



HEIDENHAIN



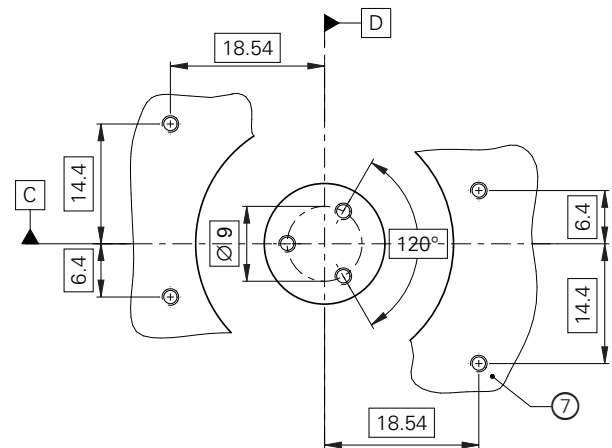
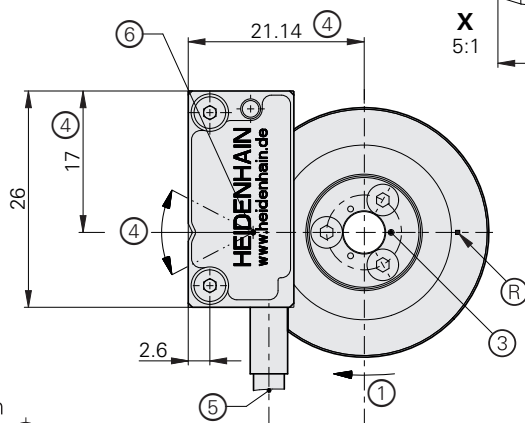
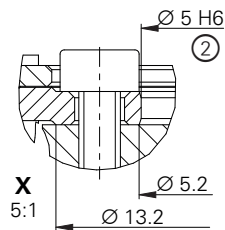
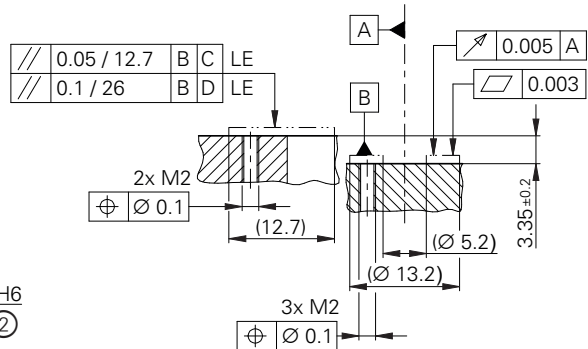
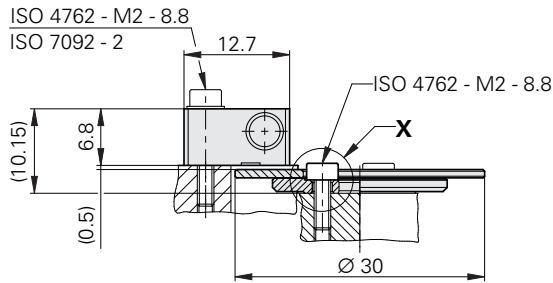
Product Information

ERO 2000 Series

Angle Encoders Without
Integral Bearing

ERO 2000 series

- High resolution and accuracy
- Low mass and low mass moment of inertia
- Consisting of AK scanning head and TKN circular scale



mm

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

- ▣ = Bearing
- Ⓜ = Reference mark
- 1 = Positive direction of rotation
- 2 = Centering collar
- 3 = Marks for circular scale centering (3x 120°)
- 4 = Fine adjustment of the scanning head to obtain optimum incremental signals
- 5 = Alternative cable outlet and connector are available
- 6 = Optical centering point
- 7 = For centering of circular scale with two scanning heads

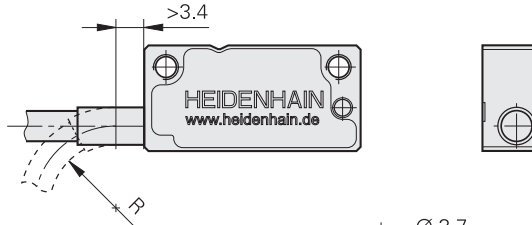
LE = Line element (ISO 1101: 2008)

Cable outlets

Cable outlet on the right



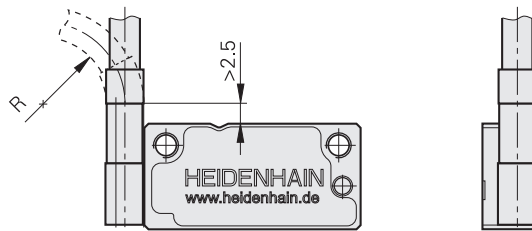
Cable outlet on the left



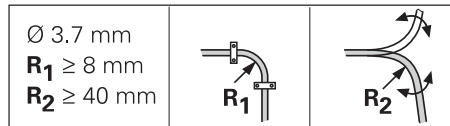
Cable outlet, angled on the right (0°)



Cable outlet, angled on the left (0°)

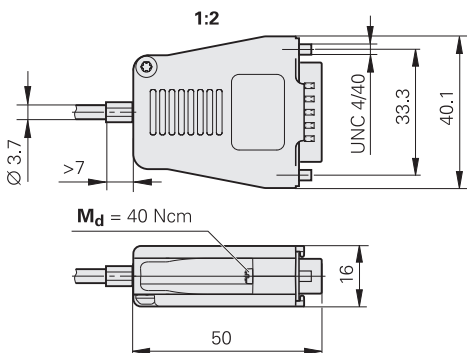


Cable bend radius **R**

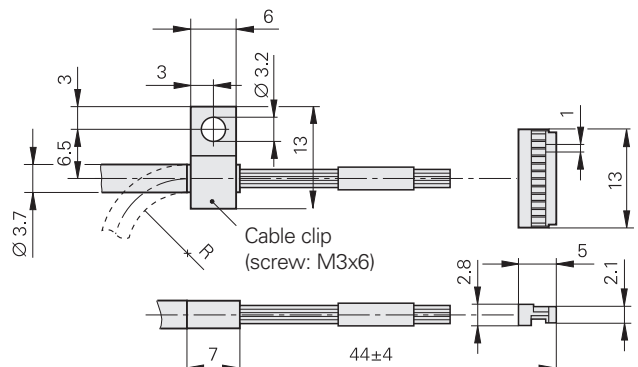


Connectors


D-sub ~ 1 V_{pp} and TTL



SHR-12V-S ~ 1 V_{pp}



Specifications

Scanning head	ERO 2080
Interface	 1 V _{PP}
Reference mark signal	Square-wave pulse
Cutoff frequency -3 dB ¹⁾	≥ 1 MHz
Electrical connection*	15-pin D-sub connector (male) with 0.5 m/1 m/1.5 m/3 m cable 12-pin SHR-12V-S connector (female) with 0.5 m/1 m/1.5 m/3 m cable Cable outlet on the left/right and straight/angled
Cable length	With HEIDENHAIN cable: ≤ 20 m; during signal adjustment with the PWM 21: ≤ 3 m
Voltage supply	DC 5 V ±0.5 V
Current consumption	≤ 150 mA (without load)
Vibration 55 Hz to 2000 Hz Shock 6 ms	≤ 500 m/s ² (EN 60068-2-6) ≤ 1000 m/s ² (EN 60068-2-27)
Operating temperature	-10 °C to 70 °C
Protection	IP50
Mass	Scanning head ≈ 5 g (without cable) Connectors ≈ 71 g Cable ≈ 22 g/m

* Please select when ordering

¹⁾ Maximum frequency during referencing: 500 kHz

Circular scale	ERO 2000 (full circle)
Measuring standard	SUPRADUR graduation on glass
Signal periods	4096
Accuracy of graduation ¹⁾	±8''
Interpolation error ²⁾	±0.3''
Position noise RMS (1 MHz)	0.03''
Reference marks	One
Hub inside diameter	5 mm
Circular scale outside diameter	30 mm
Mech. permissible speed	≤ 14000 rpm
Moment of inertia	4.1 · 10 ⁻⁷ kgm ²
Protection EN 60529	Complete, mounted encoder: IP00
Mass	≈ 5.2 g

¹⁾ When centering with two scanning heads

²⁾ The encoder-specific error contains the position error within one signal period and the accuracy of the graduation; for additional errors resulting from mounting and the bearing of the measured shaft, see *Measuring accuracy* in the brochure *Modular Angle Encoders with Optical Scanning*

Electrical connection

Pin layout

15-pin D-sub connector (male)					12-pin SHR-12V-S connector (female)								
	Power supply				Incremental signals						Other signals		
	4	12	2	10	1	9	3	11	14	7	13	15	5/6/8
	1	-	2	-	3	4	6	5	8	7	9	11	12/10
TTL	U _P	Sensor U _P	0V	Sensor 0V	U _{a1}	$\overline{U_{a1}}$	U _{a2}	$\overline{U_{a2}}$	U _{a0}	$\overline{U_{a0}}$	$\overline{U_{aS}}$	Vacant ¹⁾	Vacant ¹⁾
	U _P	Sensor U _P	0V	Sensor 0V	A+	A-	B+	B-	R+	R-	Vacant ¹⁾	Vacant ¹⁾	Vacant
	Brown/ Green	/	White/ Green	/	Brown	Green	Gray	Pink	Red	Black	Violet	Yellow	/

Shield on housing; **U_P** = Power supply voltage

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

Vacant pins or wires must not be used!

¹⁾ Required for signal adjustment using PWM 21

Adapter cables and connecting cables

PUR 6 x (2 x 0.19 mm ²); A _P = 2 x 0.19 mm ²				
PUR 4 x (2 x 0.16 mm ²) + (4 x 0.5 mm ²); A _P = 2 x 0.5 mm ²			Ø 8 mm	Ø 6 mm ¹⁾
Adapter cable with 15-pin D-sub connector (female) and 12-pin M23 connector (male)		331693-xx	355215-xx	
Adapter cable with 15-pin D-sub connector (female) and 15-pin D-sub connector (male)		335074-xx	355186-xx	
Connecting cable with 15-pin D-sub connector (female) and stripped cable end		332433-xx	355209-xx	
Connecting cable with 15-pin D-sub connector (female) and 15-pin D-sub connector (female) with pin layout for IK220		335077-xx	349687-xx	
Signal cable with stripped cable ends, 15-pin ²⁾		816317-xx	816323-xx	

¹⁾ Cable length for Ø 6 mm: max. 9 m
A_P: Cross section of supply lines

²⁾ Cable design: 4 x (2 x 0.14 mm²) + (4 x 0.5 mm²)

Accessories

Adapter connector from SHR-12V-S to D-sub for signal adjustment using PWM 21

1234385-01

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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 made.

Further information:

- Brochure: *Modular Angle Encoders with Optical Scanning*
- Brochure: *Interfaces of HEIDENHAIN Encoders*

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1078628-xx