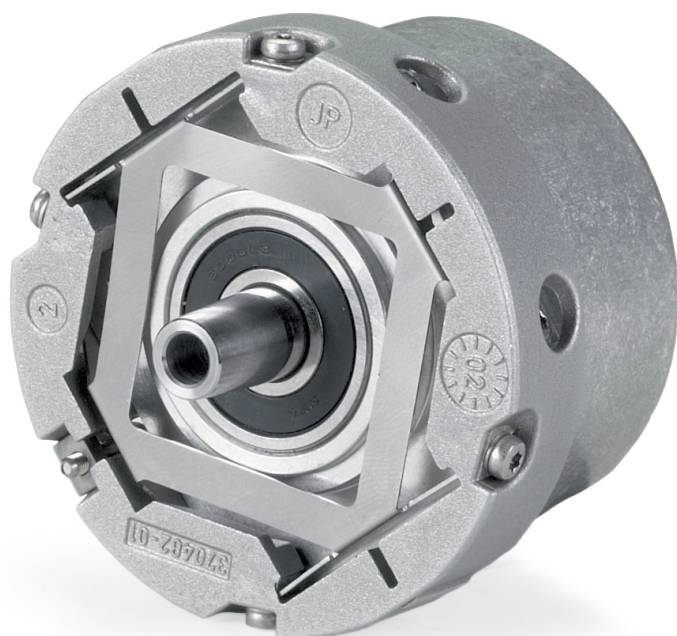




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Product Information

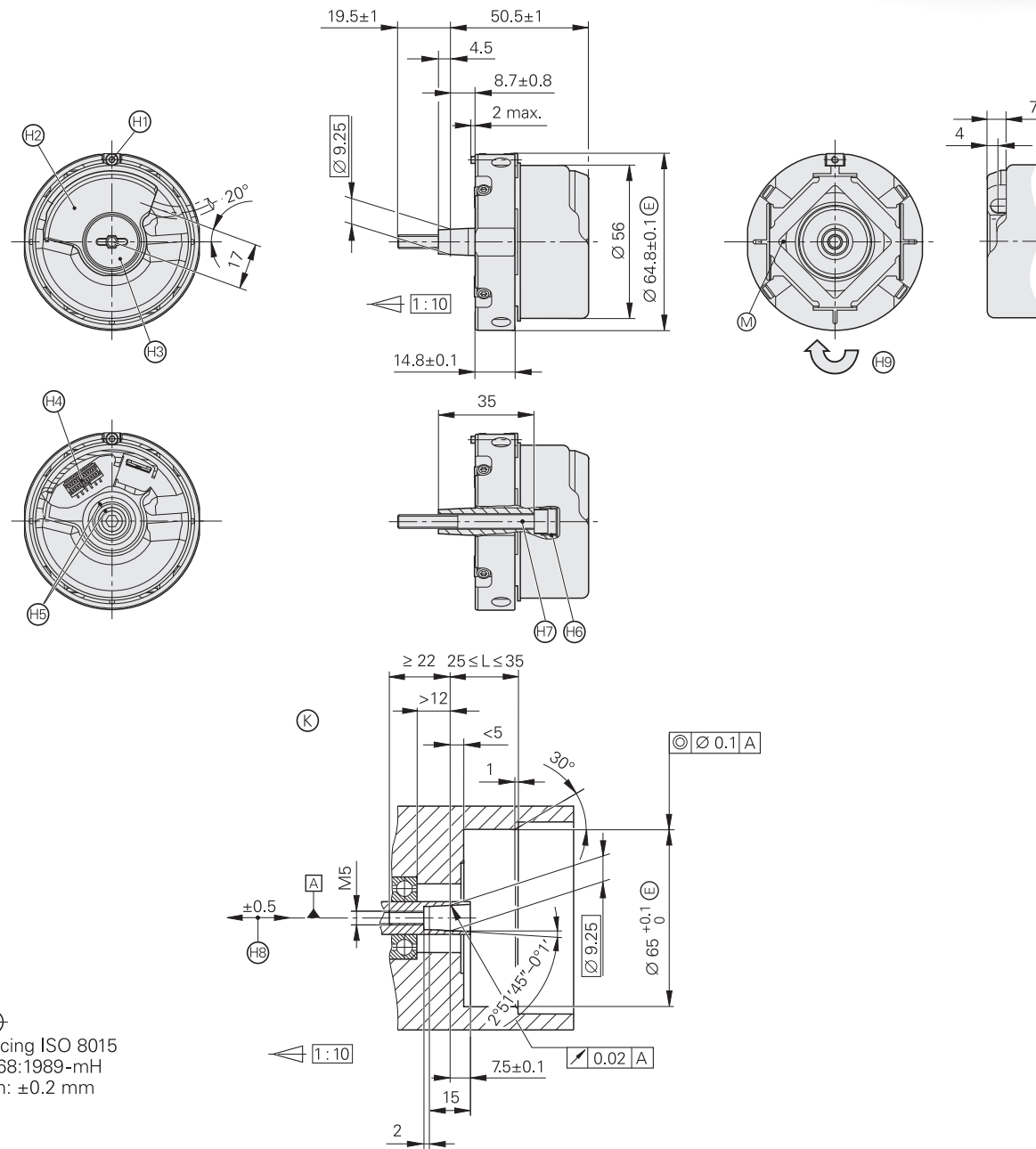
ECN 1313
EQN 1325
ECN 1325
EQN 1337

Absolute Rotary Encoders
with Tapered Shaft

ID 768295-xx
ID 1178020-xx
ID 827039-xx
ID 1178019-xx
ID 1353127-xx
ID 1353128-xx
ID 1353130-xx

08/2023

- **Absolute rotary encoders**
- **06 stator coupling for axial mounting**
- **65B tapered shaft**



- 2

- Product Information ECN 1313/EQN 1325/ECN 1325/EQN 1337 08/2023

	Absolute	
	ECN 1313	EQN 1325
Interface	SSI	
Ordering designation	SSI01r1	SSI07r1
Position values per revolution	8192 (13 bits)	
Revolutions	–	4096 (12 bits)
Electrically permissible speed/error ²⁾	15000 rpm/±12 LSB	
Calculation time t _{cal}	≤ 5 µs	
Incremental signals	~ 1 V _{PP} ¹⁾	
Line count*	512	2048
Cutoff frequency –3 dB	≥ 500 kHz	
System accuracy	512 lines: ±60"; 2048 lines: ±20"	
Electrical connection	16-pin (12+4) PCB connector	
Supply voltage	4.75 V to 30 V DC	
Power consumption (max.)	4.75 V: ≤ 600 mW 30 V: ≤ 775 mW	4.75 V: ≤ 675 mW 30 V: ≤ 875 mW
Current consumption (typical)	5 V: 70 mA (without load)	5 V: 85 mA (without load)
Shaft	Tapered shaft Ø (9.25 mm); taper: 1:10	
Mech. permiss. shaft speed n	≤ 15000 rpm	≤ 12000 rpm
Starting torque (typical)	0.01 Nm (at 20 °C)	
Moment of inertia of rotor	2.6 · 10 ^{–6} kgm ²	
Natural frequency f _N (typical)	1800 Hz	
Permissible axial motion of measured shaft	±0.5 mm	
Vibration 55 Hz to 2000 Hz Shock 6 ms	≤ 300 m/s ² ³⁾ (EN 60068-2-6); 10 Hz to 55 Hz constant over 4.9 mm peak to peak ≤ 2000 m/s ² (EN 60068-2-27)	
Operating temperature	–40 °C to 115 °C	
Relative humidity	≤ 93% (40 °C/21 d as per EN 60068-2-78); condensation excluded	
Protection rating EN 60529	IP40 when mounted	
Mass	≈ 0.25 kg	
ID number	1353127-02/-07 ⁴⁾ 1353128-01/-06 1353128-03 ⁵⁾	1353130-01/-03

* Please select when ordering

1) Deviating tolerances Signal amplitude: 0.8 V_{PP} to 1.2 V_{PP}
 Asymmetry: 0.05
 Amplitude ratio: 0.9 to 1.1
 Phase angle: 90° elec. ±5° elec.

2) Speed-dependent deviations between absolute and incremental signals

3) Valid in accordance with standard at room temperature; at operating temperatures of
up to 100 °C: ≤ 300 m/s²;
up to 115 °C: ≤ 150 m/s² (≥ 100 °C: 10 Hz to 55 Hz constant over 2.45 mm peak to peak)

4) Encoder with hybrid bearing

5) In collective package upon request

Mounting

The tapered shaft of the rotary encoder is pressed onto the measured shaft and fastened with a central screw. The stator coupling is clamped by means of an axially tightenable screw in a location hole.

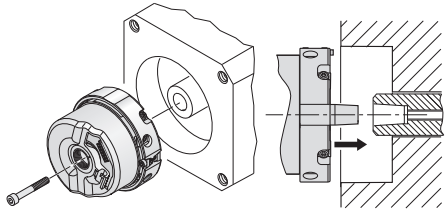
Mounting accessories

Mounting aid

To avoid damage to the cable, use the mounting aid to connect and disconnect the cable assembly. The pulling force must be applied solely to the connector and not to the wires.

ID 1075573-01

For more mounting information and mounting aids, see the **Mounting Instructions** and the *Encoders for Servo Drives* brochure. The mounting quality can be inspected with the **PWM 21** and **ATS** software.



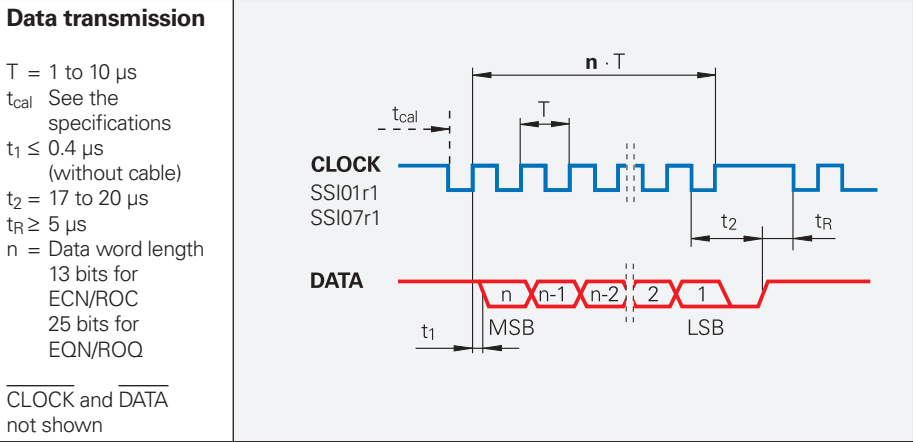
Interface

SSI position values

The **position value** is transmitted, starting with the most significant bit (MSB), over the data lines (DATA) in synchronism with a clock signal (CLOCK) provided by the control. The SSI-standard data word length for singleturn encoders is 13 bits, and for multiturn encoders, 25 bits. In addition to the absolute position values, **incremental signals** can also be transmitted. For a description of the signals, see 1 V_{PP} incremental signals in the *Rotary Encoders* brochure.

The following **functions** cannot be activated via programming inputs:

- **Direction of rotation**
- **Zero reset** (setting to zero)



Electrical connection

Pin layout SSI01r1 / SSI07r1

16-pin (12 + 4) PCB connector													
 16													
	Power supply					Incremental signals				Serial data transmission			
 12+4	1b	6a	4b	3a	/	2a	5b	4a	3b	6b	1a	2b	5a
	U _P	Sensor U _P	0V	Sensor 0V	Internal shield	A+	A–	B+	B–	DATA	<u>DATA</u>	CLOCK	<u>CLOCK</u>
													

Cable shield connected to housing; **U_P** = Power supply voltage

Sensor: The sense line is connected in the encoder with the corresponding power line.

Vacant pins or wires must not be used!

EnDat22 pin layout

16-pin PCB connector											
Power supply				Serial data transmission				Other signals ¹⁾			
1b	6a	4b	3a	6b	1a	2b	5a	1a	1b		
U _P	Sensor U _P	0 V	Sensor 0 V	DATA	DATA	CLOCK	CLOCK	T+ ²⁾	T– ²⁾		

¹⁾ Only for adapter cables inside the motor housing

²⁾ Connections for external temperature sensor; evaluation optimized for KTY 84-130

(see *Temperature measurement in motors* in the *Encoders for Servo Drives* brochure)

Cable shield connected with housing; **U_P** = Power supply voltage; **T** = Temperature

Sensor: The sense line is connected in the encoder with the corresponding power line.

Vacant pins or wires must not be used!

EnDat01 pin layout

12-pin PCB connector													
Power supply				Incremental signals				Serial data transmission					
1b	6a	4b	3a	/	2a	5b	4a	3b	6b	1a	2b	5a	
U _P	Sensor U _P	0 V	Sensor 0 V	Internal shield	A+	A–	B+	B–	DATA	DATA	CLOCK	CLOCK	

Cable shield connected with housing; **U_P** = Power supply voltage; **T** = Temperature

Sensor: The sense line is connected in the encoder with the corresponding power line.

Vacant pins or wires must not be used!

HEIDENHAIN

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This Product Information document 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 placed.



Further information:

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

- Operating Instructions

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