TECHNICAL DATASHEET

Absolute Encoder AC 36 - BiSS / SSI



- Overall length: 36 mm
- For equipment engineering and industry
- Up to 22 Bit Resolution Singleturn + 12 Bit Multiturn
- Solid or hollow shaft version available
- +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. Equiped with a solid-shaft the AC 36 is mechanical 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 22 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 sinecosine 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 mesured 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	38,1 mm
Shaft diameter	6 mm (Solid shaft) 8 mm (Hub shaft)
Flange (Mounting of housing)	Pilot flange, Tether
Protection class shaft input (EN 60529)	IP50 or IP64
Protection class housing (EN 60529)	IP64
Axial endplay of mounting shaft (Hub shaft)	± 0,5 mm
Radial runout of mating shaft (Hub shaft)	± 0,05 mm

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TECHNICAL DATA mechanical (continued)

Max. speed	max. 10 000 rpm (continuous), max. 12 000 rpm (short term)
Starting torque typ.	≤ 1 Ncm (at 20°C)
Moment of inertia	ca. 2,5 x 10^{-6} kgm²
Vibration resistance (DIN EN 60068-2-6)	100 m/s² (10 ... 2000 Hz)
Shock resistance (DIN EN 60068-2-27)	1000 m/s² (6 ms)
Operating temperature	-40 °C ... +100 °C
Storage temperature	-25 °C ... +85 °C
Weight	ca. 80 g (ST) / 130 g (MT)
Connection	Cable, axial or radial

TECHNICAL DATA electrical

Supply voltage	DC 5 V -5 %/+10 % DC 7 - 30 V
Current w/o load typ.	100 mA (ST), 150 mA (MT)
Allowable load	max. 30 mA
Resolution singleturn	12 - 22 Bit
Resolution multiturn	12 Bit
Output code	Gray, Binary
Drives	Clock and Data / RS422
Incremental signals	Sinus-Cosinus 1 Vpp
Number of pulses	2.048
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_B)	white
0 V (U_N)	brown
Clock	yellow
$\overline{\text{Clock}}$	green
Data	pink
$\overline{\text{Data}}$	grey
A	white/green [1]
$\overline{\text{A}}$	brown/green [1]
B	red/blue [1]
$\overline{\text{B}}$	grey/pink [1]
5 V Sensor	violet [1]
0 V Sensor	black [1]

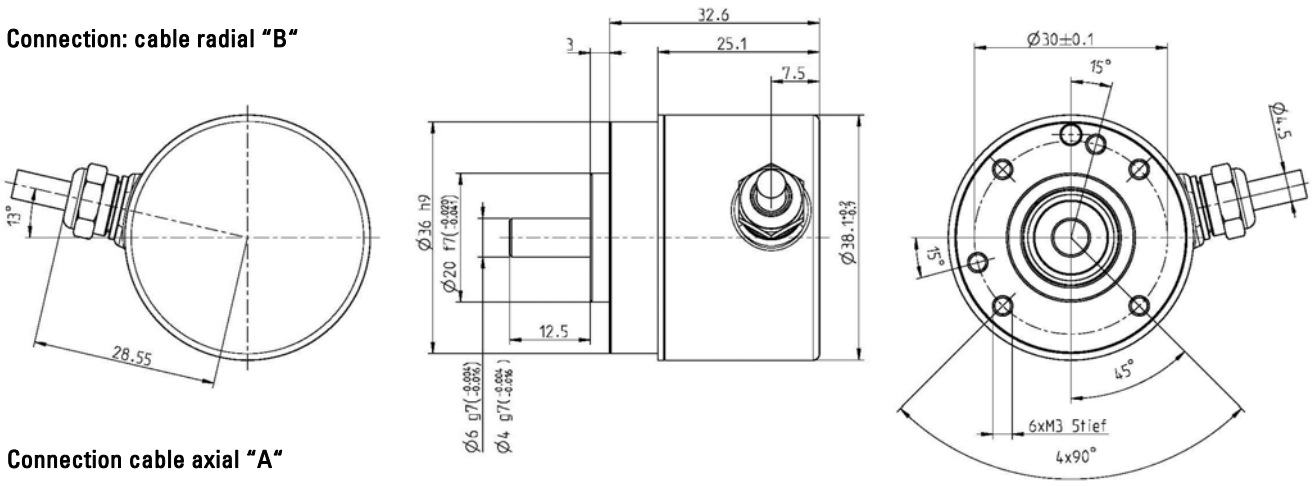
[1] only with “SC“, “SD“, “BC“, “BV“

TECHNICAL DATASHEET

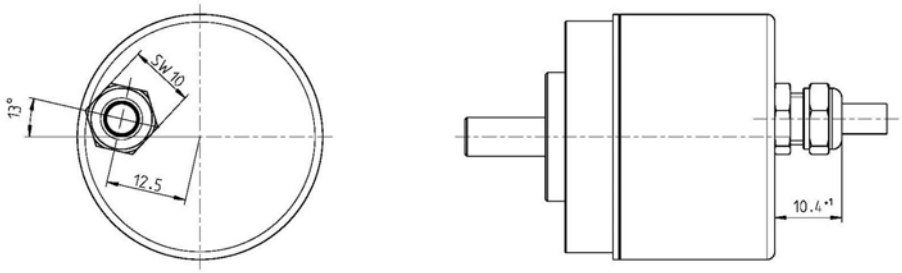
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DIMENSIONED DRAWINGS
Pilot flange „R“

Connection: cable radial “B“



Connection cable axial “A“



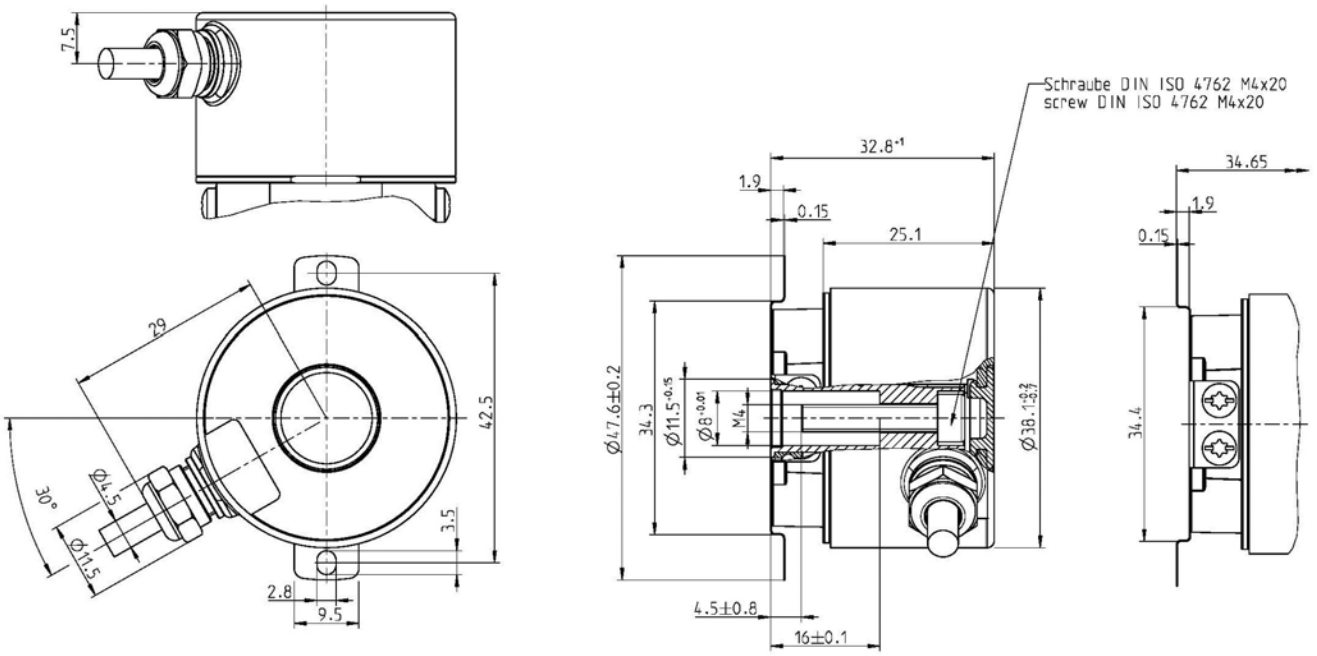
Dimensions in mm

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DIMENSIONED DRAWINGS
(continued)
Hub shaft

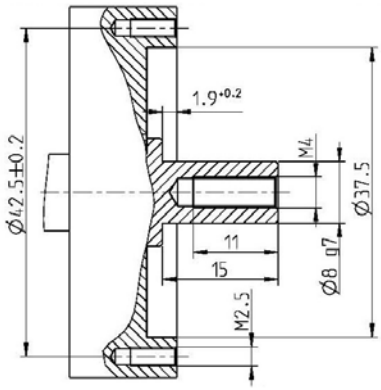
Connection: cable radial "B"



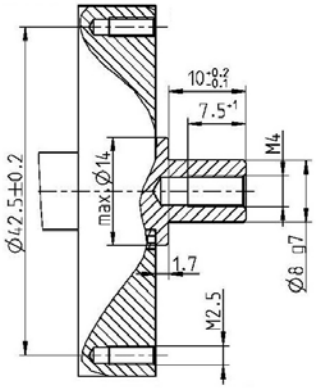
Spring tether "F" **Spring tether "U"**

Anschlussmaße kundenseitig / required mating dimensions

Flansch/flange "F"



Flansch/flange "U"



Dimensions in mm

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ORDERING INFORMATION

Type	Resolution	Supply voltage	Flange, Protection, Shaft	Interface	Connection
AC36	**0012** 12 Bit ST **0013** 13 Bit ST **0014** 14 Bit ST **0017** 17 Bit ST **0019** 19 Bit ST **0022** 22 Bit ST **1213** 12 Bit MT + 13 Bit ST **1214** 12 Bit MT + 14 Bit ST **1217** 12 Bit MT + 17 Bit ST **1219** 12 Bit MT + 19 Bit ST **1222** 12 Bit MT + 22 Bit ST	**A** DC 5 V **E** DC 10 - 30 V	**R.41** Pilot flange, IP64, 6 mm **F.1R** Spring tether, IP50 [1], 8mm hub shaft **U.1R** Spring tether, IP50 [1], 8mm hub shaft	**BI** BiSS-B **BC** BiSS-B (+SinCos 1Vpp) **BE** BiSS-C **BV** BiSS-C (+SinCos 1Vpp) **SB** SSI Binary **SD** SSI Binary (+SinCos 1Vpp) **SG** SSI Gray **SC** SSI Gray (+SinCos 1Vpp)	**A** Cable, axial **B** Cable, radial

[1] Protection class IP64 on request.

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	1,5m
-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 3 m length and M23 connector, cw: ... B - D0 - I

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Accessories

FLEXIBLE COUPLINGS


Bellows coupling


Disk coupling

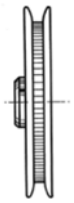

Isolated disk coupling


Plastic coupling


Helical coupling

	Hub diameter d1/d2	Ordering code
Bellows coupling	6 mm / 6 mm	3 520 068
Disk coupling	6 mm / 6 mm	0 070 663
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
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

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 sur-face	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

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