



## Absolute encoders AFS/AFM60 PROFINET, Rotary

AFM60A-BDNB018X12



**Model Name** > **AFM60A-BDNB018X12**  
**Part No.** > **1059035**



*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 plug
- PROFINET-IO-RT interface
- Less than 5 ms data update time
- Round axis functionality
- Alarms, warnings and diagnostics functions for speed, position, temperature, operating time, etc.
- Status display via 5 LEDs

#### 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:                        | ≤ 0.03 °        |
| Repeatability (Ta not constant):     | ≤ 0.002 °       |
| Measuring step deviation:            | ± 0.002 °       |
| Initialization time:                 | 6 s             |

#### 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 <sup>1)</sup> |

|                                             |                                   |
|---------------------------------------------|-----------------------------------|
| Moment of inertia of the rotor:             | 40 gcm <sup>2</sup>               |
| Bearing lifetime:                           | 3.0 x 10 <sup>9</sup> revolutions |
| Max. angular acceleration:                  | 500,000 rad/s <sup>2</sup>        |
| 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                   |
| Flange material:                            | Aluminum                          |
| Type of mounting shaft:                     | Blind hollow shaft                |

<sup>1)</sup> 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) <sup>1)</sup> |
| Connection type:                       | 3 x connector M12, 4-pin, axial     |
| Reverse polarity protection:           | 0                                   |

<sup>1)</sup> 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

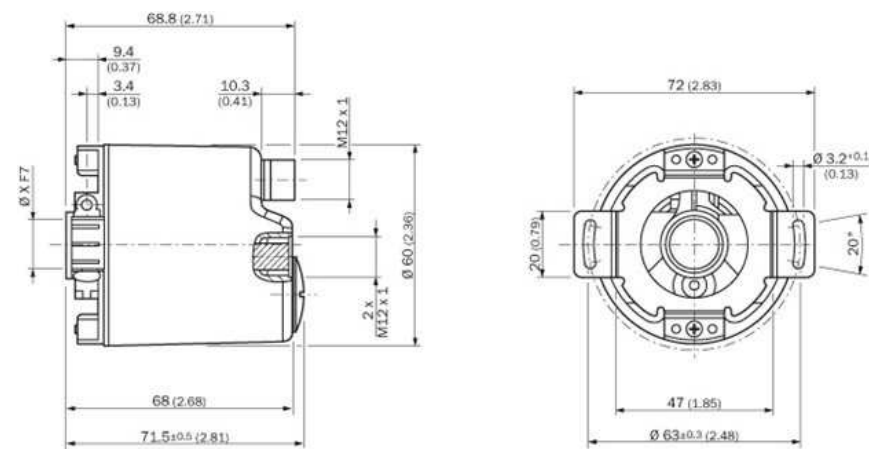
|                                     |                         |
|-------------------------------------|-------------------------|
| Electrical interface:               | PROFINET                |
| Bus interface:                      | PROFINET IO/ RT Class B |
| Data transmission rate (baud rate): | 10 Mbit/s/100 Mbit/s    |
| Encoder profile:                    | V4.1 class3             |
| RPI (requested packet interval):    | 2 ms ... 750 ms         |
| DLR (Device Level Ring):            | 0                       |
| Endless operating functionality:    | 1                       |

## Ambient data

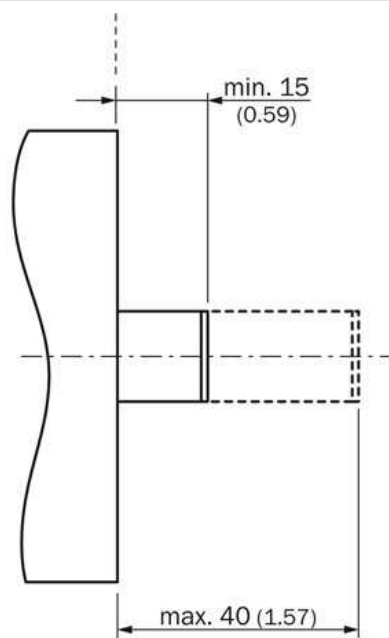
|                                |                                                                                                        |
|--------------------------------|--------------------------------------------------------------------------------------------------------|
| EMC:                           | (according to EN 61000-6-2 and EN 61000-6-3) <sup>1)</sup>                                             |
| Enclosure rating:              | IP 65 (according to IEC 60529), shaft side, IP 67 (according to IEC 60529), housing side <sup>2)</sup> |
| 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, 6 ms (according to EN 60068-2-27)                                                               |
| Resistance to vibration:       | 30 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)                                                   |

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

Dimensional drawing



Proposed fitting



All dimensions in mm (inch)

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