



**Absolute encoders
AFS/AFM60 EtherCAT**

AFM60A-BKEB018X12



Model Name > [AFM60A-BKEB018X12](#)
Part No. > [1059052](#)



Illustration may differ

At a glance

- High-resolution 30-bit absolute encoder (18-bit singleturn and 12-bit multiturn)
- Face mount flange, servo flange and blind hollow shaft
- Connection type: 3 x M12 axial connector
- Up to 125 μ s on-the-fly data transfer speed
- EtherCAT® interface CoE (CiA DS-301) Device profile (CiA DS-406)
- Round axis functionality
- Alarms, warnings and diagnostics functions for speed, position, temperature, operating time, etc.
- Status display via 5 LEDs
- Up to 16 adjustable electronic cam switches

Your benefits

- Increased productivity as a result of intelligent diagnostics functions and rapid data transfer
- Increase in network reliability due to early error detection
- Simple installation with various configuration options
- Flexible, easy setup and high resolutions for various applications with binary, integer and "decimal point" values based on round axis functionality
- Maximum system availability through embedded switch technology
- Compact and cost-efficient design



Performance

Max. number of steps per revolution:	262,144
Max. number of revolutions:	4,096
Resolution power:	262,144 x 4,096
Resolution:	18 bit x 12 bit
Error limits:	$\leq 0.03^\circ$
Repeatability (Ta not constant):	$\leq 0.002^\circ$
Measuring step deviation:	$\pm 0.002^\circ$
Initialization time:	Ca. 6 s
Cycle time:	125 μ s ... 100 ms

Mechanical data

Mechanical interface:	Blind hollow shaft
Shaft diameter:	0.25 "
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, ≤ 0.1 mm
Permissible movement radial static/dynamic:	≤ 0.3 mm, ≤ 0.05 mm
Shaft material:	Stainless steel

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

Electrical data

Operating voltage range:	10 V DC ... 30 V DC
MTTFd: mean time to dangerous failure:	80 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:	3 x connector M12, 4-pin, axial
Bus interface:	EtherCAT, CoE (CiA DS-301) ¹⁾
Data transmission rate (baud rate):	10 Mbit/s / 100 Mbit/s
Encoder profile:	CiA DS-406
Endless operating functionality:	1

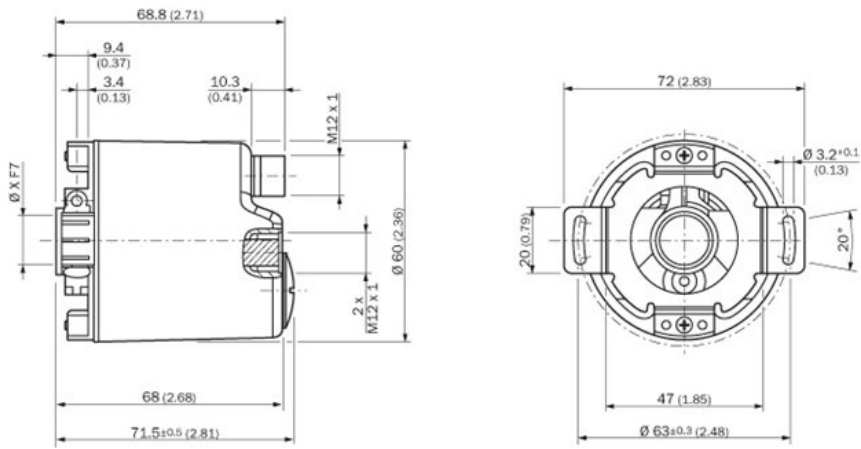
¹⁾ EtherCAT® is registered trademark and patent technology, licensed by Beckhoff Automation GmbH, Germany.

Ambient data

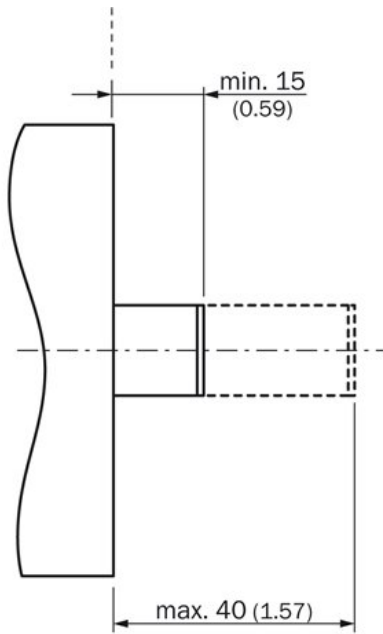
EMC:	(according to EN 61000-6-2 and EN 61000-6-3) ¹⁾
Enclosure rating:	IP 65 (according to IEC 60529), shaft side, IP 67 (according to IEC 60529)
Permissible relative humidity:	90 % (condensation of the optical scanning not permitted)
Working temperature range:	-30 °C ... 85 °C
Storage temperature range:	-40 °C ... 100 °C, without package
Resistance to shocks:	100 g (according to EN 60068-2-27)
Resistance to vibration:	30 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

¹⁾ The EMC according to the standards quoted is achieved if screened cables are used. ²⁾ With mating connector fitted

Dimensional drawing



Proposed fitting



All dimensions in mm (inch)

PIN assignment

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