



HEIDENHAIN



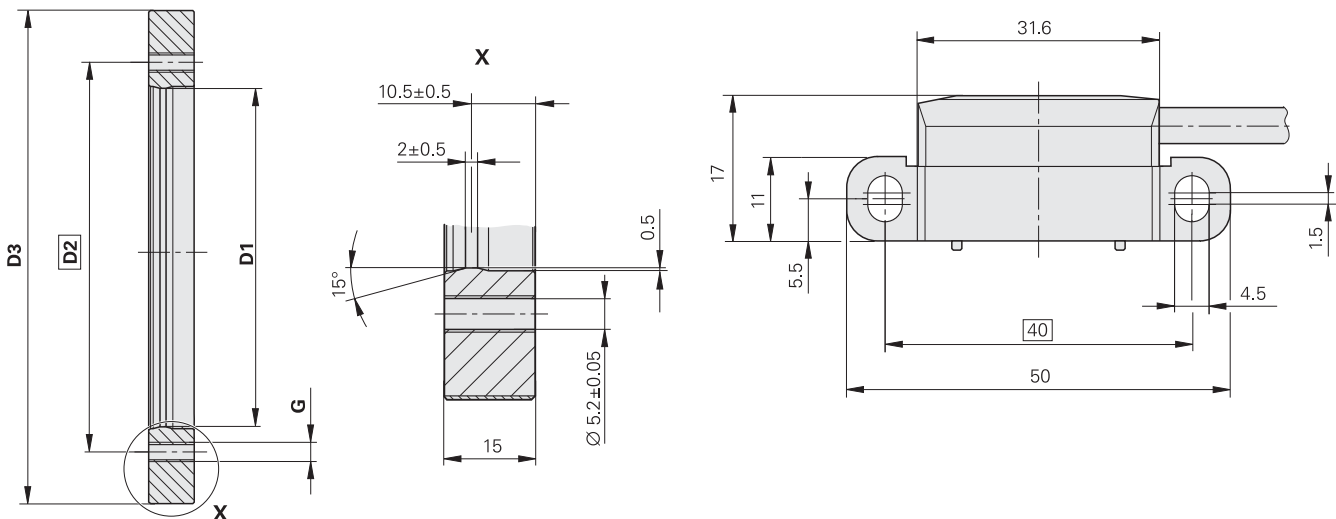
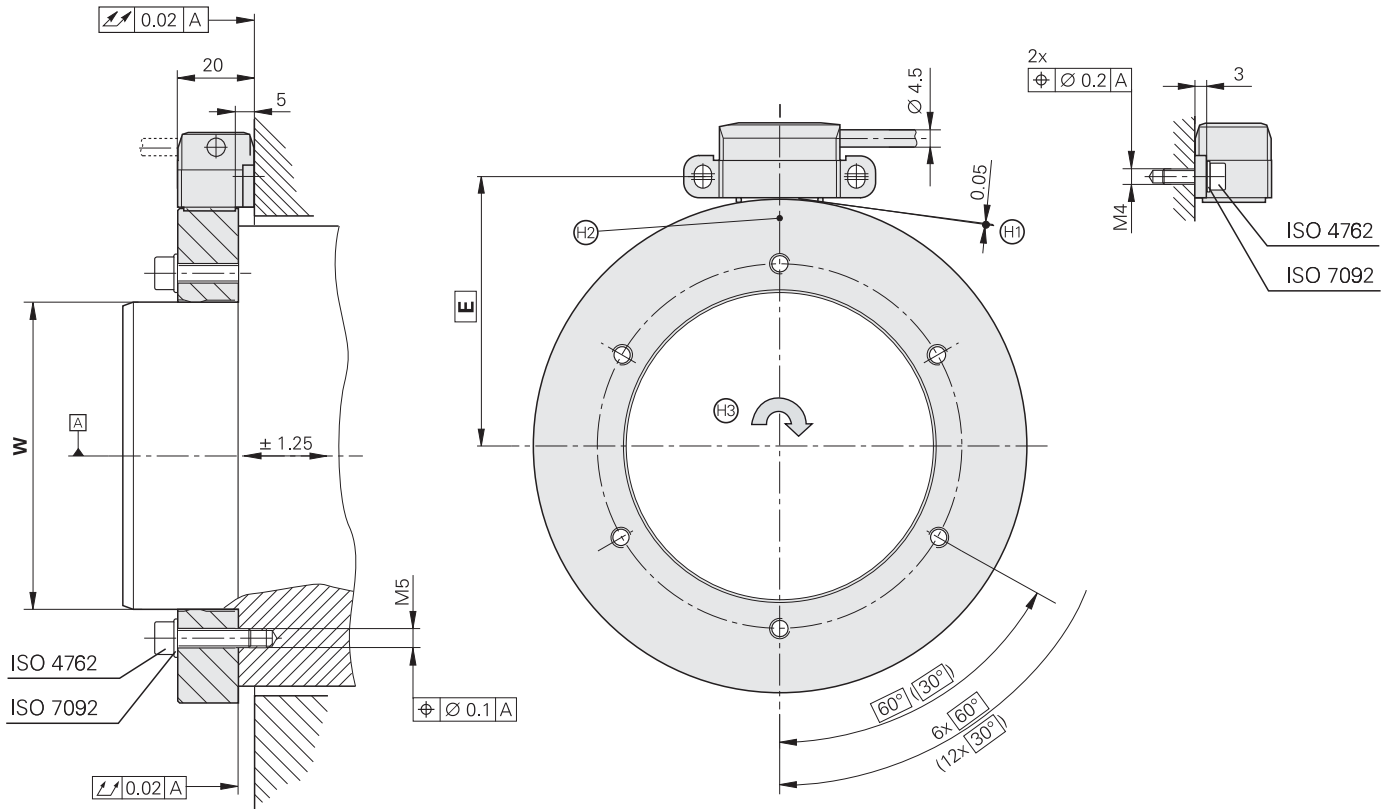
Preliminary Product
Information

ERM 2280 Magnetic Modular Encoder

September 2011

ERM 2280 Series

- Modular encoder with magnetic scanning principle
- Incremental measuring method with distance-coded reference marks
- Signal period of approx. 200 μm
- e.g. for C axes on lathes with heightened accuracy demands



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

- ▣ = Bearing
- ⊕ = Mounting distance of 0.05 mm set with spacer foil
- ⊙ = Reference mark position (home position)
- ⊙ = Direction of shaft rotation for output signals according to interface description

D1	W	D2	D3	E	G
∅ 80 -0.008	∅ 80 +0.010/+0.002	∅ 95	∅ 128.75	70.1	6x M6
∅ 120 -0.010	∅ 120 +0.013/+0.003	∅ 135	∅ 150.88	81.2	6x M6
∅ 130 -0.012	∅ 130 +0.015/+0.003	∅ 145	∅ 176.03	93.7	6x M6
∅ 180 -0.012	∅ 180 +0.015/+0.003	∅ 195	∅ 257.50	134.5	6x M6
∅ 220 -0.014	∅ 220 +0.018/+0.004	∅ 235	∅ 257.50	134.5	6x M6

Scanning head	AK ERM 2280
Incremental signals	$\sim 1 V_{PP}$
Cutoff frequency -3 dB	≥ 300 kHz
Signal period	Approx. 200 μ m
Line count *	See Scale Drum
Power supply	5 V \pm 10% DC
Current consumption	≤ 150 mA (without load)
Electrical connection*	Cable 1 m, with or without coupling
Cable length	≤ 150 m (with HEIDENHAIN cable)
Vibration 55 to 2000 Hz Shock 6 ms	≤ 400 m/s ² (EN 60068-2-6) ≤ 1000 m/s ² (EN 60068-2-27)
Operating temperature	-10 °C to +60 °C
Protection EN 60529	IP 67
Weight	Approx. 0.15 kg (with cable)

Scale drum	TTR ERM 2200C				
Measuring standard	MAGNADUR graduation; signal period of approx. 200 μ m				
Inside diameter*	80 mm	120 mm	130 mm	180 mm	220 mm
Outside diameter	128.75 mm	150.88 mm	176.03 mm	257.50 mm	257.50 mm
Line count*	2048	2400	2800	4096	4096
System accuracy¹⁾	$\pm 15''$	$\pm 13''$	$\pm 11''$	$\pm 8''$	$\pm 8''$
Accuracy of the graduation²⁾	$\pm 8''$	$\pm 7''$	$\pm 6''$	$\pm 5''$	$\pm 5''$
Reference mark	Distance-coded				
Angle for absolute reference	$\leq 22.5^\circ$	$\leq 18^\circ$	$\leq 14.4^\circ$	$\leq 11.25^\circ$	
Mech. permissible speed	≤ 13000 min ⁻¹	≤ 10500 min ⁻¹	≤ 9000 min ⁻¹	≤ 6000 min ⁻¹	≤ 6000 min ⁻¹
Moment of inertia of the rotor	$2.7 \cdot 10^{-3}$ kgm ²	$3.5 \cdot 10^{-3}$ kgm ²	$7.7 \cdot 10^{-3}$ kgm ²	$38 \cdot 10^{-3}$ kgm ²	$23 \cdot 10^{-3}$ kgm ²
Permissible axial motion	± 1.25 mm				
Weight approx.	0.89 kg	0.72 kg	1.2 kg	3.0 kg	1.6 kg


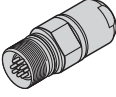


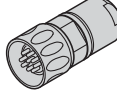



* Please select or indicate when ordering

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

²⁾ For other error, see *Measuring Accuracy* in the brochure *Magnetic Modular Encoders*
Larger diameters upon request

Electrical Connection

Pin layout





12-pin coupling M23					12-pin connector M23								
													
	Power supply				Incremental signals						Other signals		
	12	2	10	11	5	6	8	1	3	4	7/9	/	/
	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.

Vacant pins or wires must not be used!

PUR connecting cables

12-pin: $[4(2 \times 0.14 \text{ mm}^2) + (4 \times 0.5 \text{ mm}^2)] \text{ } \varnothing 8 \text{ mm}$		
Complete with M23 connector (female) and M23 coupling (male), both 12-pin		298401-xx
Complete with M23 connector (female) and M23 connector (male), both 12-pin		298399-xx
Complete with 12-pin M23 connector (female) and 15-pin D-sub connector (female) for IK 220		310199-xx
With one 12-pin M23 connector (female)		309777-xx

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For more information

- Catalog: *Magnetic Modular Encoders*