

- Contactless, robust sensor system
- Infinite resolution, no hysteresis
- Definite repeatability
- Integral electronic circuit
- Calibrated voltage or current output signals
- Protection to IP 65
- For symmetrical or unsymmetrical supply voltages



Construction and operating principle

The angle transducer operates according to the principle of the differential choke (inductive half bridge). It consists of two coils and a disc shaped rotor formed from two metals of different permeability. The coils are excited with a 10 kHz carrier frequency voltage. When turning the rotor opposing changes of inductance and, consequently, of voltage occur in the coils. These changes of inductance are converted by the integral electronic circuit into a signal proportional to the angle of rotation. The SMD electronic circuit contains an oscillator, demodulator, amplifier and/or current output source. It is short-circuit proof and protected against reverse polarity.

The flange and case are made from anodised aluminium and the shaft from stainless steel. The ball bearings are sealed with Nilos rings. The transducers can be freely rotated, i.e. without any end-stops. The electrical connection is provided by a radial plug.

Standard measuring ranges : 15°, 30°, 45°, 60°, 75°, 90°, 105° ∇

Other ranges within the maximum angle of 105° ∇ can be calibrated upon request.

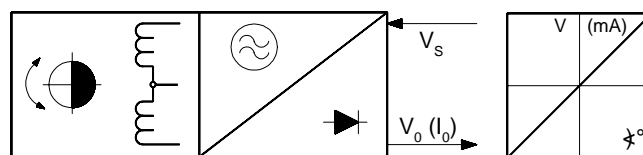
Depending on the type of transducer the midpoint is either in the middle of the range (i.g. 15° ... 0 ... 15° ∇) or at one end of the angle (i.g. 0 ... 30° ∇). Further details are given on table page 2.

Technical Data

- Supply voltage range V_s
 - unsymmetrical : 21.5 to 32 VDC
 - symmetrical : \pm 13 to 16 VDC
- Accuracy: 0.5% or 0,25%
- Temperature drift : \pm 0.01%/°C
- Stability: \leq 0.1% in 24 hours
- Measurement frequency : < 100 Hz
- Speed : 3000 rpm max.
- Torque at +20°C : \leq 1 Ncm at 1000 rpm
- Breakaway torque at +20°C : \leq 0.2 Ncm
- Permissible axial and radial shaft load : 100 N
- Bearing service life : 10⁹ rotations at max. load and max. speed

- Operating temperature range: -10°C to +80°C
- Storage temperature range : -30°C to +80°C
- Resistance to shock : 20g SRS at 20 to 2000 Hz
- Resistance to vibration : 3g rms at 20 to 2000 Hz
- Protection class : IP 65
- Mass : 0.3 kg

Basic block diagram



Current output (ID 581 to ID 584)

- Output signal : 0 to 20 mA or 4 to 20 mA
- Supply current I_s : 60 mA max.
- Load resistance : 0...500 Ω
- Ripple : \leq 0.005 mA_{P-P}
- Dependence on R_L : \leq 0.001% for $\Delta R_L = 100 \Omega$
- Dependence on V_s : \leq 0.05% for $\Delta V_s = 1 V$
- Max. output current: 25 mA

Voltage output (ID 585 to ID 58B)

- Output signal : \pm 10 VDC or 0 to 10 VDC *
- Supply current I_s : 35 mA max.
- Permissible load : 2 k (short-circuit proof)
- Ripple: \leq 5 mV_{P-P}
- Dependence on V_s : \leq 0.05% for $\Delta V_s = 1 V$

* Residual voltage 0.1 VDC max.

Note: Unless otherwise stated, all values are valid at +20°C ambient temperature and 24 VDC or \pm 15 VDC supply voltage, starting 10 minutes after switch-on.

Standard types and calibration modes

Type	Output signal	Supply voltage V_s **	Output * sense	Mid-point
ID 581	0 ... 20 mA	21.5 ... 32 V	CW	10 mA
ID 582			CCW	
ID 583	4 ... 20 mA	21.5 ... 32 V	CW	12 mA
ID 584			CCW	
ID 585	± 10 V	± 13 ... ± 16 V	CW	0 V
ID 586			CCW	
ID 58A	0 ... 10 V	21.5 ... 32 V	CW	5 V
ID 58B			CCW	
ID 589	Special variants			

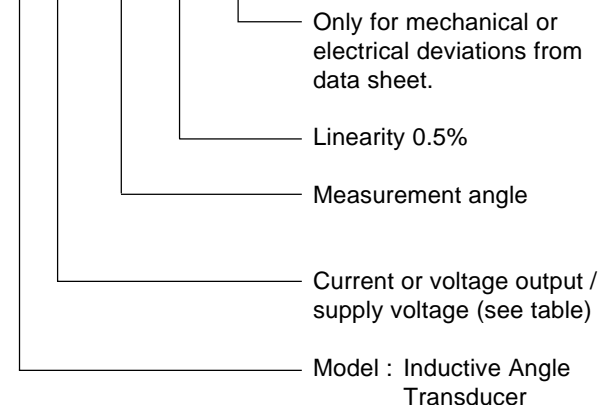
* CW = signal increases positively for rotation in clockwise direction when viewed on the shaft.

CCW = signal increases positively for rotation in counter-clockwise direction when viewed on the shaft.

** Other supply voltages upon request.

Order code format

ID 581 - 105 - 0.5 - A02*



* The applicable A-No. is specified after the definition of the deviation when ordering. No A-No. is given for standard versions as defined in this the data sheet.

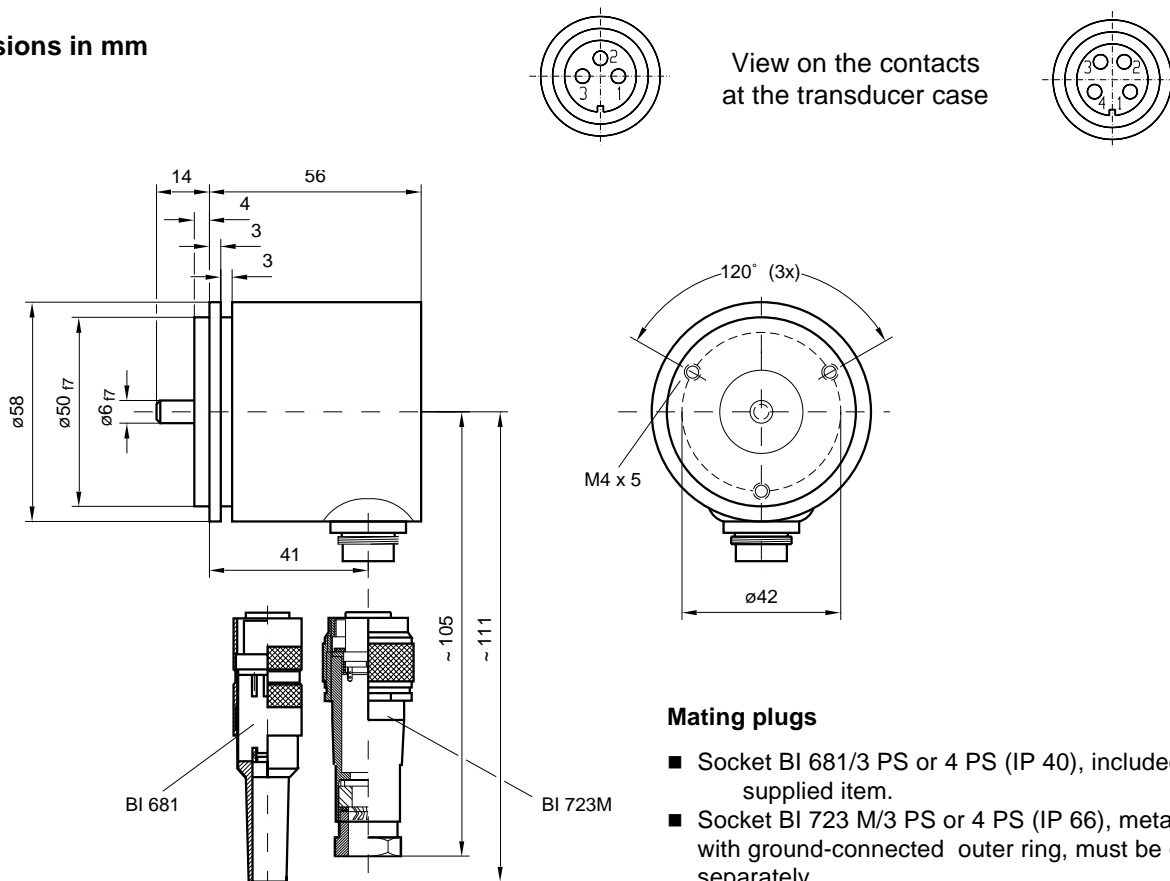
Electrical connections

Output, 3-way (3 PS)
Current signal ID 581 to ID 584
Pin No. 1 = +Vs Pin No. 2 = -Vs (0 V)-Io Pin No. 3 = +Io (output)

Output, 3-way (3 PS)
Voltage signal ID 58A and 58B
Pin No. 1 = +Vs Pin No. 2 = -Vs (0 V) Pin No. 3 = +Vo (output)

Output, 4-way (4 PS)
Voltage signal ID 585 and ID 586
Pin No. 1 = +Vs Pin No. 2 = 0 V (common) Pin No. 3 = -Vs Pin No. 4 = +Vo (output)

Dimensions in mm



Mating plugs

- Socket BI 681/3 PS or 4 PS (IP 40), included in supplied item.
- Socket BI 723 M/3 PS or 4 PS (IP 66), metal case with ground-connected outer ring, must be ordered separately.
- All plug contacts are gold-plated.