

Rotary Measuring Technology

Incremental shaft encoder

High resolution Type ESI 58HA



- Sturdy model to industry standard, Ø58 mm housing
- Resolution up to 36000 ppr (internally interpolated)
- Pulse frequency up to 800 kHz
- IP 65
- Temperature and ageing compensation
- Short-circuit proof outputs
- Reverse connection protection (at $U_B = 10 \dots 30 \text{ V DC}$)
- Highly flexible PUR-cable
- High shaft load
- Many variations, also customized versions
- Alarm output (optional)
- available as explosion proof zone 2 and 22

Mechanical characteristics:

Speed:	max. 12000 min ⁻¹
Rotor moment of inertia:	approx. $1.8 \times 10^{-6} \text{ kgm}^2$
Starting torque:	< 0.01 Nm
Radial load capacity of shaft*:	80 N
Axial load capacity of shaft*:	40 N
Weight:	approx. 0.4 kg
Protection acc. to EN 60 529:	IP 65
Working temperature:	-20 °C ... +85 °C ¹⁾²⁾
Operating temperature:	-20 °C ... +90 °C ¹⁾²⁾
Shaft:	stainless steel
Shock resistance acc. to DIN-IEC 68-2-27	1000 m/s ² , 6 ms
Vibration resistance acc. to IEC 68-2-6:	100 m/s ² , 10 ... 2000 Hz

* View also diagrams on page 25

¹⁾ Constant trailing: -20 ... +70 °C

²⁾ Non-condensing

Pulse rates available at short notice:

6000, 7200, 8000, 8192, 9000, 10000, 18000, 25000, 36000

Other pulse rates on request

Electrical characteristics:

Output circuit:	RS 422 (TTL-compatible)	Push-pull
Supply voltage:	5 V (±5%) or 10 ... 30 V DC	10 ... 30 V DC
Power consumption (no load) without inverted signal:	–	typ. 90 mA / max. 135 mA
Power consumption (no load) with inverted signals:	typ. 70 mA / max. 120 mA	typ. 115 mA / max. 160 mA
Permissible load/channel:	max. ±20 mA	max. ±30 mA
Pulse frequency:	max. 800 kHz	max. 600 kHz
Signal level high:	min. 2.5 V	min. $U_B - 2.5 \text{ V}$
Signal level low:	max. 0.5 V	max. 2.0 V
Rise time t_r :	max. 200 ns	max. 1 µs
Fall time t_f :	max. 200 ns	max. 1 µs
Short circuit proof outputs: ¹⁾	yes ²⁾	yes
Reverse connection protection at U_B :	no; 10 ... 30 V: yes	yes
Conforms to CE requirements acc. to EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3		

¹⁾ If supply voltage correctly applied

²⁾ Only one channel allowed to be shorted-out:

(If $U_B = 5 \text{ V}$, short-circuit to channel, 0 V, or + U_B is permitted)

(If $U_B = 5-30 \text{ V}$, short-circuit to channel or 0 V is permitted)

Terminal assignment

Signal:	0V	0V Sensor2)	+ U_B	+ U_B Sensor2)	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	Shield
12 pin plug, Pin:	10	11	12	2	5	6	8	1	3	4	PH ¹⁾
Cable colour:	WH 0.5 mm ²	WH	BN 0.5 mm ²	BN	GN	YE	GY	PK	BU	RD	

¹⁾ PH = Shield is attached to connector housing

²⁾ Sensor cables are connected to the supply voltage internally if long feeder cables are involved they can be used to adjust or control the voltage at the encoder

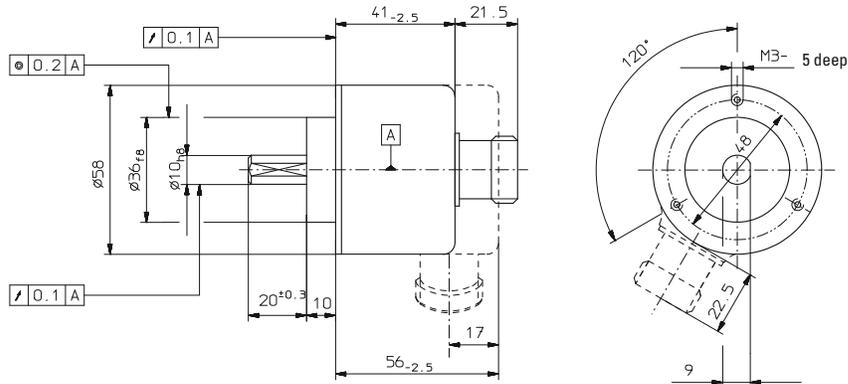
- If sensor cables are not in use, they have to be insulated or 0 V_{Sensor} has to be connected to 0 V and $U_{B \text{ Sensor}}$ has to be connected to U_B

- Using RS 422 outputs and long cable distances, a wave impedance has to be applied at each cable end.
Insulate unused outputs before initial startup.

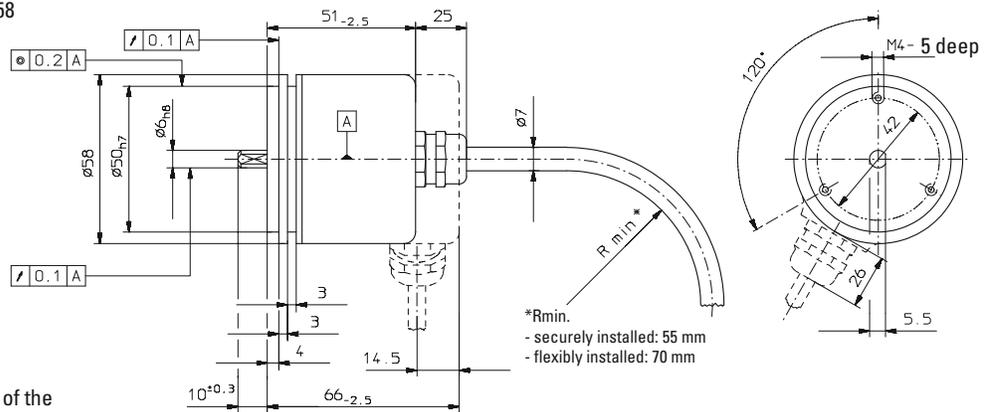
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Dimensions

Clamping bracket $\varnothing 58$



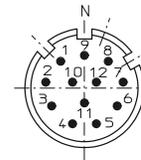
Synchronous bracket $\varnothing 58$



Mounting advice:

The brackets and shafts of the encoder and drive should not both be rigidly coupled together at the same time! We recommend the use of suitable couplings (see Accessories section).

Top view of mating side, male contact base:



Order code:

ESI 58HA.XXXX.XXXXX

Range		Pulse rate	(e.g. 18000 pulses=> 18000)
Bracket	1 = Clamping bracket $\varnothing 58$ 2 = Synchronous bracket $\varnothing 58$	Type of connection	1 = Cable axial (1 m PUR-Cable) 2 = Cable radial (1 m PUR-Cable) 3 = axial 12 pin plug without mating 5 = radial 12 pin plug without mating
Shaft	1 = $\varnothing 6 \text{ mm} \times 10 \text{ mm}$ 2 = $\varnothing 10 \text{ mm} \times 20 \text{ mm}$		
Type of connection and supply voltage	4 = RS 422 (with inverted signal) 5 V supply voltage 5 = RS 422 (with inverted signal) 10 ... 30 V supply voltage 6 = Push-pull (with inverted signal) 10 ... 30 V supply voltage 7 = Push-pull (without inverted signal) 10 ... 30 V Supply voltage		

Preferred types are indicated in bold