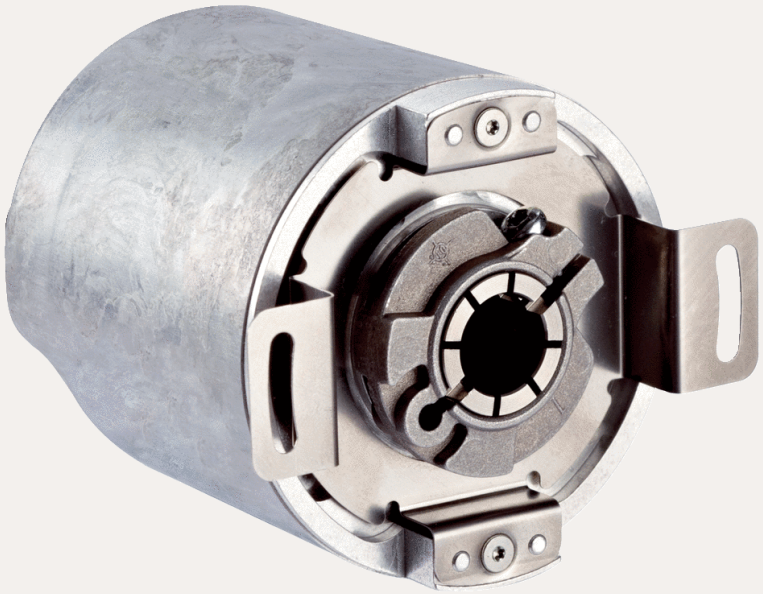
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DATA SHEET

AFM60A-BENB018x12

AFS/AFM60 Ethernet
Absolute encoders

SICK Sensor Intelligence

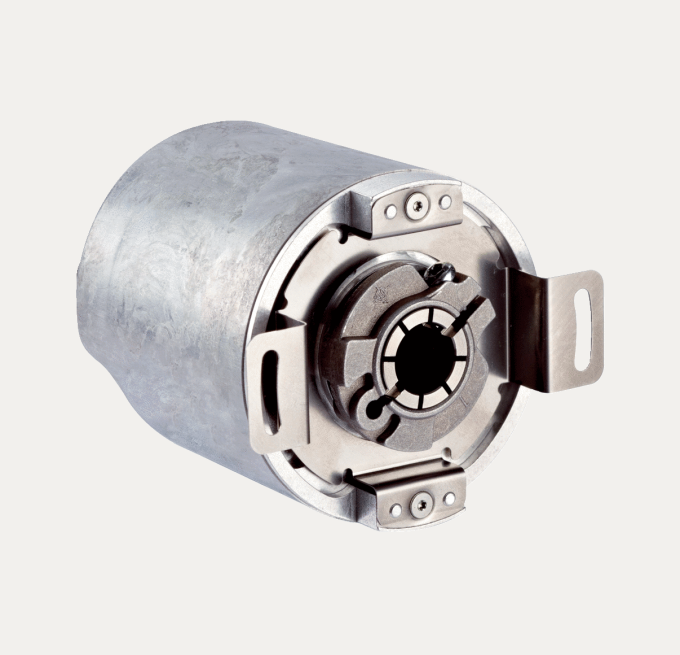


Illustration may differ

ABSOLUTE ENCODERS

AFM60A-BENB018x12

ORDERING INFORMATION

Type	part no.
AFM60A-BENB018x12	1059034

Further device versions and accessories at www.sick.com/AFS_AFM60_Ethernet

DETAILED TECHNICAL DATA

SAFETY-RELATED PARAMETERS

$MTTF_D$ (mean time to dangerous failure)	80 years (EN ISO 13849-1) [1]

[1] This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40°C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

PERFORMANCE

Number of steps per revolution (max. resolution)	262,144 (18 bit)
Number of revolutions	4,096 (12 bit)
Max. resolution (number of steps per revolution x number of revolutions)	18 bit x 12 bit (262,144 x 4,096)
Error limits G	0.03° [1]
Repeatability standard deviation σ_r	0.002° [2]

[1] In accordance with DIN ISO 1319-1, position of the upper and lower error limit depends on the installation situation, specified value refers to a symmetrical position, i.e. deviation in upper and lower direction is the same.

[2] In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

INTERFACES

Communication interface	PROFINET
Encoder profile	V4.1 class3
Data transmission rate (baud rate)	10 Mbit/s, 100 Mbit/s
Transmission medium	CAT-5e cable
Initialization time	6 s
Cycle time	≤ 1 ms
Parameterising data	Number of steps per revolution Number of revolutions PRESET Counting direction Sampling rate for speed calculation

	Unit for output of the speed value Round axis functionality
Available diagnostics data	Minimum and maximum temperature Maximumspeed Power-on counter Operatinghours counter power-on/motion Counter of direction changes/number of movements cw/number of movements ccw Maximum supply voltage

ELECTRONICS

Connection type	Male connector, 1x, M12, 4-pin, axial [1] Female connector, 2x, M12, 4-pin, axial [2]
Supply voltage	10 ... 30 V
Power consumption	≤ 3 W (without load)
Reverse polarity protection	✓

[1] A-coded.

[2] D-coded.

MECHANICS

Mechanical design	Blind hollow shaft
Shaft diameter	12 mm
Characteristics of the shaft	Front clamp
Weight	0.2 kg
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum
Start up torque	0.8 Ncm (+20 °C)
Operating torque	0.6 Ncm (+20 °C)
Permissible movement static	± 0.3 mm (radial) ± 0.5 mm (axial)
Permissible movement dynamic	± 0.05 mm (radial) ± 0.1 mm (axial)
Operating speed	≤ 6,000 min^{-1} [1]
Moment of inertia of the rotor	40 gcm^2
Bearing lifetime	3 x 10^9 revolutions
Angular acceleration	≤ 500,000 rad/s^2

[1] Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

AMBIENT DATA

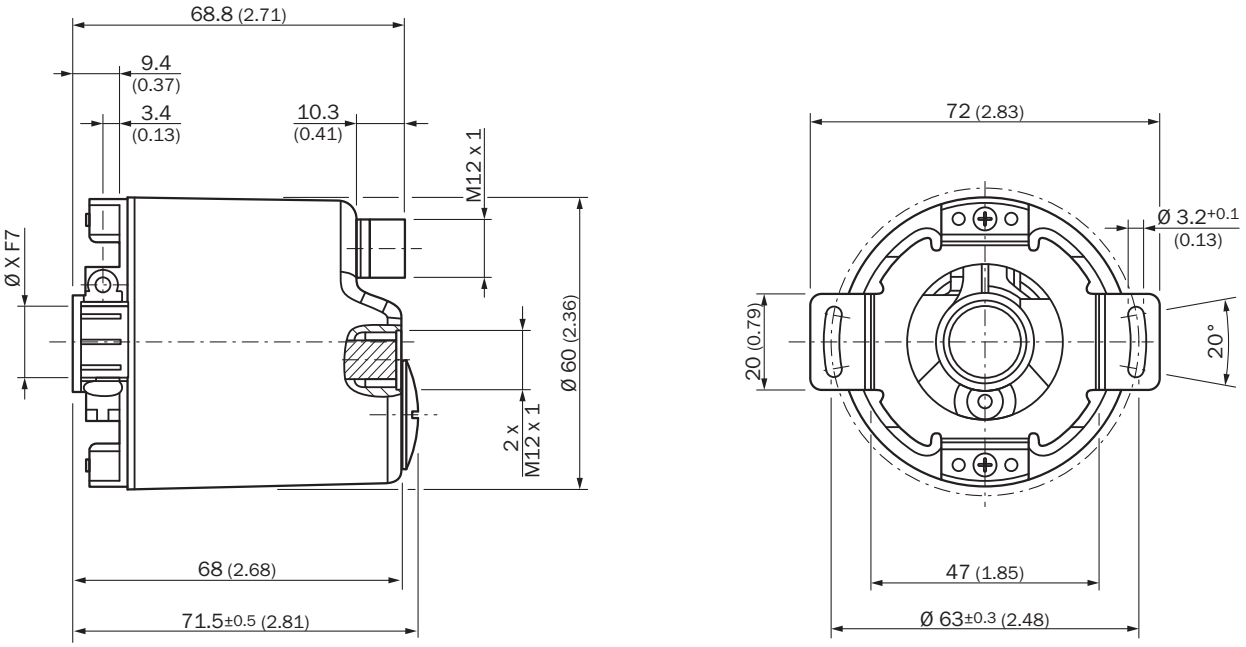
EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP65, shaft side (IEC 60529) IP67, housing side (IEC 60529) [1]
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–40 °C ... +85 °C
Storage temperature range	–40 °C ... +100 °C, without package
Resistance to shocks	100 g, 6 ms (EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

[1] With mating connector fitted.

CERTIFICATES

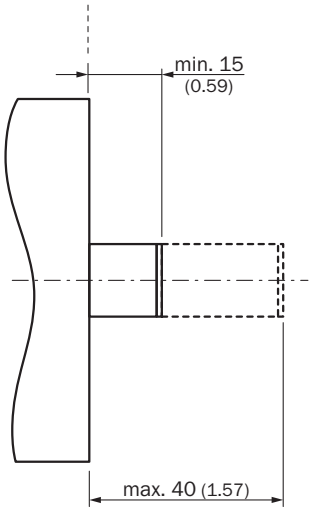
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
cTUVus certificate	✓
Profinet certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

DIMENSIONAL DRAWING BLIND HOLLOW SHAFT



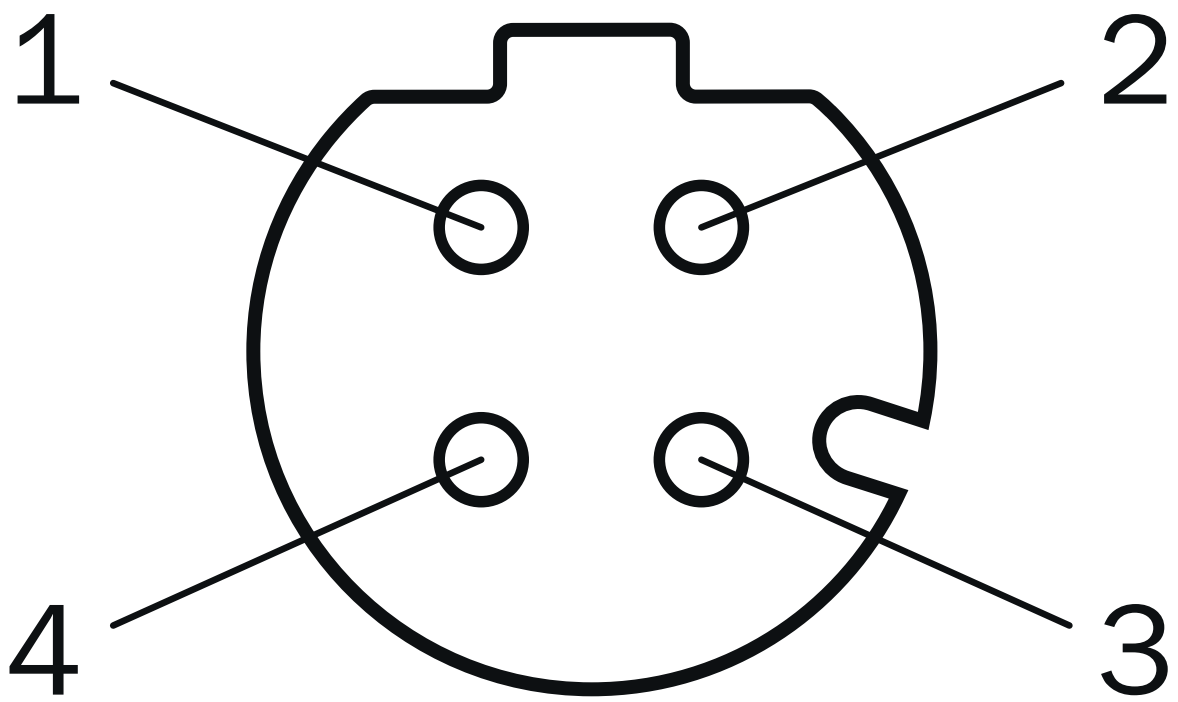
Dimensions in mm (inch)
diameter x f7 corresponds to the shaft diameter

ATTACHMENT SPECIFICATIONS BLIND HOLLOW SHAFT



All dimensions in mm (inch)

ANSCHLUSSBELEGUNG FEMALE CONNECTOR

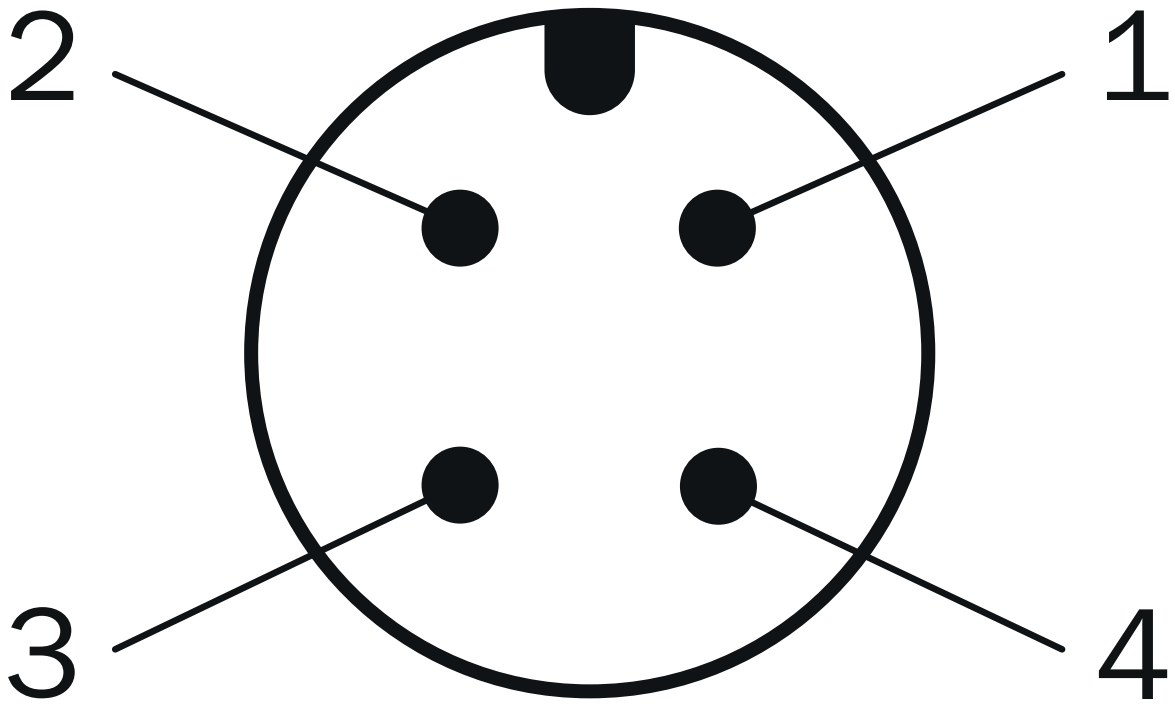


Port 1, Port 2

PIN	Wire color	Signal
1	Yellow	T x D+
2	White	R x D+
3	Orange	T x D-

PIN	Wire color	Signal
4	Blue	R x D-

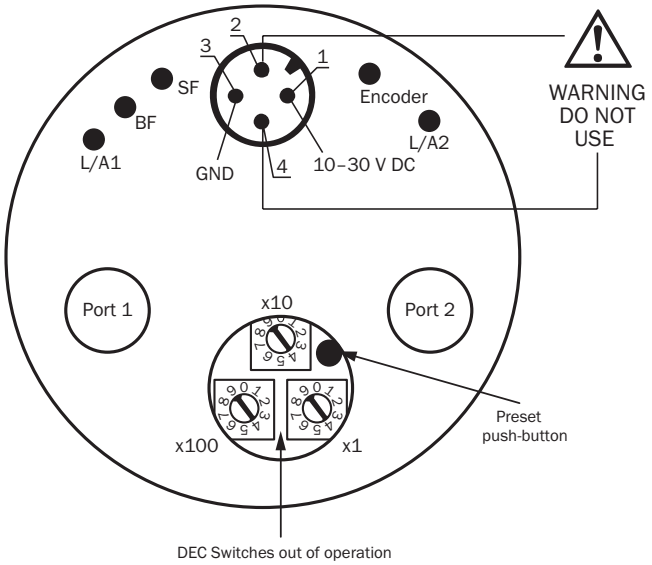
ANSCHLUSSBELEGUNG MALE CONNECTOR



Supply voltage

PIN	Wire color	Signal
1	Brown	U_s 10 V ... 30 V
2	White	Not assigned
3	Blue	GND
4	Black	Not assigned

CONNECTION DIAGRAM



Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1059034

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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

SICK

Sensor Intelligence