-30	12.5 A		
	RSD(E)50-10	6.4 A		
	RSD100-10.0	12.5 A		
	RSD200-5.0	13.0 A		
External fuse for electronic unit	Safety fuse 35 A (Lindner) + thermal circuit breaker 16 A (ETA); fuses are in the scope of delivery			

... 7 Electrical connections

... Electrical data for inputs and outputs

Binary inputs and outputs - communication

Conventional communication

Analog input	0 / 4 to 20 mA, internal load: 300 Ω
Analog output	0 / 4 to 20 mA, electrically isolated, maximum load: 500 Ω
3 digital inputs, 1 to 3	Digital 0: -3 to 5 V or open, electrically isolated Digital 1: 12 to 35 V, electrically isolated
3 digital outputs, 1 to 3	Potential-free relay contact, max. 60 V, 150 mA
Digital communication	RS232 for commissioning and service, optionally FSK / HART®
Default settings	Conventional communication on page 13
Voltage output U_v	24 V, 15 mA, electrically isolated, for scanning external contacts, or similar applications
Connection for transmitter (optional)	Supply for two-wire transmitter with activated process controller in Contrac
Individual settings	See data sheet 'DS/CONTRAC/SETTING' or available upon request.

PROFIBUS DP® Communication

PNO ID no.	0×9655 Actuators with DP/V0 communication (cyclic data traffic) 0×09EC Actuators with DP/V1 communication (cyclic and acyclic data traffic)
Communication protocol	PROFIBUS PA® Profile V3.0 Class B in accordance with IEC 50170 / EN 50170 (DIN 19245)
Bus cable	Twisted, shielded copper wire acc. to IEC 50170 / EN 50170
Interface	EIA-485 (RS485) acc. to IEC 50170 / EN 50170
Permissible baud rates	93.75 Kbit/s 187.5 Kbit/s 500 Kbit/s 1500 Kbit/s Automatic baud rate detection
Bus address	0 to 126, default address 126 Set Slave Address service is supported
Bus termination	Connectable active bus termination. Power supply from electronic unit
Block types	1 analog input function block 1 transducer block 1 physical block
Failsafe	Failsafe function is supported. Configurable function for downtime of bus communication <ul style="list-style-type: none"> • Lock in last position • Drive to safety position • Adjust with last effective set point Adjustable time delay
Modules for cyclic communication	8 standards-compliant modules and 3 manufacturer-specific modules are available.* SP (Short) SP (Long) RCAS_IN+RCAS_OUT SP+READBACK+POS_D SP+CHECKBACK SP+READBACK+POS_D+CHECKBACK RCAS_IN+RCAS_OUT+CHECKBACK SP+RCAS_IN+READBACK+RCAS_OUT+POS_D+CHECKBACK STANDARD SP+RB+MESSEING SP+RB+ENL_DIAG
Acyclic communication	Full parameterization and configurability via Master Class 2 and DTM
Default settings	PROFIBUS DP® communication on page 13
Digital outputs 1 and 2	In addition to the PROFIBUS®-communication, there are 2 digital outputs. Potential-free relay contact, max. 60 V, 150 mA Default setting: Digital output 1 End position signal 0 % Digital output 2 End position signal 100 %
Individual settings	See data sheet 'DS/CONTRAC/SETTING' or available upon request.

* A full description of communication modules can be found in parameterization and configuration instructions 45/68-10

... 7 Electrical connections

... Electrical data for inputs and outputs

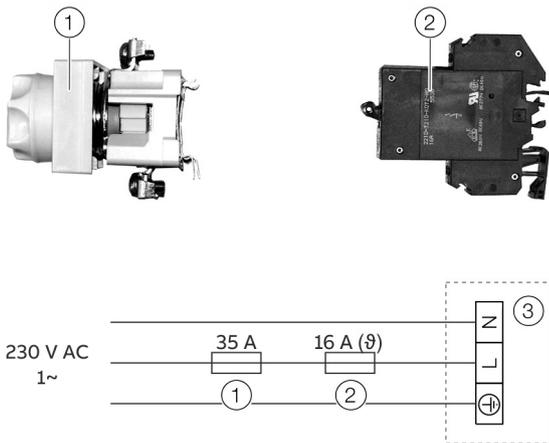
Connection on the device

Power supply

Observe the following points when connecting the power supply:

- You must be able to activate the power supply of the electronic unit on-site.
- In the power supply, the supplied fuses must be installed for certain electronic units (see **External fuses for EBN861** on page 30).
- Connect the power supply to the corresponding terminals of the electronic unit (see electrical connections starting on page 21).

External fuses for EBN861



- ① External safety fuse 35 A
- ② External safety fuse 16 A
- ③ Electronic unit

Figure 15: External fuses

Note

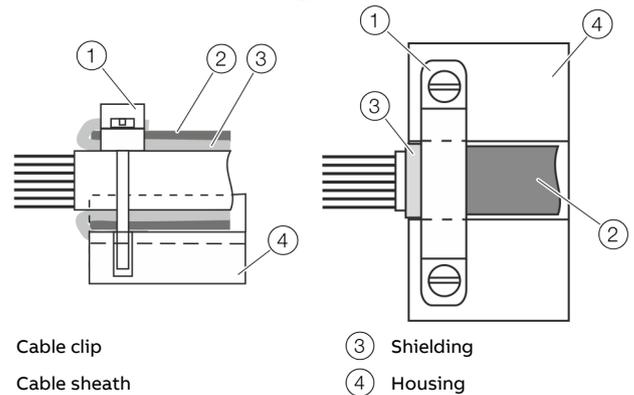
The conductor cross-section between the fuses and the electronic unit must be at least 2.5 mm² (AWG 14).

In addition to the internal fuses, the EBN861 electronic unit requires two additional external fuses which are supplied separately with the assembly.

The fuses are switched externally in the power supply.

The fuses guarantee safe operation under the special starting conditions of the electronic unit.

Connection of cable shielding



- ① Cable clip
- ② Cable sheath
- ③ Shielding
- ④ Housing

Figure 16: Cable shielding

- Remove the cover for the terminal compartment.
- Cut the cable sheath to the required length.
- Separate the cable shield and pull it back over the outer sheath
- Push the cable through the cable gland and fasten it with the clamp.
- Make sure that the cable shield is in contact with the clip and the housing.
- Connect the cable (see electrical connections starting on page 21).
- Check the cable connections for tight fit and fasten the cable gland.
- Screw the cover of the connection chamber back on tight.

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.

8 Commissioning and operation

Note

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

Note

The operating range of the actuator is not factory-set. Set up the mechanical end stops in accordance with the operating instruction for the relevant actuator.

If there is a chance that safe operation is no longer possible, take the device out of operation and secure it against unintended startup.

General information

The basic settings 'Define end positions' and 'Initial diagnosis' can be configured via the commissioning and service field on the electronic unit.

The commissioning and service field is used to adjust the actuator to the working area and set the direction of action without using a PC.

The following configuration types are available for advanced adjustment of the actuator and its parameterization:

- With DTM
Configuration can be performed within an FDT frame application that is approved for use with the DTM.
- With EDD
Configuration can be performed within an EDD frame application that is approved for use with the EDD.

Communication with the electronic unit is optionally done through the RS 232 interface on the commissioning and service field or in field electronic units through digital communication with HART® or PROFIBUS®.

Note

For detailed information on the parameterization of the actuator, consult the associated configuration and parameterization instruction.

Engineering Software ECOM688 and ECOM700

Using the ECOM688 / ECOM700 engineering software, the user can read out, store, and write back the actuator-related data from the electronic unit of a Contrac control actuator.

Depending on the software version of the electronic unit, two different engineering software versions are available.

- Contrac electronic units with software version ≥ 2.00 require ECOM700.
- Contrac electronic units with software version < 2.00 require ECOM688.

Data cannot be read or written with an incorrect ECOM version.

Note

For detailed information, observe the corresponding operating instruction of the ECOM688 / ECOM700 Engineering Software.

Checks prior to commissioning

Before powering up the power supply

Before switching on the power supply and commissioning the device, check the following points:

- Correct wiring (see **Electrical connections** on page 18).
- Close all housing covers and terminal compartments.
- Do not open the housing cover or terminal compartments during operation!
- The actuator must have been installed in accordance with the corresponding operating instruction. The working zone and mechanical end stops must have been adjusted.
- Make sure that there is no danger of injury for persons due to movement of the actuator!

1. Switch on the power supply.

After powering up the power supply

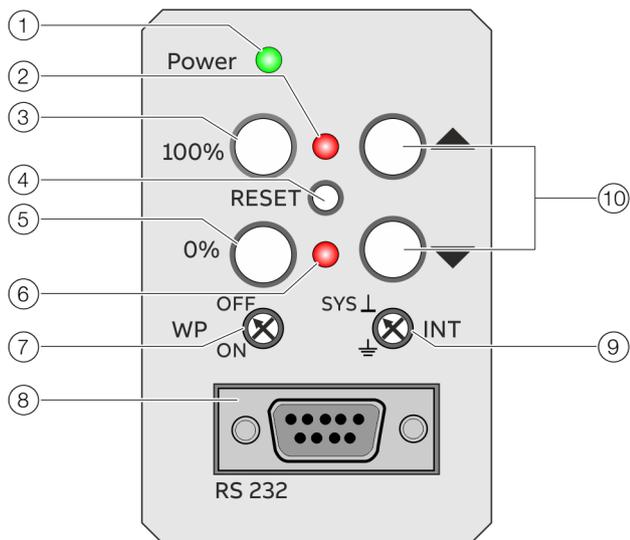
Check the following items after powering up the power supply:

- The write protection switch on the commissioning and service field is in the 'OFF' position.
- The electronic unit is in the 'MAN' operating mode; there is no +24 V signal on binary input 1.
- No error (if an error is pending, both LEDs on the commissioning and service field will flash alternately at 4 Hz).

2. Perform parameterization and basic settings on the electronic unit.

... 8 Commissioning and operation

Commissioning and service field



- ① LED power supply
- ② LED 100 %
- ③ Button 100 %
- ④ Reset button
- ⑤ Button 0 %
- ⑥ LED 0 %
- ⑦ Write protection switch
- ⑧ RS 232 interface
- ⑨ Potential switch
- ⑩ Travel button ▲ / ▼

Figure 17: Commissioning and service field

Operating element	Description
Write protection switch	Activates the hardware write protection. Factory setting: OFF – write protection deactivated. Refer to Hardware write protection on page 34.
Potential switch	Selection of reference potential. Factory setting: SYS – Reference potential on the system. Refer to Hardware write protection on page 34.
Travel button	Pressing a button moves the actuator in the selected direction. Press and hold both buttons at the same time for at least 5 seconds to delete the existing end position setting.

Operating element	Description
Button 100 %	Press to set the current position as 100 %; press briefly in combination with the 0 % button to end the adjustment process. Simultaneously pressing the 0 % button for at least 5 seconds switches the actuator to MAN operating mode (manual). (Software version 2.00 and higher)
Button 0 %	Press to set the current position as 0 %; press in combination with the 100 % button to end the adjustment process.
LED 100 % / 0 %	Depending on the flash rate, this LED indicates the adjustment process, position saved, MAN operating mode (manual via commissioning and service field from software version 2.00 or higher) or an error.
Reset button	Press to restart the processor. If the adjustment is not yet terminated, the set end positions are deleted.

Meaning of the LED indicators

The LEDs 100 % / 0 % on the commissioning and service field (Figure 17 on page 32, Pos. ② + ⑥) flash at different rates, depending on the function that has been initiated.

LED Flash code 0 % / 100 %	Description
	Adjustment mode Both LEDs flash synchronously at 4 Hz.
	Accept 1. Position correct Depending on which position is approached first, either LED 100 % flashes at 1 Hz and LED 0 % continues to flash at 4 Hz, or vice versa.
	Accept 2. Position correct Both LEDs flash at 1 Hz.
	Failure Both LEDs flash alternately at 4 Hz.
	ECOM688 or ECOM700 mode Both LEDs light continuously (from software version 2.00).
	MAN operating mode (manual) through ISF The LED 0 % flashes at 1 Hz, LED 100 % is off (from software version 2.00).
	MAN (Manual) operating mode via binary input or graphical user interface The LED 100 % lights continuously, LED 0 % is off (from software version 2.00).

Note

The flash codes for MAN (manual) operating mode through ISF or binary input / graphic user interface can also occur at the same time.

... 8 Commissioning and operation

Hardware settings

Hardware write protection

If write protection is active, the device parameterization cannot be changed.

Activating and sealing the write protection switch WP (**Commissioning and service field**, ⑦) protects the device against tampering.

Number	Function
ON	Write protection active
OFF	Write protection deactivated

Potential switch

The potentials switch INT \perp (**Figure 17**, ⑨) connects the reference potential either to the system or the protective ground.

Number	Function / setting recommendation
SYS \perp 	Reference potential on system potential Conventional control with analog set point <i>without</i> external electrical isolation
SYS \perp 	Reference potential on ground potential Conventional control with analog set point and <i>with</i> external electrical isolation
SYS \perp 	Reference potential on ground potential With step control

Basic Setup

Setting the end positions 0 % / 100 %

Note

Once commissioning is complete, set the write protection switch to 'ON'.

1. Switch the electronic unit to the 'Adjustment' operating mode. Press and hold down both travel buttons (**Figure 17**, pos. ⑩) for approx. 5 seconds, until both LEDs (**Figure 17**, pos. ② and ⑥) flash in synch at approx. 4 Hz.

Defining the initial position (0 % or 100 %)

2. Use one of the travel buttons to move to the desired position.
3. Press the Accept button to accept the position (**Figure 17**, pos. ③ or ⑤); if successful, the corresponding LED flashes at a rate of 1 Hz. The other LED will continue to flash at approx. 4 Hz.

Defining the second position (0 % or 100 %)

4. Use one of the travel buttons to move to the second position.
5. To accept the position, press the Accept button. If successful, both LEDs will flash at a rate of approx. 1 Hz.

Saving the settings

6. Press both Accept buttons to accept the settings. The LEDs will stop flashing after a short period of time and the setup process is complete.

Note

If the range selected for the actuator is too small, both LEDs begin to flash again at 4 Hz and the setup procedure must be repeated with a larger value (min. actuator travel). (Information regarding actuator travel appears on the actuator name plate.)

Correcting your settings

- If after accepting the initial value for the settings you need to make a correction, press the reset button and repeat the setting procedure.
- If you need to make a correction after saving your settings, you will need to repeat the entire setup procedure from the beginning.

After commissioning

After commissioning has been performed, it is recommended that you use the control system to operate the actuator and that you check the actuator's response and its signaling behavior. In order for the actuator to go into automatic mode after commissioning, there must be a 24 V DC-signal on binary input 1 in actuators with active binary input function (standard setting). If the digital input function is switched off, the actuator will switch to automatic mode immediately on completion of the setup process.

Manual (MAN)- and Automatic Operation (AUT)

Software version 2.00 and higher

In the manual operating mode (MAN), the actuator solely reacts upon actuation of either of the two travel buttons on the commissioning and service field. Any control via the setpoint or digital input will be ignored.

The operating mode is saved in the non-volatile memory of the electronic unit. As a result, the actuator will not start up unintentionally after a power failure.

Activating manual operating mode (MAN) on the commissioning and service field

- Simultaneously press the Accept buttons 100 % / 0 % (Figure 17 on page 32, ③, ⑤) for at least 5 seconds.

The LED for the 0%-Position will begin to flash.

Activating automatic operating mode (AUT) on the commissioning and service field

- Simultaneously press the Accept buttons 100 % / 0 % (Figure 17 on page 32, ③, ⑤) for a brief amount of time.

The LED for the 0 %-Position will go out.

Activating the automatic operating mode (AUT) through the binary input or the graphic user interface

- Apply a +24 V DC signal to binary input 1 and / or select the AUT operating mode on the graphic user interface.

With the manual operating mode (MAN) activated, the LED for the 100 % position is continually lit up.

Signaling on the commissioning and service field

Function	Display
Device setup	
Switch to Device setup:	After this time, both LEDs will then flash in sync at 4 Hz.
Press and hold down both travel buttons for approx. 5 s.	
Approach an end position:	Both LEDs will continue to flash at 4 Hz during actuator travel.
Move to the desired end position by pressing the travel button.	
Save the initial end position:	The corresponding LED will flash at approx. 1 Hz, the other will continue to flash at 4 Hz.
Press the 0% or 100% button.	
Save the second end position:	The related LED will flash at approx. 1 Hz in sync with the first LED.
Press the 0% or 100% button.	
Special Requirements	
Standard operation: MAN / AUT.	The LEDs are not lit.
Travel via the operating button on the commissioning and service field takes priority over the control system.	The LEDs are not lit.
Error (both LEDs flashing alternately at 4 Hz)	
Press the RESET button to reset the error messages.	If there are no other errors pending, both LEDs will go out.
Reset if the operating range is overshoot:	After approx. 5 seconds, the LEDs will stop flashing
Press and hold down both travel buttons for 5 seconds and then press the RESET button.	briefly. After a 'reset', the electronic unit will be in Adjustment Mode!
ECOM Mode	
The ECOM688 engineering tool is used to access the electronic unit.	Both LEDs light up continuously.

9 Diagnosis / error messages

Definition – Alarms and Errors

Alarms

The actuator / electronic unit is in a critical state (e.g., high temperature), which currently does not affect the actuator, electronic unit, process or persons.

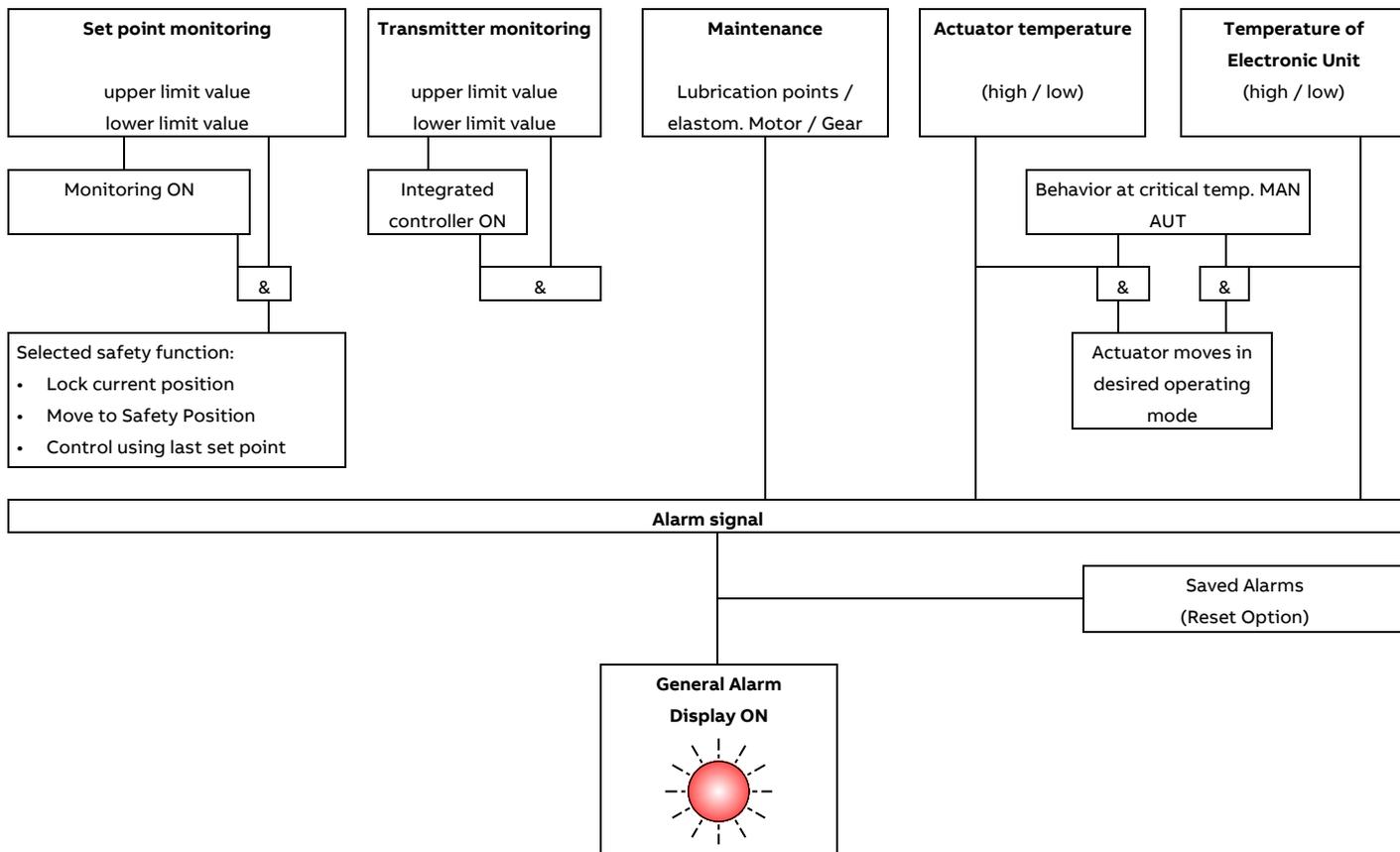
The actuator functions are available. Previous alarms are stored in the ‘Saved Alarms’ area in the electronic unit. Use the graphic user interface to read out saved alarms.

Errors

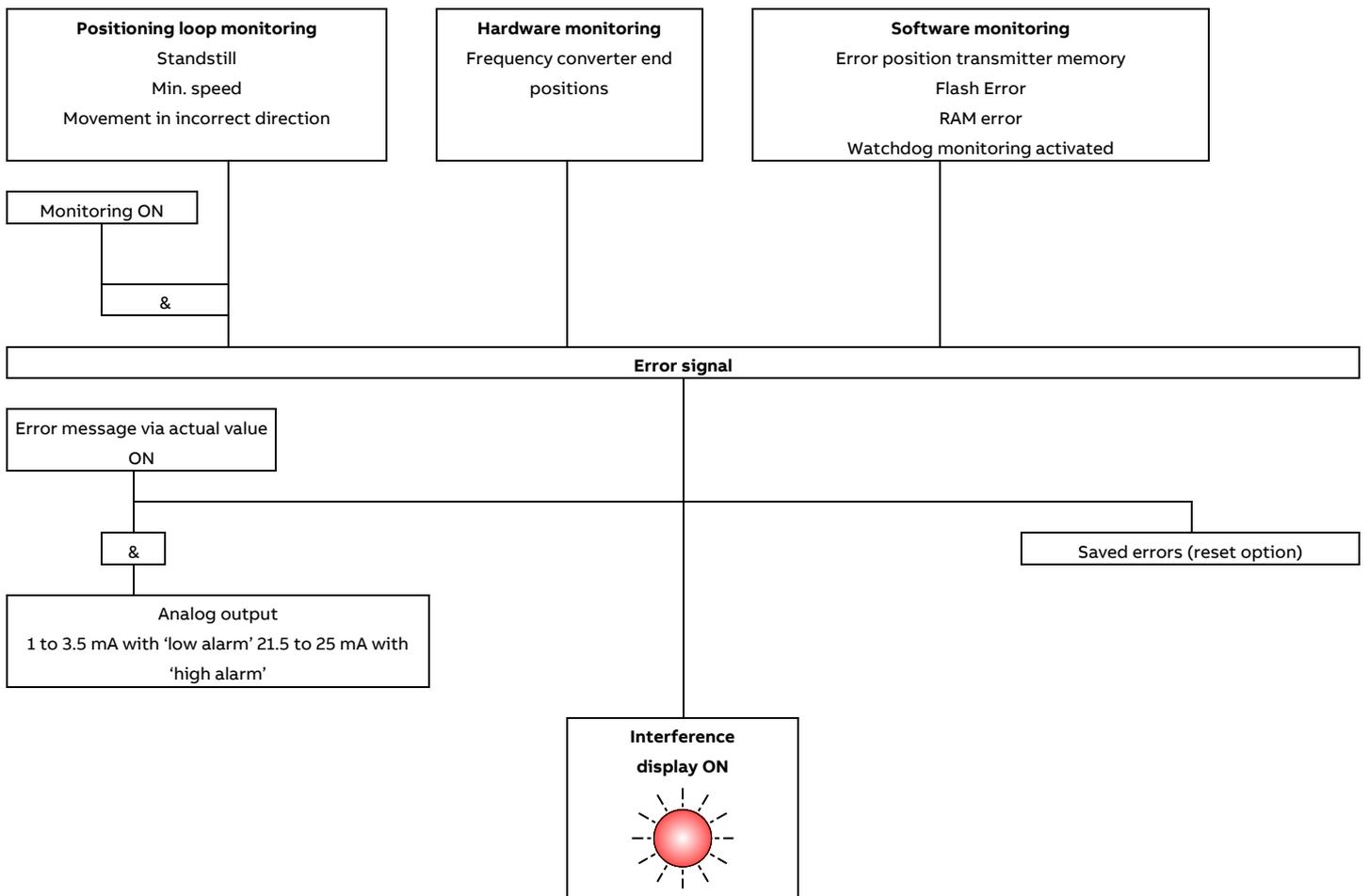
The actuator / electronic unit is in a critical state, e.g. control circuit monitoring, which is directly impairing the actuator, electronic unit, process or persons.

The actuator is switched off and the actuator functions are no longer available. Previous error messages are stored in the ‘Saved Errors’ area in the electronic unit. Use the graphic user interface to read out saved errors. Error messages cannot be reset until the cause of the error has been eliminated.

Alarm Diagram



Error Diagram



... 9 Diagnosis / error messages

Hardware Errors

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. If the actuator moves, the valve is the possible cause. 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. 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. Check the brake lock.
	Binary inputs on the electronic unit are not wired.	Make connection.
Actuator does not run in automatic mode, although automatic mode is selected in the user interface.	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. Check winding resistance of the brake coil.
	Digital input 1 (BE 1) not wired.	Make connection. 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). Drive the actuator back into the operating range and connect it to the valve.
Malfunction when approaching the end position.	Actuator in limit range of positioning sensor.	Readjust the actuator for the operating range.

10 Maintenance

Electronic unit

The electronic unit does not require any maintenance if it operated in line with intended use under normal operating conditions.

Note

Manipulation by users shall immediately render the warranty for the device invalid.

Control actuator

Note

For detailed information on the maintenance of the actuator, consult the operating instruction of the actuator!

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.

11 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 42) 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.

... 11 Repair

Fuses

Type	Fuse	Installation location	Design	Rated current of fuse	
				at 115 V AC	at 230 V AC
EBN853	External fuse	External	–	16 A, time-lag	16 A, time-lag
	Mains fuse	Connection area	G-fuse cartridge 5 × 20 mm	12.5 A, time-lag	10 A, time-lag
	Analog input	Connection area	G-fuse cartridge 5 × 20 mm	40 mA, fast-acting	40 mA, fast-acting
	Brake fuse	Power supply board	G-fuse cartridge 5 × 20 mm	0.315 A, medium time-lag	0.315 A, medium time-lag
	DC link fuse	Power supply board	G-fuse cartridge 6.3 × 32 mm	10 A, super fast-acting	10 A, super fast-acting
	Heater (optional)	Connection area	G-fuse cartridge 5 × 20 mm	2 A, time-lag	2 A, time-lag
	EBN861	External fuse*	External	Safety fuse / thermal circuit breaker	–
Brake fuse		Power supply board	G-fuse cartridge 5 × 20 mm	–	0.315 A, medium time-lag
DC link fuse		Power supply board	G-fuse cartridge 6.3 × 32 mm	–	16 A, super fast-acting
Fuse for binary outputs (3x)		Connection area	G-fuse cartridge 5 × 20 mm	–	0.2 A, medium time-lag
Heater (optional)		Connection area	G-fuse cartridge 5 × 20 mm	2 A, time-lag	2 A, time-lag

* The 35 A safety fuse and the 16 A thermal circuit breaker are included in the scope of delivery. The conductor cross-section between the fuse and the electronic system must be at least 2.5 mm² (14 AWG).

12 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

13 Approvals and certifications

CE mark



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

- 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)

14 Additional documents

Note

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

www.abb.com/actuators

15 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 combustibile (highly / extremely combustibile)

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

Trademarks

HART is a registered trademark of FieldComm Group, Austin, Texas, USA
PROFIBUS and PROFIBUS DP are registered trademarks of PROFIBUS &
PROFINET International (PI)

ABB Measurement & Analytics

For your local ABB contact, visit:
www.abb.com/contacts

For more product information, visit:
www.abb.com/actuators

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