



# HEIDENHAIN



Product Information

## **ERO 2000 Series**

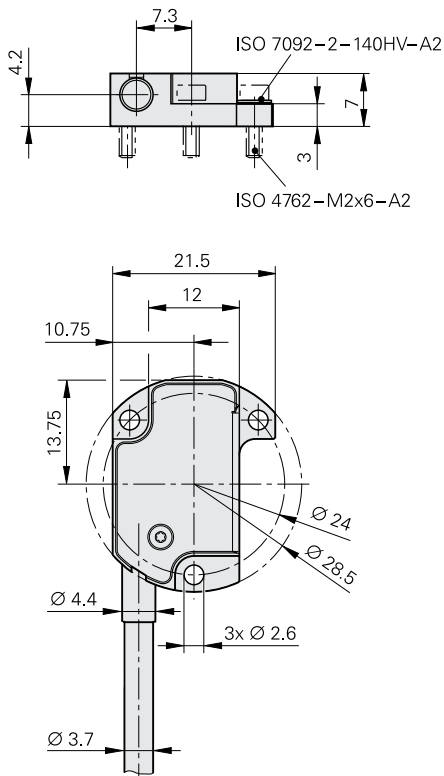
Angle Encoders without  
Integral Bearing

# ERO 2000 series

- Very compact dimensions
- Low mass, low mass moment of inertia
- Consisting of AK scanning head and TKN circular scale
- Circular scales for 360° and 45°

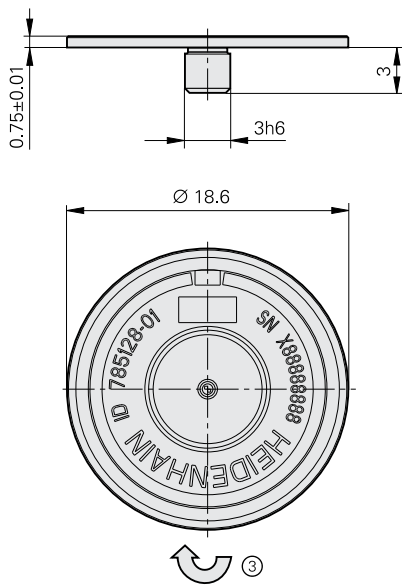


AK ERO 2080



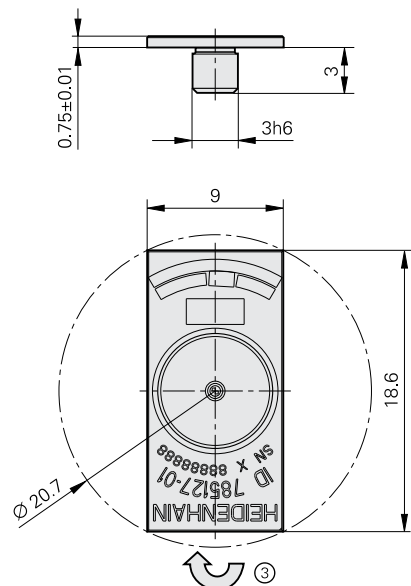
TKN ERO 2000

2:1

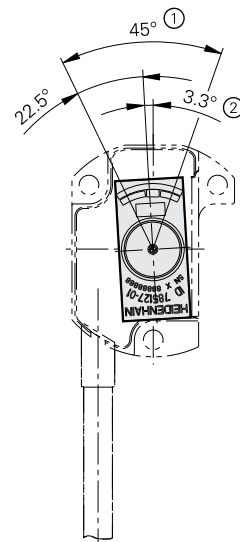
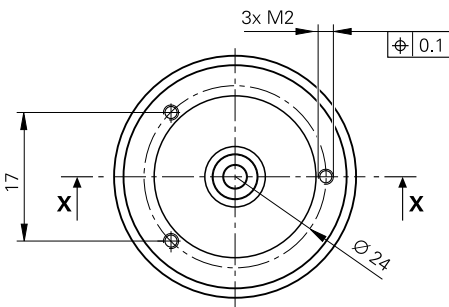
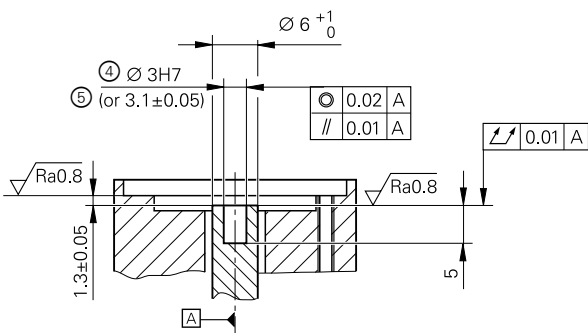


TKN ERO 2001

2:1



X-X



- ⓐ = Bearing of mating shaft
- ① = Measurement range
- ② = Position of the reference mark
- ③ = Direction of shaft rotation for output signals as per the interface description
- ④ = Dimension for simple alignment of the circular scale via centering pin of graduated disk.
- ⑤ = Dimension for mounting the graduated disk through optical alignment. For optical alignment, register marks or structures can be used at Ø 0.7 mm or Ø 8.3 mm. Do not use the edges of the transparent window.

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



<b>Scanning head</b>	<b>AK ERO 2080</b>
<b>Interface</b>	$\sim 1 V_{PP}$
Cutoff frequency -3 dB	$\geq 600$ kHz
<b>Electrical connection*</b>	Cable, 0.3 m or 1 m with D-sub connector (male), 15-pin
Cable length	$\leq 30$ m (with HEIDENHAIN cable)
Voltage supply	DC 5 V $\pm$ 0.25 V
Current requirement	< 85 mA (without load)
<b>Vibration</b> 55 to 2000 Hz <b>Shock</b> 6 ms	$\leq 500$ m/s <sup>2</sup> (EN 60068-2-6) $\leq 1000$ m/s <sup>2</sup> (EN 60068-2-27)
<b>Operating temperature</b> <b>Storage temperature</b>	-10 °C to 70 °C -20 °C to 80 °C (in the packaging)
<b>Mass</b> Scanning head	$\approx 5.5$ g (without cable)

<b>Circular scale</b>	<b>TKN ERO 2000</b>	<b>TKN ERO 2001</b>
<b>Measuring standard</b>	SUPRADUR phase grating on glass	
<b>Measuring range</b>	360°	45°
<b>Signal periods</b>	2500 over 360°	
<b>Position error per signal period</b>	Typically $\pm 1.0''$ <i>With compensation (e.g. in EIB 392): typically <math>\pm 0.2''</math></i>	
<b>Position noise RMS</b>	Typically $\pm 0.04''$	
<b>Reference marks</b>	One	
<b>Dimensions</b>	$\varnothing 18.6$ mm x 0.75 mm	9 mm x 18.6 mm x 0.75 mm
Mech. permissible speed	$\leq 14000$ rpm	
Moment of inertia	22 gmm <sup>2</sup>	11 gmm <sup>2</sup>
<b>Protection</b> EN 60529	IP 00	
<b>Mass</b>	$\approx 0.56$ g	$\approx 0.36$ g

\* Please select when ordering

# Electrical connection

## Pin layout

15-pin D-sub connector, male														
	Voltage supply				Incremental signals						Other signals			
	4	12	2	10	1	9	3	11	14	7	13	15	5/6/8	
 1 V <sub>PP</sub>	U <sub>P</sub>	Sensor U <sub>P</sub>	0V	Sensor 0V	A+	A-	B+	B-	R+	R-	Vacant <sup>1)</sup>	Vacant <sup>1)</sup>	Vacant	
	Brown/ Green	/	White/ Green	/	Brown	Green	Gray	Pink	Red	Black	Violet	Yellow	/	


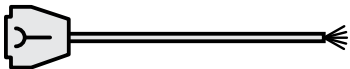
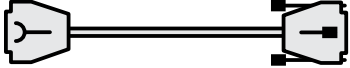
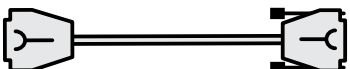

**Shield** on housing; **U<sub>P</sub>** = Power supply voltage

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

Vacant pins or wires must not be used.

<sup>1)</sup> Required for signal adjustment with PWM 20

## Connecting cables

PUR connecting cable [6(2 x 0.19 mm <sup>2</sup> ); A <sub>P</sub> = 0.19 mm <sup>2</sup> ]			
PUR connecting cable [4(2 x 0.14 mm <sup>2</sup> ) + (4 x 0.5 mm <sup>2</sup> ); A <sub>P</sub> = 0.5 mm <sup>2</sup> ]		Ø 8 mm	Ø 6 mm <sup>1)</sup>
<b>Complete</b> with D-sub connector (female), 15-pin, and M23 connector (male), 12-pin		331693-xx	355215-xx
<b>With one</b> D-sub connector (female), 15-pin		332433-xx	355209-xx
<b>Complete</b> with D-sub connector (female) and D-sub connector (male), both 15-pin		335074-xx	355186-xx
<b>Complete</b> with D-sub connector (female) and D-sub connector (female), both 15-pin <b>Pin layout for IK 220</b>		335077-xx	349687-xx
<b>Cable only</b>		816317-xx	816323-xx

<sup>1)</sup> Cable length for Ø 6 mm: max. 9 m

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

# HEIDENHAIN

**DR. JOHANNES HEIDENHAIN GmbH**

Dr.-Johannes-Heidenhain-Straße 5

83301 Traunreut, Germany

☎ +49 8669 31-0

☎ +49 8669 32-5061

E-mail: info@heidenhain.de

www.heidenhain.de

This Product Information supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information valid when the contract is made.

### Further Information

- Catalog: *Angle Encoders Without Integral Bearing*
- Catalog: *Interfaces of HEIDENHAIN Encoders*