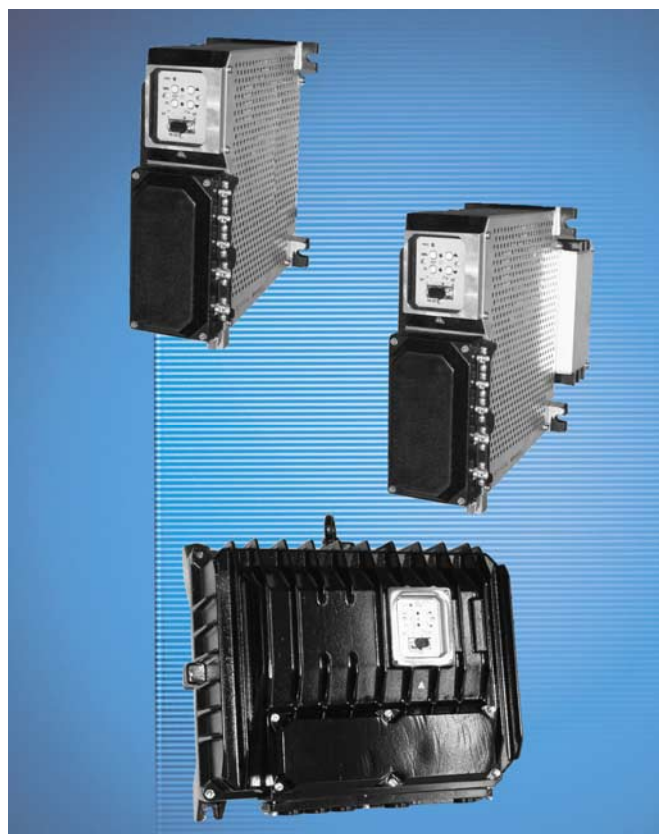


Power electronic unit for cabinet installation (contract) EAS822, EBS852, EBS862

To control Contrac actuators
in the PME, LME, RHD and RSD Series



HART 
COMMUNICATION PROTOCOL

Power electronic unit for cabinet installation (contract) EAS822, EBS852, EBS862

Operating Instruction

OI/EAS822/EBS852/EBS862-EN

12.2011

Translation of the original instruction

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1	Safety	5
1.1	General information and notes for the reader	5
1.2	Intended use.....	5
1.3	Target groups and qualifications	5
1.4	Warranty provisions.....	6
1.5	Plates and symbols	6
1.5.1	Safety-/ warning symbols, note symbols.....	6
1.5.2	Name plates for the power electronic units.....	7
1.6	Transport safety information.....	8
1.7	Storage conditions.....	8
1.8	Installation safety information.....	9
1.9	Safety information for electrical installation.....	9
1.10	Operating safety information	9
1.11	Returning devices.....	9
1.12	Integrated management system.....	10
1.13	Disposal.....	10
1.13.1	Information on WEEE Directive 2002/96/EC (Waste Electrical and Electronic Equipment).....	10
1.13.2	RoHS Directive 2002/95/EC	10
2	Design and function	11
2.1	Modules	12
2.1.1	EAS822, EBS852.....	12
2.1.2	EBS862	13
2.2	Factory default.....	14
2.2.1	Standard control.....	14
3	Mounting	15
3.1	Installation instructions	15
3.2	EAS822, EBS852	15
3.3	EBS862	16
4	Electrical connections	17
4.1	Wire cross-sectional areas (connection terminals / crimp contacts).....	17
4.1.1	Actuators	17
4.1.2	Electronic units.....	17
4.2	Actuator assignment and maximum cable lengths	18
4.2.1	Part-turn actuators	18
4.2.2	Linear actuators	18
4.3	Connection of power / signal cables	19
4.4	Cable guide in universal plug	20
4.5	Terminal connection diagrams	21
4.5.1	Power electronic unit EAS822	21
4.5.2	Power electronic units EBS852, EBS862	22
4.5.3	External fuse for EBS862.....	23
4.6	Configuration of digital input/output signals (standard control).....	23
4.6.1	Operation following a continuous setpoint (standard).....	24
4.6.2	Operation behind step controllerbehind	24
4.7	Connection elements.....	25
4.7.1	EAS822, EBS852.....	25
4.7.2	EBS862	26

Contents

4.8	Cable guide in rack.....	27
5	Local operation.....	28
5.1	General information on operation.....	28
5.2	Engineering software ECOM688 and ECOM700.....	28
5.3	Operating elements of the service field.....	29
6	Commissioning and service field.....	30
6.1	Typical commissioning with the service field.....	30
6.1.1	Status.....	30
6.2	Status displays of LEDs.....	31
6.2.1	"Device setup" operating mode.....	32
6.2.2	Setup via user interface.....	32
6.2.3	Defining the initial position (0 % or 100 %).....	32
6.2.4	Defining the second position (0 % or 100 %).....	32
6.2.5	Saving your settings.....	32
6.2.6	Correcting your settings.....	33
6.2.7	Manual (MAN) and automatic (AUT) mode (software version 2.00 and higher).....	33
6.2.8	Signals on the commissioning and service field.....	34
6.3	Positions for the potential switch.....	35
6.4	Fuses.....	36
7	Alarms / Errors.....	37
7.1	Definition.....	37
7.1.1	Alarms.....	37
7.1.2	Error.....	37
7.2	Alarm diagram.....	38
7.3	Error diagram.....	39
8	Trouble shooting.....	40
9	Specifications.....	41
10	Communication.....	42
11	Appendix.....	43
11.1	Other applicable documents.....	43
11.2	Approvals and certifications.....	43
12	Index.....	46

1 Safety

1.1 General information and notes for the reader

You must read these instructions carefully prior to installing and commissioning the device.

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

These instructions are intended as an overview and do not contain detailed information on all designs for this product or every possible aspect of installation, operation and maintenance.

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 any previous or existing agreement, promise or legal relationship nor is it intended to change the same.

This product is built based on state-of-the-art technology and is operationally safe. It has been tested and left the factory in perfect working order from a safety perspective. The information in the manual must be observed and followed in order to maintain this state throughout the period of operation.

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

Only by observing all of the safety instructions and all safety/warning symbols in these instructions can optimum protection of both personnel and the environment, as well as safe and fault-free operation of the device, be ensured.

Information and symbols directly on the product must be observed. They may not be removed and must be fully legible at all times.

1.2 Intended use

The power electronic units of type EAS822, EBS852, and EBS862 with the interconnection shown in this operating instruction are used exclusively for controlling electrical actuators in the series PME120, LME620, RHD..., and RSD.... 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.

1.3 Target groups and qualifications

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.

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

1.4 Warranty provisions

Using the device in a manner that does not fall within the scope of its intended use, disregarding this instruction, 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.

1.5 Plates and symbols

1.5.1 Safety- / warning symbols, note symbols



DANGER – <Serious damage to health / risk to life>

This symbol in conjunction with the signal word "Danger" indicates an imminent danger. Failure to observe this safety information will result in death or severe injury.



DANGER – <Serious damage to health / risk to life>

This symbol in conjunction with the signal word "Danger" indicates an imminent electrical hazard. Failure to observe this safety information will result in death or severe injury.



WARNING – <Bodily injury>

This symbol in conjunction with the signal word "Warning" indicates a possibly dangerous situation. Failure to observe this safety information may result in death or severe injury.



WARNING – <Bodily injury>

This symbol in conjunction with the signal word "Warning" indicates a potential electrical hazard. Failure to observe this safety information may result in death or severe injury.



CAUTION – <Minor injury>

This symbol in conjunction with the signal word "Caution" indicates a possibly dangerous situation. Failure to observe this safety information may result in minor or moderate injury. This may also be used for property damage warnings.



NOTICE – <Property damage>!

The symbol indicates a potentially damaging situation.

Failure to observe this safety information may result in damage to or destruction of the product and/or other system components.



IMPORTANT (NOTE)

This symbol indicates operator tips, particularly useful information, or important information about the product or its further uses. It does not indicate a dangerous or damaging situation.

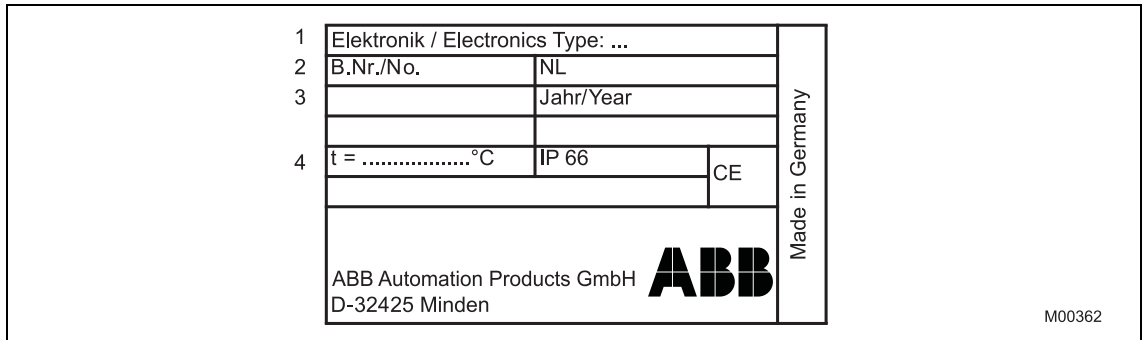


Fig. 3 Hardware name plate on electronic unit cover (EBS862 only)

- | | |
|---|--|
| 1 Electronic unit type | 3 Year of manufacture |
| 2 Serial no. / NL no. (no. of non-list version) | 4 Permissible ambient temperature / protection class / CE mark |

1.6 Transport safety information

Check the devices for possible damage that may have occurred during transport. Damages in transit must be recorded on the transport documents. All claims for damages must be claimed without delay against the shipper and before the installation.

Ensure that the specified environmental conditions in the Technical Data chapter are complied with.

1.7 Storage conditions

The EAS822, EBS852, EBS862 (Contrac) power electronic units have an enclosure rating of IP 20. They must be stored appropriately for this protection class. Condensation is not permitted.

Moisture content must not exceed an annual average of 75%.

The permissible storage and transport temperatures must be observed.

If you intend to store or transport the device for a prolonged period, we recommend that you wrap it in plastic film and add desiccant. Check that the desiccant is still effective on a regular basis.

The relevant long-term storage temperatures must be observed.

1.8 Installation safety information

- Only qualified specialists who have been trained for these tasks are authorized to mount and adjust the control actuator, and to make the electrical connection.
- When working on the actuator itself 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.

1.9 Safety information for electrical installation

- The electrical connection may only be made by authorized specialist personnel and in accordance with the electrical circuit diagrams.
- The electrical connection information in the manual must be observed; otherwise, the type of electrical protection may be adversely affected.
- Safe isolation of electrical circuits which are dangerous if touched is only guaranteed if the connected devices satisfy the requirements of DIN EN 61140 (VDE 0140 Part 1) (basic requirements for safe isolation).
- 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.

1.10 Operating safety information

Before switching on, ensure that the specified environmental conditions in the “Technical Specifications” chapter or data sheet are complied with and that the power supply voltage corresponds with the voltage of the electronic unit.

When there is a chance that safe operation is no longer possible, put the device out of operation and secure against unintended operation.

When mounting the power electronic unit in areas that may be accessed by unauthorized persons, take the required protective measures.

1.11 Returning devices

Use the original packaging or suitably secure shipping containers if you need to return the device for repair or recalibration purposes. Fill out the return form (see the Appendix) and include this with the device.

According to EC guidelines for 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 Automation Products GmbH must be free from any hazardous materials (acids, alkalis, solvents, etc.).

Please contact Customer Center Service acc. to page 2 for nearest service location.

1.12 Integrated management system

ABB Automation Products GmbH operates an integrated management system, consisting of:

- Quality management system to ISO 9001:2008
- Environmental management system to ISO 14001:2004
- Occupational health and safety management system to BS OHSAS 18001:2007 and
- Data and information protection management system

Environmental awareness is an important part of our company policy.

Our products and solutions are intended to have a minimal impact on the environment and on people during manufacturing, storage, transport, use, and disposal.

This includes the environmentally-friendly use of natural resources. We conduct an open dialog with the public through our publications.

1.13 Disposal

This product is manufactured from materials that can be reused by specialist recycling companies.

1.13.1 Information on WEEE Directive 2002/96/EC (Waste Electrical and Electronic Equipment)

This product is not subject to WEEE Directive 2002/96/EC or relevant national laws (e.g., ElektroG in Germany).

The product must be disposed of at a specialist recycling facility. Do not use municipal garbage collection points. According to the WEEE Directive 2002/96/EC, only products used in private applications may be disposed of at municipal garbage facilities. Proper disposal prevents negative effects on people and the environment, and supports the reuse of valuable raw materials.

If it is not possible to dispose of old equipment properly, ABB Service can accept and dispose of returns for a fee.

1.13.2 RoHS Directive 2002/95/EC

With the Electrical and Electronic Equipment Act (ElektroG) in Germany, the European Directives 2002/96/EC (WEEE) and 2002/95/EC (RoHS) are translated into national law. ElektroG defines the products that are subject to regulated collection and disposal or reuse in the event of disposal or at the end of their service life. ElektroG also prohibits the marketing of electrical and electronic equipment that contains certain amounts of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) (also known as hazardous substances with restricted uses).

The products provided by ABB Automation Products GmbH do not fall within the current scope of the directive on waste from electrical and electronic equipment according to ElektroG. If the necessary components are available on the market at the right time, in the future these substances will no longer be used in new product development.

2 Design and function

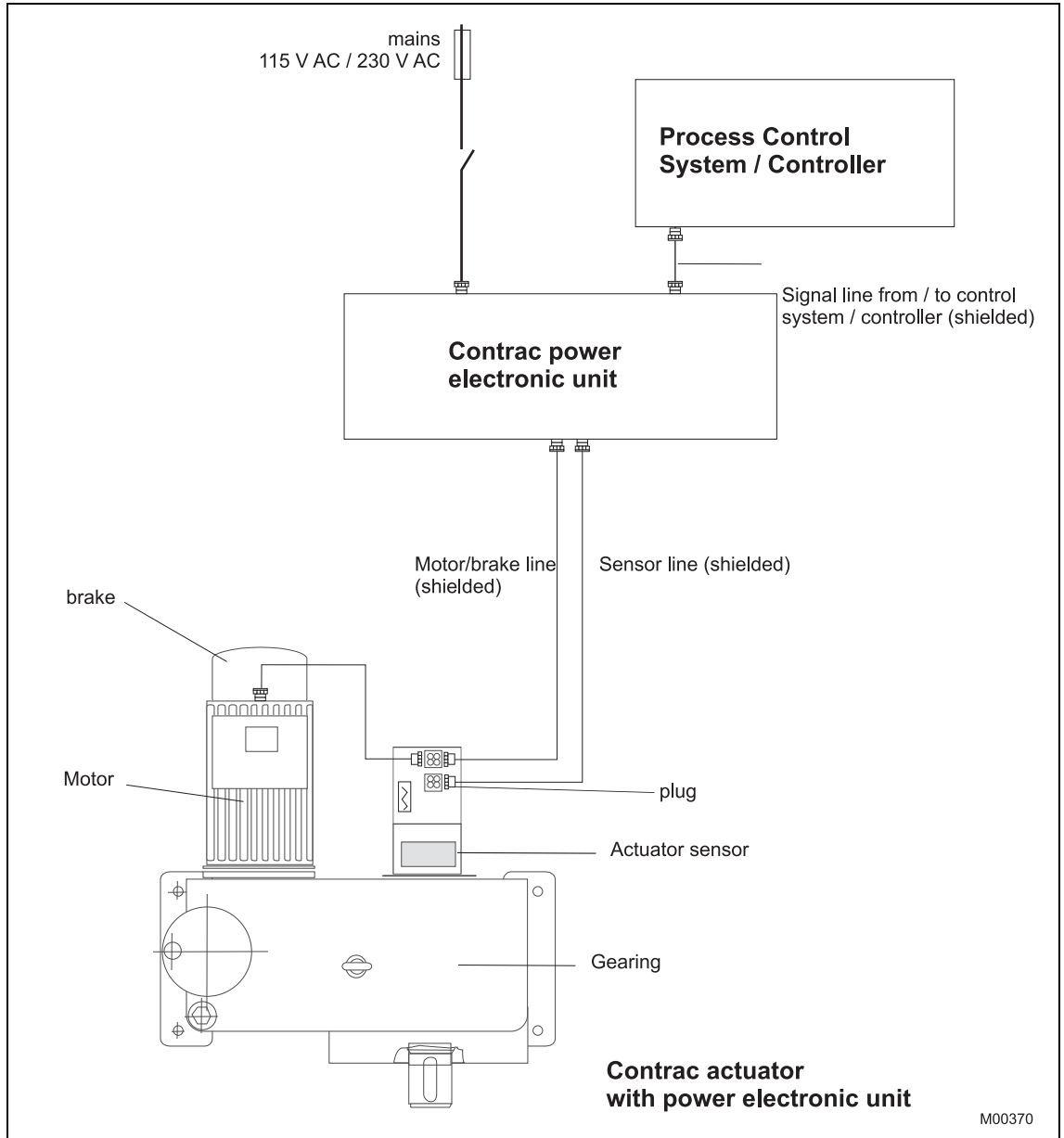


Fig. 4: Concept

Functionality

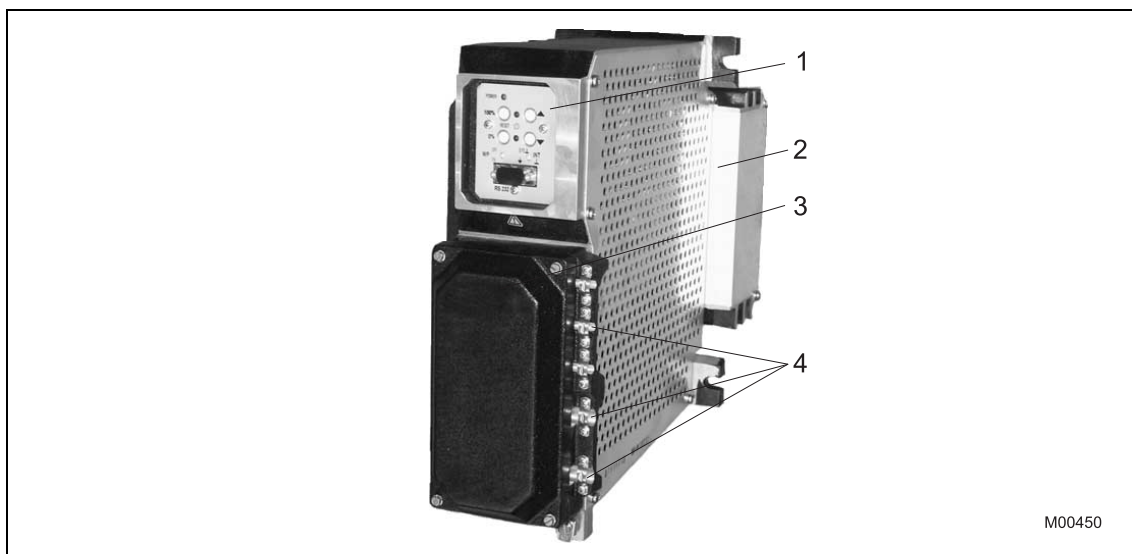
The electronic units for the Contrac PME..., LME..., RHD... or RSD... series actuators are available in three sizes for rack mounting. Special parameters can be used to adapt the electronic units to the type of actuator concerned. The electronic units EAS822, EBS852, EBS862 are the interface between actuator/valves and fittings and process control system.

The actuators/valves and fittings are positioned continuously, whatever the type of input signal (analog or digital). During continuous positioning, the motor torque is varied steplessly until the actuator force and the valve force are balanced.

High positioning accuracy combined with excellent control quality and a long actuator life can even be achieved under varying load conditions and with short stroke times.

2.1 Modules

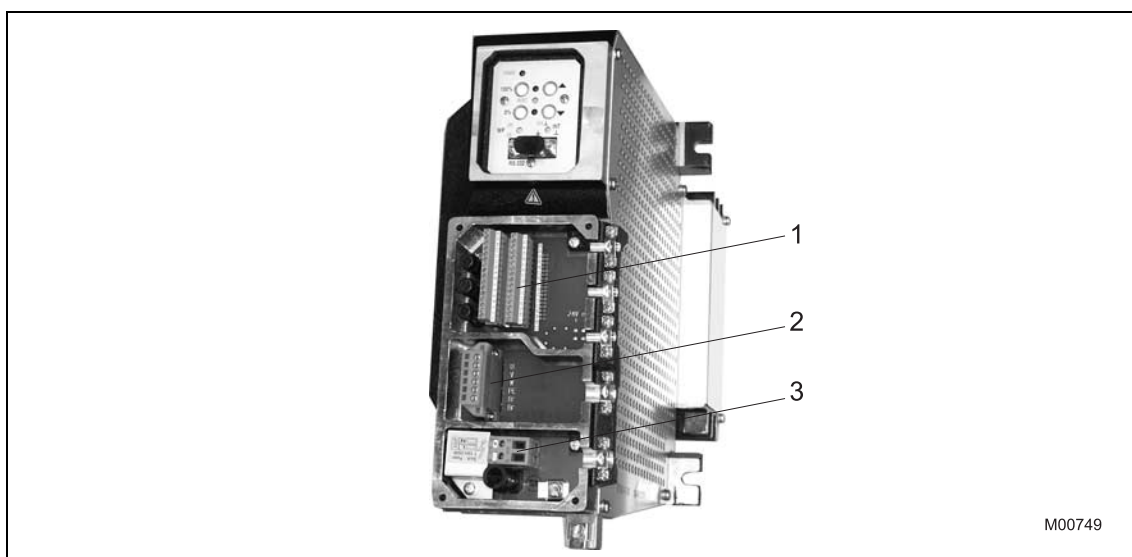
2.1.1 EAS822, EBS852



M00450

Fig. 5

- 1 Commissioning and service field
- 2 Transformer (EBS852 only)
- 3 Cover for connection space
- 4 Cable clamps



M00749

Fig. 6: Connection area

- 1 Signal terminals
- 2 Motor terminals
- 3 Mains supply terminals

2.1.2 EBS862

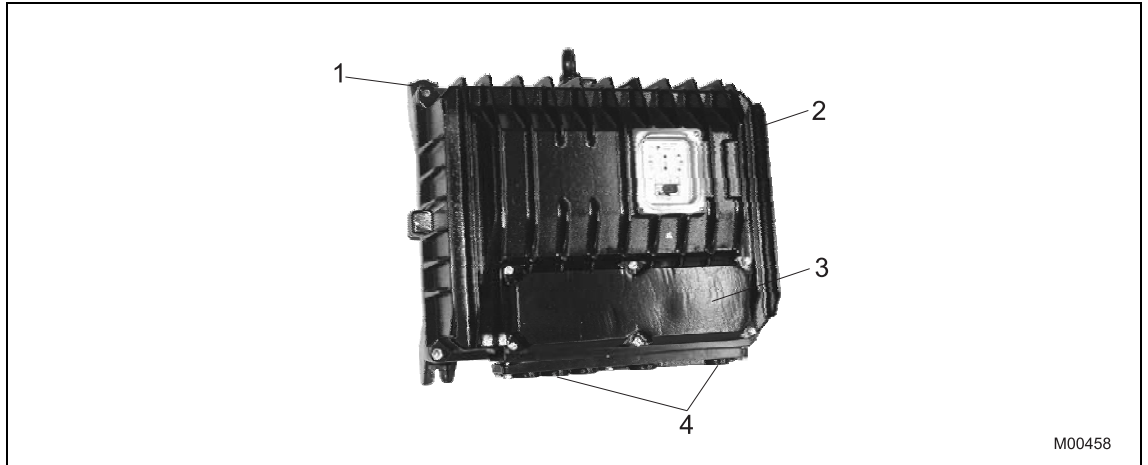


Fig. 7

- | | |
|----------------------------------|------------------------------|
| 1 Electronic unit, lower section | 3 Cover for connection space |
| 2 Electronic unit cover | 4 Holes for cable glands |

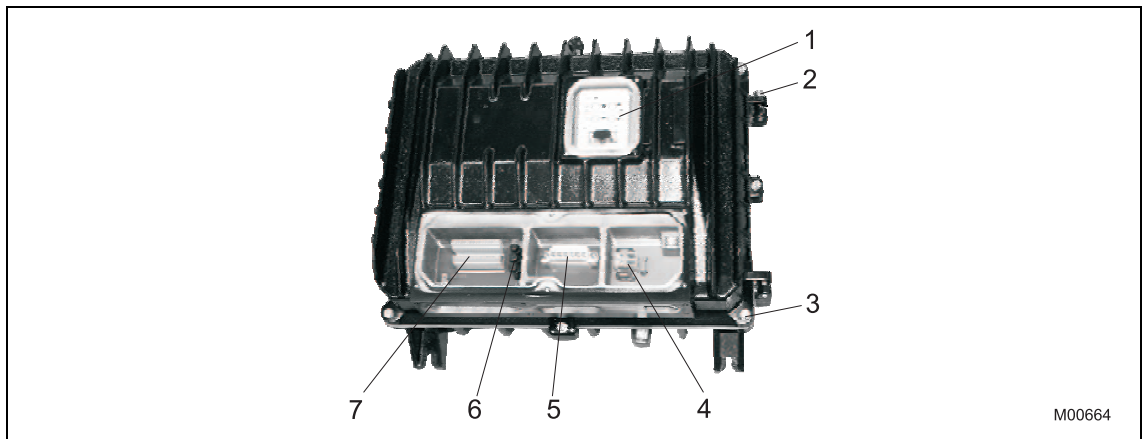


Fig. 8: Connection area

- | | |
|-----------------------------------|---|
| 1 Commissioning and service field | 5 Motor terminals |
| 2 Hinge screws | 6 Fuse for digital outputs DO 1, DO 2, DO 3 |
| 3 Cover screws | 7 Signal terminals |
| 4 Mains supply terminals | |

2.2 Factory default

Standard delivery scope:

EAS822, EBS852

- Cable clamps

EBS862

- Metric cable entry thread with IP 66 sealing plug.

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 power electronic units are delivered with the following standard configuration:

2.2.1 Standard control

Function selection:	Positioner, parameter: setpoint
Setpoint function:	Analog Setpoint
Setpoint range:	4 ... 20 mA
Setpoint characteristic:	Linear; setpoint = position value
Actual value range:	4 ... 20 mA
Rated torque / rated force in +/- direction:	100 %
Automatic speed in +/- direction:	100 %
Behavior in 0 % / 100 % end position:	Keep tight with rated torque / rated force
Digital inputs:	DI 1 Manual / Automatic switching; DI 2 / DI 3 travel command +/-
Digital outputs:	DO 1 ready for operation / failure message, DO 2/3 end position signal 0% / 100%
Breakaway function:	Deactivated
Close Tight function:	Deactivated
Positioning time-out:	Deactivated
Setpoint time-out:	Deactivated
Error message via actual value:	Deactivated
Behavior after restoration of power:	Switch to Automatic
Working range of actuator:	Not set

3 Mounting



IMPORTANT (NOTE)

Prior to installation or service activities, the electronic unit and actuator must be disconnected from the power supply and secured to prevent unintentional startup.

3.1 Installation instructions

- It must also be possible to disconnect the electronic unit and actuator onsite.
- All signal and motor cables 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 Contrac electronic units are resistant to vibration loading up to 1 g and frequencies of up to 150 Hz (acc. to EN 60068-2-6, table C.2).

3.2 EAS822, EBS852

1. Attach the module to the rack's vertical mounting rail using screws of property class 8.8 (tensile strength 800 N/mm² (116032 pounds/square inch), 640 N/mm² (92826 pounds/square inch)).
2. Provide adequate room for installation and make sure the actuator is accessible from all sides.
3. Cable entries point to the right.

3.3 EBS862

**IMPORTANT (NOTE)**

The total weight of the EBS862 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 and remove the cover screws (Fig. 8).
3. Open the electronic unit.
4. Disconnect the internal plug connection between the housing halves.
5. Close the housing halves.
6. Unscrew and remove the hinge screw (Fig. 8).
7. Fold the front section forward while lifting it up and off the hinge pin. The cover of the electronic unit must be positioned in exactly the right place. For details about how to install the housing half see section "Installation".

Mounting the housing halves

1. Set the front housing half down on the hinge pin and insert and fasten the hinge screw. The cover of the electronic unit must be positioned in exactly the right place.
2. Restore the internal plug connection.
3. Close the housing and insert and fasten the cover screws (Fig. 8).

Installation

1. Attach the module to the rack's vertical mounting rail using screws of property class 8.8 (tensile strength 800 N/mm² (116032 pounds/square inch), yield strength 640 N/mm² (92826 pounds/square inch)).
2. Provide adequate room for installation and make sure the actuator is accessible from all sides.
3. The cable glands point down.

4 Electrical connections

Each actuator requires a Contrac electronic unit which is loaded with the type-specific software.



IMPORTANT (NOTE)

Observe the instructions for the actuator and compare the specifications on the name plates of the actuator and the electronic unit in order to ensure the hardware and software assignment is correct.

4.1 Wire cross-sectional areas (connection terminals / crimp contacts)

4.1.1 Actuators

	Crimp pins		Terminals (Option)	
Wire cross-sectional area	Motor, heater: Signals:	1.5 mm ² (16 AWG) 0.5 mm ² (20 AWG)	Motor, heater, signals:	0.2 ... 2.5 mm ² (24 ... 14 AWG)
Contact surface	Motor, signal: Gold-plated Heater: Silver-plated			

4.1.2 Electronic units

EAS822, EBS852

Screw terminals			
Wire cross-sectional area	Motor / brake	fixed:	0.08 ... 2.5 mm ² (28 ... 14 AWG)
		flexible:	0.25 ... 2.5 mm ² (24 ... 14 AWG)
	mains	fixed:	0.5 ... 6 mm ² (20 ... 10 AWG)
		flexible:	0.5 ... 4 mm ² (20 ... 12 AWG)
	Signals	fixed:	0.2 ... 1.5 mm ² (24 ... 16 AWG)
		flexible:	0.2 ... 1.5 mm ² (24 ... 16 AWG)

EBS862

Screw terminals			
Wire cross-sectional area	Motor / brake	fixed:	0.2 ... 6 mm ² (24 ... 10 AWG)
		flexible:	0.2 ... 4 mm ² (24 ... 12 AWG)
	mains	fixed:	0.5 ... 6 mm ² (20 ... 10 AWG)
		flexible:	0.5 ... 4 mm ² (20 ... 12 AWG)
	Signals	fixed:	0.5 ... 4 mm ² (20 ... 12 AWG)
		flexible:	0.5 ... 2.5 mm ² (20 ... 14 AWG)

Electrical connections

4.2 Actuator assignment and maximum cable lengths

4.2.1 Part-turn actuators

Electronics	Average power loss of the electronic unit	Max. current consumption ¹⁾		Actuator	Motor cable cross-section/permissible cable length in m (ft) ²⁾				
		115 V	230 V		1.5 mm ² (16 AWG)	2.5 mm ² (14 AWG)	4 mm ² (12 AWG)	6 mm ² (10 AWG)	10 mm ² (8 AWG)
EAS822	60 W	1.0 A (1.4 A ³⁾)	0.5 A (0.7 A ³⁾)	PME120	180 (591)	300 (984)	480 (1575)	-	-
EBS852	60 W	1.8 A	0.9 A	RHD250-10	270 (866)	460 (1476)	-	-	-
	75 W	2.2 A	1.1 A	RHD500-10					
	60 W	5.0 A	2.5 A	RHD800-10					
	80 W	5.0 A	2.5 A	RHD1250-12					
	80 W	5.0 A	2.5 A	RHD2500-25					
	80 W	5.8 A	2.7 A	RHD4000-40					
EBS862	80 W	-	5.3 A	RHD2500-10	160 (513)	270 (866)	430 (1380)	-	-
	100 W		10.0 A	RHD4000-10					
	115 W		8.0 A	RHD8000-12					
	115 W		12.5 A	RHD16000-30					

- 1) At actuator rated power. Current consumption in positioning mode approx. 40% to 50% of I_{max} in each case
2) Cable length between electronic unit and actuator. Signal cable cross-section 0.5 mm² (20 AWG).
3) For low-temperature version

4.2.2 Linear actuators

Electronics	Average power loss of the electronic unit	Max. current consumption ¹⁾		Actuator	Motor cable cross-section/permissible cable length in m (ft) ²⁾				
		115 V	230 V		1.5 mm ² (16 AWG)	2.5 mm ² (14 AWG)	4 mm ² (12 AWG)	6 mm ² (10 AWG)	10 mm ² (8 AWG)
EAS822	60 W	1.0 A (1.4 A ³⁾)	0.5 A (0.7 A ³⁾)	LME620	180 (591)	300 (984)	480 (1575)	-	-
EBS852	55 W	2.2 A	1.1 A	RSD10-5.0	270 (866)	460 (1476)	-	-	-
	60 W	3.6 A	1.8 A	RSD10-10.0					
	60 W	3.6 A	1.8 A	RSD20-5.0					
	75 W	4.8 A	2.4 A	RSD20-7.5					
	75 W	5.0 A	2.5 A	RSD50-3.0					
	75 W	5.0 A	2.5 A	RSD100-1.5					
EBS862	100 W	-	6.4 A	RSD50-10.0	160 (513)	270 (866)	430 (1380)	-	-
	115 W		12.5 A	RSD100-10.0					

- 1) At actuator rated power. Current consumption in positioning mode approx. 40% to 50% of I_{max} in each case
2) Cable length between electronic unit and actuator. Signal cable cross-section 0.5 mm² (20 AWG).
3) For low-temperature version

4.3 Connection of power / signal cables



NOTICE - Potential damage to cables and wires!

Damage due to improper installation.
Do not clamp individual wires under the clips.

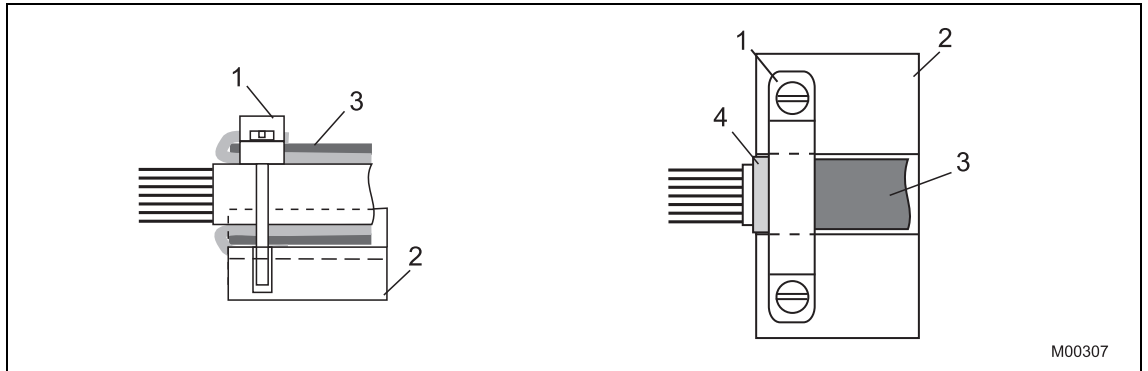


Fig. 9: Installing the cable shield

1. Remove the cover for the connection area or disconnect the connectors.
2. Cut the cable sheath (3) to the required length.
3. Separate the shield and peel it back to its inner sheathing (4).
4. Insert the cable and fasten it with the clamp (1).
5. Make sure that the cable shield is in contact with the clamp (1) and the electronic unit housing (2).
6. Connect the cable as described in Chapter 4.5 "Terminal connection diagrams".
7. Check the cable connections to ensure they are seated firmly and fasten the cable gland (EBS862 only).
8. Close the cover of the connection area or re-connect the connectors.

4.4 Cable guide in universal plug



NOTICE - Potential damage to cables and wires!

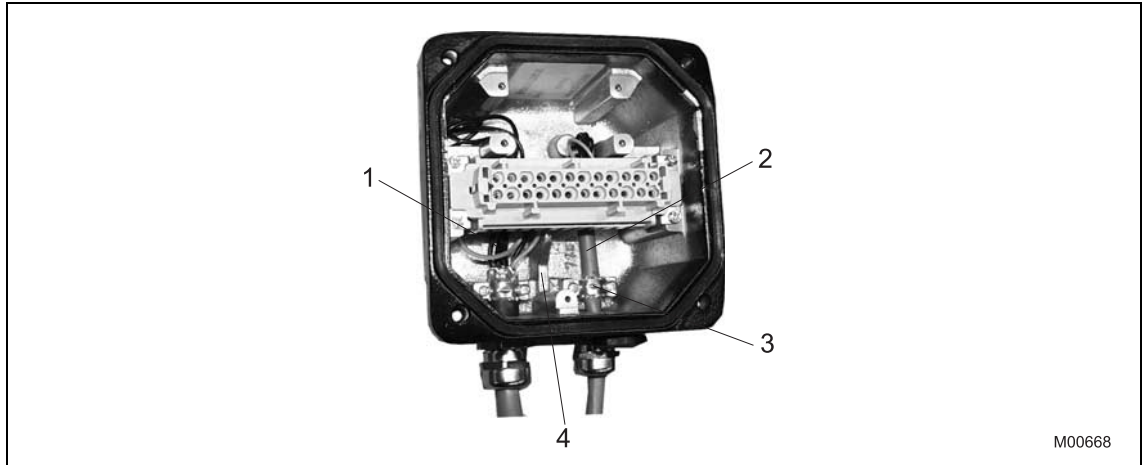
Damage due to improper installation.
Do not clamp individual wires under the clips.



IMPORTANT (NOTE)

To prevent interference from electromagnetic fields, the signal and power cables in the connector housing must be routed and connected separately.

A metal divider separates the two cable areas inside the universal plug.



M00668

Fig. 10

1 Power cable
2 Signal cable

3 Shield
4 Separator

4.5 Terminal connection diagrams

4.5.1 Power electronic unit EAS822



IMPORTANT (NOTE)

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

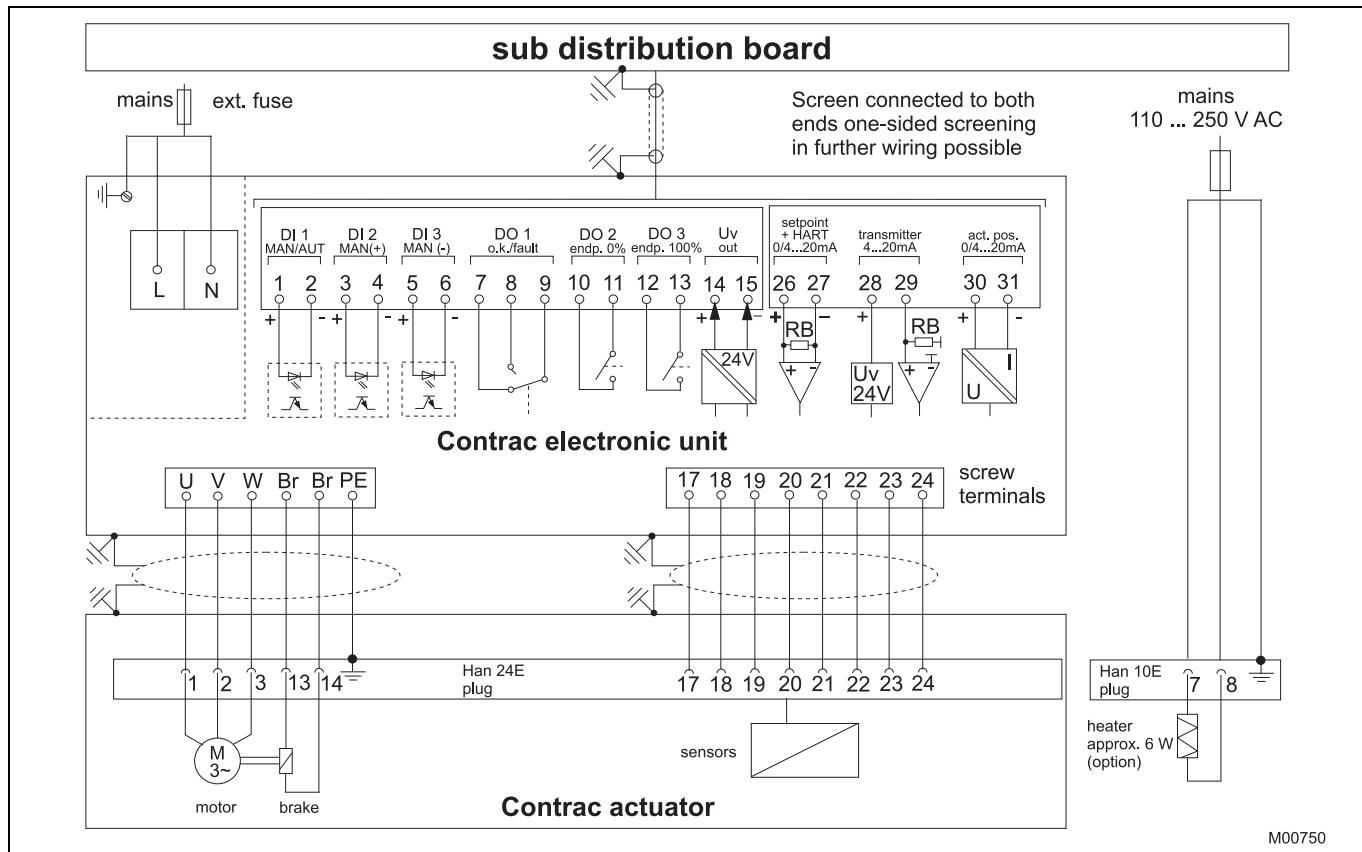


Fig. 11

Electrical connections

4.5.2 Power electronic units EBS852, EBS862



IMPORTANT (NOTE)

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

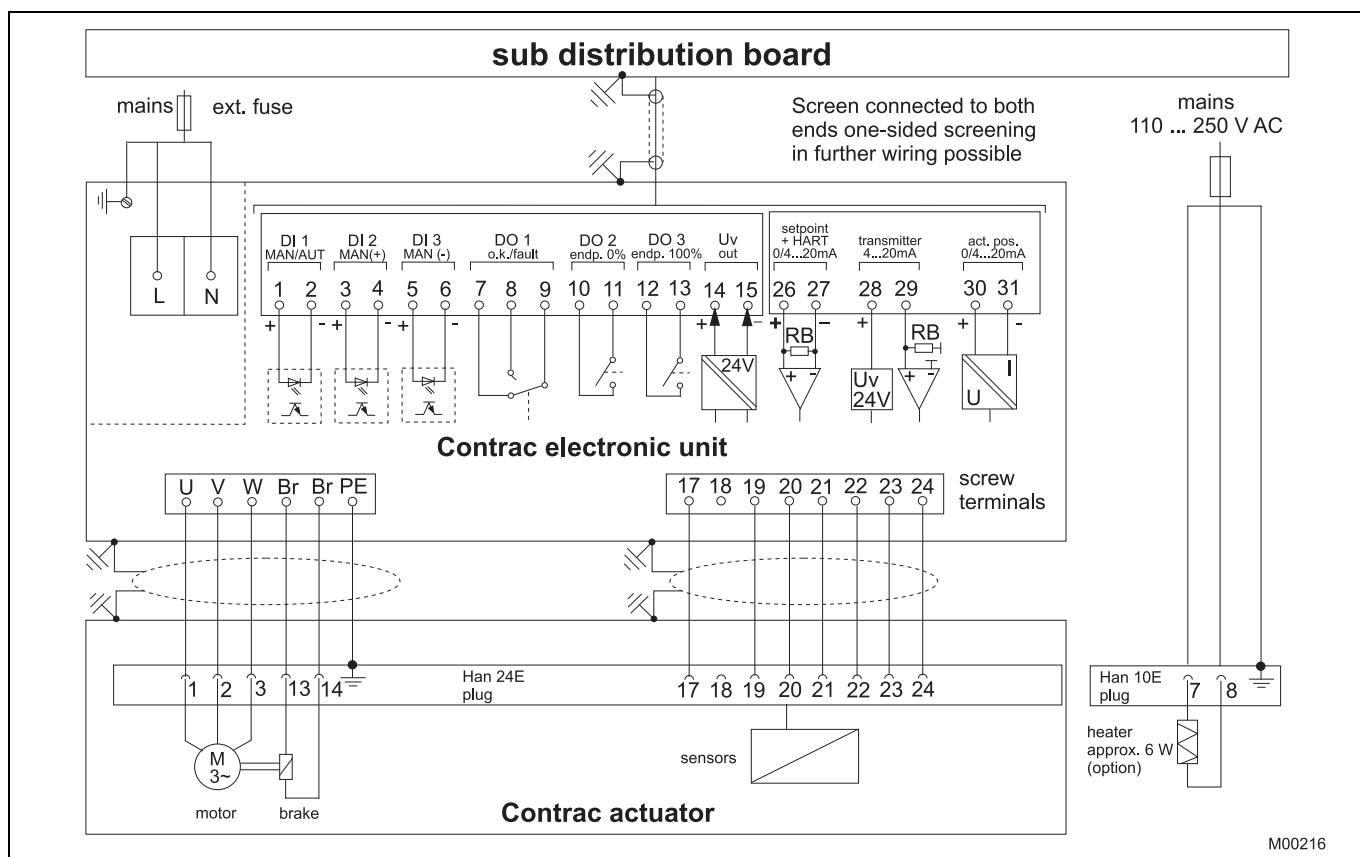


Fig. 12

4.5.3 External fuse for EBS862

In addition to the internal fuses, the EBS862 power electronic unit needs two other external fuses, which are delivered separately with the module.

They ensure the safe operation of the EBS862 power electronic under the special starting conditions.



IMPORTANT (NOTE)

The cable cross-section between the fuse and the electronic unit must be a minimum of 2.5 mm².



Fig. 13

- 1 External fuse: 35 A
- 2 External fuse: 16 A

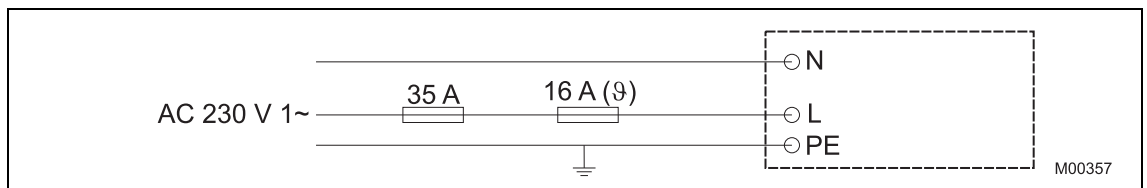


Fig. 14

4.6 Configuration of digital input / output signals (standard control)

In the standard configuration, the digital input function is set to “Manual operation”.

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

- Power must be on for the digital input (DI 1).
- AUT is activated via graphic user interface.
- MAN is not selected via the commissioning and service field (software-version 2.00 and higher).

4.6.1 Operation following a continuous setpoint (standard)

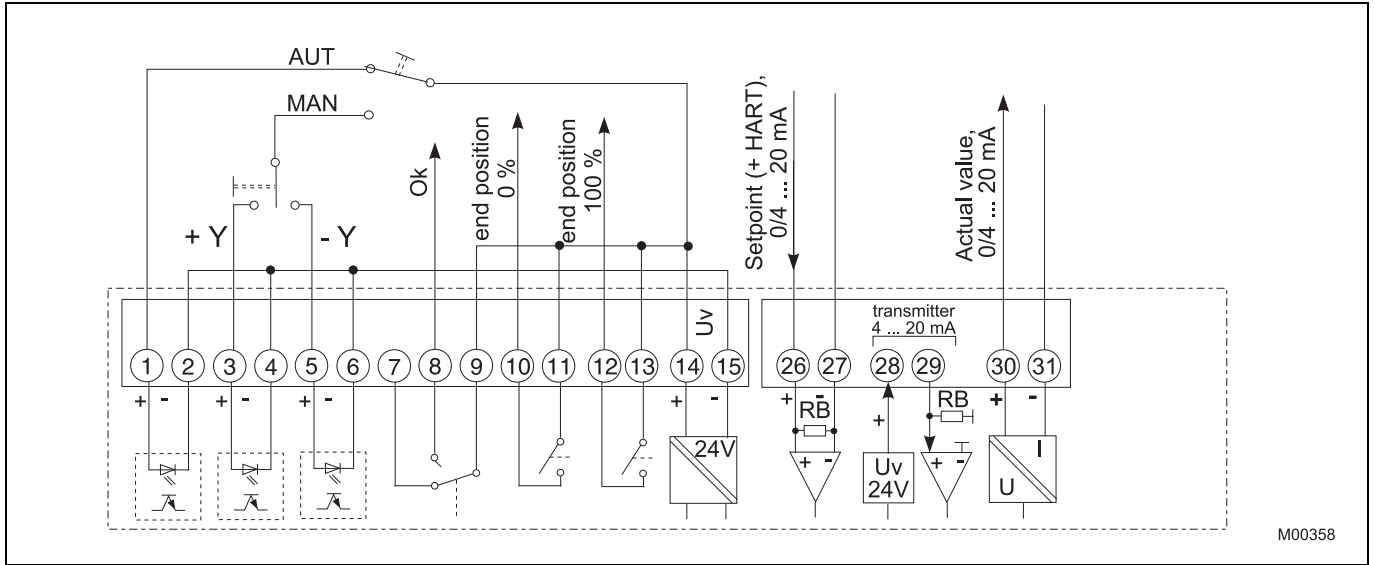


Fig. 15: Potential wiring for default assignments with standard configuration

4.6.2 Operation behind step controller

Contract 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:

- Digital input function “Step controller” has been selected.
- The actuator must be switched to automatic mode (AUT) via digital input DI 1.
- AUT is activated via graphic user interface.
- MAN is not selected via the commissioning and service field (software-version 2.00 and higher).

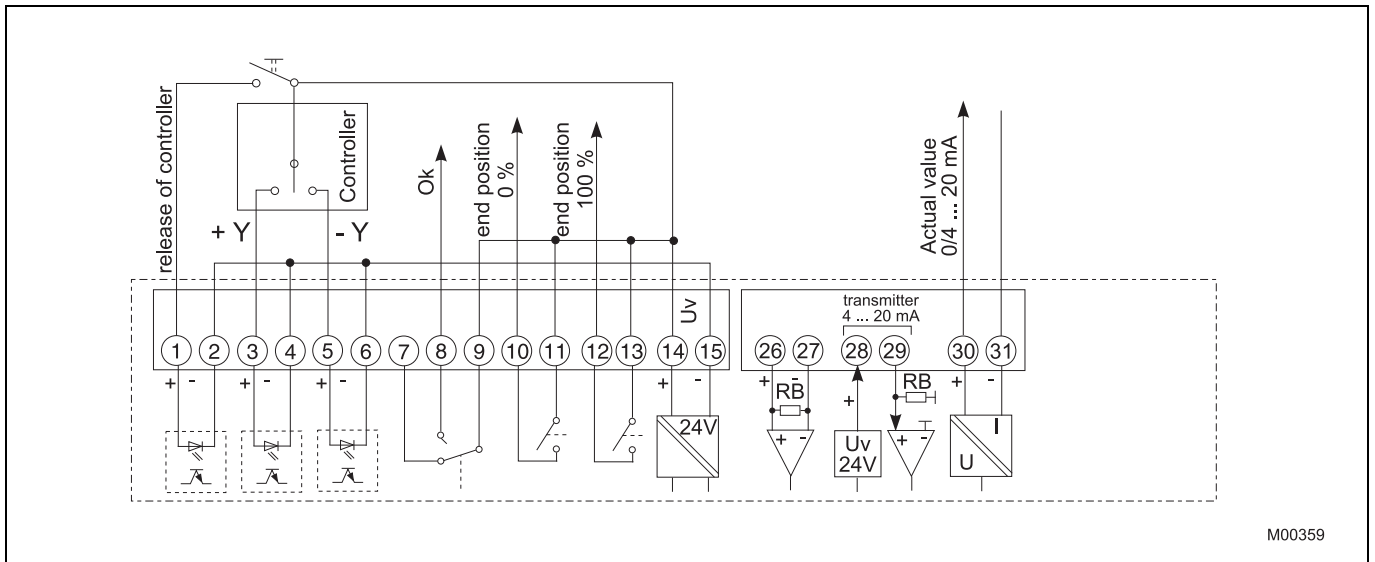
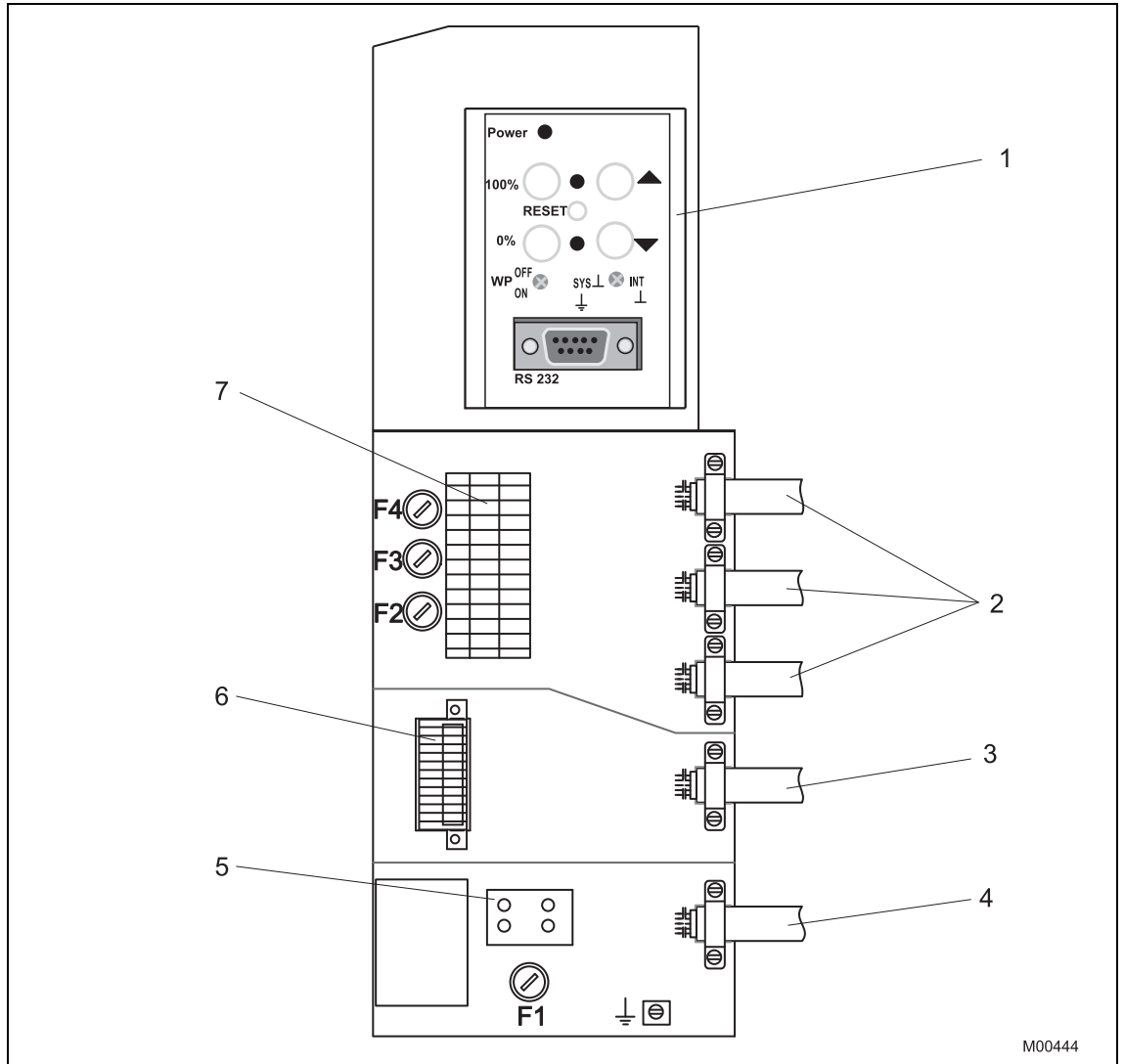


Fig. 16: Potential wiring for "Operation behind step controller"

4.7 Connection elements

4.7.1 EAS822, EBS852



M00444

Fig. 17

- | | |
|------------------------------------|--|
| 1 Commissioning and service field | 5 Terminal for power supply connection |
| 2 Position sensor and signal cable | 6 Plug for motor connection |
| 3 Motor connecting cable | 7 Plug for signal connection |
| 4 Power supply connection cable | |

4.7.2 EBS862

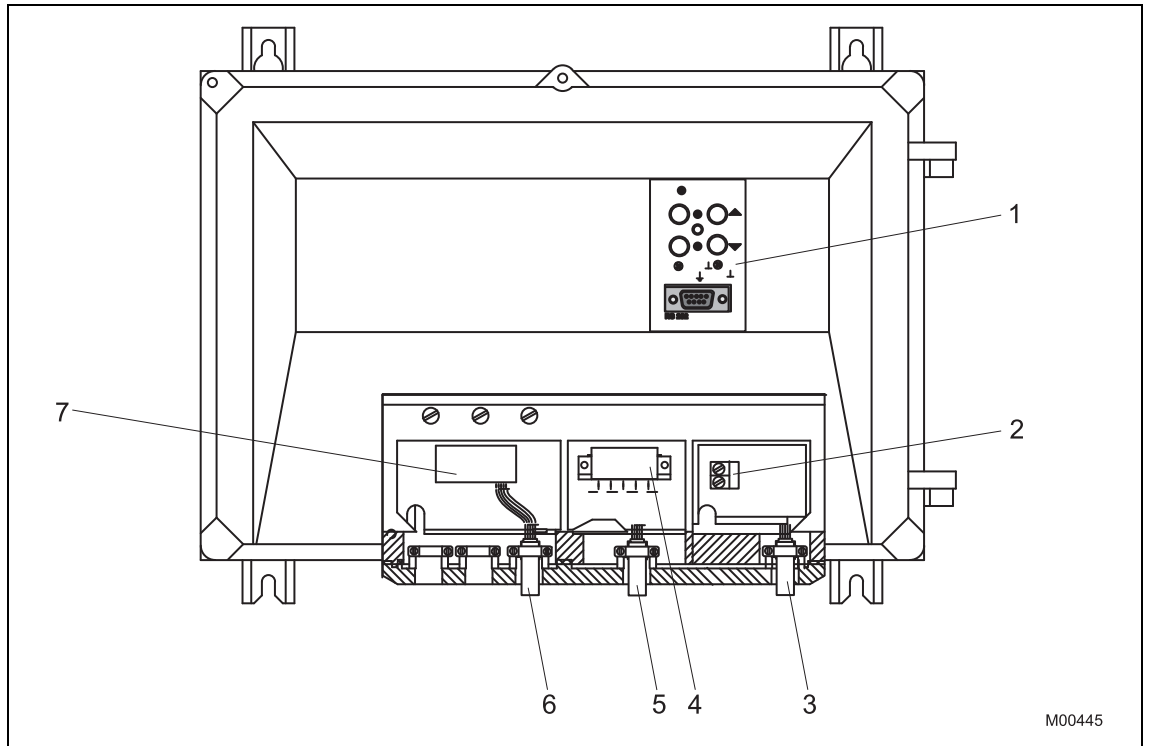


Fig. 18

- | | |
|-----------------------------------|------------------------------|
| 1 Commissioning and service field | 5 Motor connecting cable |
| 2 Terminals for mains connection | 6 Signal cable |
| 3 Power supply connection cable | 7 Plug for signal connection |
| 4 Plug for motor connection | |

4.8 Cable guide in rack

When installing the power electronic units in a rack (on site), we recommend laying the cables as illustrated below.

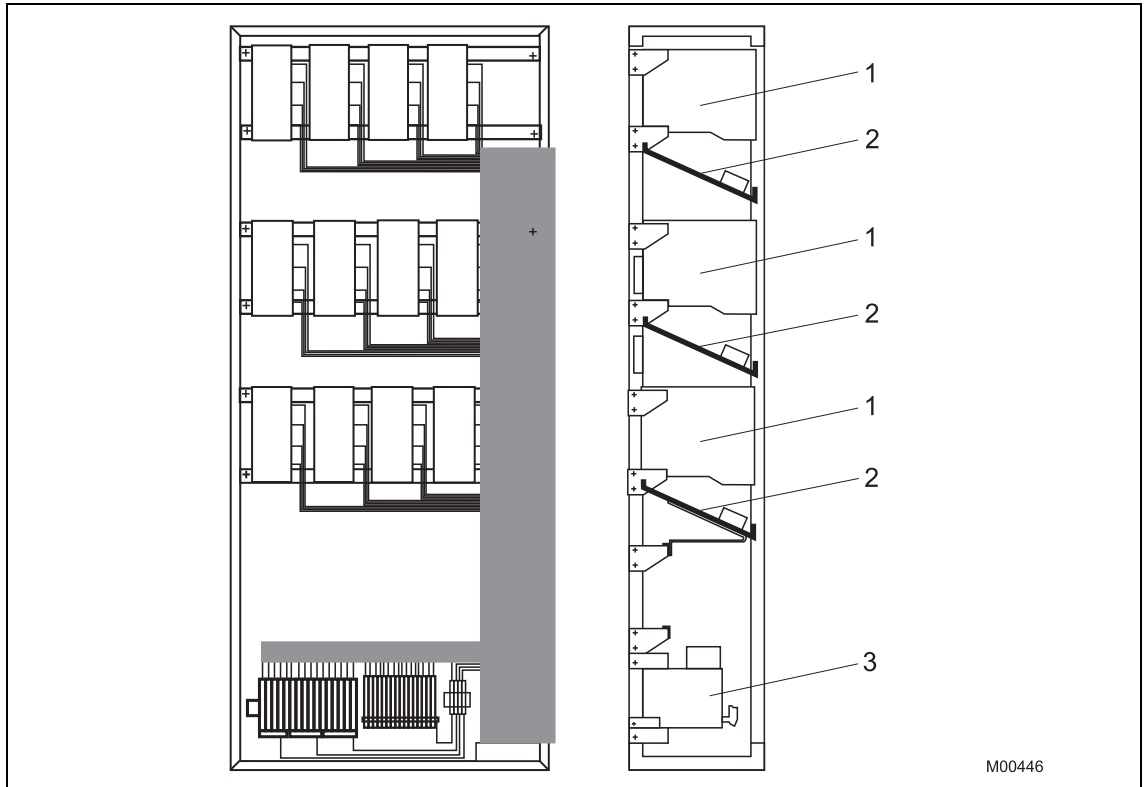


Fig. 19: Example
 1 Electronics modules
 2 Thermally conductive plates
 3 Mains distribution

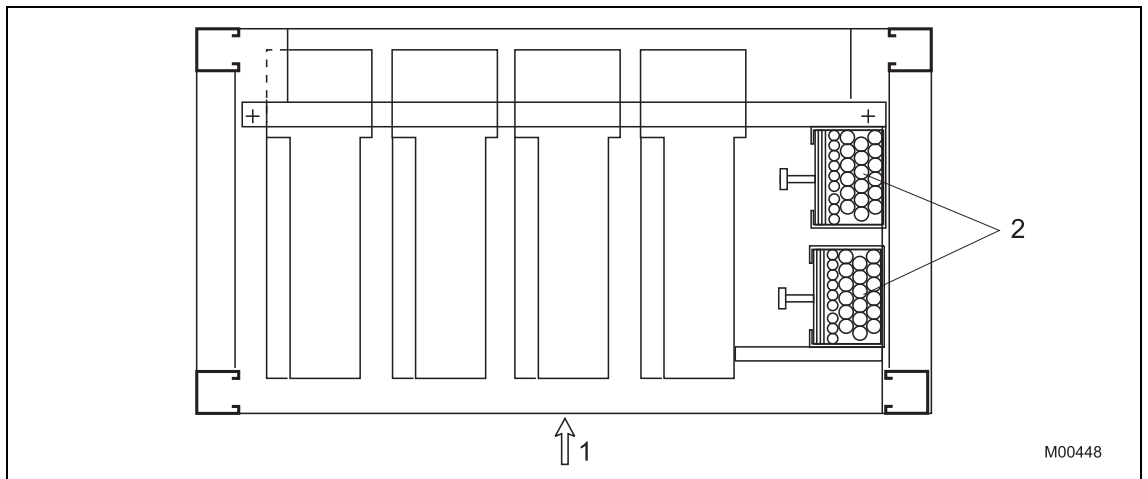


Fig. 20: Cable guide and electronic unit mounted in rack (view from above)
 1 Front
 2 Cable guide

5 Local operation

5.1 General information on operation

The basic settings "Define end positions" and "Initial diagnosis" can be configured via the commissioning and service field. It can be used to adjust the actuator to the working area and set the direction without using a PC. The actuator can be further parametrized using a graphic user interface.

**IMPORTANT (NOTE)**

The commissioning and service field is located on the electronic unit.

5.2 Engineering software ECOM688 and ECOM700

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

Depending on the software version, 2 different engineering software versions are available.

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

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

**IMPORTANT (NOTE)**

For information about how to use an engineering or configuration software refer to the additional documentation, see 11.1 "Other applicable documents".

5.3 Operating elements of the service field

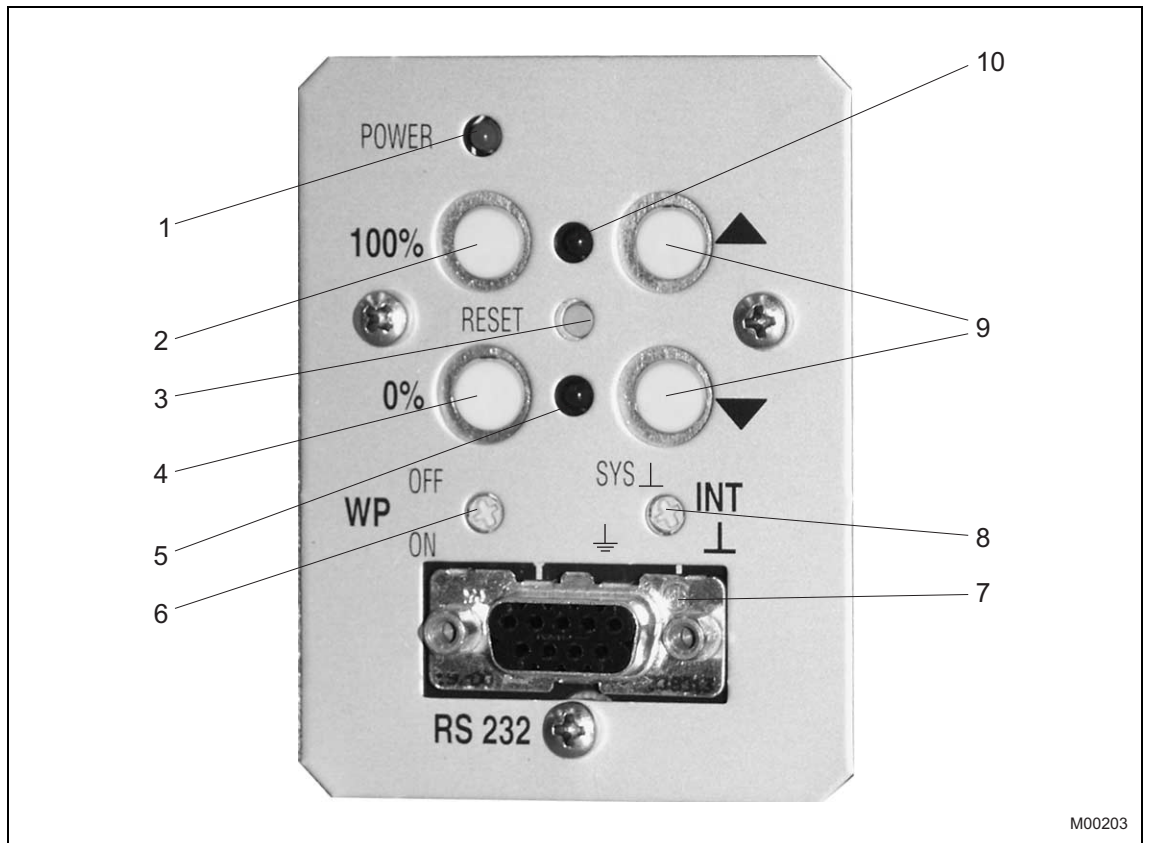


Fig. 21: Commissioning and service field

- 1 "Power" LED: Displays supply by line voltage.
- 2 Accept button (100 %): Press to set the current position as 100 %; press in combination with the 4 button to end the adjustment process.
By simultaneously pressing the 4 button for at least 5 seconds you can switch the actuator to manual mode (MAN). (Software version 2.00 and higher)
- 3 Reset button: Press to restart the processor. If the adjustment is not yet terminated, the set end positions are deleted.
- 4 Accept button (0 %): Press to set the current position as 0 %; press in combination with the 2 button to end the adjustment process.
By simultaneously pressing the 2 button for at least 5 seconds you can switch the actuator to manual mode (MAN). (Software version 2.00 and higher)
- 5 LED for 0% position: Depending on the flash rate, this LED indicates the adjustment process, position saved, MAN (Manual) mode via commissioning and service field (software version 2.00 or higher), or an error.
- 6 Write-protection switch (default: OFF).
- 7 RS232 connector: Connection for a PC.
- 8 Potential switch: Connection of reference potential either to system or protective ground (default setting: to system).
- 9 Travel button: Pressing one of the buttons causes the actuator to move. Press and hold both buttons at the same time for at least 5 seconds to delete the existing end position setting.
- 10 LED for 100 % position: Depending on the flash rate, this LED indicates the adjustment process, position saved, MAN (Manual) mode via digital input or graphical user interface (software version 2.00 or higher), or an error.

6 Commissioning and service field

6.1 Typical commissioning with the service field



IMPORTANT (NOTE)

The operating range of the actuator is not factory-set.

The setup of the mechanical end stops must be made in accordance with the operating instructions for the corresponding actuator (refer to 11.1 "Other applicable documents").

6.1.1 Status

- The electronic unit is connected to the power supply and wired to the actuator.
- The write-protection switch (item 6, Fig. 21) is in the OFF position.
- The electronic unit is in "MAN" mode; no signal at digital input 1 (DI 1).
- No error (if an error is pending, the LEDs will flash alternately at 4 Hz).

6.2 Status displays of LEDs

The LEDs (item 5 and item 10, Fig. 21) flash at different rates, depending on the function that has been initiated.

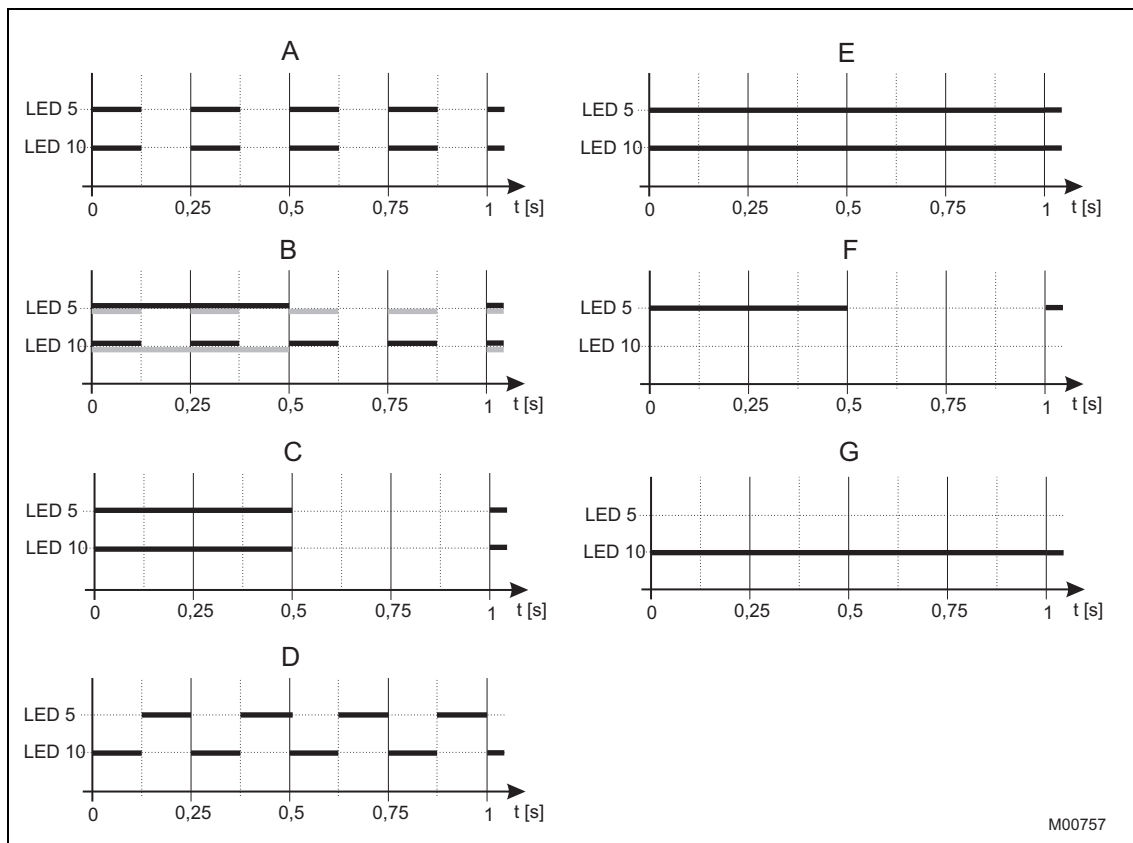


Fig. 22

- A Adjustment mode.
Both LEDs flash in sync at 4 Hz.
- B Acceptance of 1st position correct
Depending on which position is approached first, either LED 5 flashes at 1 Hz and LED 10 continues to flash at 4 Hz, or vice versa.
- C Acceptance of 2nd position correct
Both LEDs flash at 1 Hz.
- D Failure
Both LEDs flash alternately at 4 Hz.
- E ECOM688 or ECOM700 mode (software version 2.00 and higher)
Both LEDs are lit continuously
- F MAN (Manual) mode via commissioning and service field (software version 2.00 or higher)
LED 5 flashes at 1 Hz, LED 10 is off
- G MAN (Manual) mode via digital input or graphical user interface (software version 2.00 and higher)
LED 10 is lit continuously, LED 5 is off



IMPORTANT (NOTE)

Items "F" and "G" in the legend may also occur at the same time.

6.2.1 "Device setup" operating mode

- Switch the electronic unit to the "Device setup" operating mode. Press and hold down both travel buttons (9) at the same time for approx. 5 s until both LEDs (items 5 and 10 in Fig. 21) flash in sync at a rate of around 4 Hz.

6.2.2 Setup via user interface

Context-sensitive online help can be called at any time via the graphical user interface.



IMPORTANT (NOTE)

The RS232 communication cable provides a conductive ground connection between the computer and the Contrac electronic unit. If the PC is grounded, a ground loop may form in the system.

6.2.3 Defining the initial position (0 % or 100 %)

- Use a travel button (9) to move to the desired position.
- Press the Accept button (2) or (4) to accept the position; if successful, the corresponding LED flashes at a rate of 1 Hz. The other LED will continue to flash at approx. 4 Hz.

6.2.4 Defining the second position (0 % or 100 %)

- Use a button (9) to move to the second position.
- To accept the position, press the Accept button (2) or (4). If successful, both LEDs (5) and (10) will flash at a rate of approx. 1 Hz.

6.2.5 Saving your settings

- Press both Accept buttons (2 + 4) to accept the settings. The LEDs (5 + 10) will stop flashing after a short period of time to indicate that the setup process is complete.
- 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 name plate.)

6.2.6 Correcting your settings

- If, after accepting the initial value for the settings, you need to make a correction, press the reset button (3) 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.

6.2.7 Manual (MAN) and automatic (AUT) mode (software version 2.00 and higher)

The power electronic unit can be set to manual (MAN) mode by simultaneously pressing the Accept buttons 2 and 4 on the commissioning and service field for at least 5 seconds. LED 5 flashes to indicate the operating mode.

In this operating mode, the actuator solely reacts on 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 power electronic unit. As a result, the actuator will not start up unintentionally upon power failure and recovery.

In order to switch back the actuator to automatic (AUT) mode, briefly press both Accept buttons 2 and 4 on the commissioning and service field. LED 5 extinguishes.

Manual (MAN) mode selected via digital input or graphic user interface is indicated by LED 10 lit continuously. In order to switch to automatic (AUT) mode, apply the appropriate digital input signal and / or select AUT mode via the graphic user interface.

6.2.8 Signals on the commissioning and service field

Function	Signals
Device setup	
Switch to Device setup: Press and hold down both travel buttons for approx. 5 s.	After this time, both LEDs will then flash in sync at 4 Hz.
Approach an end position: Use the appropriate button on the commissioning and service field.	Both LEDs will continue to flash at 4 Hz during actuator travel.
Save the initial end position: Press the 0% or 100% button.	The corresponding LED will flash at approx. 1 Hz, the other will continue to flash at 4 Hz.
Save the second end position: Press the 0% or 100% button.	The related LED will flash at approx. 1 Hz in sync with the first LED.
Finish setup: Press the 0% and 100% buttons at the same time.	Both LEDs will light up briefly and then go out.
Operation (up to software version 1.60)	
Normal operation: MAN / AUT.	The LEDs are off.
Positioning via the button on the commissioning and service field takes priority over the control system.	The LEDs are off.
Operation (software version 2.00 and higher)	
Normal operation: MAN via digital input or graphical user interface.	LED 10 is on, LED 5 is off.
Normal operation: MAN via commissioning and service field.	LED 10 is off, LED 5 flashes at 1 Hz.
Normal operation: AUT.	The LEDs are off.
Positioning via the button on the commissioning and service field takes priority over the control system.	LED 10 lights up as long as the button is being pressed, LED 5 is off.
Error (both LEDs flashing alternately at 4 Hz)	
Reset: Resets error messages.	If there are no other errors pending, both LEDs will go out.
Reset if the operating range is overshoot: Press and hold down both travel buttons for 5 s and then press the "Reset" button.	After approx. 5 s, the LEDs will stop flashing briefly. After a reset, the electronic unit will be in Device setup mode.
ECOM mode	
The ECOM 688 or ECOM 700 engineering tool is used to access the electronic unit.	Both LEDs are lit continuously.



IMPORTANT (NOTE)

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 startup, there must be a 24 V DC signal at digital input 1 for actuators with active digital input functions (default setting). If the digital input function is switched off, the actuator will switch to automatic mode immediately on completion of the setup process.

6.3 Positions for the potential switch

The potential switch connects the reference potential either to the system or the protective ground (see page 29 Fig. 21 item 8).

Name:	INT ⊥
Position A:	SYS ⊥
Position B:	⊥

Settings:

Conventional control via analog setpoint without external electrical isolation:	SYS ⊥
Conventional control via analog setpoint with external electrical isolation:	⊥
Step controller control:	⊥

6.4 Fuses

Electronics	Fuse type	Dimensions	Installation location	U=115 V	U=230 V
EAS822 / EBS852	External fuse	-	External	16 A; time-lag	
	Mains fuse	5 x 20 mm	in connection chamber	12.5 A; time-lag	10 A; time-lag
	Brake fuse (EBS852 only)	5 x 20 mm	Power board	0.315 A; medium time-lag	
	DC link fuse (EBS852 only)	6.3 x 32 mm	Power board	10 A, super fast-acting	
	Fuse for digital outputs DO 1, DO 2, DO 3	5 x 20 mm	in connection chamber		3 x 0.2 A, medium time-lag
EBS862	External fuse ¹⁾	-	External		35 A fuse 16 A thermal circuit breaker
	Brake fuse	5 x 20 mm	Power board		0.315 A; medium time-lag
	DC link fuse	6.3 x 32 mm	Power board		16 A, super fast-acting
	Fuse for digital outputs DO 1, DO 2, DO 3	5 x 20 mm	in connection chamber		3 x 0.2 A, medium time-lag

1) The 35 A safety fuse and the 16 A thermal circuit breaker are included in the delivery scope. The special starting conditions of the EBN861 power electronic unit help to ensure safe operation.

7 Alarms / Errors

7.1 Definition

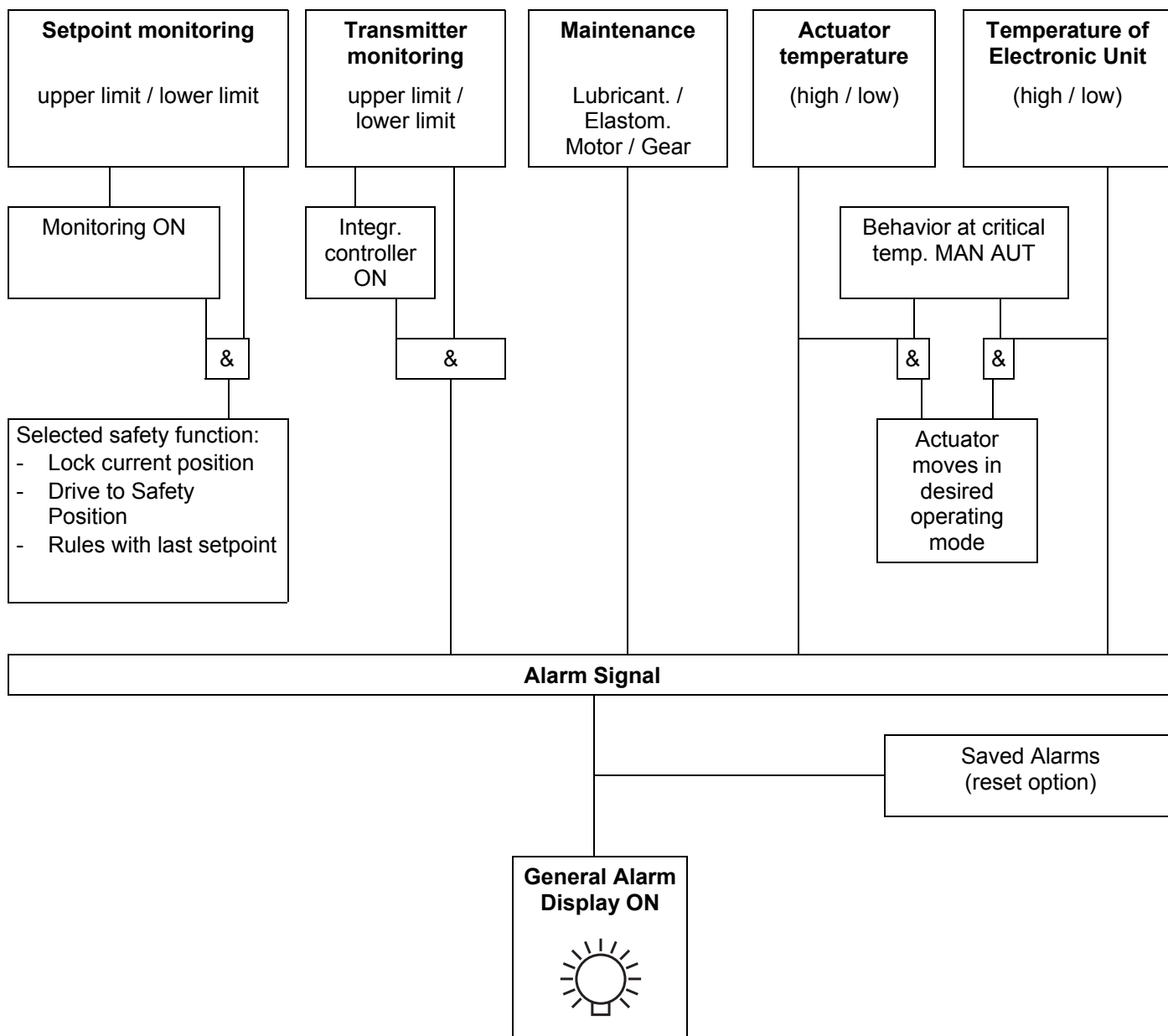
7.1.1 Alarms

The actuator or 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 stored alarms.

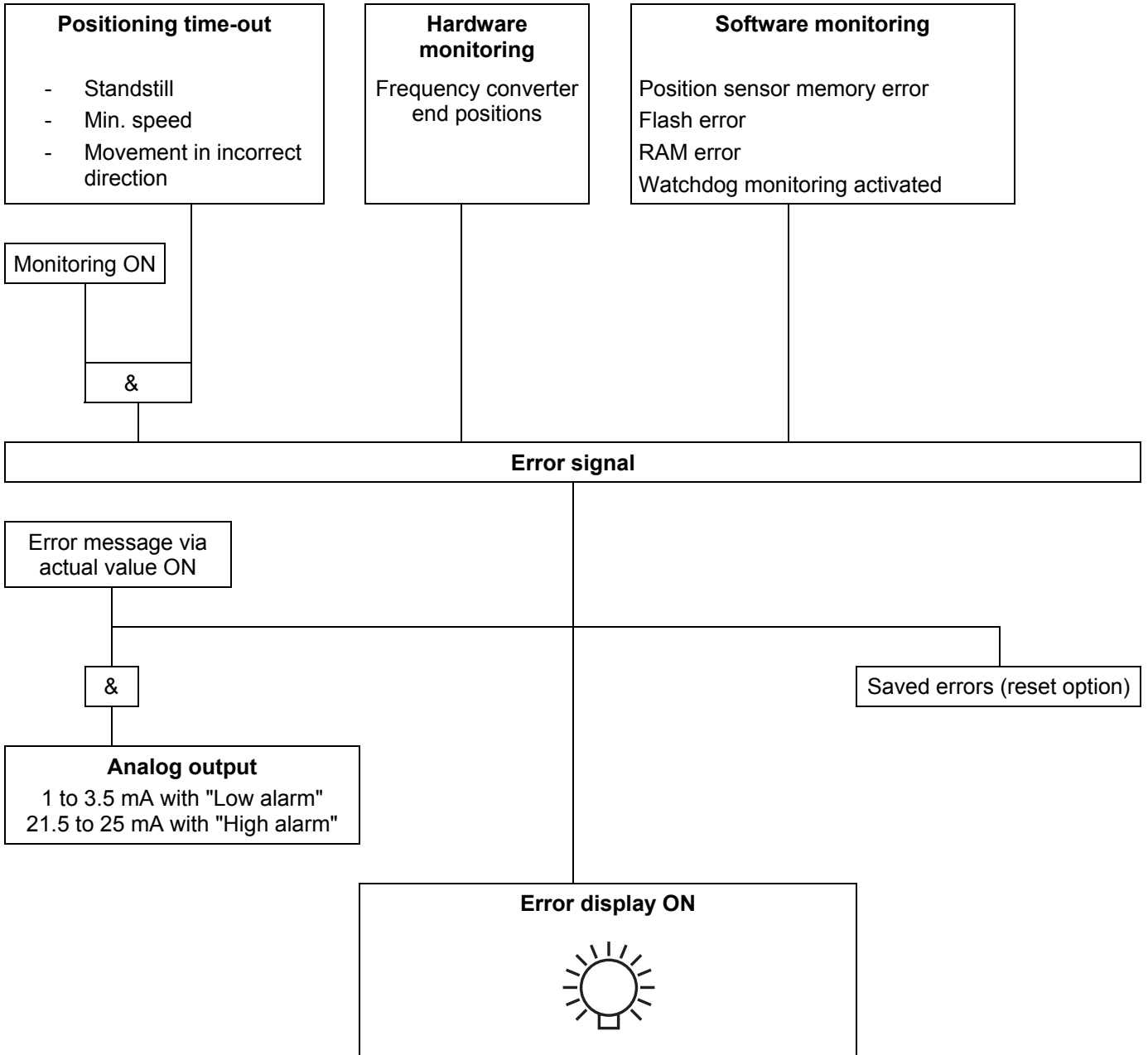
7.1.2 Error

The actuator or electronic unit is in a critical state, e.g., positioning time-out, which currently is 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 output the stored errors. Error messages cannot be reset until the cause of the error has been eliminated.

7.2 Alarm diagram



7.3 Error diagram



8 Trouble shooting

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

Error	Possible cause	Troubleshooting
Valve cannot be moved by actuator.	Failure either on the actuator or the valve (e.g., stuffing box tightened too much).	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 record.	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.
	Defective motor/brake.	Check the winding resistance of the motor and brake. 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 inch)) and electrical connection to the brake. Check winding resistance of the brake coil.
Actuator does not run in AUT mode, although "AUT" is selected in the user interface.	Digital input 1 (DI 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 to manual mode (MAN) via commissioning and service field.	Switch actuator to automatic mode (AUT).
LEDs in the commissioning and service field 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 valve before). Drive the actuator back into the operating range and connect it to the valve. Readjust the actuator for the operating range.
Malfunction when approaching the end position.	Actuator in limit range of positioning sensor.	

9 Specifications

Power electronic units EAS822 (Contrac), EBS852 (Contrac)	
Degree of protection	IP 20
Humidity	≤ 75% annual average (condensation not permitted)
Rack air inlet temperature	0 ... 45 °C (32 ... 110 °F)
Transport and storage temperature	-25 ... 70 °C (-15 ... 160 °F)
Long-term storage temperature	-25 ... 40 °C (-15 ... 105 °F)
Mounting position	On vertical support, cable entries pointing to the right
Coating	2-layer component epoxy (RAL 9005, black)
Electrical connection	Mains supply via screw terminals; all other connections made via screw-type plug connectors
Weight; approx.	EAS822: 9 kg (20 lb) EBS852: 11 kg (24 lb)

Supply voltage	115 V AC (94 V to 130 V) or 230 V AC (190 V to 260 V); 47.5 to 63 Hz; 1 Ph			
Current at electronic unit [A] (115 V AC / 230 V AC)		I_{max} at 115 V	I_{max} at 230 V	$I_{pos.}$ (115 V + 230 V) Approx 40% to 50% of I_{max} .
	PME120	1.0 A (1.4 A ¹⁾)	0.5 A (0.7 A ¹⁾)	
	RHD250-10	1.8 A	0.9 A	
	RHD500-10	2.2 A	1.1 A	
	RHD800-10	5.0 A	2.5 A	
	RHD1250-12	5.0 A	2.5 A	
	RHD2500-25	5.0 A	2.5 A	
	RHD4000-40	5.8 A	2.7 A	
	RHD8000-80	5.0 A	2.5 A	
	LME620	1.0 A (1.4 A ¹⁾)	0.5 A (0.7 A ¹⁾)	
	RSD10-5.0	2.2 A	1.1 A	
	RSD10-10.0	3.6 A	1.8 A	
	RSD20-5.0	3.6 A	1.8 A	
	RSD20-7.5	4.8 A	2.4 A	
	RSD50-3.0	5.0 A	2.5 A	
	RSD100-1.5	5.0 A	2.5 A	
External fuse for power electronic unit	16 A; time-lag			
External fuse for heat supply	2 ... 6 A; medium time-lag			

1) For low temperature design

Power Electronic Unit EBS862 (Contrac)	
Degree of protection	IP 20
Humidity	≤ 75% annual average (condensation not permitted)
Rack air inlet temperature	0 ... 45 °C (32 ... 110 °F)
Transport and storage temperature	-25 ... 70 °C (-15 ... 160 °F)
Long-term storage temperature	-25 ... 40 °C (-15 ... 105 °F)
Mounting position	On vertical support, cable glands pointing down
Coating	2-layer component epoxy (RAL 9005, black)
Electrical connection	Mains supply via screw terminals; all other connections made via screw-type plug connectors
Weight; approx.	40 kg (88 lb)

Supply voltage	230 V AC (190 V to 260 V); 47.5 to 63 Hz; 1 Ph		
Current at electronic unit [A] (AC 230 V AC)	RHD2500-10 RHD4000-10 RHD8000-12 RHD16000-30 RSD50-10.0 RSD100-10.0	$I_{max.}$ at 230 V 5.3 A 10.0 A 8.0 A 12.5 A 6.4 A 12.5 A	$I_{pos.}$ (230 V) Approx 40% to 50% of $I_{max.}$
External fuse	Safety fuse 35 A (Lindner) + thermal circuit breaker 16 A (ETA) (fuse and circuit breaker are part of shipment)		
External fuse for heat supply	2 to 6 A; medium time-lag		

10 Communication


Analog input	0 / 4 ... 20 mA; internal load EAS822, EBS852 300 Ω; internal load EBS862 250 Ω
Analog output	0 / 4 ... 20 mA, electrically isolated, max. load 500 Ω
3 digital inputs*, DI 1 ... DI 3	Digital 0: -3 ... 5 V or open, electrically isolated Digital 1: 12 ... 35 V, electrically isolated
3 digital outputs*, DO 1 ... DO 3	Potential free relay contact, max. 60 V, 150 mA
Digital communication	RS232 for commissioning and service, optionally FSK / HART®
Default settings	See Chapter 2.2.1 "Standard control", page 14.
Voltage output U_V	24 V, 15 mA, electrically isolated; e.g., for scanning external contacts
Transmitter (optional)	Supply for 2-wire transmitter with activated process controller in Contrac
Individual settings	See data sheet 10/68-2.40 or upon request

11 Appendix

11.1 Other applicable documents

- Data Sheet LME620-AI / AN (10/68-2.73)
- Data Sheet PME120-AI / AN (10/68-1.51)
- Data Sheet RSD10 ... 20 (10/68-2.75)
- Data Sheet RSD50 (10/68-2.77)
- Data Sheet RSD100 (10/68-2.79)
- Data Sheet RHD250 (10/68-1.53)
- Data Sheet RHD500-800 (10/68-1.55)
- Data Sheet RHD1250-2500 (10/68-1.57)
- Data Sheet RHD4000 (10/68-1.59)
- Data Sheet RHD8000 (10/68-1.61)
- Data Sheet RHD16000 (10/68-1.63)
- Data Sheet EAS822 (10/68-8.23)
- Data Sheet EBS852 (10/68-8.24)
- Data Sheet EBS862 (10/68-8.25)
- Data Sheet Software for Contrac Actuators for Operation, Parmeterization and Service (10/68-510)
- Operating Instructions for Electrical Part-Turn Actuators PME120 / RHD250 ... 4000 (OI/PME/RHD250_4000)
- Operating Instructions for Electrical Part-Turn Actuators RHD8000 ... 16000 (OI/RHD8000_16000)
- Operating Instructions for Electrical Linear Actuators LME620 / RSD10 ... 100 (OI/LME/RSD10_100)
- Operating Instructions Software for Contrac Acatuators ECOM688 for Contrac Power Electronic Units (42/68-504)
- Operating Instructions Software for Contrac Acatuators ECOM700 for Contrac Power Electronic Units (OI/ECOM700)
- Configuration and Parameterization Instructions (45/68-10)

11.2 Approvals and certifications

CE mark		<p>The version of the meter in your possession meets the requirements of the following European directives:</p> <ul style="list-style-type: none"> - EMC directive 2004/108/EC - Low voltage directive 2006/95/EC
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IMPORTANT (NOTE)

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

www.abb.com/instrumentation



EG-KONFORMITÄTSERKLÄRUNG

EC DECLARATION OF CONFORMITY

Hersteller: <i>Manufacturer:</i>	ABB Automation Products GmbH Minden
Anschrift: <i>Address:</i>	Schillerstraße 72 D-32425 Minden
Produktbezeichnung: <i>Product name:</i>	Elektroniken für CONTRAC System <i>Electronic units for CONTRAC System</i>
Typ: <i>Type:</i>	EAI823, EAN823, EBN853, EBN861, EAS822, EBS852, EBS862

Das Produkt stimmt mit den Vorschriften folgender Europäischer Richtlinien überein:
This product meets the requirements of the following European directives:

2004/108/EG <i>2004/108/EC</i>	EMV-Richtlinie <i>Electromagnetic Compatibility Directive</i>
2006/95/EG <i>2006/95/EC</i>	Niederspannungsrichtlinie <i>EC-Low-Voltage Directive</i>


Die Übereinstimmung mit den Vorschriften dieser Richtlinien wird nachgewiesen durch die vollständige Einhaltung folgender Normen:
Conformity with the requirements of these Directives is proven by complete adherence to the following standards:

EN 61 000-6-2 / EN 61 000-6-4 / EN 50 178

Die Sicherheitshinweise der mitgelieferten Dokumentation sind zu beachten.
The safety remarks of the supplied documentation have to be observed.

27.09.2011

Datum
Date


i. V. Dr. Wolfgang Scholz
Leiter R&D
Head of R&D


i. V. Manfred Klüppel
Leiter Qualitätssicherung
Head of Quality Assurance

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: _____

E-mail: _____

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

12 Index

A	
Actuator configuration	14
Alarm diagram	38
Alarms	37
Alarms / Errors	37
Appendix	43
Approvals and certifications	43
Automatic mode	23
B	
Brake fuse	36
C	
Cable cross-section	23
Cable guide in rack	27
Cable guide in universal plug	20
Commissioning and service field	30
Communication	42
Configuration of digital input / output signals (conventional control)	23
Connection elements	25
Connection of power / signal cables	19
Contamination of devices	45
Contrac electronic unit	17
D	
DC link fuse	36
Default assignments	24
Delivery scope	14
Design and function	11
Device setup	34
Disposal	10
E	
EAS822, EBS852	15
Engineering software	28
Error	37
Error diagram	39
External fuse for EBS862	23
External fuses	23
F	
Factory default	14
Failure	34
Fuse type	36
Fuses	23
G	
General information and notes for the reader	5
General information on operation	28
H	
Hazardous materials	9
I	
Information on WEEE Directive 2002/96/EC	10
Installation	16
Installation safety information	9
Integrated management system	10
Intended use	5
Interference	20
Internal fuses	23
L	
Local operation	28
M	
Modules	12
Mounting	15
Mounting the housing halves	16
N	
Note symbols	6
O	
Operating elements of the service field	29
Operating safety information	9
Operation behind step controller	24
Other applicable documents	43
P	
Plates and symbols	6
Positions for the potential switch	35
R	
Returning devices	9
RoHS Directive 2002/95/EC	10
S	
Safety	5
Safety information for electrical installation	9
Separating the housing halves	16
Setpoint function:	14
Setup via user interface	32
Signals on the commissioning and service field	34
Specifications	41
Standard configuration	14
Standard control	14, 42
Storage conditions	8
T	
Target groups and qualifications	5
Terminal connection diagrams	19, 21
Transport safety information	8
Trouble shooting	40
Typical commissioning with the service field	30
W	
Warranty	6
Warranty provisions	6

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