

## TECHNICAL DATASHEET

### Absolute Encoder AC 36 - BiSS / SSI



- Overall length: 36 mm
- For equipment engineering and industry
- Up to 17 Bit Resolution Singleturn + 12 Bit Multiturn
- Solid shaft 6 mm (Hollow shaft version: AD 36)
- +100°C operating temperature
- 10,000 rpm (continuous)
- Optical encoder with a true geared multiturn
- Interfaces: SSI, BiSS-B or BiSS-C
- Option Sinewave 1 Vpp
- Bandwidth 500 kHz



#### APPLICATIONS

The AC 36 is an absolute optical encoder with a true geared multiturn, optical sensing technology and 36 mm diameter. Equipped with a solid-shaft the AC 36 is mechanically compatible with all common incremental encoders. The compact design allows to replace the adequate incremental encoders directly. As a result the technical facilities of absolute encoders can be used for the first time in equipment engineering and also in medical engineering. The mechanical design consists of two ball bearings supported mechanical shaft assembly. The AC 36 complements the **ACURO®-industry** series with small frame sizes and the same performance as 58 mm versions.

#### BiSS-Interface

Unique within his class the AC 36 provides fully digital position data up to 17 Bit (singleturn) and 12 Bit (multi-turn) over the bidirectional synchronous interface with a variable clock rate up to 10 MHz. This corresponds a singleturn resolution of more than 130 000 measured steps. Backward compatibility is realized through the SSI interface together with 2048 sine-cosine periods per revolution.

#### Integrated diagnostic system

The AC 36 is based on latest OptoAsic technology with an advanced diagnostic concept. A continuous plausibility check controls the internal signal processing for each increment. A code check guarantees that the encoder signal represents bit by bit the measured rotation. Also the operating temperature of the encoder can be measured, read out and monitored over warn and alarm bits with 8 bit resolution (1°C). Monitoring and controlling of the operating temperature ensures a maximum lifetime of the LED. Eventual failures are indicated early over warn bits.

#### TECHNICAL DATA mechanical

Housing diameter	37.5 mm
Shaft diameter	6 mm (Solid shaft)
Flange (Mounting of housing)	Pilot flange
Protection class shaft input (EN 60529)	IP64
Protection class housing (EN 60529)	IP64
Max. speed	max. 10 000 rpm (continuous), max. 12 000 rpm (short term)
Starting torque typ.	≤ 1 Ncm
Moment of inertia	ca. 2.5 x 10 <sup>-6</sup> kgm <sup>2</sup>

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**TECHNICAL DATA  
mechanical (continued)**

Vibration resistance (DIN EN 60068-2-6)	100 m/s <sup>2</sup> (10 ... 2000 Hz)
Shock resistance (DIN EN 60068-2-27)	1000 m/s <sup>2</sup> (6 ms)
Operating temperature	-40 °C ... +100 °C
Storage temperature	-15 °C ... +85 °C
Weight	approx. 80 g (ST) / 130 g (MT)
Connection	Cable, axial or radial

**TECHNICAL DATA  
electrical**

Supply voltage	-5%/ 10% DC 5 V DC 7-30 V
Current w/o load typ.	100 mA (ST), 150 mA (MT)
Resolution singleturn	12 - 17 Bit
Resolution multiturn	12 Bit
Output code	Gray, Binary
Drives	Clock and Data / RS422
Incremental signals	Sinus-Cosinus 1 Vpp
Number of pulses	2048
3dB limiting frequency	500 kHz
Absolute accuracy	±35"
Alarm output	Alarm bit (SSI Option), warning and alarm bit (BiSS)

**ELECTRICAL CONNECTIONS  
Cable**

Signal	Colour cable
5 / 7-30 V (U <sub>B</sub> )	white
0 V (U <sub>N</sub> )	brown
Clock	yellow
Clock	green
Data	pink
Data	grey
A	white/green <sup>1</sup>
A	brown/green <sup>1</sup>
B	red/blue <sup>1</sup>
B	grey/pink <sup>1</sup>
5 V Sensor	violet <sup>1</sup>
0 V Sensor	black <sup>1</sup>

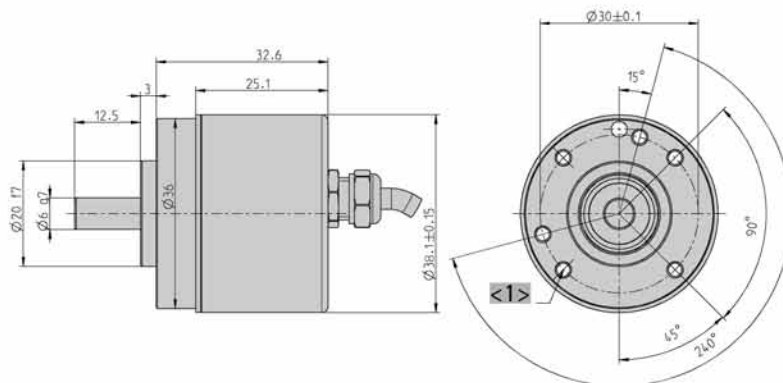
<sup>1</sup> only with "SC"

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#### DIMENSIONED DRAWINGS

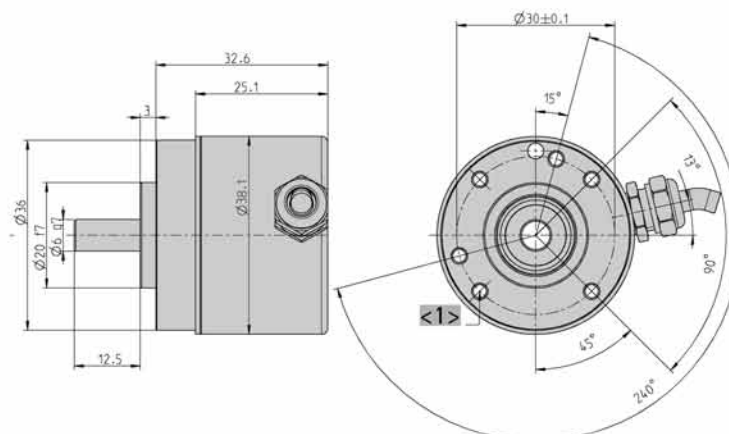
##### Connection axial



<1> M3 (depth 6)

Dimensions in mm

##### Connection radial



<1> M3 (depth 6)

Dimensions in mm

#### ORDERING INFORMATION

Type	Resolution	Supply voltage	Flange, Protection, Shaft	Interface	Connection
<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>AC36</b>	<b>0012</b> 12 Bit ST <b>0013</b> 13 Bit ST <b>0014</b> 14 Bit ST <b>0017</b> 17 Bit ST <b>1213</b> 12 Bit MT + 13 Bit ST <b>1217</b> 12 Bit MT + 17 Bit ST (BiSS)	<b>A</b> DC 5 V <b>E</b> DC 7 - 30 V	<b>R.41</b> Pilot, IP64, 6 mm	<b>BI</b> BiSS-B <b>SB</b> SSI Binary <b>SG</b> SSI Gray <b>SC</b> SSI Gray (+SinCos 1Vpp) <b>BE</b> BiSS-C	<b>A</b> Cable, axial <b>B</b> Cable, radial

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#### ORDERING INFORMATION Selection of cable length

Versions with cable outlet (connection A, B, E or F) are available with various lengths of cable. To order your desired cable length, please add the respective code to the end of your ordering code. For variants with connector on cable end please add cable length code in between. Further cable lengths on request.

Code	Cable length
without code	1.5 m
-D0	3 m
-F0	5 m
-K0	10 m
-P0	15 m
-U0	20 m
-V0	25 m

Example:

Cable 3 m length: ... B - D0

Cable mit 3 m length and M23 connectorr, cw: ... B - D0 - I

## TECHNICAL DATASHEET

### Absolute Encoder AC 36 - BiSS / SSI Accessories

#### FLEXIBLE COUPLINGS



Bellows coupling



Disk coupling



Helical coupling



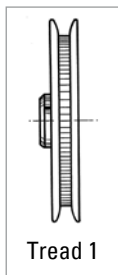
Isolated disk coupling



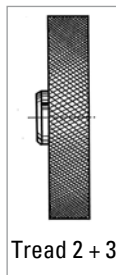
Plastic coupling

		Ordering code
Bellows coupling	6 mm / 6 mm	3 520 068
Disk coupling	6 mm / 6 mm	0 070 663
Helical coupling 19/28	5 mm / 6 mm	3 520 035
Helical coupling 19/28	6 mm / 6 mm	0 070 653
Helical coupling 25/32	6 mm / 9.53 mm	3 520 052
Helical coupling 25/32	6 mm / 10 mm	3 520 066
Isolated disk coupling	6 mm / 6 mm	3 520 081
Isolated disk coupling	6 mm / 10 mm	3 520 082
Plastic coupling	5 mm / 6 mm	3 520 033
Plastic coupling	6 mm / 6 mm	1 761 026

#### MEASURING WHEELS



Tread 1



Tread 2 + 3

##### Tread 1

with rim and fine crosshatched knurl  
Applications such as threads and yarns

##### Tread 2 B

with glued-on rubber profile B = low-wear rubber surface with good grip (white)  
Applications such as paper and cardboard, measuring cables, nongreasy metals, fleece, undressed or surface-treated wood, soft and hard plastics

Material	Bore diameter (mm) fitting to encoder shaft	Circum- ference	Tread	Width of bearing surface	Ordering code
Aluminum	6 mm	0.2 m	1	4 mm	0 601 015
Aluminum	6 mm	0.2 m	2 B	12 mm	0 601 048

#### DISPLAYS

	Ordering code
Position indicator Signo-SSI	0 727 111