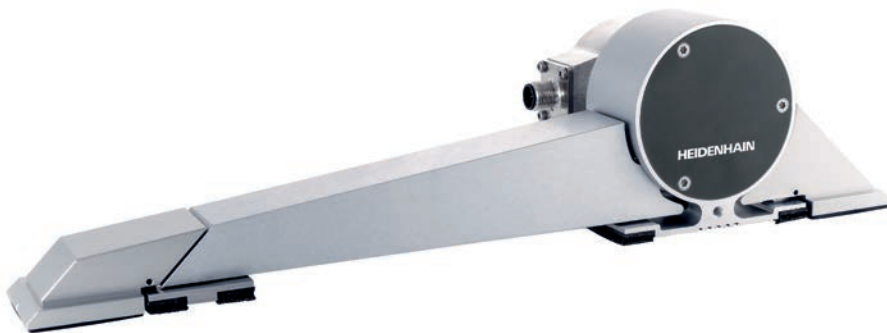




# HEIDENHAIN

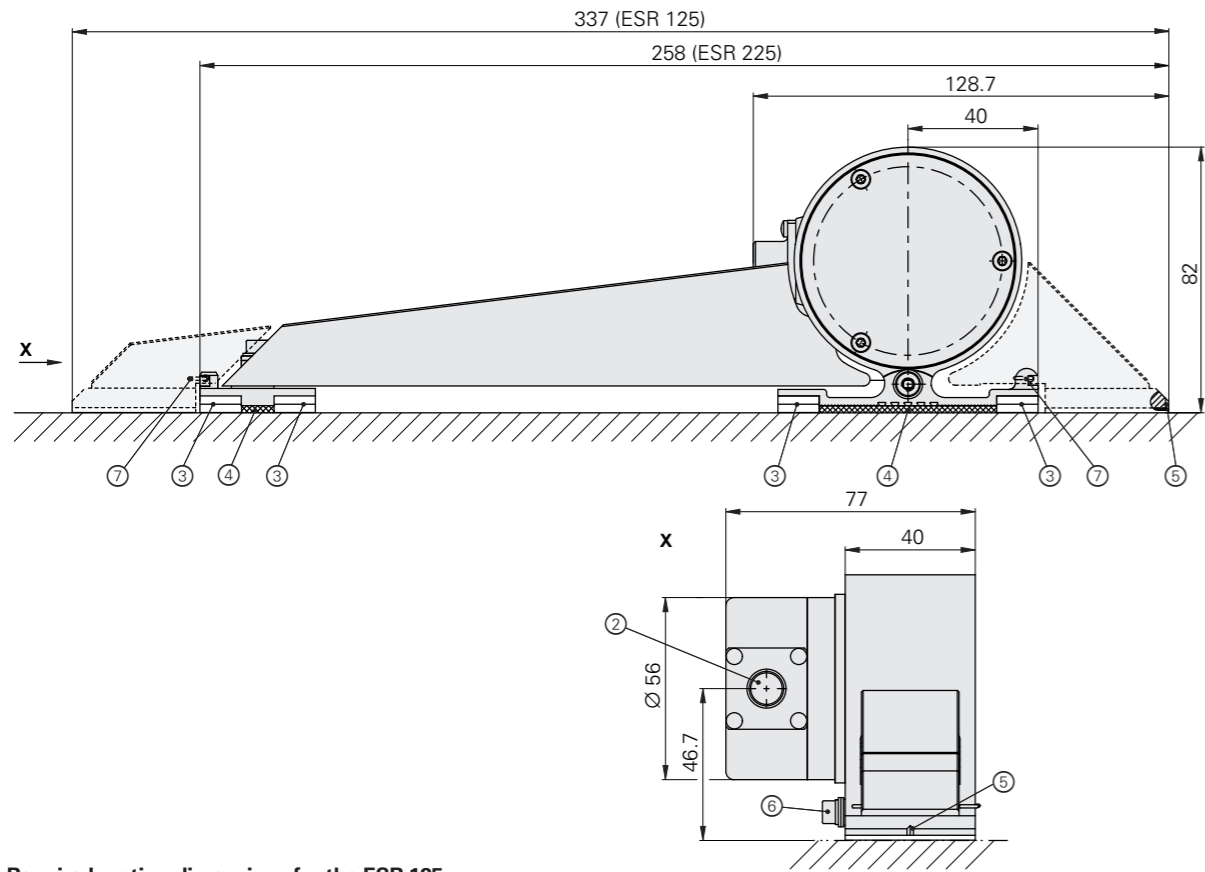
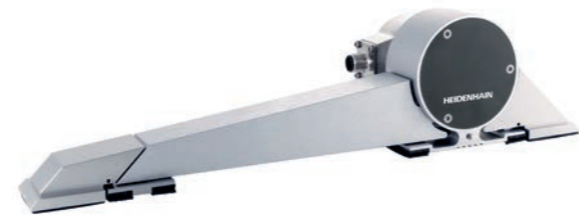


Product Information

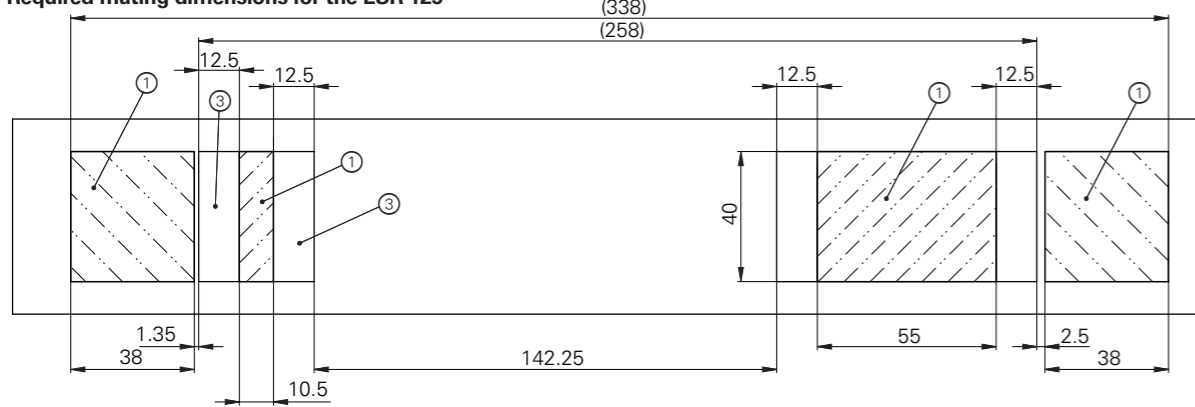
## **ESR Series** Strain Sensors

# Dimensions

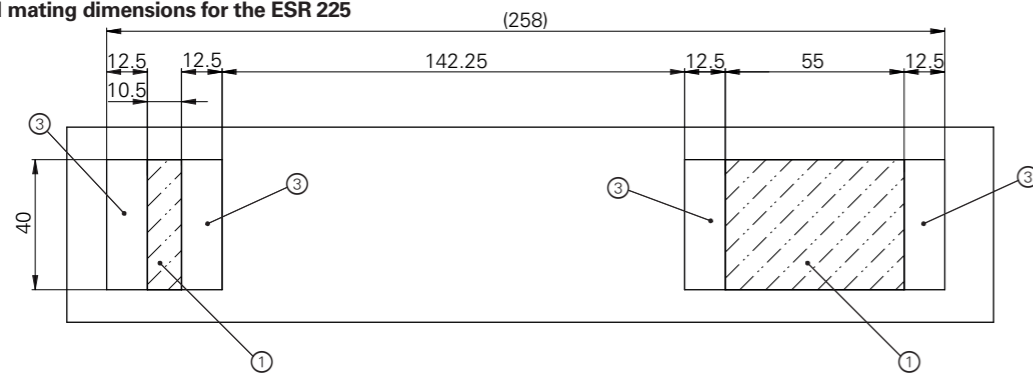
ESR 125, ESR 225



Required mating dimensions for the ESR 125



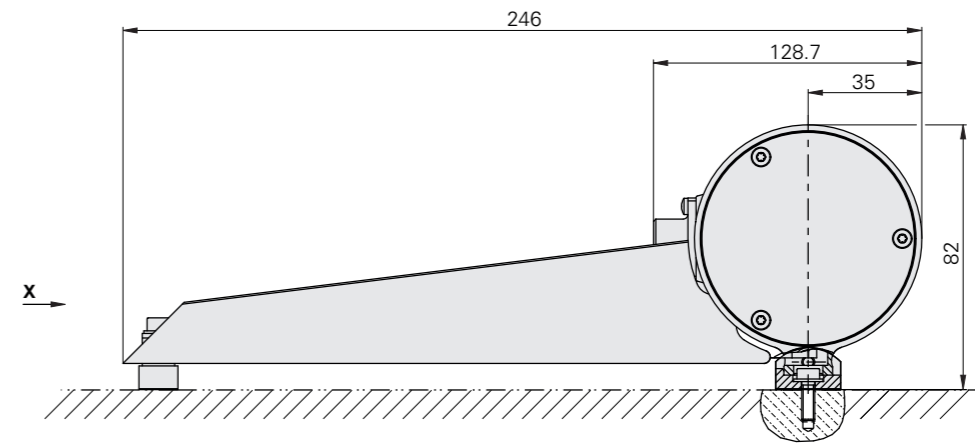
Required mating dimensions for the ESR 225



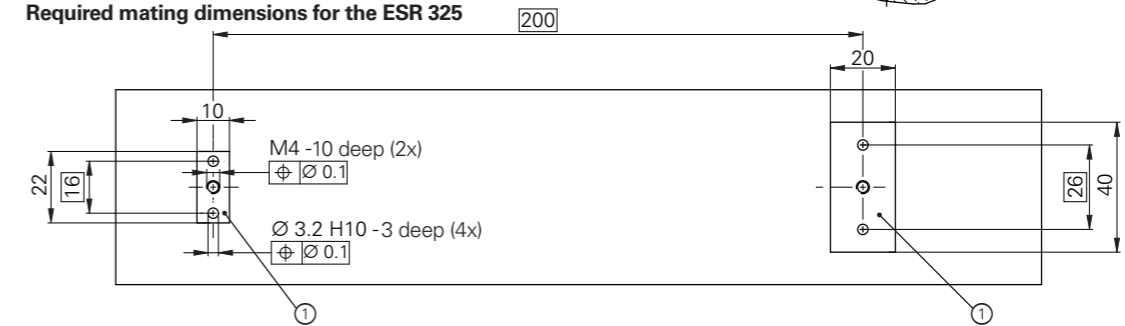
- 1 = Adhesive surface
- 2 = 8-pin M12 flange socket
- 3 = Velcro fastener for attachment
- 4 = Adhesive gap completely filled with Plexus MA300 two-component adhesive
- 5 = Adjustment mark
- 6 = Ground connection
- 7 = Insert cotter here (ESR 125)

mm  
 Tolerancing ISO 8015  
 ISO 2768 - m H  
 ≤ 6 mm: ±0.2 mm

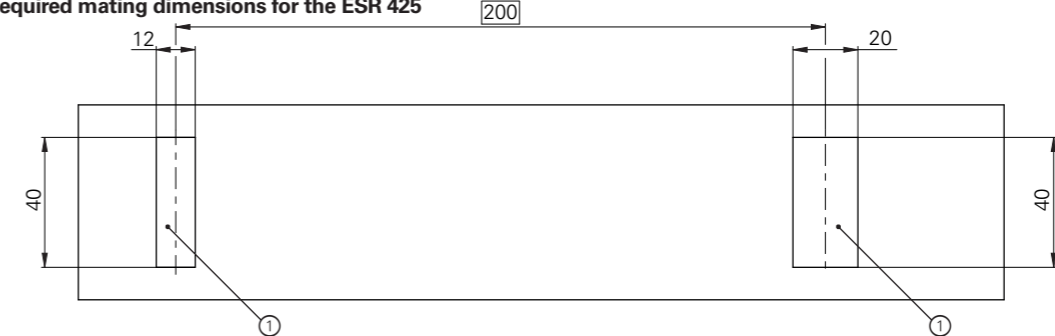
ESR 325, ESR 425



Required mating dimensions for the ESR 325



Required mating dimensions for the ESR 425



- 1 = Screw-fastening surface (ESR 325), for magnet (ESR 425)
  - 2 = 8-pin M12 flange socket
  - 3 = Adjustment mark
  - 4 = Ground connection
- Product Information ESR 08/2021

mm  
 Tolerancing ISO 8015  
 ISO 2768 - m H  
 ≤ 6 mm: ±0.2 mm


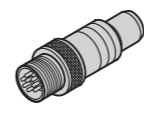



Specifications	ESR 125	ESR 225	ESR 325	ESR 425
Measuring arm material*	CFRP, GFRP, steel, aluminum <sup>1)</sup>			
Measuring arm length	200 mm			
<b>Strain measurement</b>				
Measuring step	0.025 µε			
Measuring range	±5000 µε			
Permissible mechanical range of operation	±17 500 µε			
Accuracy (of the measurement)	< ±0.2 %			
Linearity (of the measurement)	< ±0.2 %			
Hysteresis	< 2 µε			
Repeatability	< 1 µε			
<b>Temperature measurement</b>				
Measuring step	0.2 K			
Measuring range	-40 °C to +100 °C			
Offset for the ambient temperature	+10 K			
Accuracy	±2 K			
<b>Electrical data</b>				
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	100 m (with HEIDENHAIN cable)			
Clock frequency	≤ 8 MHz			
Sampling rate	≤ 30 kHz			
Connection	8-pin M12 flange socket (male)			
<b>Mechanical data</b>				
Type of mounting	Bonded	Bonded and screw-fastened	Screw-fastened	Magnetic
Operating temperature	-40 °C to 100 °C			-40 °C to 70 °C
Protection	IP66			
Vibration 55 Hz to 2000 Hz Shock 11 ms	≤ 200 m/s <sup>2</sup> (EN 60068-2-6) ≤ 300 m/s <sup>2</sup> (EN 60068-2-27)	< 50 m/s <sup>2</sup> < 100 m/s <sup>2</sup>		< 20 m/s <sup>2</sup> < 40 m/s <sup>2</sup>
Mass	0.65 kg			

\* Select when ordering

<sup>1)</sup> Thermal coefficient of expansion  
CFRP: ≈ 1 · 10<sup>-6</sup> K<sup>-1</sup>  
GFRP: ≈ 8 · 10<sup>-6</sup> K<sup>-1</sup>  
Structural steel: ≈ 12 · 10<sup>-6</sup> K<sup>-1</sup>  
Austenitic steel: ≈ 16 · 10<sup>-6</sup> K<sup>-1</sup>  
Aluminum: ≈ 23 · 10<sup>-6</sup> K<sup>-1</sup>




## Electrical connection

### Pin layout

8-pin M12 coupling								
								
	Power supply				Serial data transmission			
	<b>8</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>7</b>	<b>6</b>
	<b>U<sub>P</sub></b>	<b>Sensor U<sub>P</sub></b>	<b>0V</b>	<b>Sensor 0V</b>	<b>DATA</b>	<b>DATA</b>	<b>CLOCK</b>	<b>CLOCK</b>
	Brown/Green	Blue	White/Green	White	Gray	Pink	Violet	Yellow

**Cable shield** connected to housing; **U<sub>P</sub>** = 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!

PUR connecting cables	8-pin: 2 x (2 x 0.09 mm <sup>2</sup> ) + 2 x (2 x 0.16 mm <sup>2</sup> ); A <sub>P</sub> = 2 x 0.16 mm <sup>2</sup>	
	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

A<sub>P</sub>: Cross section of power supply lines

## HEIDENHAIN

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