



HEIDENHAIN



Product Information

ROC 2000

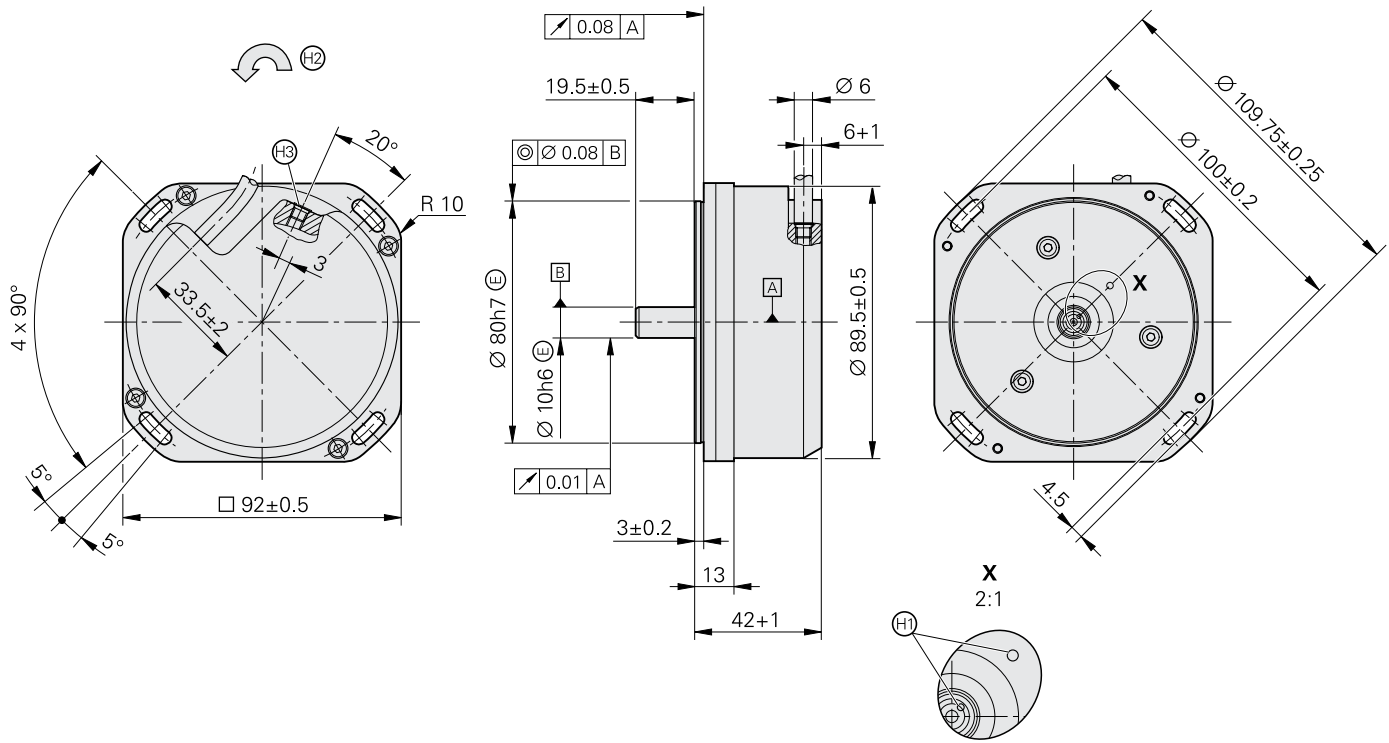
ROC 7000


Angle Encoders with
Integral Bearing for
Separate Shaft Coupling





November 2015

ROC 2000 series

- For separate shaft coupling
- System accuracy $\pm 5''$



mm

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

-  = Bearing
-  = Position of the reference mark signal $\pm 5^\circ$
-  = Direction of shaft rotation for output signals as per the interface description
-  = Compressed air inlet M5

	Absolute ROC 2310	ROC 2380	ROC 2390F	ROC 2390M
Measuring standard	DIADUR circular scale with absolute and incremental track (16384 lines)			
System accuracy	±5"			
Position error per signal period	±0.4"			
Interface	EnDat 2.2		Fanuc Serial Interface αi interface	Mitsubishi high speed interface
Ordering designation	EnDat22	EnDat02	Fanuc05	Mit03-4
Position values/revolution	67 108864 (26 bits); <i>Fanuc α interface</i> : 8388608 (23 bits)			
Elec. permissible speed	≤ 3000 rpm for continuous position value	≤ 1500 rpm for continuous position value	≤ 3000 rpm for continuous position value	
Clock frequency Calculation time t_{cal}	≤ 16 MHz ≤ 5 μs	≤ 2 MHz ≤ 5 μs	–	
Incremental signals Cutoff frequency –3 dB	–	~ 1 V _{PP} ≥ 400 kHz	–	
Electrical connection	Cable 1 m, with M12 coupling (male) <i>For EnDat02</i> : Cable 1 m with 17-pin M23 coupling (male)			
Cable length ¹⁾	≤ 150 m		≤ 50 m	≤ 30 m
Voltage supply	3.6 V to 14 V DC			
Power consumption ²⁾ (max.)	3.6 V: ≤ 1.1 W; 14 V: ≤ 1.3 W			
Current consumption (typical)	5 V: 140 mA (without load)			
Shaft	Solid shaft D = 10 mm			
Mechanically permissible speed	≤ 3000 rpm			
Starting torque	≤ 0.02 Nm at 20 °C			
Moment of inertia of rotor	50.0 · 10 ⁻⁶ kgm ²			
Permissible shaft load	<i>Axial</i> : 30 N <i>Radial</i> : 30 N at shaft end			
Vibration 55 to 2000 Hz Shock 6 ms	≤ 200 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>Fixed cable</i> : –20 °C to 60 °C			
Protection EN 60529	IP64			
Mass	≈ 1.0 kg			

* Please select when ordering

¹⁾ With HEIDENHAIN cable; ≤ 8 MHz

²⁾ See *General electrical information* in the *Interfaces for HEIDENHAIN Encoders* catalog

	Absolute ROC 7310	ROC 7380	ROC 7390F	ROC 7390M
Measuring standard	DIADUR circular scale with absolute and incremental track (16384 lines)			
System accuracy	±2"			
Position error per signal period	±0.4"			
Interface	EnDat 2.2		Fanuc Serial Interface αi interface	Mitsubishi high speed interface
Ordering designation	EnDat22	EnDat02	Fanuc05	Mit03-4
Position values/revolution	268435456 (28 bits); <i>Fanuc α interface</i> : 134217728 (27 bits)			
Elec. permissible speed	≤ 3000 rpm for continuous position value	≤ 1500 rpm for continuous position value	≤ 3000 rpm for continuous position value	
Clock frequency Calculation time t_{cal}	≤ 16 MHz ≤ 5 μs	≤ 2 MHz ≤ 5 μs	–	
Incremental signals Cutoff frequency –3 dB	–	~ 1 V _{PP} ≥ 400 kHz	–	
Electrical connection	Cable 1 m, with M12 coupling (male) <i>For EnDat02</i> : Cable 1 m with 17-pin M23 coupling (male)			
Cable length ¹⁾	≤ 150 m		≤ 50 m	≤ 30 m
Voltage supply	3.6 V to 14 V DC			
Power consumption ²⁾ (max.)	3.6 V: ≤ 1.1 W; 14 V: ≤ 1.3 W			
Current consumption (typical)	5 V: 140 mA (without load)			
Shaft	Solid shaft D = 14 mm			
Mechanically permissible speed	≤ 3000 rpm			
Starting torque	≤ 0.025 Nm at 20 °C			
Moment of inertia of rotor	65.0 · 10 ⁻⁶ kgm ²			
Permissible shaft load	<i>Axial</i> : 30 N <i>Radial</i> : 30 N at shaft end			
Vibration 55 to 2000 Hz Shock 6 ms	≤ 200 m/s ² (EN 60068-2-6) ≤ 200 m/s ² (EN 60068-2-27)			
Operating temperature	0 °C to 50 °C			
Protection EN 60529	IP64			
Mass	≈ 1.6 kg			

* Please select when ordering

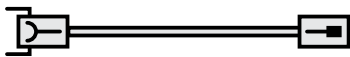
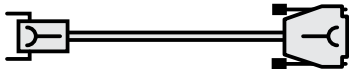
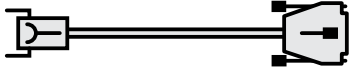
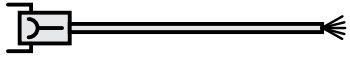
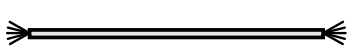
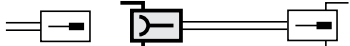
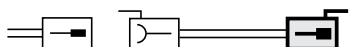
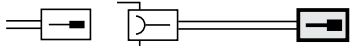

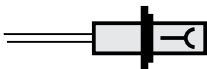
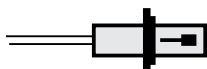
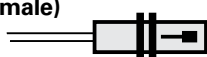
¹⁾ With HEIDENHAIN cable; ≤ 8 MHz

²⁾ See *General electrical information* in the *Interfaces for HEIDENHAIN Encoders* catalog

Connecting cables EnDat

8-pin
M12

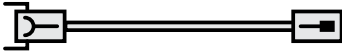

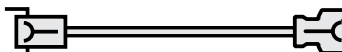
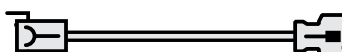
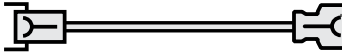
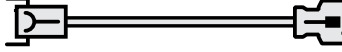

17-pin
M23

		EnDat without incremental signals	EnDat with incremental signals
PUR connecting cable 17-pin: $[(4 \times 0.14 \text{ mm}^2) + 4(2 \times 0.14 \text{ mm}^2) + (4 \times 0.5 \text{ mm}^2)]; A_P = 0.5 \text{ mm}^2$			
PUR connecting cable 8-pin: $[(4 \times 0.14 \text{ mm}^2) + 4 \times 0.34 \text{ mm}^2]; A_P = 0.34 \text{ mm}^2$		Ø 6 mm	Ø 8 mm
Complete with connector (female) and coupling (male)		368330-xx	323897-xx
Complete with connector (female) and D-sub connector (female), 15-pin		533627-xx	332115-xx
Complete with connector (female) and D-sub connector (male), 15-pin		524599-xx	324544-xx
With one connector (female)		634265-xx	309778-xx
Cable without connectors , Ø 8 mm		816329-xx	816322-xx
Mating element on connecting cable to connector on encoder cable	Connector (female) Ø 8 mm 	–	291697-26
Connector on cable for connection to subsequent electronics	Connector (male) Ø 8 mm 	–	291697-27
Coupling on connecting cable	Coupling (male) Ø 4.5 mm Ø 6 mm Ø 8 mm 	–	291698-25 291698-26 291698-27
Flange socket for mounting on subsequent electronics	Flange socket (female) 	–	315892-10
Mounted couplings	With flange (female) Ø 6 mm 	–	291698-35
	With flange (male) Ø 6 mm Ø 8 mm 	–	291698-41 291698-29
	With central fastening (male) Ø 6 mm to 10 mm 	–	741045-02

A_P: Cross section of power supply lines

Ø: Cable diameter

Connecting cables Fanuc Mitsubishi

PUR connecting cable	① Ø 6 mm; [4 × 0.14 mm ² + 4 × 0.34 mm ²] ② Ø 8 mm; [2 × 2 × 0.14 mm ² + 4 × 1 mm ²] ③ Ø 6 mm; [2 × 2 × 0.14 mm ² + 4 × 0.5 mm ²]	$A_P = 0.34 \text{ mm}^2$ $A_P = 1 \text{ mm}^2$ $A_P = 0.5 \text{ mm}^2$	Cable	Fanuc	Mitsubishi
Complete with M12 connector (female), 8-pin, and M12 coupling (male), 8-pin		①	368330-xx		
Complete with M12 connector (female), 8-pin, and M23 coupling (male), 17-pin		①	582333-xx		
Complete with M12 connector (female), 8-pin, and <ul style="list-style-type: none"> • Fanuc connector (female) or • Mitsubishi connector (female), 10-pin 		①	646807-xx	647314-xx	
Complete with M12 connector (female), 8-pin, and Mitsubishi connector (male), 20-pin		①	-	646806-xx	
Complete with M23 connector (female), 17-pin, and <ul style="list-style-type: none"> • Fanuc connector (female) or • Mitsubishi connector (female), 10-pin 		②	534855-xx	573661-xx	
Complete with M23 connector (female), 17-pin, and Mitsubishi connector (male), 20-pin		③	-	367958-xx	
Cable only		②	816327-xx		

A_P : Cross section of power supply lines

Ø: Cable diameter (for bend radii, see *Interfaces of HEIDENHAIN Encoders catalog*)

HEIDENHAIN

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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 with Integral Bearing*
- Catalog: *Interfaces of HEIDENHAIN Encoders*