



HEIDENHAIN



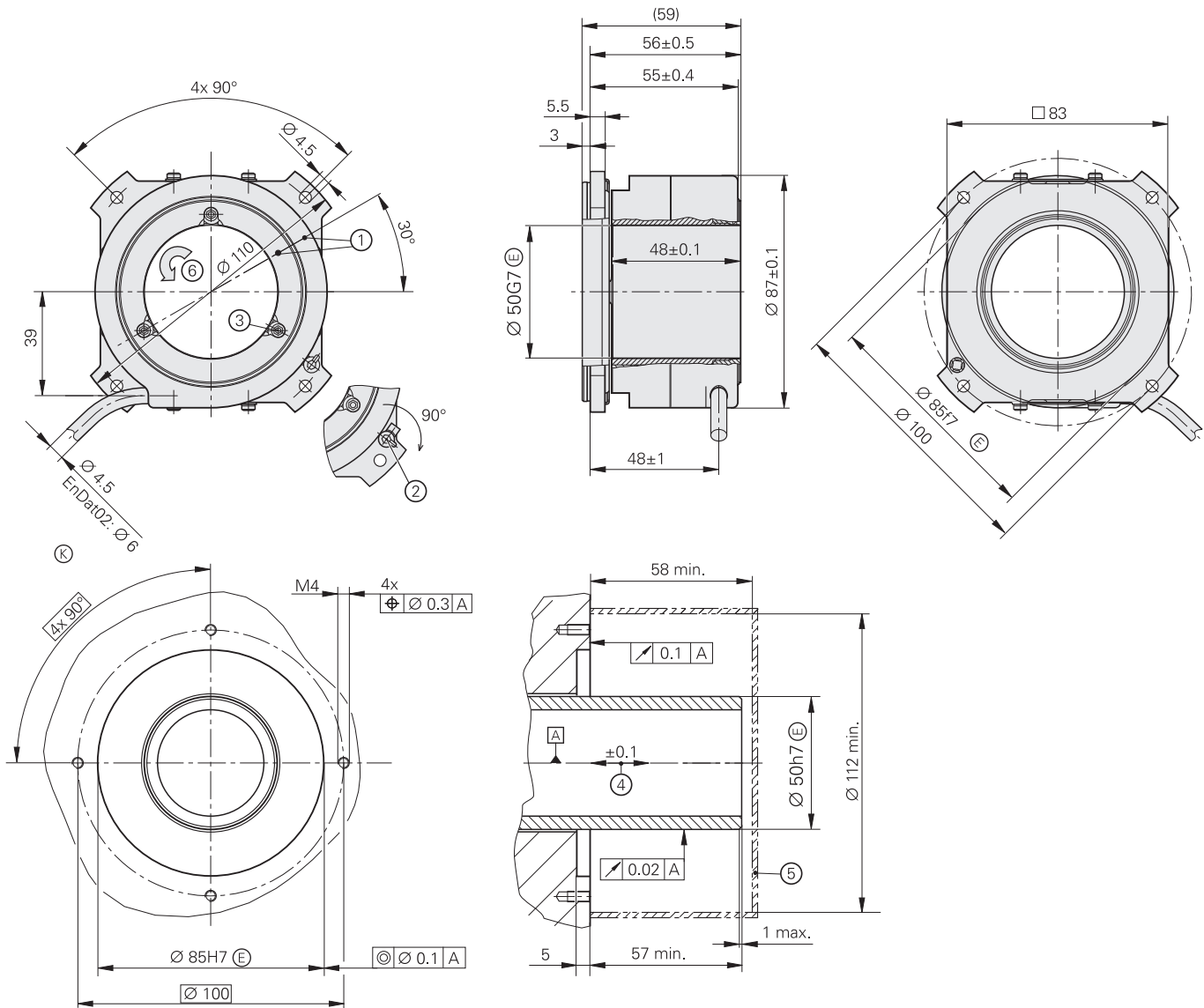
Product Information


ECN 2000

Absolute Angle Encoders
with Integral Bearing

ECN 2000

- Mounted stator coupling
- Hollow through shaft $\varnothing 50$ mm
- System accuracy $\pm 10''$



mm

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

- ▣ = Bearing of mating shaft
- ⊙ = Required mating dimensions
- ① = Mark for 0° position $\pm 15^\circ$
- ② = Rotate to loosen mounting aid before putting into service. Width A/F 3
- ③ = SW3 (3 x 120°), tightening torque 2.5 Nm + 0.5 Nm
- ④ = Tolerance specification includes mounting tolerances and thermal expansion. No dynamic movement permitted.
- ⑤ = Comply with protection against contact (EN 60529)
- ⑥ = Direction of shaft rotation for output signals according to interface description

	ECN 2110	ECN 2180	ECN 2190F	ECN 2190M
Measuring standard	DIADUR circular scale with one absolute and one incremental track (2048 lines)			
System accuracy	±10"			
Position error per signal period	≤ ±1.5"			
Interface	EnDat 2.2		Fanuc serial interface αi Interface	Mitsubishi High Speed Interface
Ordering designation*	EnDat22	EnDat02	Fanuc05	Mit03-4
Position values/revolution	33554432 (25 bits); with Fanuc α interface 8388608 (23 bits)			
Elec. permissible speed	≤ 3000 rpm for continuous position value			
Clock frequency	≤ 16 MHz	≤ 2 MHz	–	
Calculation time t_{cal}	≤ 6 μs	≤ 9 μs	–	
Incremental signals	–	~ 1 V _{PP}	–	
Cutoff frequency –3 dB	–	≥ 400 kHz	–	
Electrical connection*	Cable, 1 m, with 8-pin M12 coupling (male)	Cable, 1 m, with 17-pin M23 coupling (male)	Cable, 1 m, with or without 8-pin M12 coupling (male)	
Cable length ¹⁾	≤ 150 m		≤ 50 m	≤ 30 m
Voltage supply	DC 3.6 V to 14 V			
Power consumption ²⁾ (maximum)	3.6 V: ≤ 0.7 W 14 V: ≤ 0.8 W			
Current consumption (typical)	5 V: 100 mA (without load)			
Shaft	Hollow through shaft, 50 mm			
Mechanically permissible speed	≤ 3000 rpm			
Starting torque (at 20 °C)	≤ 0.2 Nm			
Moment of inertia of rotor	220 · 10 ⁻⁶ kgm ²			
Permissible axial motion of measured shaft	±0.1 mm			
Natural frequency	≥ 1000 Hz			
Vibration 55 Hz to 2000 Hz Shock 6 ms	≤ 100 m/s ² (EN 60068-2-6) ≤ 200 m/s ² (EN 60068-2-27)			
Operating temperature	<i>Moving cable:</i> –10 °C to 60 °C <i>Stationary cable:</i> –20 °C to 60 °C			
Protection EN 60529	IP 64			
Mass	≈ 0.7 kg			




* Please select when ordering

¹⁾ With HEIDENHAIN cable




²⁾ See *General electrical information* in the brochure *Interfaces of HEIDENHAIN Encoders*

Electrical connection


EnDat connecting cable without incremental signals

PUR connecting cable $\varnothing 6 \text{ mm}; 2(2 \times 0.09 \text{ mm}^2) + 2(2 \times 0.16 \text{ mm}^2)$		$A_p = 2 \times 0.16 \text{ mm}^2$
Complete with 8-pin M12 connector (female) and 8-pin M12 coupling (male)		1036372-xx
Complete with 8-pin M12 connector (female) and 15-pin D-sub connector (female)		1036521-xx
Complete with 15-pin connector (female) and 15-pin D-sub connector (male)		1036526-xx

EnDat adapter cable with incremental signals

PUR connecting cable $\varnothing 8 \text{ mm}; 4(2 \times 0.16 \text{ mm}^2) + 4 \times 0.5 \text{ mm}^2 + 4 \times 0.16 \text{ mm}^2$		$A_p = 0.5 \text{ mm}^2$
With one connector 17-pin M23 (female)		309778-xx
Complete with 17-pin M23 connector (female) and 15-pin D-sub connector (female)		332115-xx
Complete with 17-pin M23 connector (female) and 15-pin D-sub connector (male)		324544-xx

Fanuc/Mitsubishi connecting cable

PUR connecting cable $\varnothing 6 \text{ mm}; 2(2 \times 0.09 \text{ mm}^2) + 2(2 \times 0.16 \text{ mm}^2)$		$A_p = 2 \times 0.16 \text{ mm}^2$	Fanuc	Mitsubishi
Complete with 8-pin M12 connector (female) and 8-pin M12 coupling (male)			1036372-xx	

A_p : Cross section of power supply lines

\varnothing : Cable diameter (for bend radii see the brochure *Interfaces of HEIDENHAIN Encoders*)

For more cables, see the brochure *Angle Encoders with Integral Bearing*.

HEIDENHAIN

DR. JOHANNES HEIDENHAIN GmbH

Dr.-Johannes-Heidenhain-Straße 5

83301 Traunreut, Germany

☎ +49 8669 31-0

FAX +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 document edition valid when the order is made.



For more information:

Comply with the requirements described in the following documents to ensure correct operation:

- Brochure: *Angle Encoders with Integral Bearing*
- Brochure *Interfaces of HEIDENHAIN Encoders*

591109-xx
1078628-xx

For brochures and product information sheets, visit www.heidenhain.de.