

ONLINE DATA SHEET
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Absolute encoders
AFS/AFM60 SSI

AFM60B-TGRA032768

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AFS/AFM60 SSI

Model Name > AFM60B-TGRA032768
Part No. > 1052839



At a glance

- High-resolution absolute encoders with up to 30 bits (AFM60) or up to 18 bits (AFS60)
- Face mount flange, servo flange, blind or through hollow shaft
- SSI, SSI + Incremental or SSI + Sin/Cos interface
- Programmable resolution and offset (dependent on type)
- Connection system: M12, M23 connector or cable outlet
- Enclosure rating: IP 67 (housing), IP 65 (shaft)
- Operating temperature: -30 °C to +100 °C (depends on type)

Your benefits

- Programmability of the encoders means less storage, greater machine availability and easy installation
- Precise positioning due to high resolutions
- Large selection of mechanical interfaces and electrical contacting possibilities: Suitable for all applications
- Suitable for applications with limited space requirements (extremely short installation depth of 30 mm)
- Very good rotation accuracy due to increased bearing distance
- One programming tool and software with automatic encoder detection for AFS60/AFM60/DFS60

Performance

Max. number of steps per revolution:	32,768
Max. number of revolutions:	4,096
Resolution power:	32,768 x 4,096
Resolution:	15 bit x 12 bit
Error limits:	± 0.05 °
Repeatability (Ta not constant):	0.002 °
Measuring step deviation:	± 0.01 °
Measuring step:	90 ° elektrisch/Strichzahl
Initialization time:	50 ms [1)]

[1)] Valid positional data can be read once this time has elapsed

Mechanical data

Mechanical interface:	Through hollow shaft
Shaft diameter:	14 mm

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Mass:	0.2 kg
Start up torque:	0.8 Ncm (20 °C)
Operating torque:	0.6 Ncm (20 °C)
Maximum operating speed:	9,000 /min [1]
Moment of inertia of the rotor:	40 gcm²
Bearing lifetime:	3.0 x 10^9 revolutions
Max. angular acceleration:	500,000 rad/s²
Permissible movement axial static/dynamic:	± 0.5 mm, ± 0.2 mm
Permissible movement radial static/dynamic:	± 0.3 mm, ± 0.1 mm

[1] Self warming of 3.3 K per 1000 revolutions/min when applying note working temperature range

Electrical data

Power consumption:	0.5 W (without load)
Operating voltage range:	4.5 V DC ... 32 V DC
Load current max.:	30 mA
Maximum output frequency:	600 kHz
Reference signal, position:	90 °, electronically, gated with A and B
MTTFd: mean time to dangerous failure:	250 a (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.

Interfaces

Electrical interface:	Connector M23, 12-pin, radial
Interface signals:	A, B: digital differential, Clock +, Clock -, Data +, Data-
Clock frequency:	2 MHz [1]
SET (electronic adjustment):	H-active (L ≡ 0 - 1,5 V, H ≡ 2,0 - Us V)
CW/CCW (counting sequence when turning):	L-active (L ≡ 0 - 1,5 V, H ≡ 2,0 - Us V)

[1]

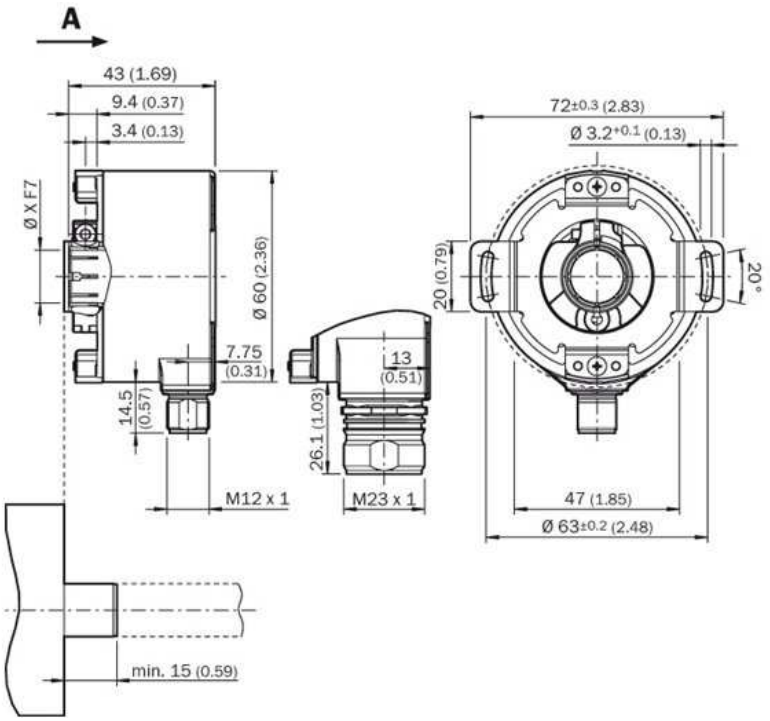
Ambient data

EMC:	(according to EN 61000-6-2 and EN 61000-6-3) [1]
Enclosure rating:	IP 65 (according to IEC 60529), housing side, IP 65 (according to IEC 60529), shaft side [2]
Permissible relative humidity:	90 % (condensation of the optical scanning not permitted)
Working temperature range:	-30 °C ... 100 °C
Storage temperature range:	-40 °C ... 100 °C, without package
Resistance to shocks:	70 g (according to EN 60068-2-27)
Resistance to vibration:	30 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

[1] [2] With mating connector fitted

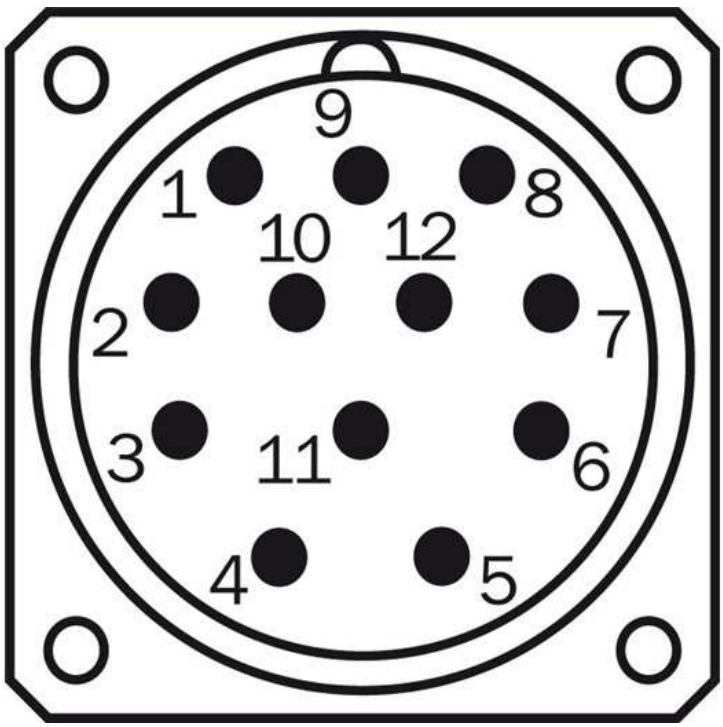
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Dimensional drawing



|1| Cable diameter = 5,6 mm
+/- 2 mmBending radius = 30 mm

PIN assignment



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