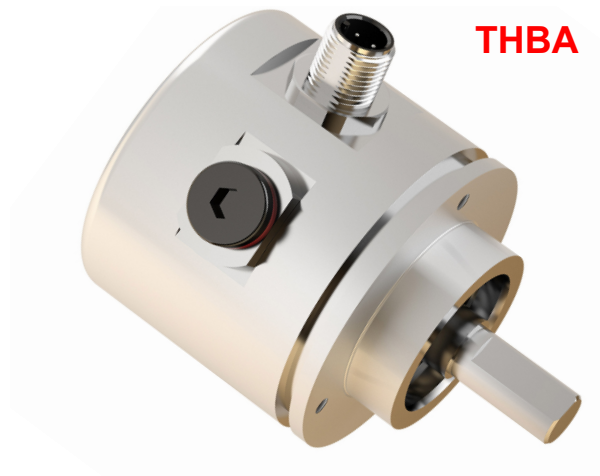
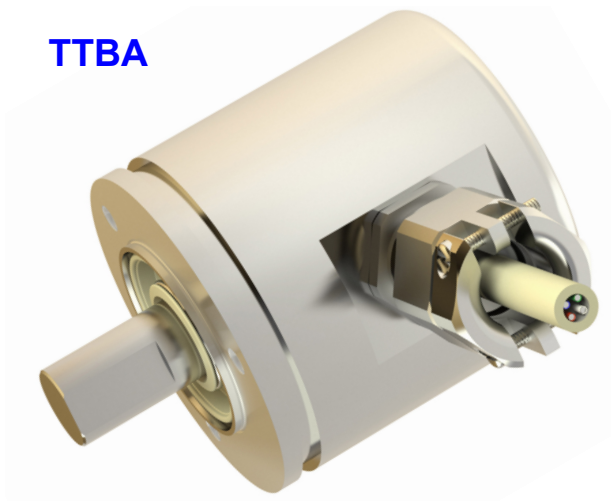


Rotary Encoder for low and high temperature applications Models TTBA / THBA - MONOTOUR, analog output



- Compact, robust versions for low- or high-temperature applications
- Two-chamber system for separation of shaft and electronics
- Low temperature range: - 60 °C to + 85°C
High temperature range: - 40 °C to + 125°C
- Angle measuring range: up to 360°
- Linearity: <math>< \pm 0.5 \% (T), < \pm 1.5 \% (H)</math>
- Interface: Analog 0(4) ... 20 mA
- Supply voltage nominal 24 VDC
- Characteristic with underflow and overflow for measuring ranges <math>< 360^\circ</math>
- High temperature model:
 - Switch for code progression under rear cover
 - button for preset behind lateral screw plug

Design and function

The encoder uses magnetic sensor. Due to the robust design, this sensor can be used in harsh environments. The robust housing is available in aluminum or stainless steel. This harsh environmental encoder is available in two version. The TTBA version is made for low temperatures (-60 ... +85°C). The THBA is made for high temperatures (-40 ...+125°C).

Rotary Encoder

Model TXBA / low / high temperature application

Technical Data

Mechanical data

- Housing material: aluminum or stainless steel
- Operating speed: < 1000 rpm
- Angular acceleration: 10^5 rad/s² max.
- Moment of inertia shaft: 20 gcm²
- Operating torque: < 3 Ncm, without shaft sealing ring
- Starting torque: < 1 Ncm, without shaft sealing ring
- Operating torque: < 8 Ncm, with shaft sealing ring
- Starting torque: < 4 Ncm, with shaft sealing ring (operating torques at 500 rpm)
- Permissible shaft load: 250 N axial / radial
- Bearing service life: > 10⁹ revolutions
- Mass: approx. 0.4 kg (aluminum)
approx. 0.6 kg (stainless steel)
- Protection class, shaft side: IP 65 - THBA (without shaft sealing ring)
IP 66 - TTBA (with shaft sealing ring)
- Protection class, electronics side: IP 67

Environmental data

- Operating temperature range: Version "T": -60 °C to +85 °C
- Operating temperature range: Version "H": -40 °C to +125 °C
- Storage temperature range: -20 °C to +60 °C (due to packaging)
- Resistance
 - against shock: 500 m/s²; 5 ms (DIN EN 60068-2-27)
 - against vibration: 200 m/s²; 10 ... 1000 Hz (DIN EN 60068-2-6)
- EMC standards: EN 61000-6-2 (ESD),
EN 61000-6-4 (burst)
- MTTF: 106.6 a (at temperature = + 25 °C)
31.9 a (at temperature = +85 °C)
0.4 a (at temperature = +125 °C)
(temperature permanently applied)

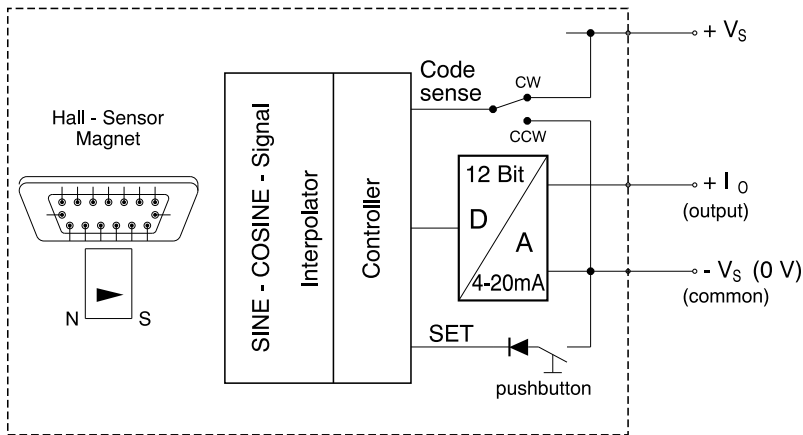
Electrical data

- Sensor system: ASIC with HALL elements
- D / A converter: 12 bit
- Measuring range: 0 to 360°
- Linearity: ± 1.5 % (high temp.)
± 0.5 % (low temp.)
- Repeatability: ± 0.8 % (high temp.)
± 0.25 % (low temp.)
- Temperature drift: ± < 0.01 % / K typ.
± < 0.004 % / K (optional)
- Operating voltage: 18 ... 28 VDC (low temp.)
24 VDC ± 10 % (high temp.)
- Current consumption: 80 mA typ. (low temp.)
55 mA typ. (high temp.)

Rotary Encoder Model TXBA / low / high temperature application

Block diagram, Electrical output data

Block diagram



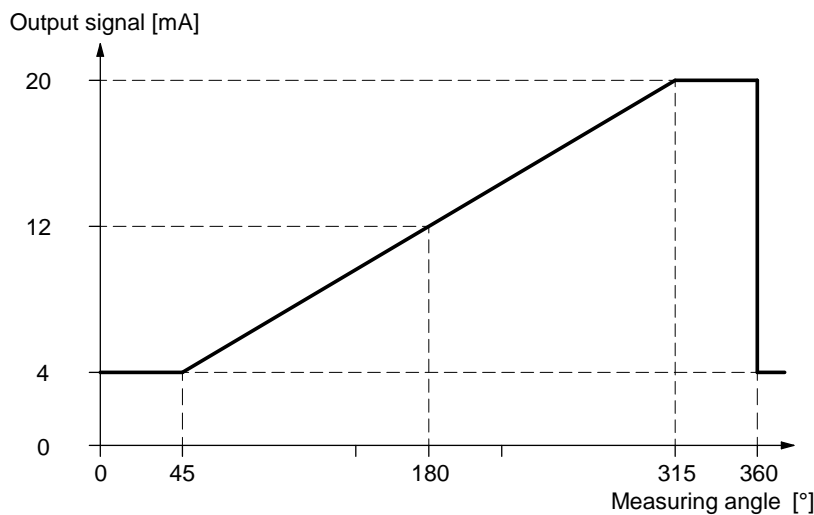
Note: Switch for signal sequence (Codesense) and button for preset (SET) only for high temperature model THBA

Electrical output data

- Current output
 - A: 0 to 20 mA, 4.88 μ A / digit
 - B: 4 to 20 mA, 3.91 μ A / digit
- Load resistance (burden):
 - 0 ... 250 Ω (high temp.)
 - 0 ... 500 Ω (low temp.)

Characteristic curve

Characteristic curve (example for overflow and underflow at 270° measuring angle at output B)



Rotary Encoder

Model TXBA / low / high temperature application

Order number

Order code format (Rotary Encoder)

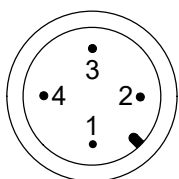
TTBA	50	S	A	360	W	S	B	01
TTBA	Model (with analog output): <ul style="list-style-type: none"> ■ TTBA: T = -60 °C to +85 °C ■ THBA: T = -40 °C to +125 °C 							
50	Design: ø 50 mm (only low temp.) ø 58 mm							
S	Flange: S = Synchro flange K = Clamping flange							
A	Housing material: A = Aluminum S = Stainless steel							
360	Measuring range: 360°							
W	Signal course: W = CW C = CCW							
S	Electrical connections: K = Cable 1 m S = Plug (high temp. only)							
B	Output signals: A = 0 - 20 mA B = 4 - 20 mA							
01	Electrical and mechanical variants*							

* The basic versions (standard) according to the data sheet bear the number 01. Deviations are marked with a variant number and documented at the factory.

- **Order designation Mating connector for THBA**
 (M12, socket, 4-pin, A-coded): **STK4GS94**

Electrical connections at the connector of the Model THBA

Looking at the pin side of the connector installed in the THBA, M12, A-coded:



M12-connector
Pin, 4-pin

Contact assignment	
Pin number	Function
1	+V _S
2	-V _S
3	Output signal lo
4	not connected

The contact assignment can also be found in the terminal assignment enclosed with each device.

The wire colors for cable connection can be found in the enclosed pin assignment.

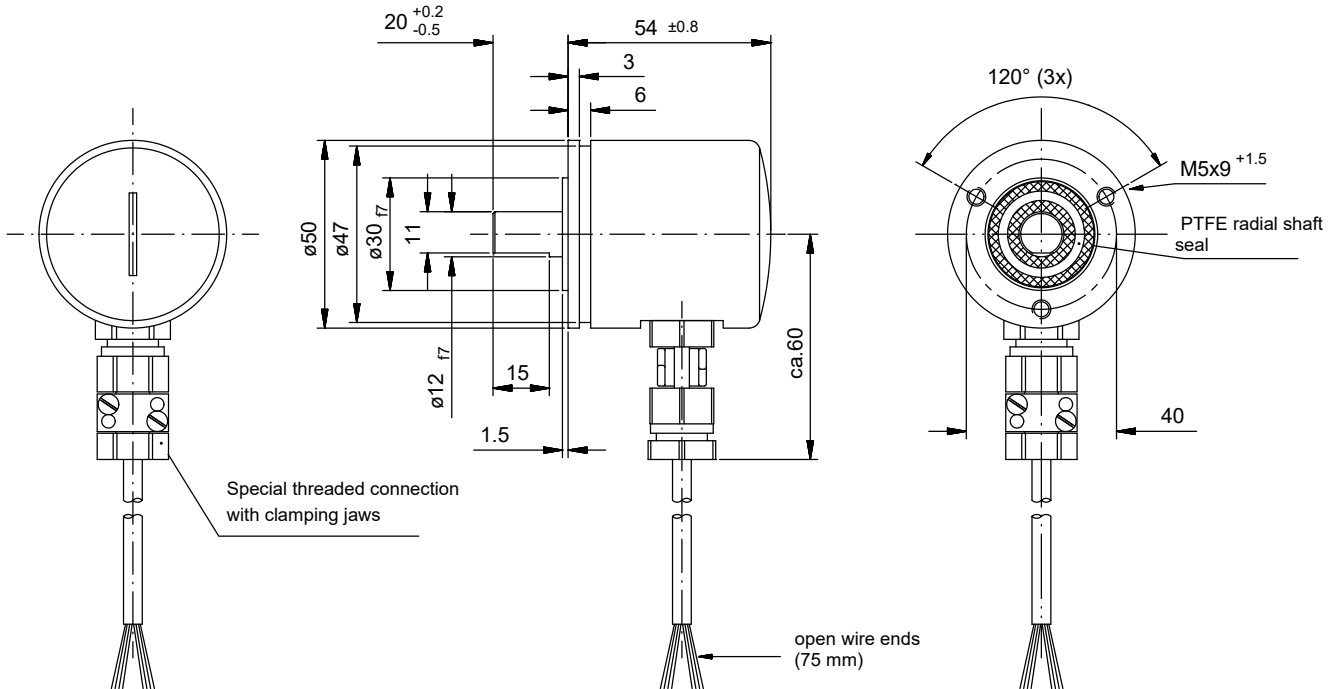
Attention:

The special version TBA58-KA080WSB69 has a plug M16, 3-pole (series 723) as electrical connection.

**Rotary Encoder
Model TXBA / low / high temperature application**

Installation dimensions low temperature TTBA (dimensions in mm)

Housing with cable gland (Synchro flange)



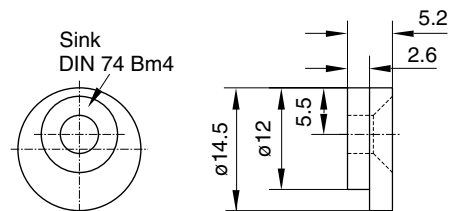
Materials used

- Aluminum housing: AlMgSi1
- Stainless steel housing: 1.4305 (Note: in each case incl. housing cover)
- Stainless steel shaft: 1.4305
- Sealing rings: PTFE
- Cable gland: nickel-plated brass or 1.4305 with silicone gasket

Mounting clamps of the KL 66-2-S

(see data sheet [MZ 10111](#))

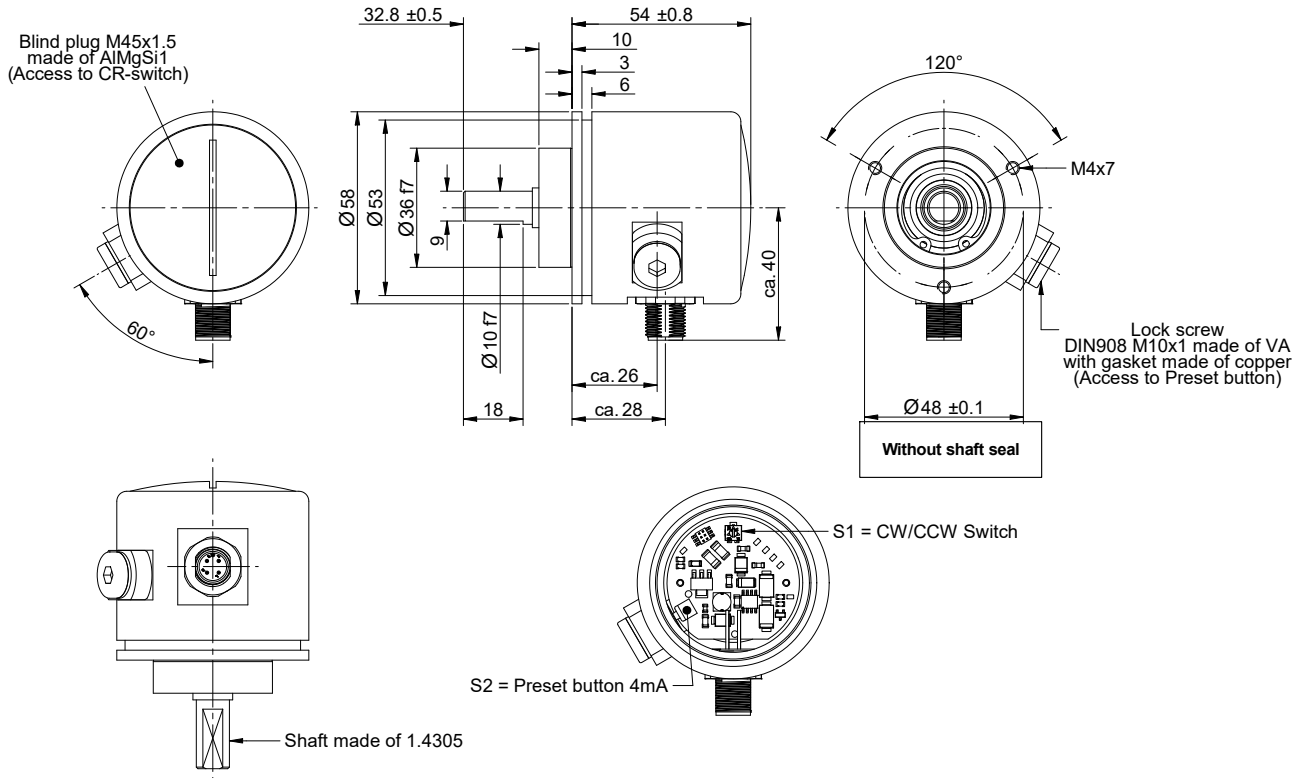
- Pitch circle diameter: 65 + 0.5 mm / TTBA
73 + 0,5 mm / THBA
- Material: Ms nickel plated
- Required screws: M4 countersunk head with
(3 pieces required in each case)
hexagon socket DIN 7991



Rotary Encoder Model TXBA / low / high temperature application

Installation dimensions high temperature TTBA (dimensions in mm)

Housing with housing connector M12 (Clamping flange)



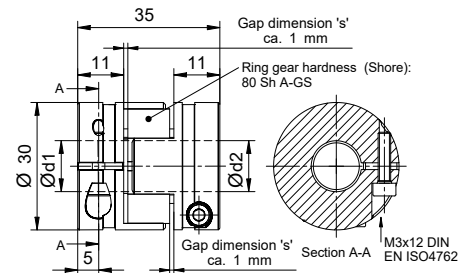
Materials used

- Aluminum housing: AlMgSi1
- Stainless steel housing: 1.4305 (Note: in each case incl. housing cover)
- Stainless steel shaft: 1.4305
- Sealing rings: Silicone
- Screw plug: 1.4305
- Cable gland: nickel-plated brass or 1.4305 with silicone seal

Clamping coupling KK14S/12

(see data sheet [KK 12301](#))

- Operating temperature range: -50 °C to +80 °C (permanent)
-60 °C to +120 °C (short-term)
- Material: Clamping hub: AlMgSiSnBi (Stanal 32),
Gear rim: Polyurethane
- Available bore diameters "d1" or "d2":
6 mm to 12 mm in increments of 2 mm.



Bellows coupling BKK32

(see data sheet [BKK 11840](#))

- Operating temperature range: -40 °C to +150 °C
- Material: stainless steel, 1.4301
- Available bore diameters "d1" or "d2":
4 mm to 12 mm in increments of 1 mm,
as well as 6.35 mm and 12.7 mm.

