Electronic remote display
MESSKO® EI100/EI160

Operating instructions

7304833/00 EN

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1 Introduction

This technical file contains detailed descriptions on the safe and proper installation, connection, commissioning and monitoring of the product.

It also includes safety instructions and general information about the product.

This technical file is intended solely for specially trained and authorized personnel.

1.1 Manufacturer

Maschinenfabrik Reinhausen GmbH
Falkensteinstrasse 8
93059 Regensburg
Germany

Tel.: +49 941 4090-0
E-mail: sales@reinhausen.com
Internet: www.reinhausen.com
MR Reinhausen customer portal: https://portal.reinhausen.com

Further information on the product and copies of this technical file are available from this address if required.

1.2 Completeness

This technical file is incomplete without the supporting documents:

- Order confirmation

1.3 Safekeeping

Keep this technical file and all supporting documents ready at hand and accessible for future use at all times.

1.4 Notation conventions

1.4.1 Hazard communication system

Warnings in this technical file are displayed as follows.

1.4.1.1 Warning relating to section

Warnings relating to sections refer to entire chapters or sections, sub-sections or several paragraphs within this technical file. Warnings relating to sections use the following format:

⚠ WARNING

Type of danger!

Source of the danger and outcome.

- ► Action
- ► Action

1.4.1.2 Embedded warning information

Embedded warnings refer to a particular part within a section. These warnings apply to smaller units of information than the warnings relating to sections. Embedded warnings use the following format:

⚠ DANGER! Instruction for avoiding a dangerous situation.

1.4.1.3 Signal words

Depending on the product, the following signal words are used:

Signal word	Meaning
DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates measures to be taken to prevent damage to property.

Table 1: Signal words in warning notices

1.4.2 Information system

Information is designed to simplify and improve understanding of particular procedures. In this technical file it is laid out as follows:

Important information.

1.4.3 Instruction system

This technical file contains single-step and multi-step instructions.

Single-step instructions

Instructions which consist of only a single process step are structured as follows:

Aim of action

✓ Requirements (optional).

► Step 1 of 1.

⇨ Result of step (optional).

⇨ Result of action (optional).

Multi-step instructions

Instructions which consist of several process steps are structured as follows:

Aim of action

✓ Requirements (optional).

1. Step 1.

⇨ Result of step (optional).

2. Step 2.

⇨ Result of step (optional).

⇨ Result of action (optional).

1.4.4 Typographic conventions

Typographic convention	Purpose	Example
UPPERCASE	Operating controls, switches	ON/OFF
[Brackets]	PC keyboard	[Ctrl] + [Alt]
Bold	Software operating controls	Press **Continue** button

Typographic convention	Purpose	Example
…>…>…	Menu paths	Parameter > Control parameter
Italics	System messages, error messages, signals	*Function monitoring* alarm triggered
[► Number of pages]	Cross reference	[► Page 41].
Dotted underscore	Glossary entry, abbreviations, definitions, etc.	Glossary entry

Table 2: Typographic conventions used in this technical file

2 Safety

- Read this technical file through to familiarize yourself with the product.
- This technical file is a part of the product.
- Read and observe the safety instructions provided in this chapter.
- Read and observe the warnings in this technical file in order to avoid function-related dangers.
- The product is manufactured on the basis of state-of-the-art technology. Nevertheless, risks to life and limb for the user or impairment of the product and other material assets due to the function may arise in the event of improper use.

2.1 Appropriate use

The product is designed solely for use in stationary large-scale systems.

If used as intended, in compliance with the requirements and conditions specified in this technical document and observing the warning notices in this technical document and attached to the product, the product does not pose a risk of injury or damage to property or the environment. This applies throughout the service life of the product, from delivery, installation and operation to removal and disposal.

The following is considered intended use:

- Operate the product in accordance with this technical document, the agreed-upon delivery conditions and the technical data.
- Ensure that all necessary work is performed by qualified personnel only.
- Only use the devices supplied for the intended purpose and in accordance with the specifications in this technical document.
- Observe the notices in this technical document regarding electromagnetic compatibility and the technical data.

2.2 Inappropriate use

Use is considered inappropriate if the product is used other than as described in the Appropriate use section. In addition, observe the following:

- The product is not a protective device. Do not use it to handle safety-related functions.
- Risk of explosion and fire from highly flammable or explosive gases, vapors or dusts. Do not operate the product in areas at risk of explosion.

- The product is not intended for use in environments subject to strong corrosion effects.
- Unauthorized or inappropriate changes to the product may result in personal injury, material damage and malfunctions. Only modify the product after consultation with Maschinenfabrik Reinhausen GmbH.

2.3 Fundamental safety instructions

To prevent accidents, malfunctions and damage as well as unacceptable adverse effects on the environment, those responsible for transport, installation, operation, maintenance and disposal of the product or parts of the product must ensure the following:

Personal protective equipment

Loosely worn or unsuitable clothing increases the danger of becoming trapped or caught up in rotating parts and the danger of getting caught on protruding parts. This results in danger to life and limb.

- All necessary devices and personal protective equipment required for the specific task, such as a hard hat, safety footwear, etc. must be worn. Observe the "Personal protective equipment" section.
- Never wear damaged personal protective equipment.
- Never wear rings, necklaces or other jewelry.
- If you have long hair, wear a hairnet.

Work area

Untidy and poorly lit work areas can lead to accidents.

- Keep the work area clean and tidy.
- Make sure that the work area is well lit.
- Observe the applicable laws for accident prevention in the relevant country.

Explosion protection

Highly flammable or explosive gases, vapors and dusts can cause serious explosions and fire.

- Do not install or operate the product in areas where a risk of explosion is present.

2 Safety

Safety markings

Warning signs and safety information plates are safety markings on the product. They are an important aspect of the safety concept. Safety markings are depicted and described in the chapter "Product description".

- Observe all safety markings on the product.
- Make sure all safety markings on the product remain intact and legible.
- Replace safety markings that are damaged or missing.

Ambient conditions

To ensure reliable and safe operation, the product must only be operated under the ambient conditions specified in the technical data.

- Observe the specified operating conditions and requirements for the installation location.

Modifications and conversions

Unauthorized or inappropriate changes to the product may lead to personal injury, material damage and operational faults.

- Only modify the product after consultation with Maschinenfabrik Reinhausen GmbH.

Spare parts

Spare parts not approved by Maschinenfabrik Reinhausen GmbH may lead to physical injury, damage to the product and malfunctions.

- Only use spare parts that have been approved by Maschinenfabrik Reinhausen GmbH.
- Contact Maschinenfabrik Reinhausen GmbH.

Working during operation

You must only operate the product when it is in a sound operational condition. Otherwise it poses a danger to life and limb.

- Regularly check the operational reliability of safety equipment.
- Perform the inspection tasks described in this technical document regularly.

2.4 Personnel qualification

The person responsible for assembly, commissioning, operation and inspection must ensure that personnel are sufficiently qualified.

Operator

The operator uses and operates the product in line with this technical document. The operating company provides the operator with instruction and training on the specific tasks and the associated potential dangers arising from improper handling.

Technical Service

We strongly recommend having repairs and retrofitting carried out by our Technical Service department. This ensures that all work is performed correctly. If repair work is not carried out by our Technical Service department, please ensure that the personnel who carry out the repairs are trained and authorized to do so by Maschinenfabrik Reinhausen GmbH.

Maschinenfabrik Reinhausen GmbH

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2.5 Personal protective equipment

Personal protective equipment must be worn during work to minimize risks to health.

- Always wear the personal protective equipment required for the job at hand.
- Never wear damaged personal protective equipment.
- Observe information about personal protective equipment provided in the work area.

Protective clothing	Close-fitting work clothing with a low tearing strength, with tight sleeves and with no protruding parts. It mainly serves to protect the wearer against being caught by moving machine parts.
Safety shoes	To protect against falling heavy objects and slipping on slippery surfaces.
Safety glasses	To protect the eyes from flying parts and splashing liquids.
Visor	To protect the face from flying parts and splashing liquids or other dangerous substances.
Hard hat	To protect against falling and flying parts and materials.
Hearing protection	To protect against hearing damage.
Protective gloves	To protect against mechanical, thermal, and electrical hazards.

Table 3: Personal protective equipment

3.1 Scope of delivery

The product is packaged with protection against moisture and is delivered as follows:

- EI100/EI160 electronic remote display
- Operating instructions
- Dimensional drawing (optional)

Please note the following:

- Check the shipment for completeness on the basis of the shipping documents.
- Store the parts in a dry place until installation
- The product must remain in its airtight, protective wrapping and may only be removed immediately before installation

3.2 Function description

The EI100 and EI160 electronic remote displays show the temperature or a percentage modulation of a 4…20 mA signal.

3.3 Design

This is displayed using an analog pointer instrument and a digital LCD display.

The input signal is 4…20 mA. The supply voltage is 24 V DC.

3 Product description

EI100

The EI100 is installed in a Ø 100 mm housing. It can be mounted in the control cabinet via clamping bracket or externally in open air using a support.

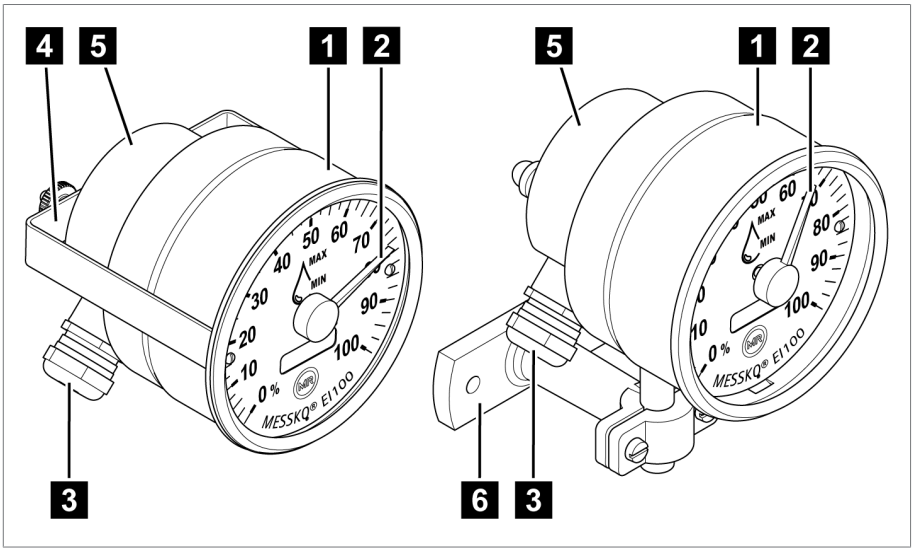


Figure 1: EI100 with clamping bracket or support

1	EI100 housing (clamping bracket/support)	2	Pointer
3	M20x1.5 cable gland in accordance with EN 60423	4	Clamping bracket
5	Terminal cover	6	Support

EI160

The EI160 is installed in a Ø 160 mm housing and is mounted on the rear mounting plate via the two drill holes.

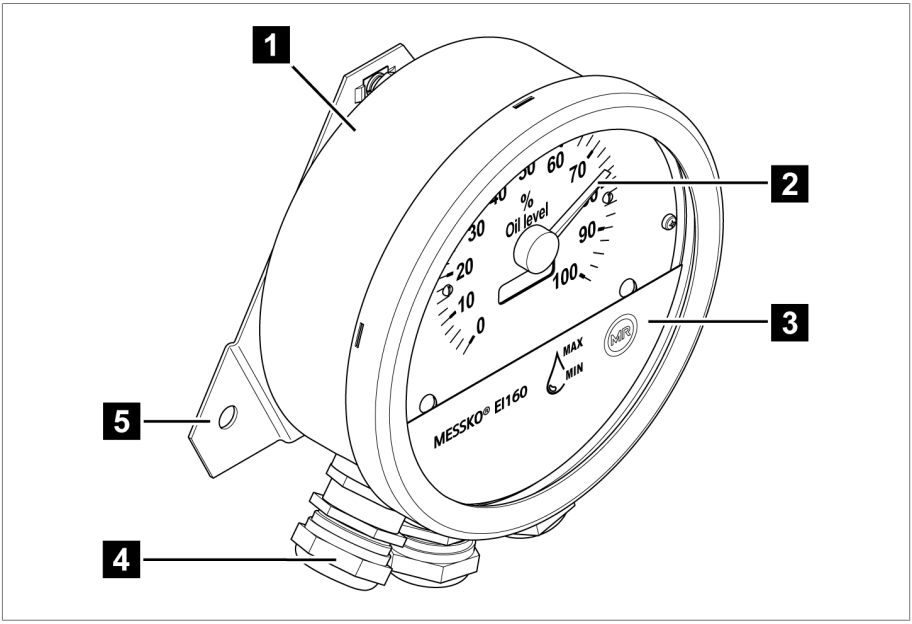


Figure 2: EI160 with vibration-damping plate

1	EI160 housing	2	Pointer
3	Cover plate	4	M25x1.5 cable gland in accordance with EN 604203
5	Vibration-damping plate		

3 Product description

3.4 Versions

The electronic remote display is available in the following versions:

	Scale / housing versions
Oil temperature measured value [°C] / Winding temperature measured value [°C]	0 °C to 150 °C 0 °C to +160 °C -20 °C to +140 °C -20 °C to +160 °C -40 °C to +80 °C 0 °C to +240 °C
Oil level measured value [%]	0–100 0–120
Pressure measured value [bar]	0...6 0...10
Housing diameter [mm]	EI100: Ø 100 EI160: Ø 160
Mounting	EI100: Support, clamping bracket EI160: Vibration-damping plate
Supplementary products	EPT202 thermometer, TT=4…20 mA temperature transmitter, TT30 signal converter

4.1 Packaging

The products are sometimes supplied with sealed packaging and sometimes in a dry state, depending on requirements.

Sealed packaging surrounds the packaged goods with plastic foil on all sides.

Products that have also been dried are identified by a yellow label on the sealed packaging. In the dry state, delivery is also possible in a transport container.

The information in the following sections should be applied as appropriate.

4.1.1 Suitability, structure and production

The goods are packaged in a sturdy cardboard box. This ensures that the shipment is secure when in the intended transportation position and that none of its parts touch the loading surface of the means of transport or touch the ground after unloading.

The box is designed for a maximum load of 10 kg.

Inlays inside the box stabilize the goods, preventing impermissible changes of position, and protect them from vibration.

4.1.2 Markings

The packaging bears a signature with instructions for safe transport and correct storage. The following symbols apply to the shipment of non-hazardous goods. Adherence to these symbols is mandatory.

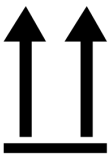
				
Protect against moisture	Top	Fragile	Attach lifting gear here	Center of mass

Table 4: Shipping pictograms

4 Packaging, transport and storage

4.2 Transportation, receipt and handling of shipments

In addition to vibrations, jolts must also be expected during transportation. To prevent possible damage, avoid dropping, tipping, knocking over and colliding with the product.

If the packaging tips over or falls, damage is to be expected regardless of the weight.

Every delivered shipment must be checked for the following by the recipient before acceptance (acknowledgment of receipt):

- Completeness based on the delivery slip
- External damage of any type.

The checks must take place after unloading when the cartons or transport container can be accessed from all sides.

Visible damage

If external transport damage is found upon receipt of the shipment, proceed as follows:

- Immediately record the transport damage found in the shipping documents and have this countersigned by the carrier.
- In the event of severe damage, total loss or high damage costs, immediately notify the sales department at Maschinenfabrik Reinhausen GmbH and the relevant insurance company.
- After identifying damage, do not modify the condition of the shipment further and retain the packaging material until an inspection decision has been made by the transport company or the insurance company.
- Record the details of the damage immediately on site together with the carrier involved. This is essential for any claim for damages.
- If possible, photograph damage to packaging and packaged goods. This also applies to signs of corrosion on the packaged goods due to moisture inside the packaging (rain, snow, condensation).
- Be absolutely sure to also check the sealed packaging.

Hidden damage

When damage is not determined until unpacking after receipt of the shipment (hidden damage), proceed as follows:

- Make the party responsible for the damage liable as soon as possible by telephone and in writing, and prepare a damage report.
- Observe the time periods applicable to such actions in the respective country. Inquire about these in good time.

With hidden damage, it is very hard to make the transportation company (or other responsible party) liable. Any insurance claims for such damage can only be successful if relevant provisions are expressly included in the insurance terms and conditions.

4.3 Storage of shipments

When selecting and setting up the storage location, ensure the following:

- Protect stored goods against moisture (flooding, water from melting snow and ice), dirt, pests such as rats, mice, termites and so on, and against unauthorized access.
- Store the crates on timber beams and planks as a protection against rising damp and for better ventilation.
- Ensure sufficient carrying capacity of the ground.
- Keep entrance paths free.
- Check stored goods at regular intervals. Also take appropriate action after storms, heavy rain or snow and so on.

5 Mounting

This chapter describes how to install and connect the electronic remote display.

5.1 Mounting the remote display

When attaching the remote display to the transformer, note the following information:

- Ensure that the remote display is mounted vertically.
- Ensure that the remote display is not subject to any vibrations or only to minor vibrations at the installation location.
- Comply with EMC standards [►Section 5.4, Page 27].
- Observe the dimensions in the chapter Technical data [►Section 8, Page 40].

5.1.1 EI100 mounting with support

1. Drill two holes into a suitable bracket on the outside of the transformer, on the control cabinet mounting plate or on another suitable structure.

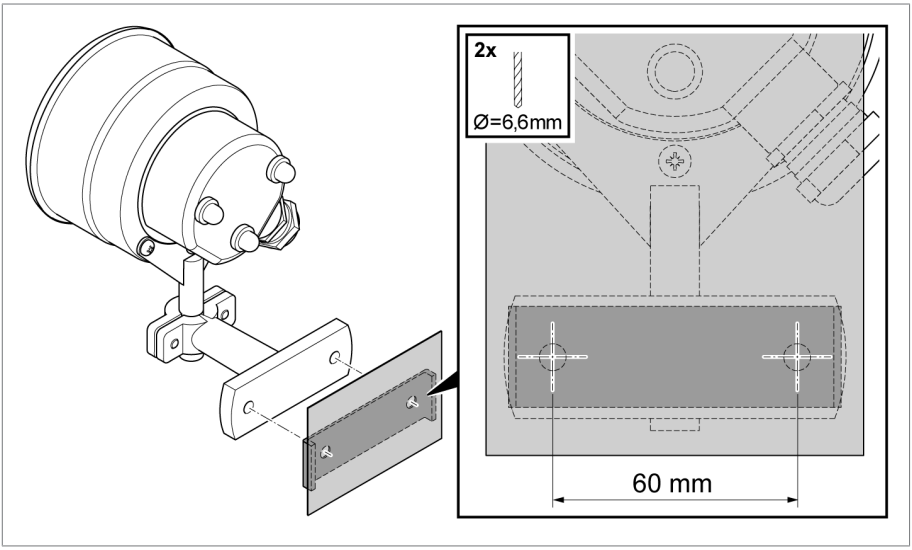


Figure 3: Holes

2. Attach the device to the transformer via the support. To do so, use hexagon screws or cylinder screws with a screw length that is suitable for the installation situation.

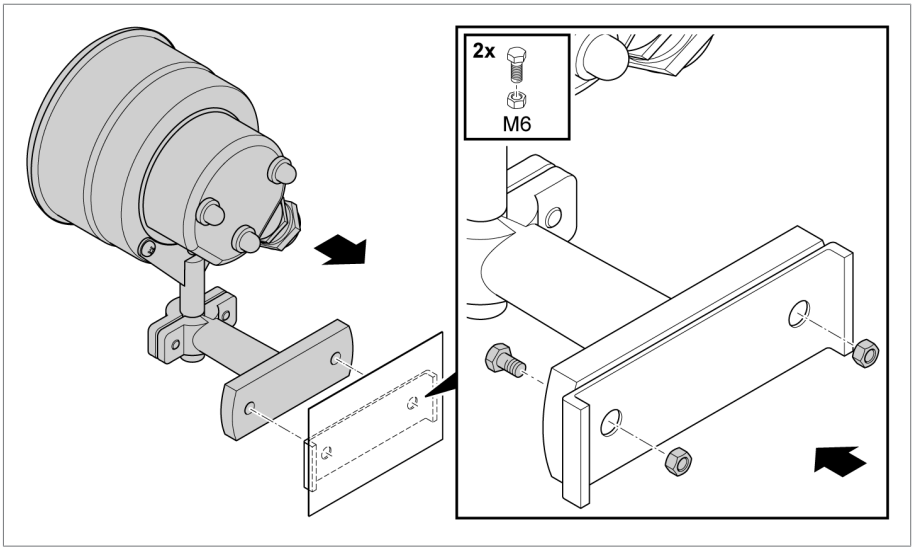


Figure 4: Mounting with support

5.1.2 EI100 mounting with clamping bracket

1. Unscrew the clamping bracket and clamp it to a suitable plate.

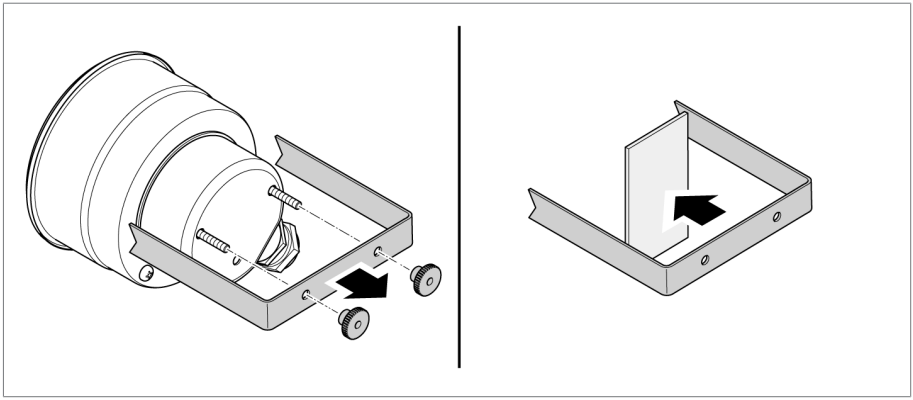


Figure 5: Positioning the clamping bracket

2. Reattach the device from the other side and screw the clamping bracket on.

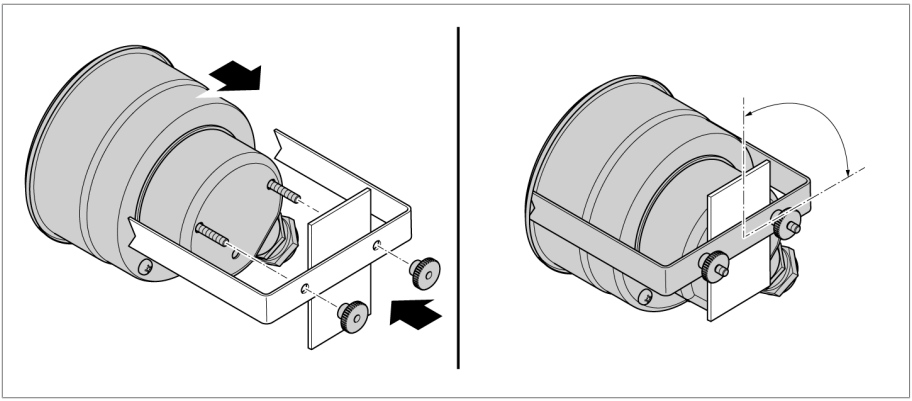


Figure 6: Mounting with clamping bracket

3. Straighten the device and tighten the clamping bracket so that the device does not slip.

5.1.3 EI160 mounting with vibration-damping plate

1. Drill two holes into a suitable bracket on the outside of the transformer, on the control cabinet mounting plate or on another suitable structure.

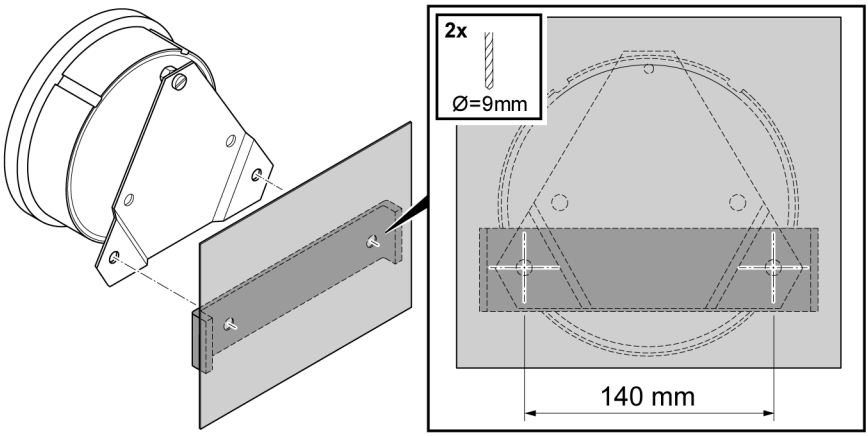


Figure 7: Holes

2. Attach the device to the transformer via the vibration-damping plate. To do so, use hexagon screws or cylinder screws with a screw length that is suitable for the installation situation.

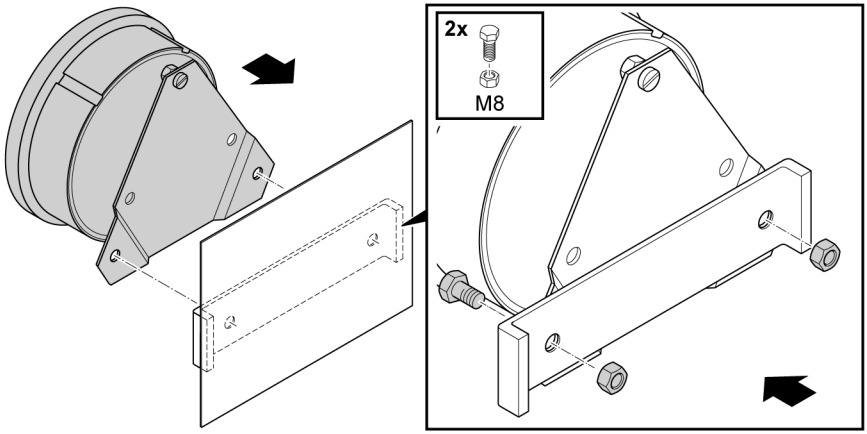


Figure 8: Mounting with vibration-damping plate

5.2 Electromagnetic compatibility

The device has been developed in accordance with applicable EMC standards. The following points must be noted in order to maintain the EMC standards.

5.2.1 Wiring requirement of installation site

Note the following when selecting the installation site:

- The system's overvoltage protection must be effective.
- The system's ground connection must comply with all technical regulations.
- Separate system parts must be joined by a potential equalization.

5.2.2 Wiring requirement of operating site

Note the following when wiring the operating site:

- Do not route lines which cause interference (e.g. supply lines) and lines susceptible to interference (e.g. signal lines) in the same cable duct.
- Maintain a distance of more than 100 mm (3.94") between lines which cause interference and those which are susceptible to interference.

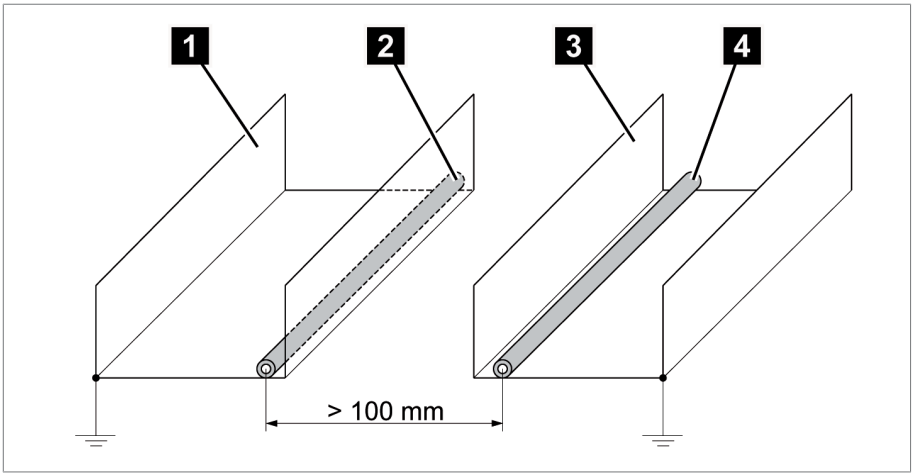


Figure 9: Recommended wiring

1	Cable duct for lines causing interference	3	Cable duct for lines susceptible to interference
2	Line causing interference (e.g. power line)	4	Line susceptible to interference (e.g. signal line)

- Never connect the device with a multi-wire collective pipe.
- Use a shielded cable for transmitting the output signal.

5.3 Connecting cables to the system periphery

NOTICE

Damage to digital signal transfer device and system periphery!

An incorrect connection can lead to damage to the signal transfer device and system periphery.

► Prior to commissioning, check the entire configuration and the measuring and operating voltage.

Excessive line capacitance can prevent the relay contacts from interrupting the contact current. In control circuits operated with alternating current, take into account the effect of the line capacitance of long control cables on the function of the relay contacts.

To obtain a better overview when connecting cables, only use as many leads as necessary.

To connect the cables to the system periphery, proceed as follows:

✓ Only use cables in accordance with the specification in the technical data for wiring.

► Connect the cables to be wired to the device to the system periphery as shown in the connection diagrams supplied.

5.4 Electrical connection

This chapter describes how to connect the device correctly. Note the connection diagrams provided. Observe the following hazard notices prior to opening the device:

NOTICE

Damage to the device!

Electrostatic discharge can lead to damage to the device.

► Take precautionary measures to prevent the build-up of electrostatic charges on work surfaces and personnel.

5.4.1 Cable recommendation

Please note the following recommendation from Maschinenfabrik Reinhausen GmbH when wiring the device:

- The connection cables used must have a temperature resistance of at least +90 °C (ambient temperature max. +70 °C plus intrinsic device heating of 20 K).
- The cables used must be flame-resistant in accordance with IEC 60332-1-2 or UL 2556 VW-1.
- If both low voltage and extra-low voltage are connected in the device, it must be ensured that the circuits for extra-low voltage and for low voltage in the connection area and in the cable are separated from each other with double insulation.

Cable*)	Terminal	Cable type	Conductor cross-section
Ground connection	⏚	Unshielded	EI100 0.14…1.5 mm² / AWG 26…16
			EI160 1…2.5 mm² / AWG 17…13
Voltage supply	1 (+), 3 (-)	Unshielded	EI100 0.14…1.5 mm² / AWG 26…16
			EI160 1…2.5 mm² / AWG 17…13
Analog inputs Analog input 1 Analog input 2	Terminals 14 to 16	Shielded	EI100 0.14…1.5 mm² / AWG 26…16
			EI160 1…2.5 mm² / AWG 17…13

Table 5: Recommendation for connection cable (standard connections)

*) It must be possible to load all connection cables with a nominal voltage of 300 V;
Cable type solid or flexible

5.4.2 Mounting the cable gland

How the cables are fixed into place differs depending on the housing. The individual connection cables in the device are to be connected as shown in the diagram which is affixed to the rear of the housing.

5.4.2.1 EI100 cable gland

1. Prepare the cables (strip).
2. Remove the cover with cable gland from the rear of the device.

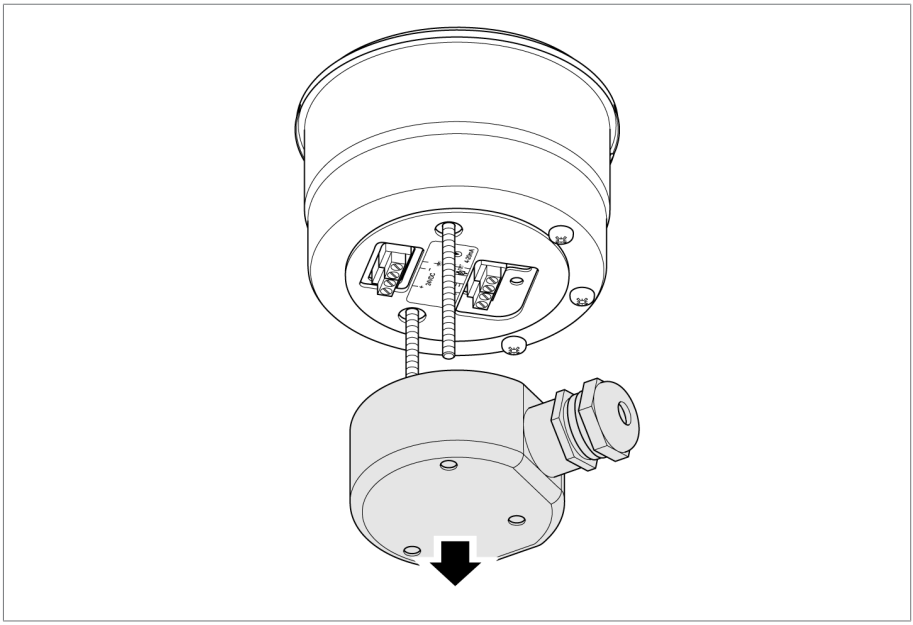


Figure 10: Removing the cover

3. Unscrew the provided cable gland and remove the dust protection disk.

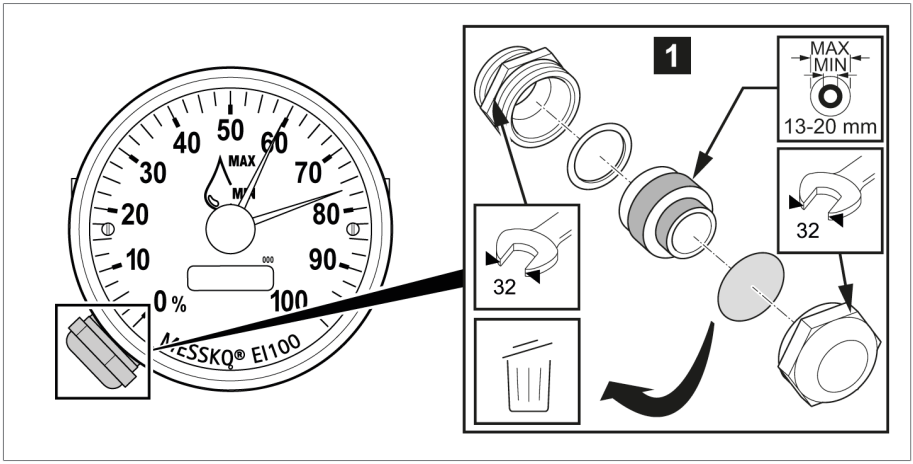


Figure 11: Cable gland

1	EI100 STD (WADI) M20x1.5

4. Thread the connection cable through the cable screw connection into the housing.

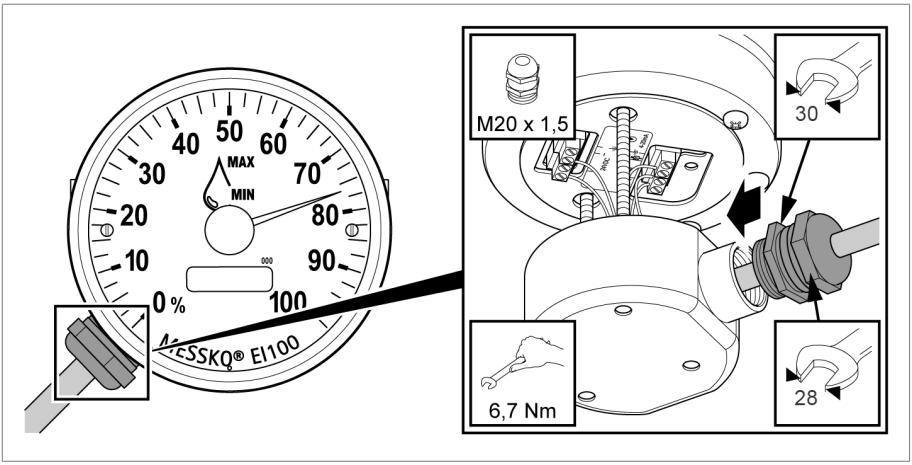


Figure 12: Attaching the cable gland

5. Tighten the cable gland.

5.4.2.2 EI160 cable gland

1. Prepare the cables (strip).
2. Turn the bayonet seal ring approx. 30...40° counter-clockwise and then lift it out together with the viewing glass. The viewing glass is held in place by a rubber gasket.

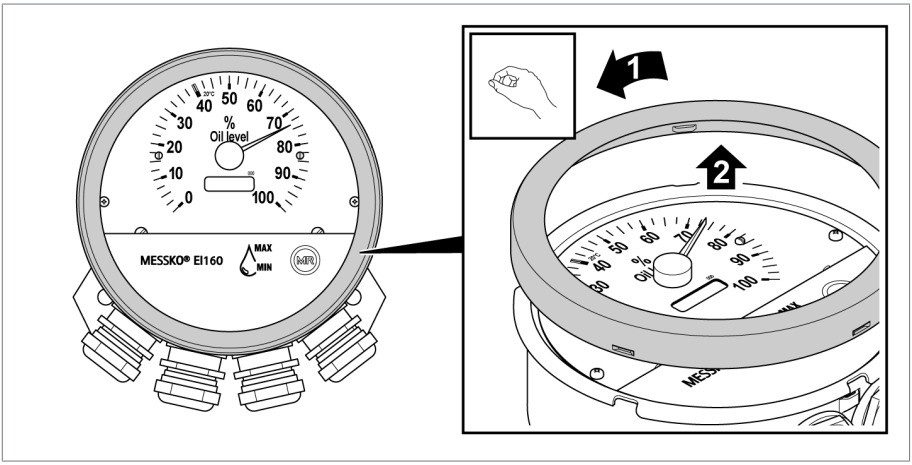


Figure 13: Removing the locking ring with viewing glass

3. Open the cover plate.

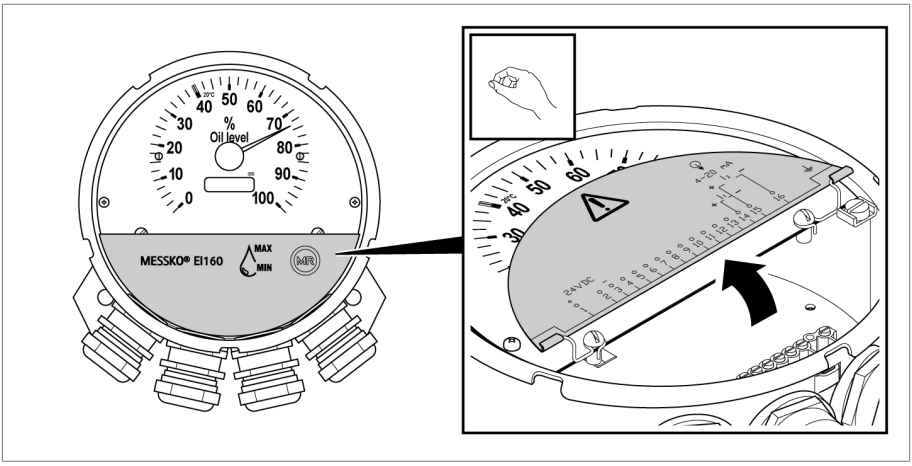


Figure 14: Opening the cover plate

4. Unscrew the provided cable gland and remove the dust protection disk.

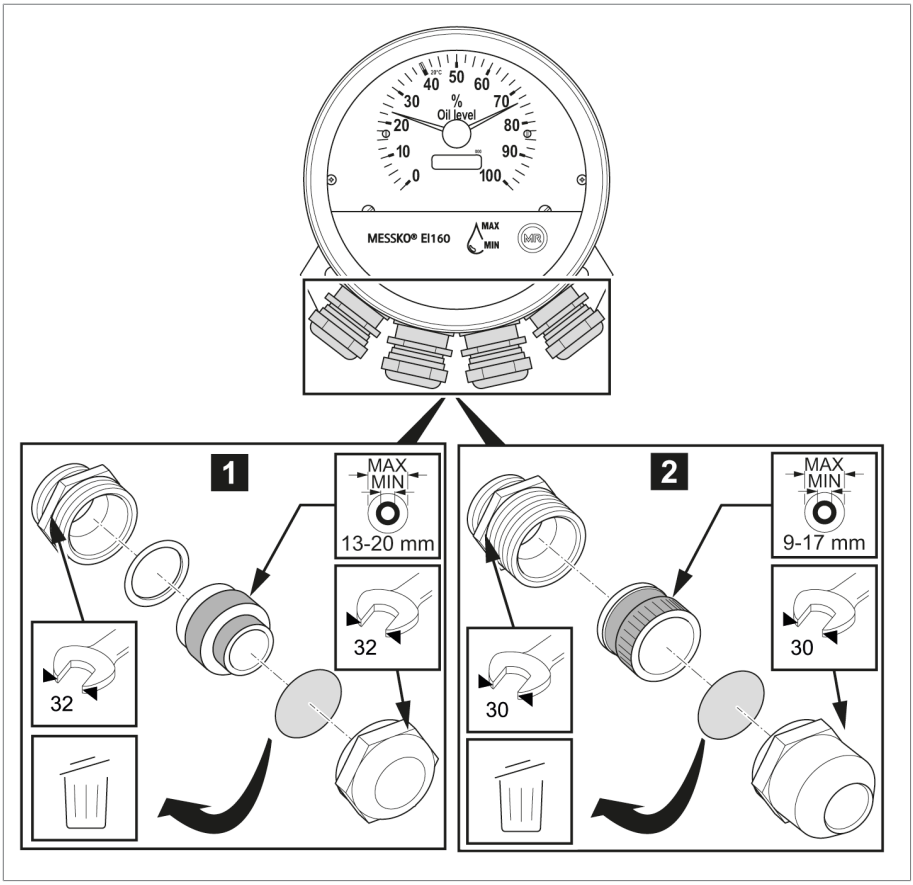


Figure 15: Cable glands

1	EI160 STD (WADI) M25x1.5	2	EI160 OFF M25x1.5

5. Thread the connection cable through the cable screw connection into the housing.

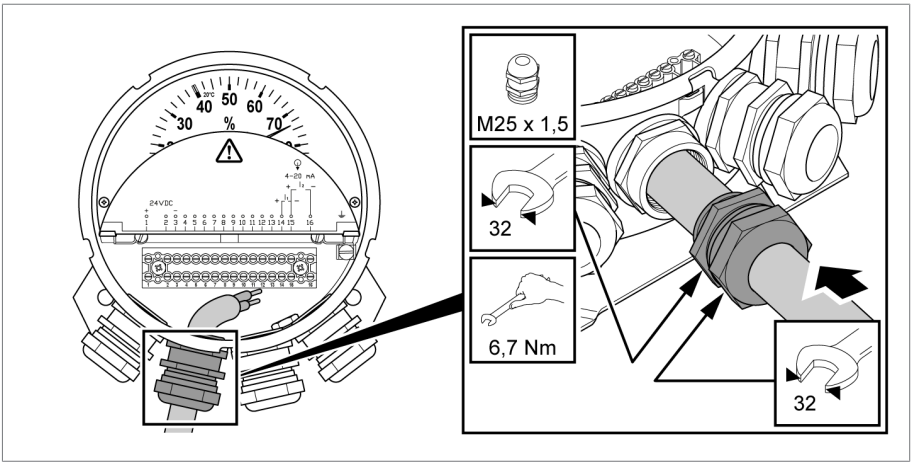


Figure 16: Cable gland

6. Tighten the cable gland

5.4.3 Connecting the supply voltage

The device is equipped with a connection terminal for the supply voltage of 24 V DC.

⚠ DANGER

Type and source of danger

The cables must be de-energized while being connected; the supply voltage may only be switched on after the device is fully connected.

EI100

► To connect the cable for the supply voltage, connect the wires to the + and - terminals in accordance with the EI100 connection diagram.

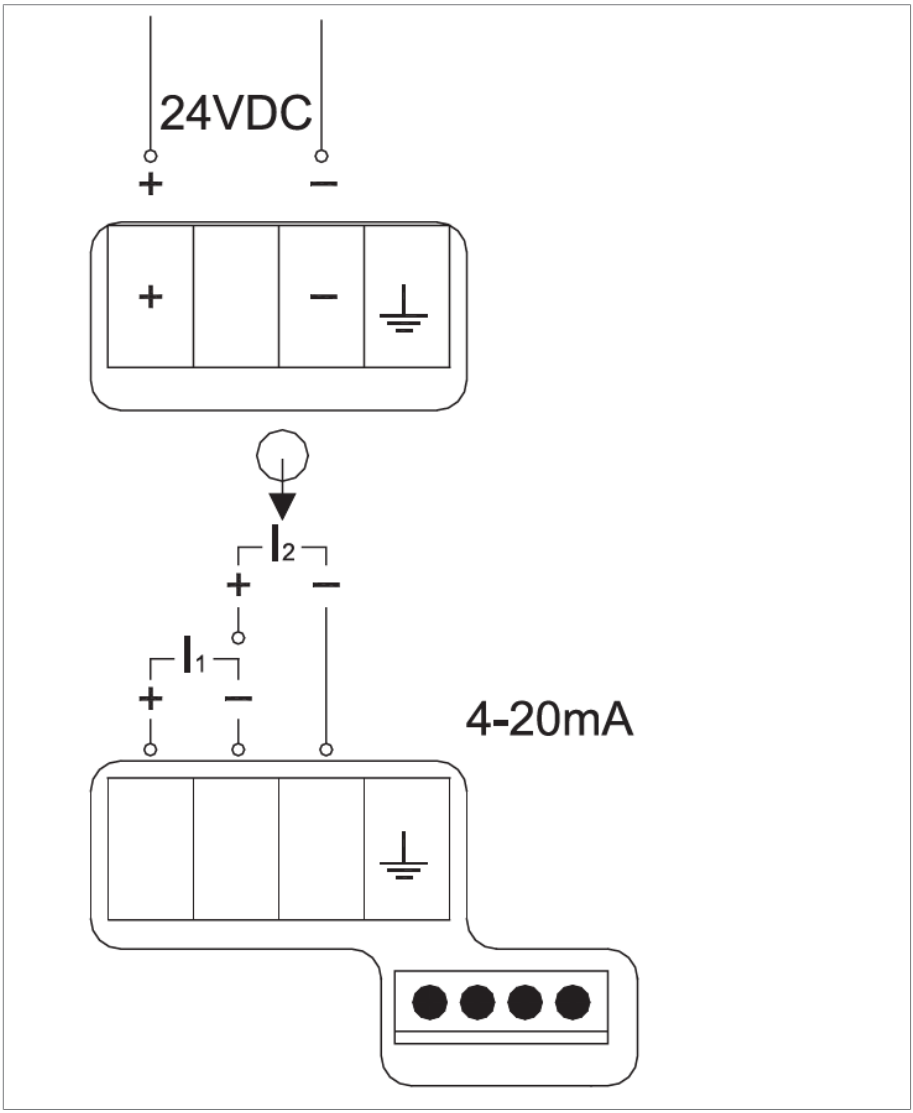


Figure 17: EI100 electrical connection

EI160

► To connect the cable for the supply voltage, connect the wires to the + and - terminals in accordance with the EI160 connection diagram.

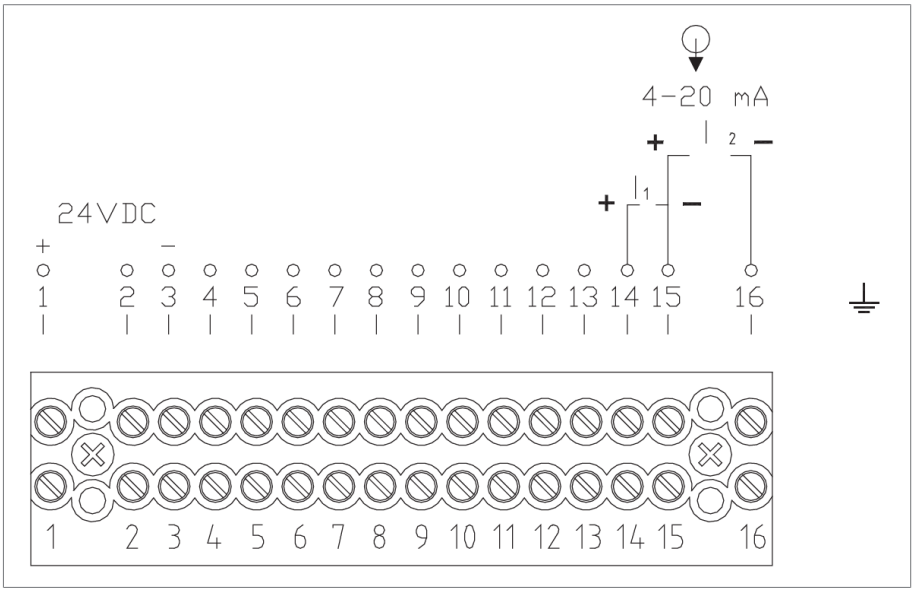


Figure 18: EI160 electrical connection

Refer to the circuit diagrams [►Section 9.2, Page 46] for info on how to connect the supplementary products.

5.4.4 Connecting the sensor inputs

The range of the input signal 4…20 mA must be in accordance with the specifications on the nameplate of the sensor and all connected devices.

There are two options for connecting the 4...20 mA signal from the sensor:

- I_1 passive sensor, without its own supply voltage
- I_2 active sensor or active 4…20 mA circuit

Note the maximum load of the sensor with both connection methods respectively.

- Connect the wires to the terminals for the sensor input in accordance with the connection diagram.
- Twist the shielding and connect the ground directly to the ground connection (terminal).
- EI160: As an option, grounding via the base plate is possible if it is mounted conductively on a grounded surface.

5.4.4.1 Active sensor

An active 4…20 mA sensor that has an external supply can be connected to input I2.

To do this, connect the cables to the I_2 + and - terminals in accordance with the connection diagram.

Active sensor example:

- Oil level indicator MTO-STF160(G) with TT30

5.4.4.2 Passive sensor

The input for I_1 is equipped with an internal voltage source for supplying a passive sensor with 24 V DC. To do this, connect the cables to the I_1 + and - terminals in accordance with the connection diagram.

Passive sensor examples:

- Oil temperature thermometer MT-ST 160 SK/TT or combi-bushing/TT
- Winding temperature thermometer MT-ST 160W/TT or ZT-F2/TT

5.5 Function test

NOTICE

Malfunction

Applying voltages that are too high can lead to device malfunctions.

► Do not perform any dielectric tests on this device.

1. Check that the electrical connection of the EI100 or EI160 is in accordance with the circuit diagrams [►Section 9.2, Page 46].
2. Switch the supply voltage on. The value displayed must be in accordance with the value of the sensor.

3. The tolerances are listed in the data sheets of the connected devices.

6 Maintenance, care and servicing

The device is maintenance-free.

You can clean the device housing with a dry cloth.

Servicing is not necessary.

Observe the national disposal regulations in the country of use.

7.1 SVHC information in accordance with the REACH regulation

This product complies with the provisions of European Regulation 1907/2006/EC dated December 18, 2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

The following components of the product contain > 0.1% [w/w] of the SVHC substance lead (CAS no. 7439-92-1):

- Aluminum alloy
- Brass alloy
- Standard parts with a low property class

8 Technical data

8.1 Housing

Dimensions	Ø 100
Housing material	Stainless steel
Viewing glass material	Polycarbonate
Mounting	Clamping bracket or support
Degree of protection	IP55 in accordance with IEC 529
Display	1x pointer (analog) 1x LCD (digital) 8-digit, 7-segment
Scale	°C or %
Connection terminals	0.14…1.5 mm² / AWG 26…16

Table 6: EI100

Dimensions	Ø 160
Housing material	Steel plate, galvanized, coated RAL 7033 (cement gray)
Viewing glass material	Laminated safety glass with UV filter (96% in accordance with DIN EN 410)
Mounting	Wall mounting
Degree of protection	IP55 in accordance with IEC 529
Display	1x pointer (analog) 1x LCD (digital) 8-digit, 7-segment
Scale	°C or %
Connection terminals	1…2.5 mm² / AWG 17…13

Table 7: EI160

8.2 Ambient conditions

Operating temperature	- 20…+ 80 °C
Storage temperature	- 40…+ 80 °C

Table 8: Temperature range

8.3 Inputs

Supply voltage	17...30 V DC unregulated, Max. 10% residual ripple, protected against polarity reversal
Power consumption	2 W
Measurement input	Current 4...20 mA, Specify measurement range when ordering
Measured value recording	Resolution 12-bit, sampling rate 20 ms
Voltage drop	Max. 50 mV at the measurement input
Sensor supply	See circuit diagrams [►Section 9.2, Page 46]

Table 9: EI100, EI160 inputs

9 Drawings

9.1 Dimensions

	DATE	NAME	DOCUMENT NO.	
DFTR.	–	–	SED 8021337 000 00	
CHKD.	–	–	CHANGE NO.	SCALE
STAND.	–	–	1107279	1:2

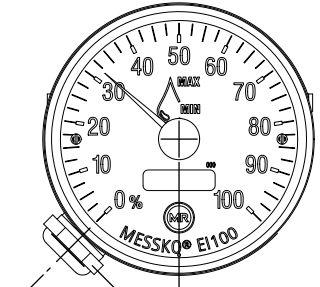
DIMENSION IN mm EXCEPT AS NOTED

TRANSFORMER ACCESSORIES
EI 100 mit Klemmbügel / EI 100 WITH CLAMP STRAP
Maßzeichnung/DIMENSION DRAWING

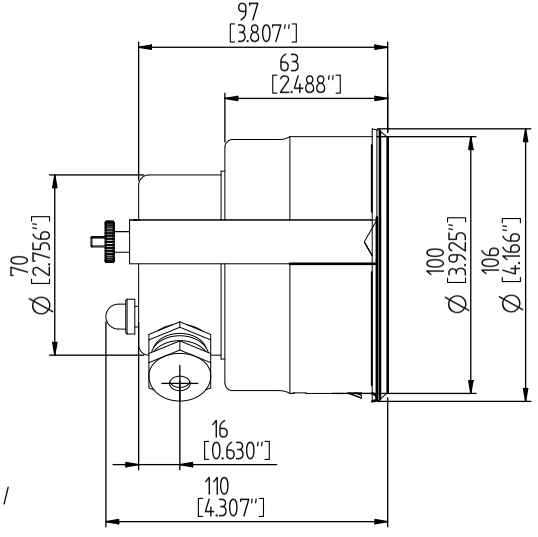
MATERIAL NUMBER 1015729 80M

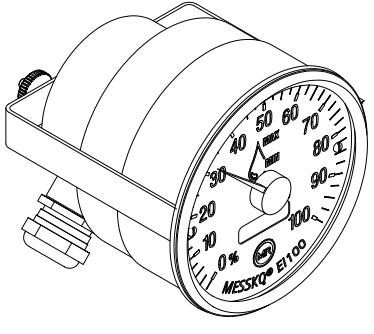
SERIAL NUMBER –

SHEET 1 / 1



Kabelverschraubung M20x1,5 nach EN 60423 /
CABLE GLAND M20x1,5 ACC. TO EN 60423





	DATE	NAME	DOCUMENT NO.	
DFTR.	-	-	SED 8026701 000 01	
CHKD.	21.07.2021	REHNELT	CHANGE NO.	SCALE
STAND.	-	-	1115555	1:2

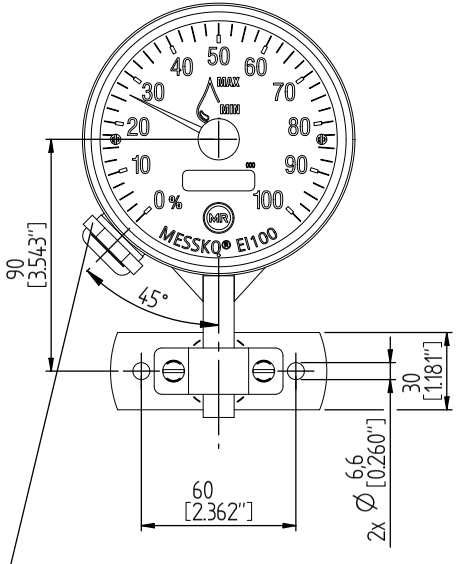
DIMENSION IN mm EXCEPT AS NOTED

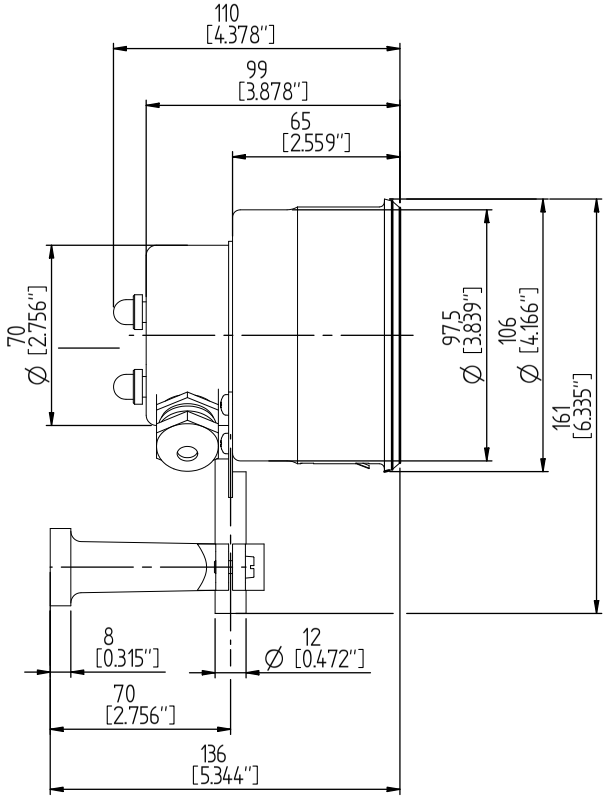
TRANSFORMER ACCESSORIES
EI100 mit Stativ / EI100 ON STAND
Maßzeichnung/DIMENSION DRAWING

MATERIAL NUMBER 10157707.0M

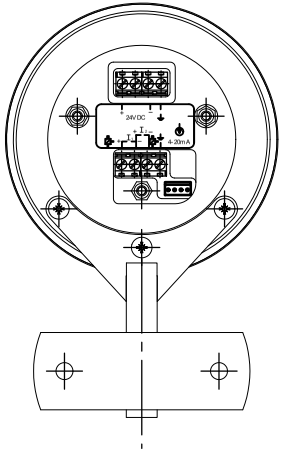
SERIAL NUMBER -

SHEET 1 / 1



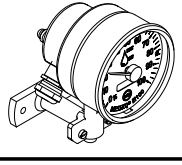


Ansicht ohne Klemmenabdeckung /
VIEW WITHOUT CLAMP COVER



Kabelverschraubung M20x1,5 nach EN 60423 /
CABLE GLAND M20x1,5 ACC. TO EN 60423

1:5



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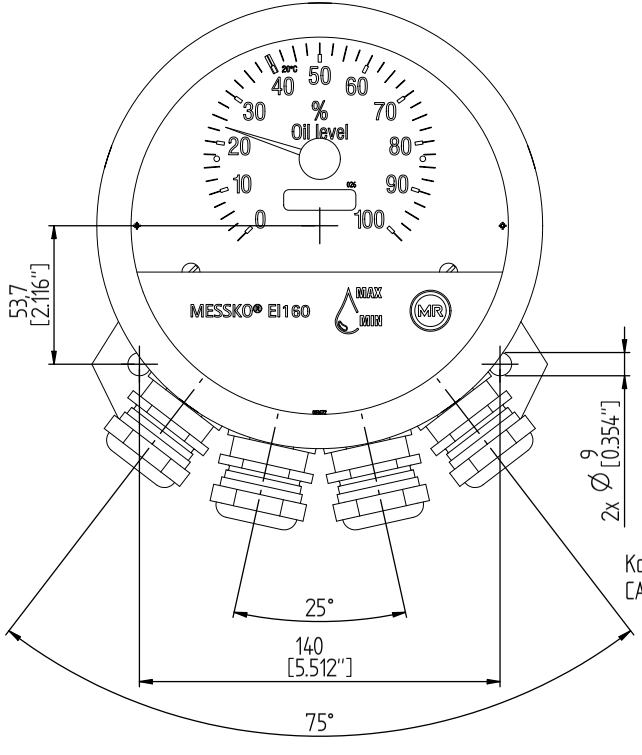
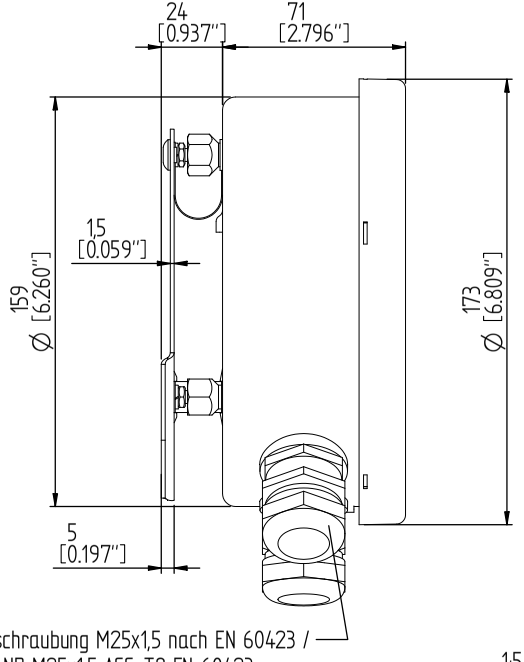
DFTR.	07.07.2021	KAFFENBERGER	SED 8057152 000 00	
CHKD.	-	-	CHANGE NO.	SCALE
STAND.	-	-	1107279	1:2

DIMENSION IN mm EXCEPT AS NOTED

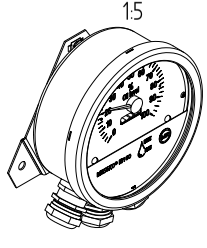
TRANSFORMER ACCESSORIES
EI 160 mit Befestigungsplatte / EI 160 WITH MOUNTING PLATE
Maßzeichnung/DIMENSION DRAWING





Kabelverschraubung M25x1,5 nach EN 60423 /
CABLE GLAND M25x1,5 ACC. TO EN 60423

1:5



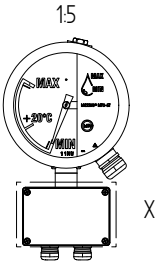
MATERIAL NUMBER	SERIAL NUMBER	SHEET
10158064 0M	-	1 / 1

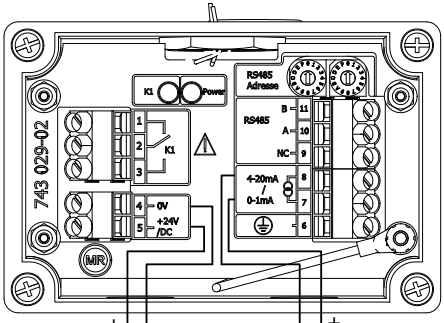
A4

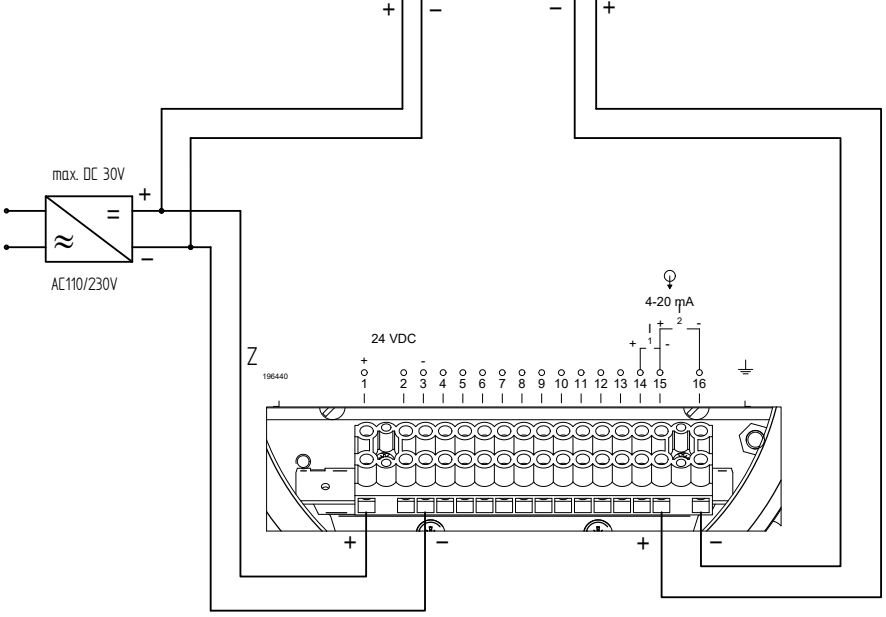
9.2 Circuit diagrams

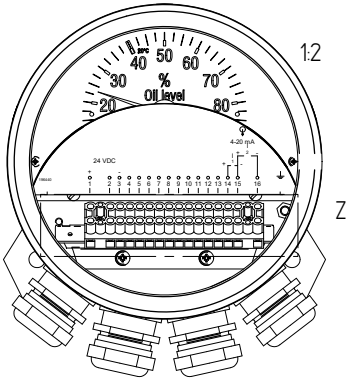
9.2 Circuit diagrams

VIEW X SHOWN WITHOUT COVER









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EHKD.	21.07.2021	REINHELT	CHANGE NO. / SCALE
STAND	-	-	1115555 / 1:1

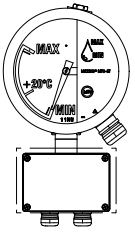
DIMENSION IN mm EXCEPT AS NOTED

TRANSFORMER ACCESSORIES
EI160 – MTO-ST160/TT OIL LEVEL INDICATOR
Verdrahtungsbeispiel / WIRING EXAMPLE

SERIAL NUMBER –
MATERIAL NUMBER 101583330M
SHEET 1 / 1
A3

VIEW X SHOWN WITHOUT COVER

1:5



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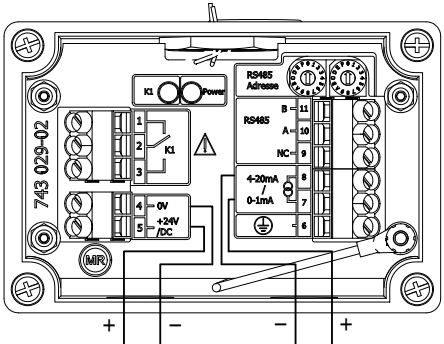
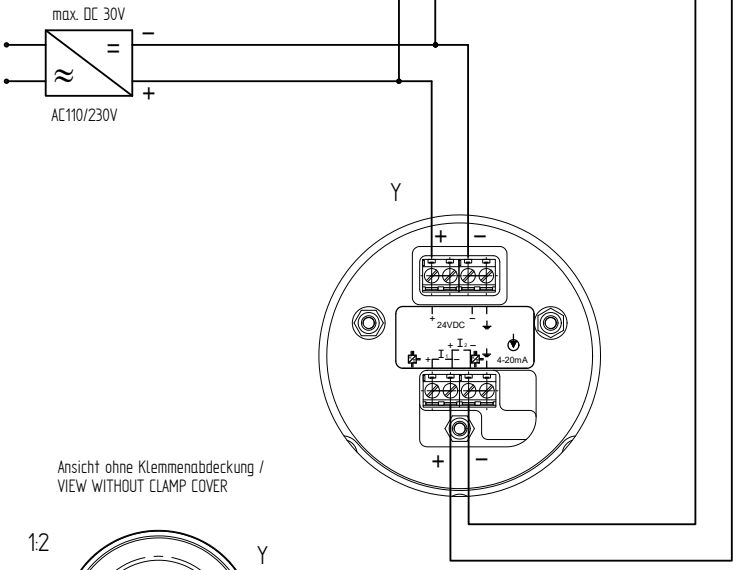
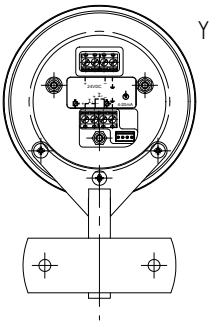




Ansicht ohne Klemmenabdeckung /
VIEW WITHOUT CLAMP COVER

1:2



	DATE	NAME	DOCUMENT NO.
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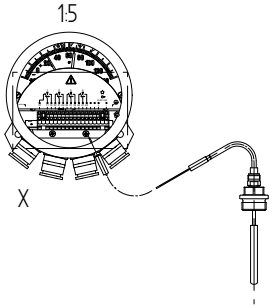
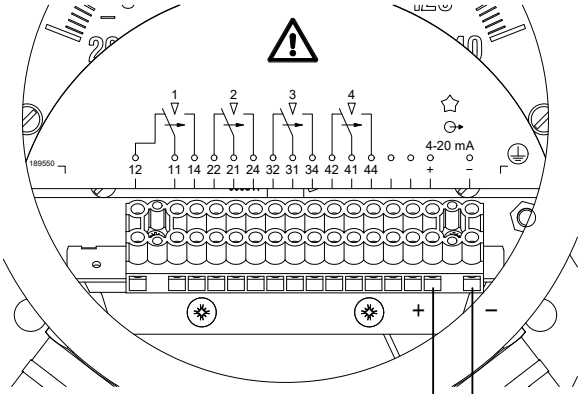
EHKD.	21.07.2021	REINHELT	CHANGE NO. / SCALE
STAND.	-	-	1115555 / 1:1

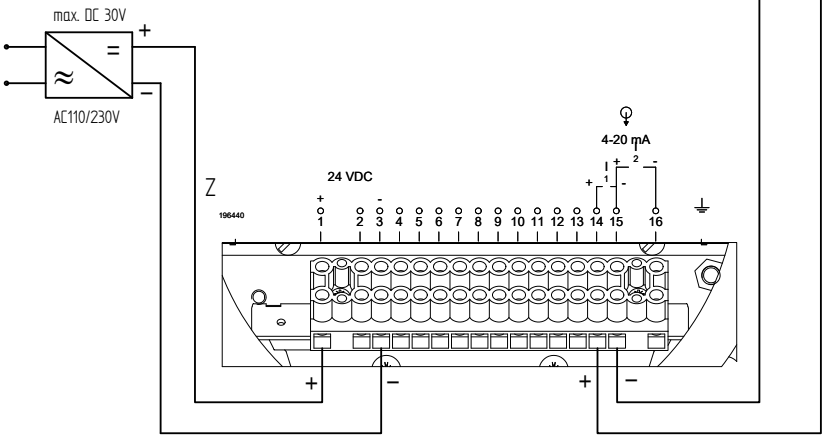
DIMENSION IN mm EXCEPT AS NOTED

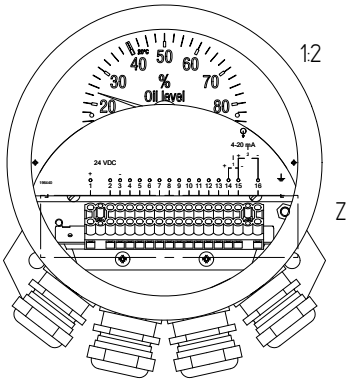
TRANSFORMER ACCESSORIES
EI100 – MTO-ST160/TT OIL LEVEL INDICATOR
Verdrahtungsbeispiel / WIRING EXAMPLE

SERIAL NUMBER –
MATERIAL NUMBER 101583430M
SHEET 1 / 1
A3









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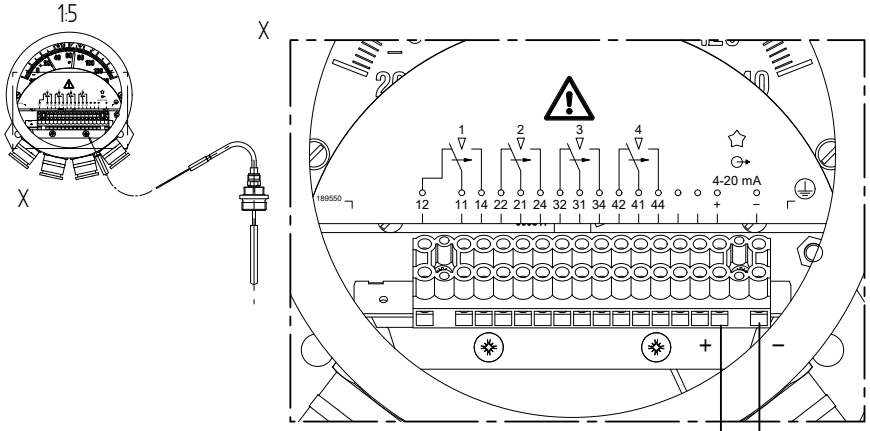
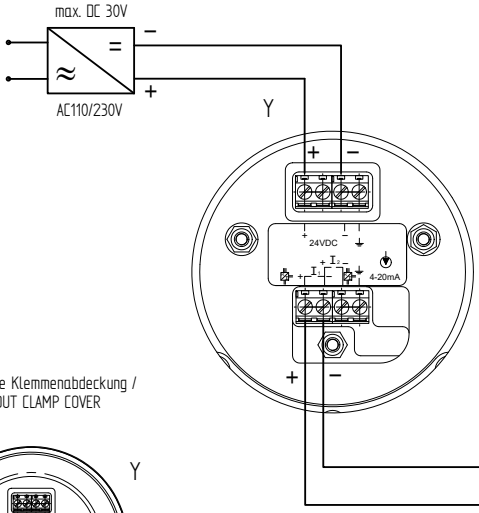
EHKD.	21.07.2021	REINHELT	CHANGE NO. / SCALE
STAND.	-	-	1115555 / 1:1

DIMENSION IN mm EXCEPT AS NOTED

TRANSFORMER ACCESSORIES
EI160 – MT-ST160SK/TT POINTER THERMOMETER OIL TEMP.
Verdrahtungsbeispiel / WIRING EXAMPLE

SERIAL NUMBER –
MATERIAL NUMBER 101592300M
SHEET 1/ 1
A3





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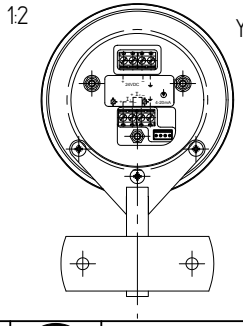
VIEW WITHOUT CLAMP COVER



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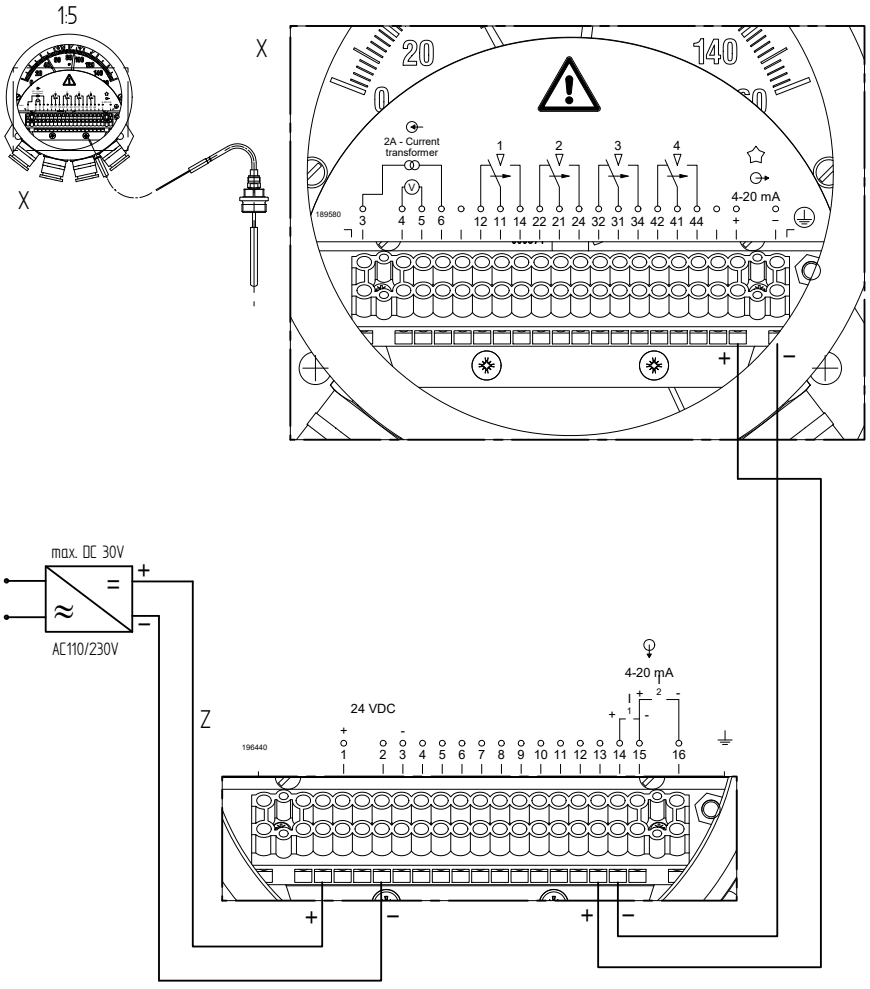
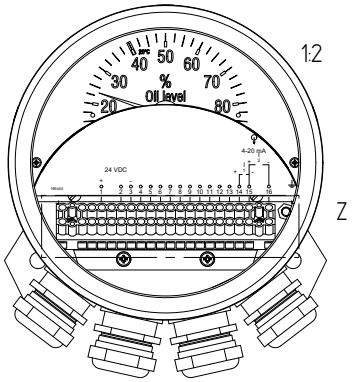
EHKD.	21.07.2021	REINELT	CHANGE NO.	SCALE
STAND.	–	–	1115555	1:1

DIMENSION IN mm EXCEPT AS NOTED

TRANSFORMER ACCESSORIES
EI100 – MT-ST160SK/TT POINTER THERMOMETER OIL TEMP.
Verdrahtungsbeispiel / WIRING EXAMPLE

SERIAL NUMBER –
MATERIAL NUMBER 101592310M
SHEET 1/ 1
A3





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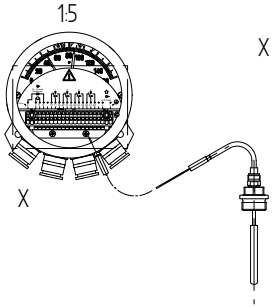
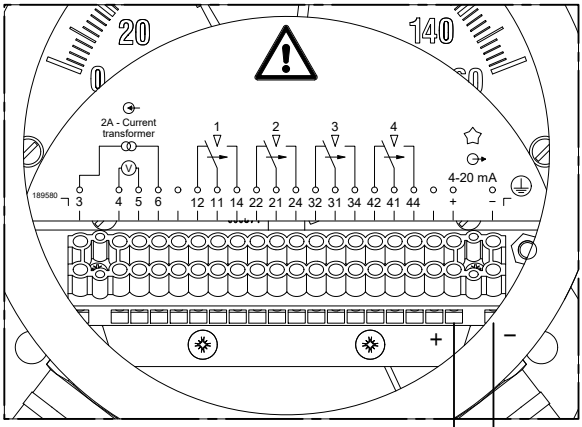
EHKD.	21.07.2021	REINELT	CHANGE NO. / SCALE
STAND.	–	–	1115555 / 1:1

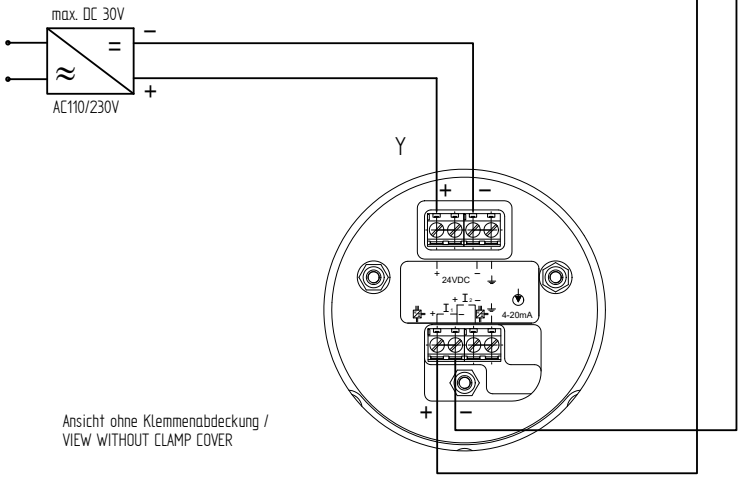
DIMENSION IN mm EXCEPT AS NOTED

TRANSFORMER ACCESSORIES
EI160 – MT-ST160W/TT POINTER THERM. WINDING TEMP.
Verdrahtungsbeispiel / WIRING EXAMPLE

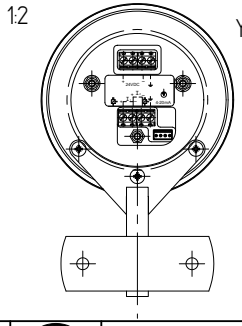
SERIAL NUMBER –
MATERIAL NUMBER 101592420M
SHEET 1 / 1
A3







Ansicht ohne Klemmenabdeckung /
VIEW WITHOUT CLAMP COVER



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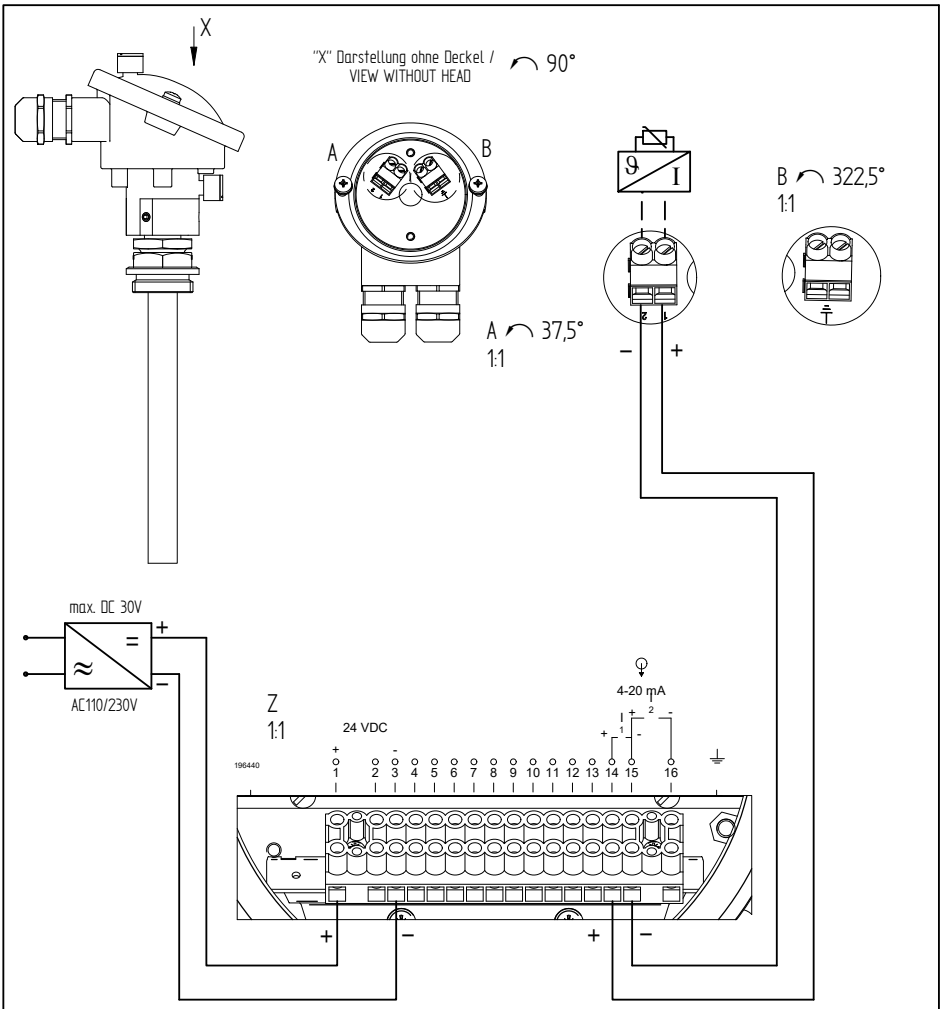
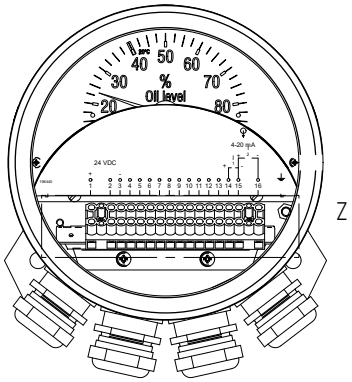
DFTR.	-	-	SED 8128674 000 01	
EHKD.	21.07.2021	REINHELT	CHANGE NO.	SCALE
STAND.	-	-	1115555	1:1

DIMENSION IN mm EXCEPT AS NOTED

TRANSFORMER ACCESSORIES
EI100 – MT-ST160W/TT POINTER THERM. WINDING TEMP.
Verdrahtungsbeispiel / WIRING EXAMPLE

SERIAL NUMBER
–
MATERIAL NUMBER 101592430M
SHEET 1/ 1
A3





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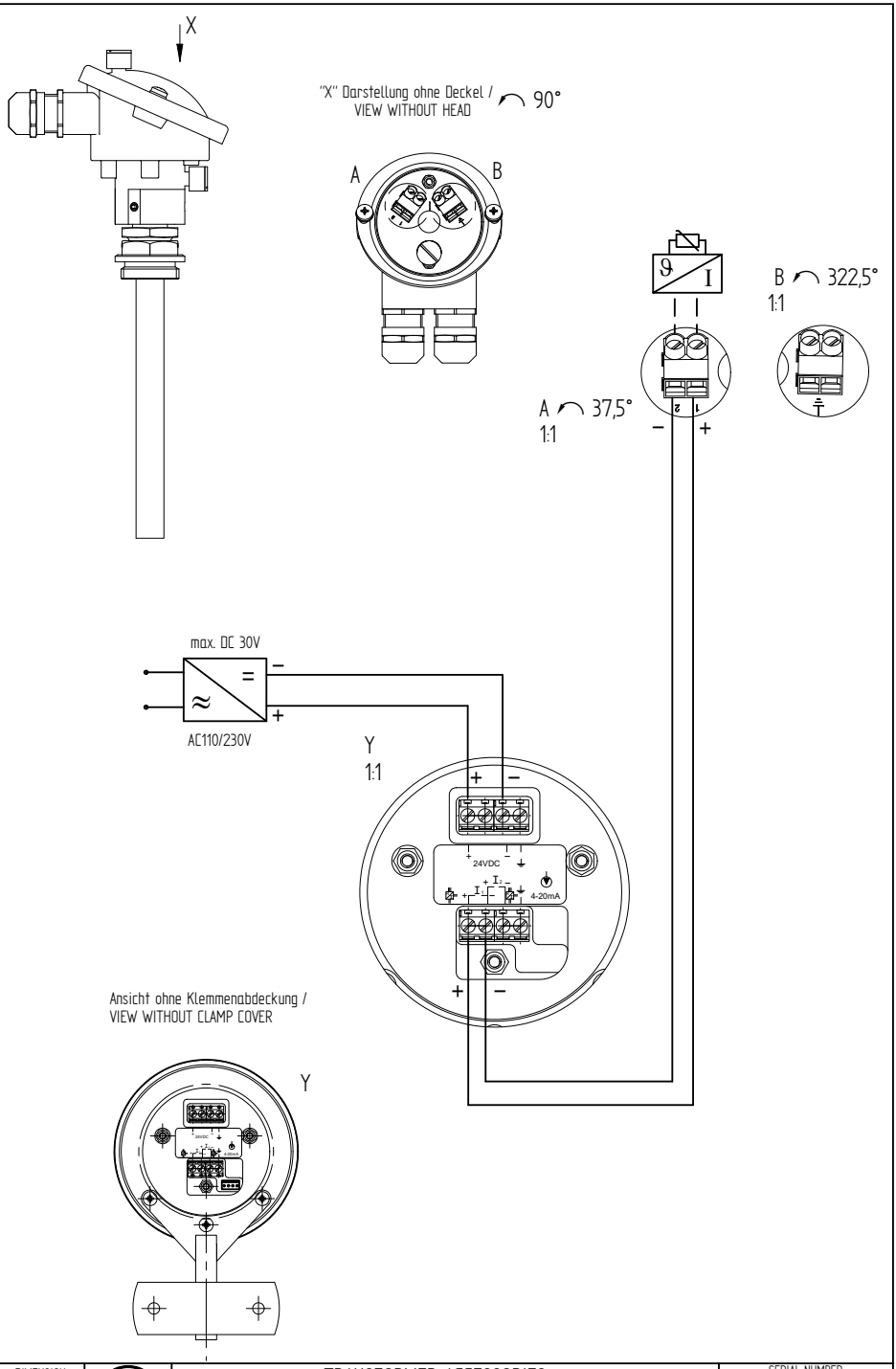
DFTR.	-	-	SED 8130948 000 01
EHKD.	21.07.2021	REINHELT	CHANGE NO. / SCALE
STAND	-	-	1115555 / 1:2

DIMENSION IN mm EXCEPT AS NOTED

TRANSFORMER ACCESSORIES
EI160 – Kombihülse TT OIL TEMP.
Verdrahtungsbeispiel / WIRING EXAMPLE

SERIAL NUMBER –
MATERIAL NUMBER 101599140M
SHEET 1 / 1
A3



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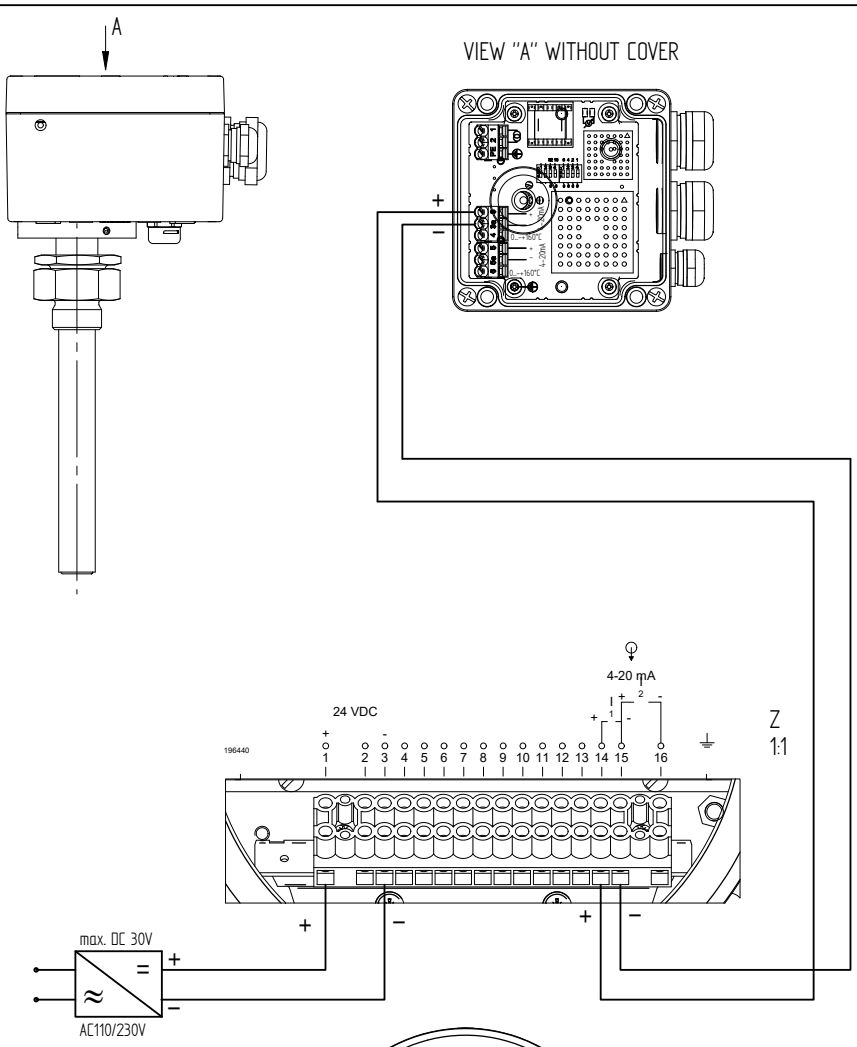
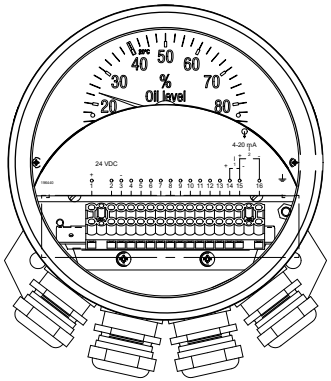
ÜFTR.	-	-	SED 8138019 000 01	
EHKD.	21.07.2021	REINHELT	CHANGE NO.	SCALE
STAND	-	-	1115555	1:2

DIMENSION IN mm EXCEPT AS NOTED

TRANSFORMER ACCESSORIES
EI100 - COMBI WELL TT OIL TEMP
Verdrahtungsbeispiel / WIRING EXAMPLE

SERIAL NUMBER
-
MATERIAL NUMBER 101599520M
SHEET 1/ 1
A3





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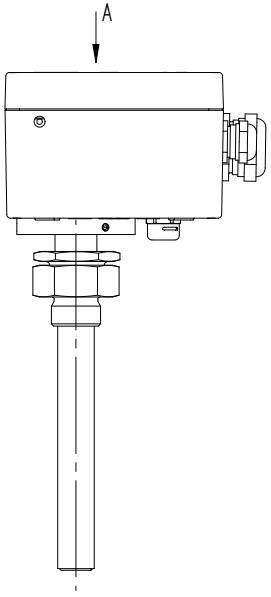
EHKD.	21.07.2021	REINHELT	CHANGE NO.	SCALE
STAND	-	-	1115555	1:2

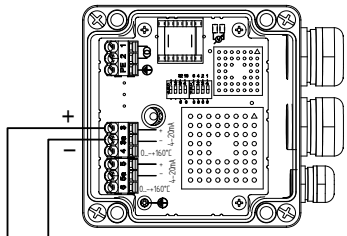
DIMENSION IN mm EXCEPT AS NOTED

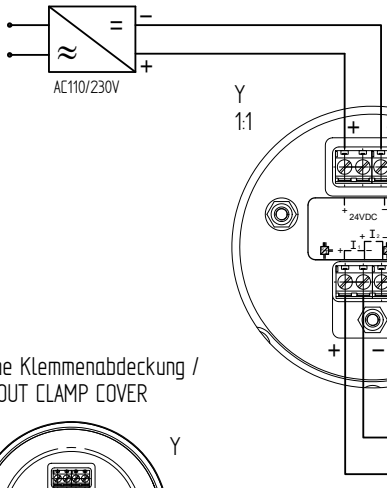
TRANSFORMER ACCESSORIES
EI160 – ZT-F2.1 Wicklung / WINDING TEMPERATURE
Verdrahtungsbeispiel / WIRING EXAMPLE

SERIAL NUMBER
–
MATERIAL NUMBER 101601070M
SHEET 1 / 1
A3

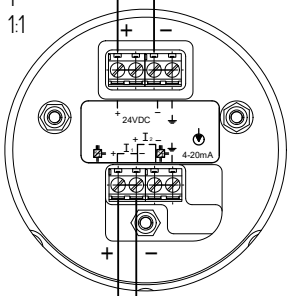


VIEW "A" WITHOUT COVER

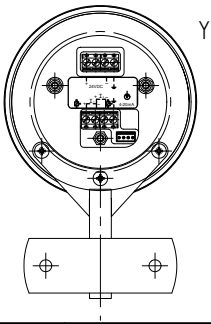




Y
1:1



Ansicht ohne Klemmenabdeckung /
VIEW WITHOUT CLAMP COVER



	DATE	NAME	DOCUMENT NO.
DFTR.	-	-	SED 8144197 000 01
EHKD.	21.07.2021	REINELT	CHANGE NO. / SCALE
STAND.	-	-	1115555 / 1:2

DIMENSION IN mm EXCEPT AS NOTED

TRANSFORMER ACCESSORIES
EI100 – ZT-F2.1 Wicklung / WINDING TEMPERATURE
Verdrahtungsbeispiel / WIRING EXAMPLE

SERIAL NUMBER –
MATERIAL NUMBER 101602630M
SHEET 1 / 1
A3

EMC

Electromagnetic compatibility

Operating temperature

Permissible temperature in the immediate surroundings of the device during operation taking ambient influences, for example due to the equipment and installation location, into consideration.

Storage temperature

Permissible temperature for storing the device in an unmounted state or in a mounted state so long as the device is not in operation.

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F0391100 - 02/23 - Maschinenfabrik Reinhausen GmbH 2023

THE POWER BEHIND POWER.