Product Information

ESR Series
Strain Sensors
**Dimensions**

**ESR 125, ESR 225**

1. Adhesive surface
2. 8-pin M12 flange socket
3. Velcro fastener for attachment
4. Adhesive gap completely filled with Plexus MA300 two-component adhesive
5. Adjustment mark
6. Ground connection
7. Insert cotter here (ESR 125)

**ESR 325, ESR 425**

1. Screw-fastening surface (ESR 325), for magnet (ESR 425)
2. 8-pin M12 flange socket
3. Adjustment mark
4. Ground connection

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**Required mating dimensions for the ESR 125**

**Required mating dimensions for the ESR 225**

**Required mating dimensions for the ESR 325**

**Required mating dimensions for the ESR 425**

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**Product Information**

**ESR 125, ESR 225**

- Dimensions: 337 (ESR 125), 258 (ESR 225), 128.7 (ESR 225), 337 (ESR 125)
- Product Information ESR 08/2021

**ESR 325, ESR 425**

- Dimensions: 246, 128.7, 77
- Product Information ESR 08/2021
Specifications | ESR 125 | ESR 225 | ESR 325 | ESR 425
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Measuring arm material* | CFRP, GFRP, steel, aluminum | | | |
Measuring arm length | 200 mm | | | |
**Strain measurement**
- Measuring step | 0.025 µe | | | |
- Measuring range | ±5000 µe | | | |
- Permissible mechanical range of operation | ±17 500 µe | | | |
- Accuracy (of the measurement) | < ±0.2 % | | | |
- Linearity (of the measurement) | < ±0.2 % | | | |
- Hysteresis | < 2 µe | | | |
- Repeatability | < 1 µe | | | |
**Temperature measurement**
- Measuring step | 0.2 K | | | |
- Measuring range | –40 °C to +100 °C | | | |
- Offset for the ambient temperature | + 10 K | | | |
- Accuracy | ±2 K | | | |
**Electrical data**
- Supply voltage | DC 3.6 V to 14 V | | | |
- Power consumption | 3.6 V ≤ 0.6 W, 14 V ≤ 0.7 W | | | |
- Output signal | EnDat 2.2 | | | |
- Max. cable length (with HEIDENHAIN cable) | 100 m | | | |
- Clock frequency | ≤ 8 MHz | | | |
- Sampling rate | ≤ 30 kHz | | | |
- Connection | 8-pin M12 flange socket (male) | | | |
**Mechanical data**
- Type of mounting | Bonded | Bonded and screw-fastened | Screw-fastened | Magnetic |
- Operating temperature | –40 °C to 100 °C | –40 °C to 70 °C | | |
- Protection | IP68 | | | |
- Vibration 55 Hz to 2000 Hz | ≤ 200 m/s² (EN 60068-2-6) | | | |
- Shock 11 ms | ≤ 300 m/s² (EN 60068-2-27) | | | |
- Mass | 0.65 kg | | | |

* Select when ordering

<table>
<thead>
<tr>
<th>Material</th>
<th>Thermal coefficient of expansion</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFRP</td>
<td>(1 \cdot 10^{-6} \text{K}^{-1})</td>
</tr>
<tr>
<td>GFRP</td>
<td>(8 \cdot 10^{-6} \text{K}^{-1})</td>
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<tr>
<td>Structural steel</td>
<td>(12 \cdot 10^{-6} \text{K}^{-1})</td>
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<tr>
<td>Austenitic steel</td>
<td>(16 \cdot 10^{-6} \text{K}^{-1})</td>
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<tr>
<td>Aluminum</td>
<td>(23 \cdot 10^{-6} \text{K}^{-1})</td>
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This Product Information document supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information document edition valid when the order is placed.

**Electrical connection**

**Pin layout**

*8-pin M12 coupling*

<table>
<thead>
<tr>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<td>UP</td>
<td>Sensor</td>
<td>0 V</td>
<td>Sensor</td>
<td>0 V</td>
<td>DATA</td>
</tr>
<tr>
<td>Serial data transmission</td>
<td>DATA</td>
<td>CLOCK</td>
<td>CLOCK</td>
<td></td>
<td></td>
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</table>

**PUR connecting cables**

*8-pin: \(2 \times (2 \times 0.09 \text{mm}^2) + 2 \times (2 \times 0.16 \text{mm}^2)\); \(A_P = 2 \times 0.16 \text{mm}^2\)*

- **Cable diameter**: 6 mm
- **With connector (female) and coupling (male)**: 1036372-xx
- **With connector (female) and 15-pin D-sub connector (male), for IK 215, PWM 20, EIB 74x, etc.**: 1036526-xx
- **With connector (female) and unassembled cable end**: 1129581-xx

**Electrical connection**

**Power supply**

**Serial data transmission**

**Cable shield**: connected to housing; \(U_P\) = Power supply voltage

**Sensor**: The sense line is connected in the encoder with the corresponding power line.

Vacant pins or wires must not be used!

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