



Design/versions

This technical document contains detailed information about the technical properties of the product. To place an order, please use the MR website: <https://portal.reinhausen.com/ecosense-sensors>. More information on the product can be found at: <https://www.reinhausen.com/productdetail/sensors/ecosense-active-part>.

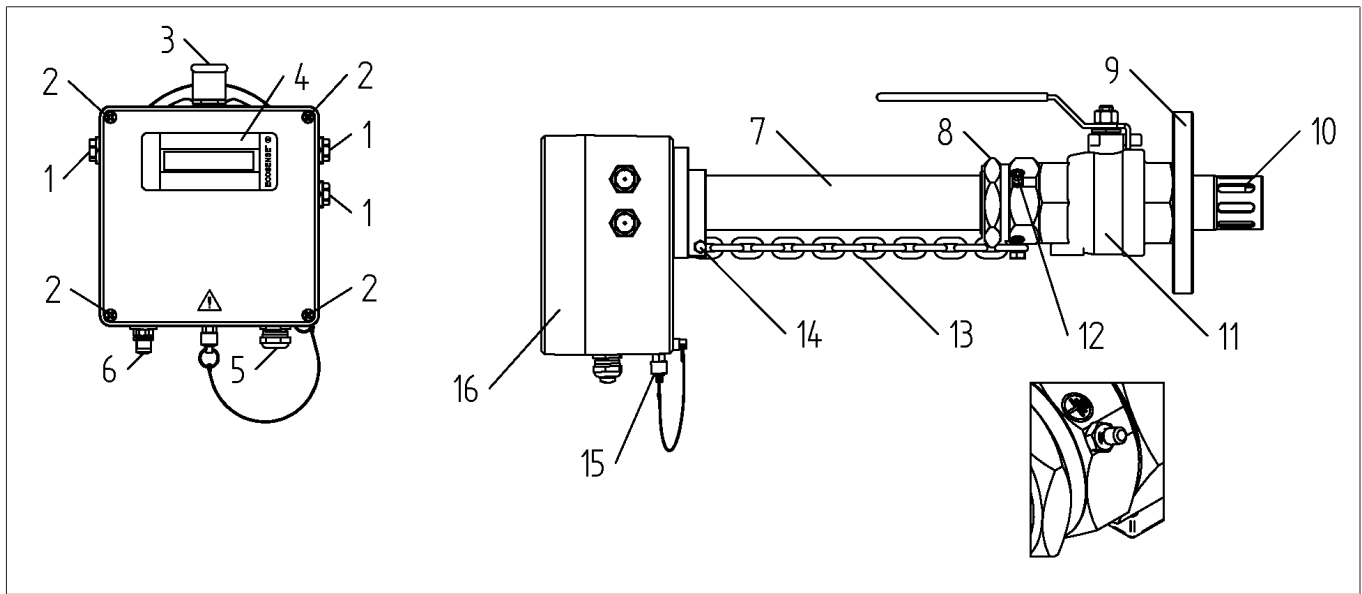


Figure 1: ECOSENSE® ACTIVE PART

Measurement components H₂, CO, moisture in oil and oil temperature (for mineral oils)

| | |
|---|--|
| 1 Ventilation | 2 Housing cover screw connection |
| 3 Ball valve locking lever | 4 Display |
| 5 Supply voltage cable screw connection (3x M20 x 1.5 WAD1 or 3x ½" NPT) | 6 Interface (5-pole) for service PC and Modbus RTU communication |
| 7 Measuring pipe (507 mm) | 8 Ball valve clamp connection |
| 9 Mounting flange any gasket: DN50 PN16 and DN80 PN16 | 10 Measuring head |
| 11 Ball valve | 12 Grounding screw |
| 13 Safety chain | 14 Fixing screw for safety chain |
| 15 Connection for venting and taking samples | 16 Housing cover |



Technical data

| Measurement | | | | | |
|------------------------|--|---|----------------------|-------------------|-----------------|
| Application | Determination of the gas concentration of fault gases as well as moisture in oil and oil temperature of mineral-based transformer insulating oil in accordance with IEC 60296:2012 / ASTM D3487-09 | | | | |
| Measured variables | H ₂ | CO | Humidity | | Oil temperature |
| | | | Relative | Absolute | |
| Display in alternation | | | | | |
| Lower detection limit | 15 ppm | 25 ppm | 3%RH | 5 ppm | -20°C |
| Upper detection limit | 2,000 ppm | 2,000 ppm | 90%RH | 2,000 ppm | +115°C |
| Measuring accuracy | ±15 % ^{1,2} oder ³ | ±20 % ^{1,2} oder ³ | ±1.8%RH ⁵ | ±2 % ⁴ | ±1 °C |
| Repetition accuracy | ±5% ² or ³ ±10 ppm | ±5% ² or ³ ±10 ppm | ±1% RH | ±1 % ⁴ | ±1 °C |
| Sensor resolution | 1 ppm | 1 ppm | 1%RH | n/a | 1°C |

¹ Determination based on IEC 60567, Appendix E

² Of the measured value

³ Depending on which value is larger

⁴ Of the saturation curve; IEC 60422

⁵ At +23°C

| Conditions of use | |
|--|---|
| Locations of use | Indoors and outdoors, all climate zones |
| Installation altitude | Up to 4,000 m above sea level |
| Offshore | Optional |
| Mounting location | Directly on the transformer tank or in the oil closed circuit cooling pipe; installation horizontal |
| Ambient temperature during operation ⁶ | -40 to +60 °C |
| Oil temperature during operation ^{6,7} | -20...+115°C |
| DGA measuring range with respect to the ambient temperature ⁶ | -20...+50°C |
| DGA measuring range with respect to the oil temperature ^{6,7} | +10...+80°C |
| Ambient humidity | 0...100%RH |
| Ambient temperature storage/transport | -40...+80°C |

⁶ Please contact MR to check the use in case of extreme conditions

⁷ At the point of measurement

| Device properties | |
|---------------------------|--|
| Mechanical connection | Via ball valve and configurable flange DN50 or DN80; with safety chain for safe installation and removal |
| Measuring pipe length | Measuring pipe: (507 mm) |
| Oil extraction connection | Luer lock socket on the device; adapter set for safe and clean oil extraction |
| Operation | VFD display (suitable for use in daylight) for displaying measured values and messages in alternation |
| Materials used | Stainless steel and aluminum; All external parts and parts in contact with oil are weather-resistant, resistant to transformer oil and UV-resistant |
| Color (terminal box) | RAL 7035 |
| Vacuum resistance | 5 Pa for 48 hours |
| Pressure resistance | max. 400 kPa |
| Degree of protection | IP66 |
| Dimensions | 657 x 218 x 264 mm |



| Device properties | |
|--|--|
| Device weight | Approx. 14 kg (without ball valve / flange / safety chain) |
| Ball valve weight | Approx. 6 kg (including flange and safety chain) |
| Electrical connection | |
| Voltage supply | 95...280 V AC, 50/60 Hz or 95...280 V DC (protected against polarity reversal) |
| Power consumption | <13 W |
| Overvoltage category | III |
| Connection terminals | Voltage supply |
| Cable gland | 3 x M20 x 1.5 or 3 x ½" NPT; 8...15 mm lead diameter |
| Interfaces | |
| Service interface | 5-pole socket (Molex) for communication via Modbus RTU and parameterization via MSET parameterization software |
| MESSKO® MSET parameterization software | |
| Download | MR Reinhausen Website http://www.reinhausen.com or MR Reinhausen customer portal: https://portal.reinhausen.com |
| Operating system | From Microsoft Windows 10 |
| Measured value display and evaluation | Display of the current measured values and device information; Event database with time stamp (date and time); Graphic display and evaluation of the temporal progression of the measured values; Export of the measured values (CSV file) or settings of a protocol (PDF file) |
| Parameterization | Configuration of the parameters for commissioning, communication and ongoing operation |
| Field calibration | Setting the time stamp of the oil sample extraction; Entry of the reference values in accordance with the laboratory report |
| Service | Reading out the internal device service database for further analysis by MR experts |
| Mechanical tests | |
| Vibration | 10–150 Hz with 2g, 2 h (IEC 60068-2-6) |
| Seismic event | 2–10 Hz, 22.5 mm, 1 h (IEC 60068-2-57) |
| Shock | 10g, 10 ms (IEC 60068-2-27) |



Dimensional drawings

For dimensional drawings, refer to the following pages.

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| DATE | NAME | DOCUMENT NO. |
|-------------------|---------|--------------------|
| DFTR. 11.08.2022 | THIELEK | SED 8947473 000 00 |
| CHKD. 11.08.2022 | REHNELT | CHANGE NO. SCALE |
| STAND. 11.08.2022 | KLEYN | 116752 1:2 |

DIMENSION
 IN mm
 EXCEPT AS
 NOTED



TRANSFORMER ACCESSORIES
 ECOSENSE ACTIVE PART
 Maßzeichnung/DIMENSION DRAWING

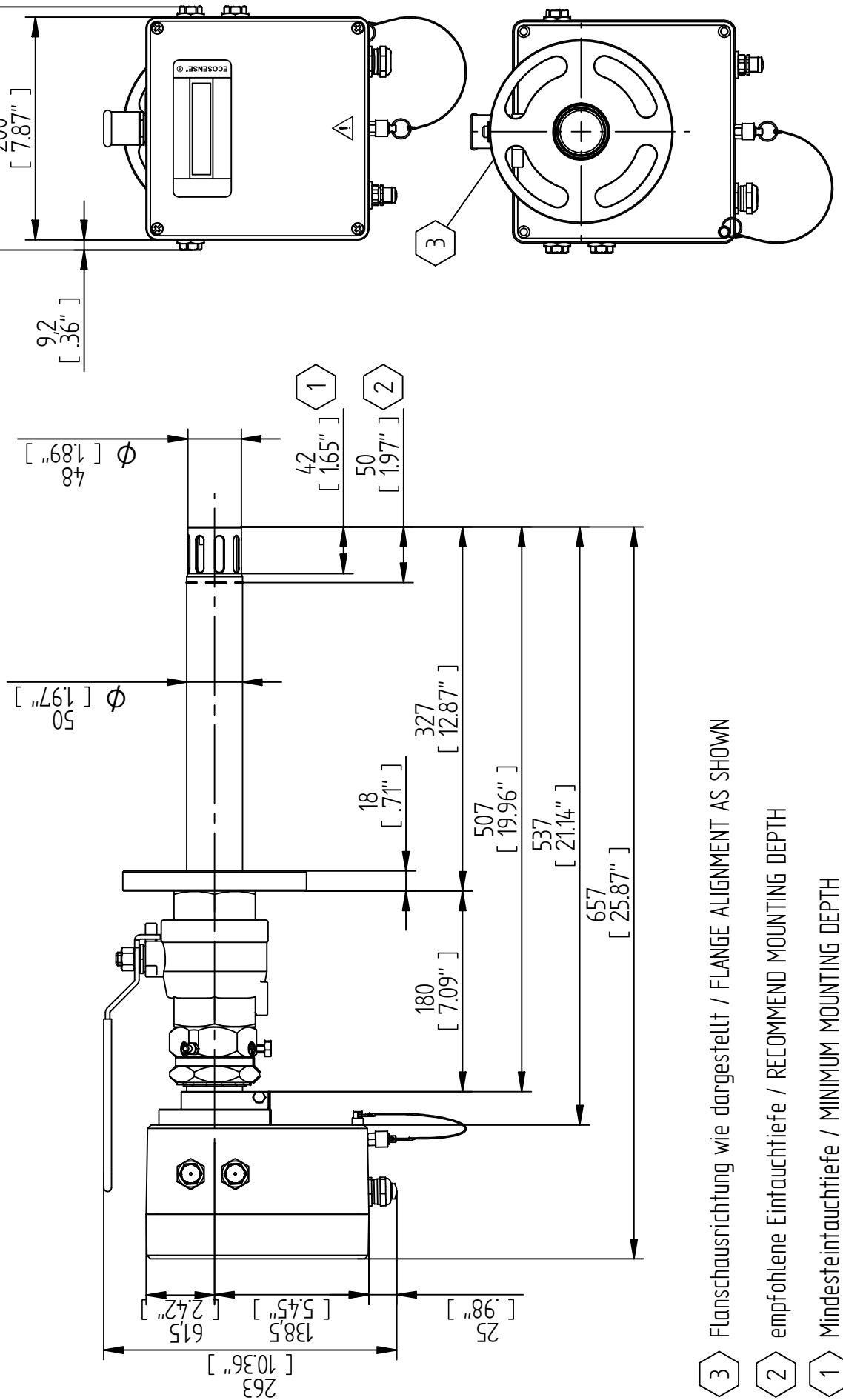
SERIAL NUMBER

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MATERIAL NUMBER
 101719160M

SHEET
 1 / 3

1:5



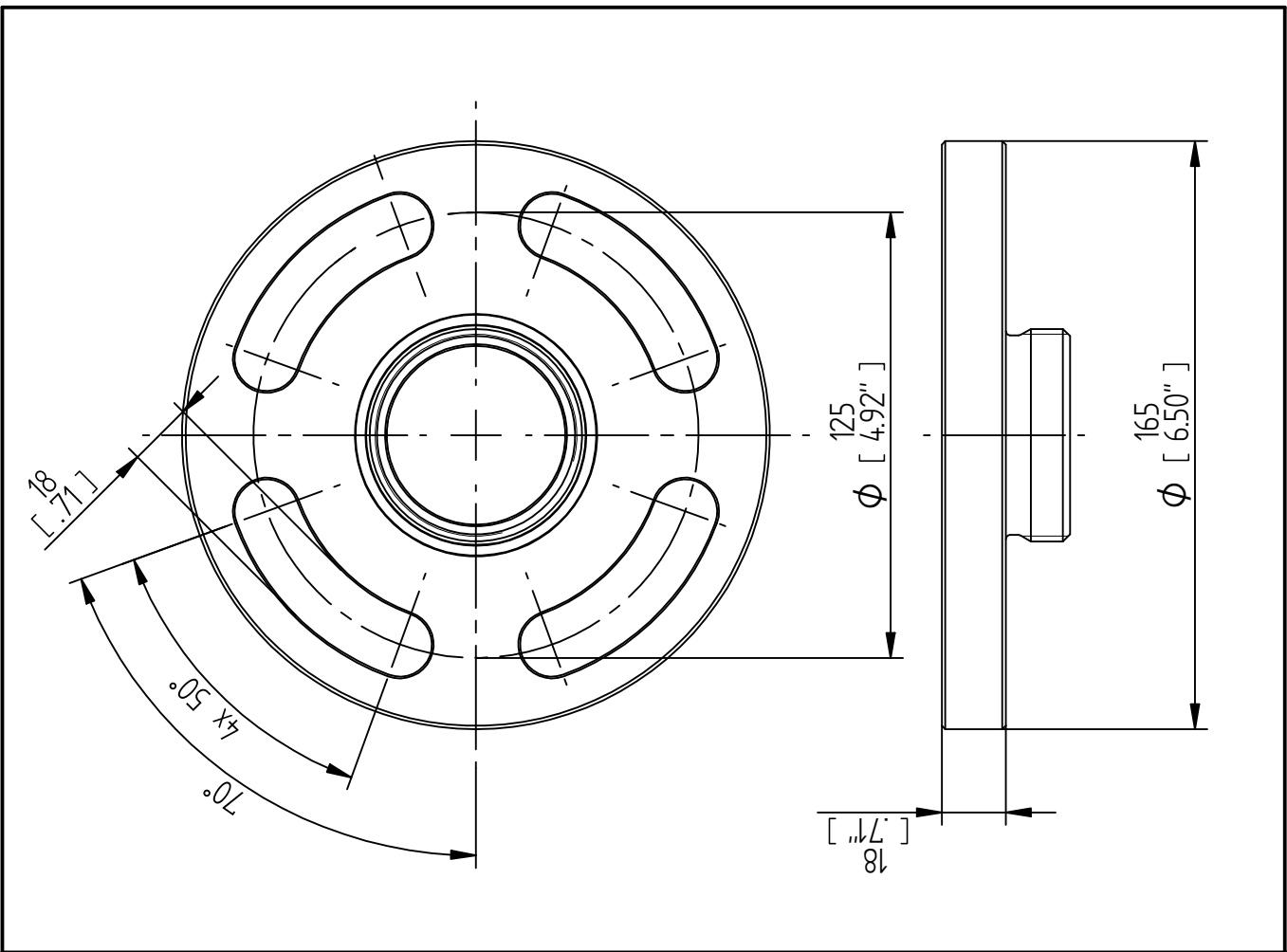
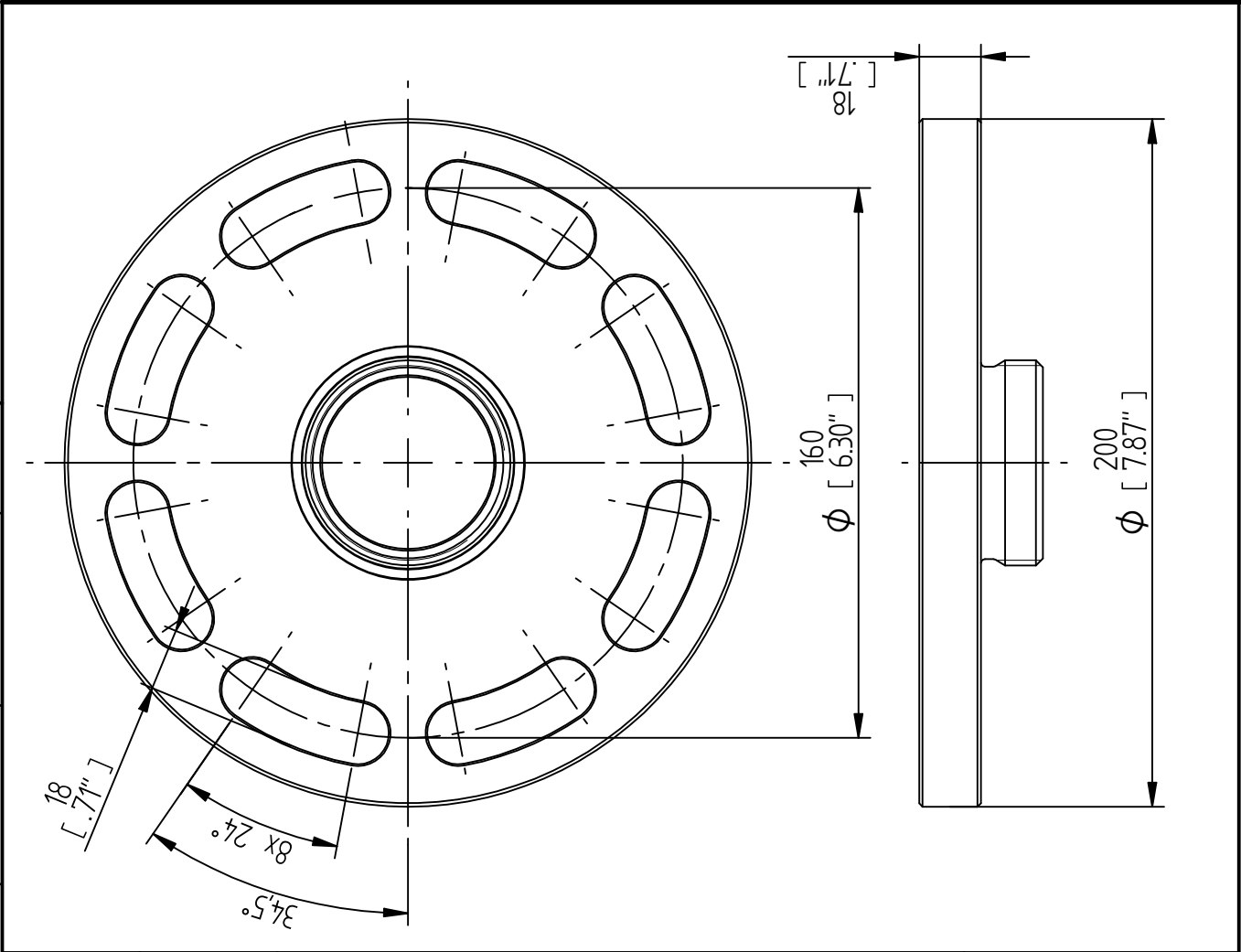
3 Flanschausrichtung wie dargestellt / FLANGE ALIGNMENT AS SHOWN

2 empfohlene Eintauchtiefe / RECOMMEND MOUNTING DEPTH

1 Mindesteintauchtiefe / MINIMUM MOUNTING DEPTH

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DIMENSION
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TRANSFORMER ACCESSORIES
 ECOSENSE ACTIVE PART
 Maßzeichnung/DIMENSION DRAWING

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| MATERIAL NUMBER | SHEET |
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DIMENSION
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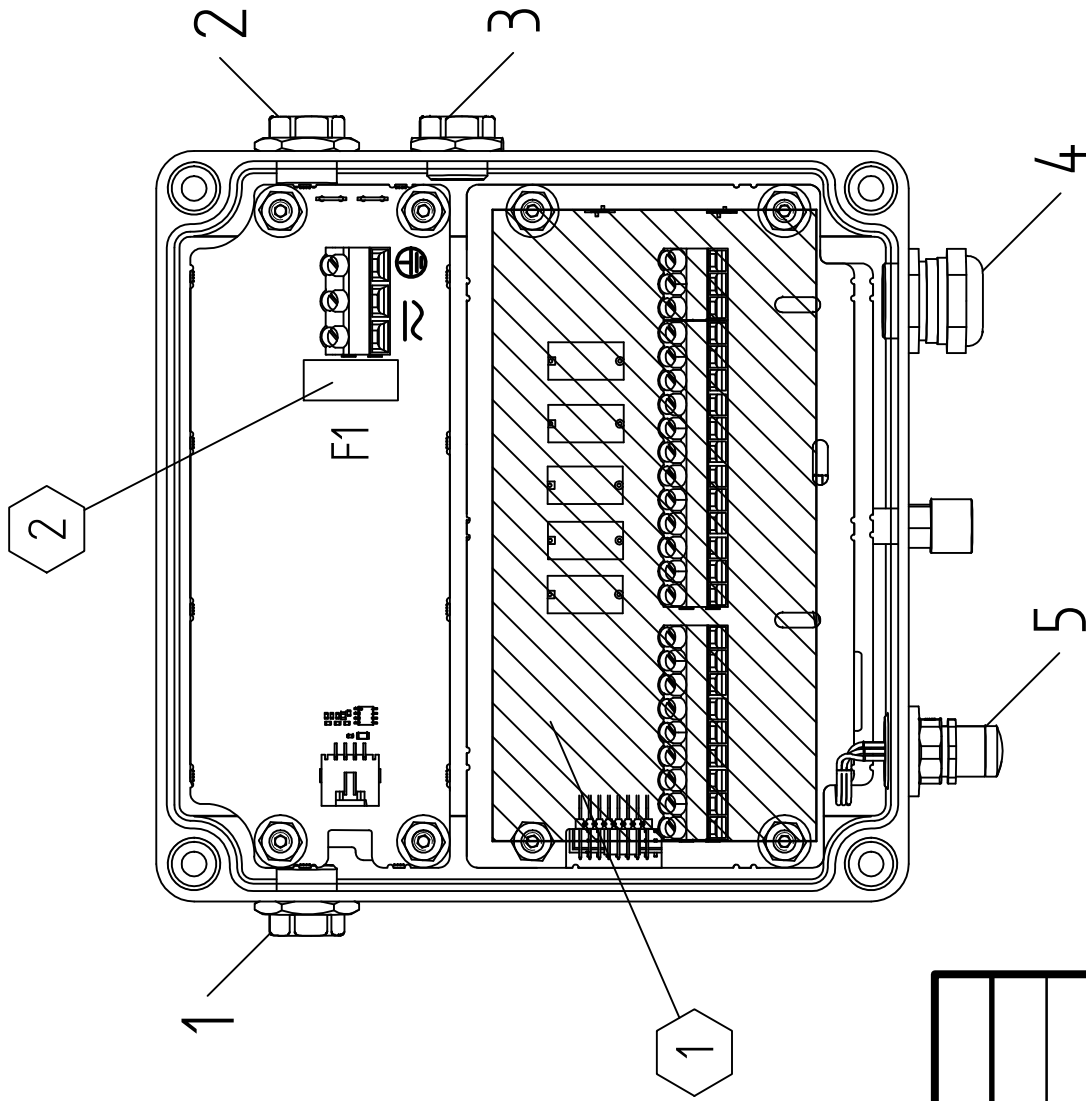
TRANSFORMER ACCESSORIES
 ECOSENSE ACTIVE PART
 Maßzeichnung/DIMENSION DRAWING

SERIAL NUMBER

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MATERIAL NUMBER
 101719160M

SHEET
 3 / 3



- 1 ohne Funktion / WITHOUT FUNCTION
- 2 Schmelzsicherung / INERT FUSE: 500 V, 500 mA

| Pos./POS. | Beschreibung/DISCRPTION |
|-----------|---|
| 1 | Belüftung / VENTILATION |
| 2 | Belüftung / VENTILATION |
| 3 | Belüftung / VENTILATION |
| 4 | Kabelverschraubung / CABLE GLAND: M20x1,5 |
| 5 | Schnittstelle / INTERFACE: M12x1 MODBUS RTU |

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- 08/22 - Maschinenfabrik Reinhausen GmbH 2022

THE POWER BEHIND POWER.

