



Absolute encoders AFS/AFM60 SSI

AFM60B-BDAA032768

Model Name > [AFM60B-BDAA032768](#)
Part No. > [AFM60B-BDAA032768](#)



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:	0.01 °
Initialization time:	50 ms ¹⁾

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

Mechanical data

Mechanical interface:	Blind hollow shaft
Shaft diameter:	10 mm

Mass:	0.2 kg
Start up torque:	0.8 Ncm (20 °C)
Operating torque:	0.6 Ncm (20 °C)
Maximum operating speed:	6,000 /min ¹⁾
Moment of inertia of the rotor:	40 gcm ²
Bearing lifetime:	3.0 x 10 ⁹ revolutions
Max. angular acceleration:	500,000 rad/s ²
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
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:	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), shaft side, IP 67 (according to IEC 60529)
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

Technical drawing of the 1000 Series 1/2" (Figure 1000 Series 1/2"). The drawing includes three views: a side view, a front view, and a top view. Dimensions are provided in both inches and millimeters.

Side View Dimensions:

- Overall length: 45.5 (1.79)
- Distance from mounting face to center of M12 x 1 thread: 9.4 (0.37)
- Distance from mounting face to center of M23 x 1 thread: 3.4 (0.13)
- Distance from mounting face to center of M12 x 1 thread: 2.5 (0.10)
- Distance from mounting face to center of M23 x 1 thread: 7.75 (0.31)
- Distance from mounting face to center of M12 x 1 thread: 14.5 (0.57)
- Distance from mounting face to center of M23 x 1 thread: 26.1 (1.03)
- Distance from mounting face to center of M12 x 1 thread: min. 15 (0.59)
- Distance from mounting face to center of M23 x 1 thread: max. 42 (1.65)

Front View Dimensions:

- Overall width: 72 ± 0.3 (2.83)
- Distance from mounting face to center of M12 x 1 thread: 13 (0.51)
- Distance from mounting face to center of M23 x 1 thread: 26.1 (1.03)

Top View Dimensions:

- Overall width: 72 ± 0.3 (2.83)
- Distance from mounting face to center of M12 x 1 thread: 13 (0.51)
- Distance from mounting face to center of M23 x 1 thread: 26.1 (1.03)
- Distance from mounting face to center of M12 x 1 thread: min. 15 (0.59)
- Distance from mounting face to center of M23 x 1 thread: max. 42 (1.65)

A diagram of a circular board, likely for a game. The board is enclosed in a square frame with rounded corners. Inside the frame, there are 12 numbered positions arranged in a circle, labeled 1 through 12. The positions are numbered as follows: 1 (top-left), 2 (left), 3 (bottom-left), 4 (bottom), 5 (bottom-right), 6 (right), 7 (top-right), 8 (top), 9 (top-center), 10 (center), 11 (bottom-center), and 12 (center-right). There are also four corner positions, labeled 13, 14, 15, and 16, located at the corners of the square frame. The board is divided into four quadrants by a vertical line and a horizontal line passing through the center.

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