



HEIDENHAIN

Product Information

ERO 785

Incremental Angle Encoder
without Integral Bearing



May 2006

ERO 785

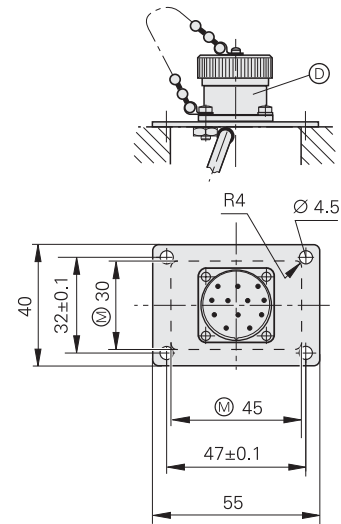
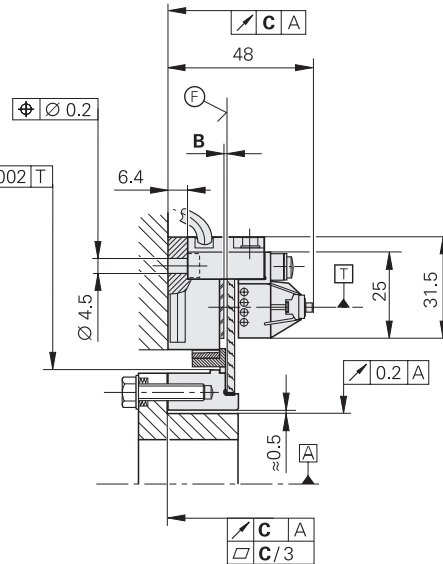
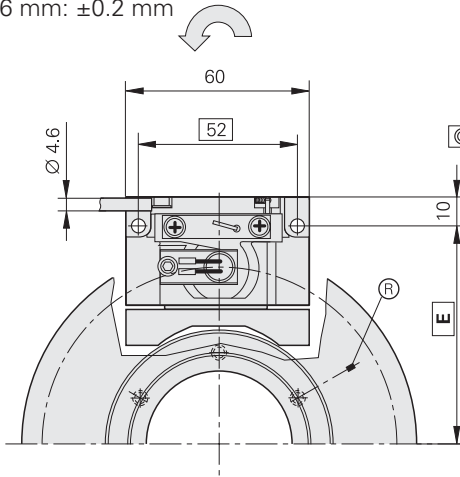
- Modular angle encoder
- Circular scale with hub



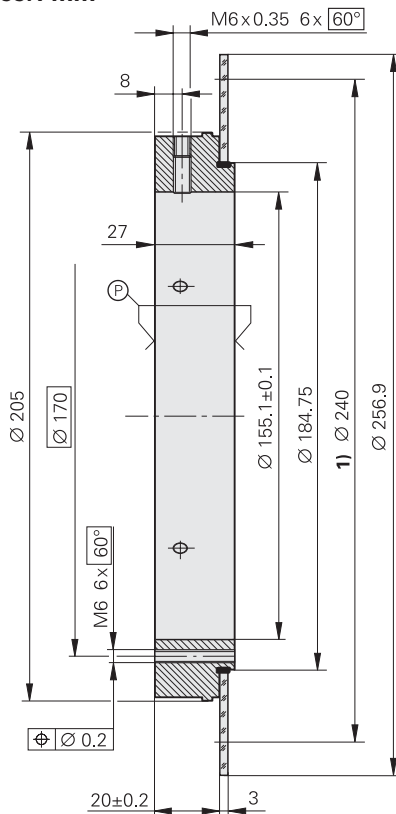
Dimensions in mm



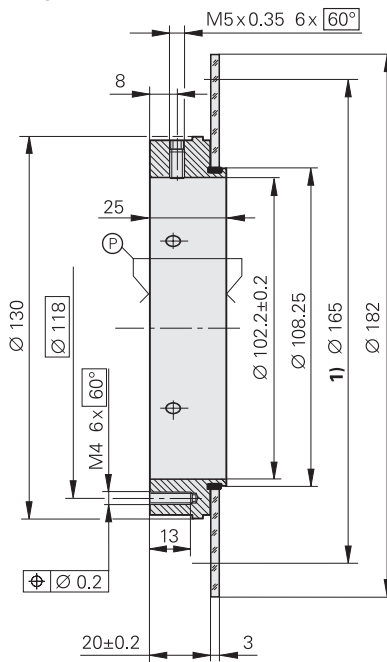
Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ±0.2 mm



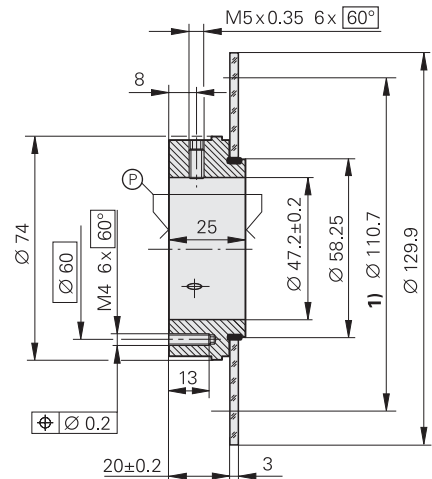
Hub inside diameter
155.1 mm



102.2 mm



472 mm



1) Mean graduation diameter

- ▭ A = Bearing
- ⊖ M = Cutout for mounting
- Ⓟ P = Position of the reference mark to an integral mounting thread ±2°
- ▭ T = Graduation
- Ⓟ P = Graduation plane
- Ⓟ P = Mounting surface
- Ⓟ P = Flange socket
- ↻ Direction of shaft rotation for output signals according to interface description

Hub inside diameter	Line count	E	B	C
155.1	36000	132	0.05 ±0.02	0.02
102.2		94.5	0.20 ±0.02	
472		67.35	0.08 ±0.01	0.01

Specifications	Incremental ERO 785		
Incremental signals	~ 1 V _{PP}		
Line count	36 000		
Reference mark	One		
Cutoff frequency -3 dB	180 kHz		
Recommended measuring step for position capture	0.0001°		
System accuracy ¹⁾	± 4.2"	± 3"	± 2.2"
Accuracy of the graduation ²⁾	± 3.7"	± 2.5"	± 1.7"
Power supply without load	5 V ± 10% max. 150 mA		
Electrical connection	Cable 0.3 m with M23 flange socket (male) on mounting base		
Cable length	≤ 150 m (with HEIDENHAIN cable)		
Hub inside diameter*	47.2 mm	102.2 mm	155.1 mm
Mech. permissible speed	≤ 8000 rpm	≤ 6000 rpm	≤ 4000 rpm
Moment of inertia of rotor	620 · 10 ⁻⁶ kgm ²	3700 · 10 ⁻⁶ kgm ²	26000 · 10 ⁻⁶ kgm ²
Permissible axial motion of the measured shaft	See the tolerance of scanning gap "B" in the dimension drawing		
Vibration 55 to 2000 Hz Shock 6 ms	≤ 100 m/s ² (IEC 60 068-2-6) ≤ 1000 m/s ² (IEC 60 068-2-27)		
Operating temperature	0 to 50 °C		
Protection* (IEC 60 529)	IP 00		
Weight			
Scanning unit	Approx. 0.19 kg		
Circular scale with hub	0.46 kg	0.87 kg	2.6 kg

* Please indicate when ordering

¹⁾ Before installation. Additional error caused by mounting inaccuracy and inaccuracy from the bearing of the drive shaft are not included.

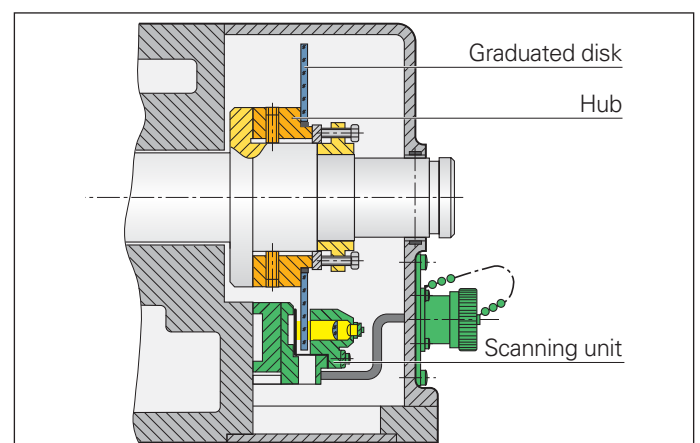
²⁾ For other errors, see *Measuring Accuracy* in the *Angle Encoders without Integral Bearing* brochure

Mounting

The **ERO 785** modular angle encoder consists of the disk/hub assembly and the matching scanning unit. Special design features assure comparatively fast mounting and easy adjustment.





The disk/hub assembly is slid onto the drive shaft, centered, and fastened with screws. The scanning unit is then slid onto the centering collar of the hub and the screws are tightened. The gap between the graduated disk and the scanning unit is set with spacer foils.

Mounting cross section of **ERO 785**


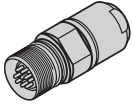

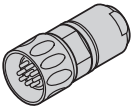
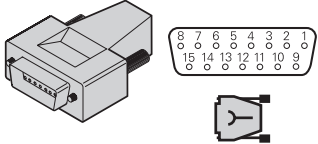





Electrical Connection

Connecting cable

PUR connecting cable Ø 8 mm [4(2 × 0.14 mm ²) + (4 × 0.5 mm ²)]			
Complete with M23 connector (female) and M23 connector (male) 	298399-xx	With one M23 connector (female) 	309777-xx
Complete with M23 connector (female) and D-sub connector (female) for IK 220 	310199-xx	Cable only , PUR Ø 8 mm 	244957-01

Pin layout

12-pin M23 coupling		12-pin M23 connector		15-pin D-sub connector, socket for HEIDENHAIN controls and IK 220										
														
	Power supply				Incremental signals						Other signals			
	12	2	10	11	5	6	8	1	3	4	7/9	/	/	
	1	9	2	11	3	4	6	7	10	12	5/8/13/14/15	/	/	
	U _P	Sensor U _P	0V	Sensor 0V	A+	A-	B+	B-	R+	R-	Vacant	Vacant	Vacant	
	Brown/ Green	Blue	White/ Green	White	Brown	Green	Gray	Pink	Red	Black	/	Violet	Yellow	

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

Sensor: The sensor line is connected internally with the corresponding power line

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For more information

- Brochure: *Angle Encoders without Integral Bearing*