

# AHM36B-BCQC012x12

AHS/AHM36

ABSOLUTE ENCODERS

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

| Type              | Part no. |
|-------------------|----------|
| AHM36B-BCQC012x12 | 1092006  |

Other models and accessories → [www.sick.com/AHS\\_AHM36](http://www.sick.com/AHS_AHM36)

### Detailed technical data

#### Performance

|   |                                 |
|---|---------------------------------|
| <b>Number of steps per revolution (max. resolution)</b>                         | 4,096 (12 bit)                  |
| <b>Number of revolutions</b>  | 4,096 (12 bit)                  |
| <b>Max. resolution (number of steps per revolution x number of revolutions)</b> | 12 bit x 12 bit (4,096 x 4,096) |
| <b>Error limits G</b>   | 0.35° (at 20 °C) <sup>1)</sup>  |
| <b>Repeatability standard deviation <math>\sigma_r</math></b>                   | 0.25° (at 20 °C) <sup>2)</sup>  |

<sup>1)</sup> 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.

<sup>2)</sup> In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

#### Interfaces

|                                       |  |
|---------------------------------------|--|
| <b>Communication interface</b>        | IO-Link  |
| <b>Communication Interface detail</b> | IO-Link V1.1 / COM3 (230,4 kBaud)  |
| <b>Initialization time</b>            | 2 s <sup>1)</sup>  |
| <b>Cycle time</b>                     | ≤ 3.2 ms   |
| <b>Smart Sensor</b>                   | Efficient communication, Enhanced Sensing  |
| <b>Process data</b>                   | Position, speed  |
| <b>Parameterising data</b>            | Number of steps per revolution<br>Number of revolutions<br>PRESET<br>Counting direction<br>Sampling rate for speed calculation<br>Unit for output of the speed value |
| <b>Status information</b>             | Via status LED   |

<sup>1)</sup> Valid positional data can be read once this time has elapsed.

## Electrical data

|  |  |
|--|--|
| <b>Connection type</b>                       | Male connector, M12, 4-pin, universal    |
| <b>Supply voltage</b>                        | 18 ... 30 V                              |
| <b>Power consumption</b>                     | ≤ 1.5 W                                  |
| <b>Reverse polarity protection</b>           | ✓  |
| <b>MTTFd: mean time to dangerous failure</b> | 240 years (EN ISO 13849-1) <sup>1)</sup> |

<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.

## Mechanical data

|                                       |                                       |
|---------------------------------------|---------------------------------------|
| <b>Mechanical design</b>              | Blind hollow shaft                    |
| <b>Shaft diameter</b>                 | 3/8"                                  |
| <b>Weight</b>                         | 0.12 kg <sup>1)</sup>                 |
| <b>Shaft material</b>                 | Stainless steel                       |
| <b>Flange material</b>                | Aluminum                              |
| <b>Housing material</b>               | Zinc                                  |
| <b>Start up torque</b>                | < 0.5 Ncm (+20 °C)                    |
| <b>Operating torque</b>               | < 0.5 Ncm (+20 °C)                    |
| <b>Permissible movement static</b>    | ± 0.3 mm, ± 0.3 mm (radial, axial)    |
| <b>Permissible movement dynamic</b>   | ± 0.1 mm (radial)<br>± 0.1 mm (axial) |
| <b>Operating speed</b>                | ≤ 6,000 min <sup>-1</sup>             |
| <b>Moment of inertia of the rotor</b> | 15 gcm <sup>2</sup>                   |
| <b>Bearing lifetime</b>               | 2.0 x 10 <sup>9</sup> revolutions     |
| <b>Angular acceleration</b>           | ≤ 500,000 rad/s <sup>2</sup>          |

<sup>1)</sup> Based on devices with male connector.

## Ambient data

|                                      |  |
|--------------------------------------|--|
| <b>EMC</b>                           | According to EN 61000-6-2, EN 61000-6-3 and EN 61131-9 |
| <b>Enclosure rating</b>              | IP65 (IEC 60529)                                       |
| <b>Permissible relative humidity</b> | 90 % (Condensation not permitted)                      |
| <b>Operating temperature range</b>   | -20 °C ... +70 °C                                      |
| <b>Storage temperature range</b>     | -40 °C ... +100 °C, without package                    |
| <b>Resistance to shocks</b>          | 100 g, 6 ms (EN 60068-2-27)                            |
| <b>Resistance to vibration</b>       | 20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)                |

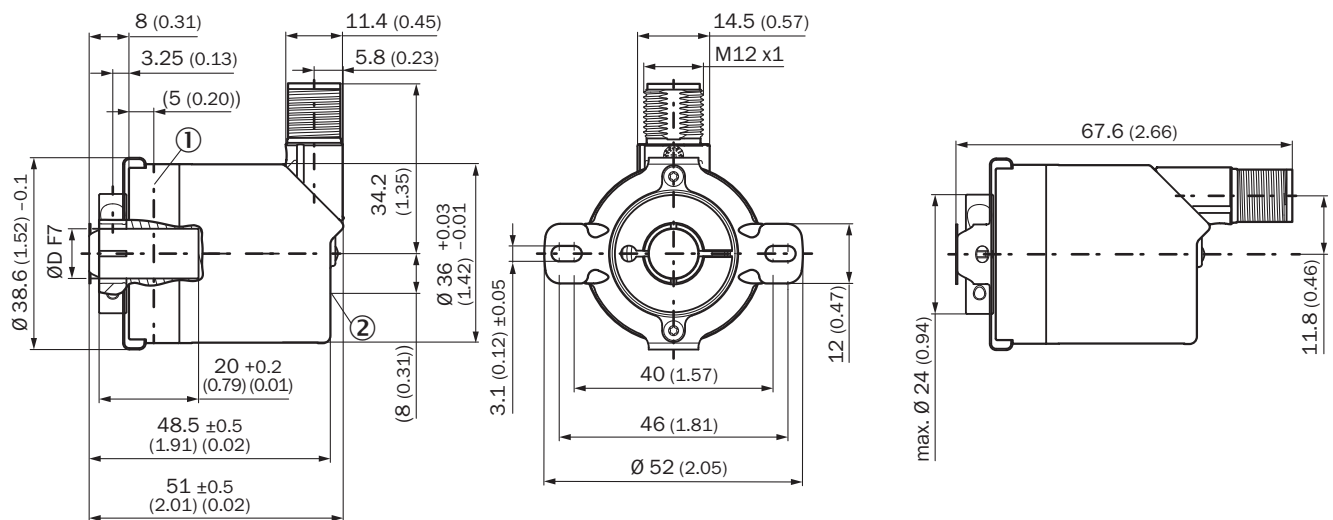
## Classifications

|                     |          |
|---------------------|----------|
| <b>ECLASS 5.0</b>   | 27270502 |
| <b>ECLASS 5.1.4</b> | 27270502 |
| <b>ECLASS 6.0</b>   | 27270590 |
| <b>ECLASS 6.2</b>   | 27270590 |
| <b>ECLASS 7.0</b>   | 27270502 |
| <b>ECLASS 8.0</b>   | 27270502 |

|                       |          |
|-----------------------|----------|
| <b>ECLASS 8.1</b>     | 27270502 |
| <b>ECLASS 9.0</b>     | 27270502 |
| <b>ECLASS 10.0</b>    | 27270502 |
| <b>ECLASS 11.0</b>    | 27270502 |
| <b>ECLASS 12.0</b>    | 27270502 |
| <b>ETIM 5.0</b>       | EC001486 |
| <b>ETIM 6.0</b>       | EC001486 |
| <b>ETIM 7.0</b>       | EC001486 |
| <b>ETIM 8.0</b>       | EC001486 |
| <b>UNSPSC 16.0901</b> | 41112113 |

### Dimensional drawing (Dimensions in mm (inch))

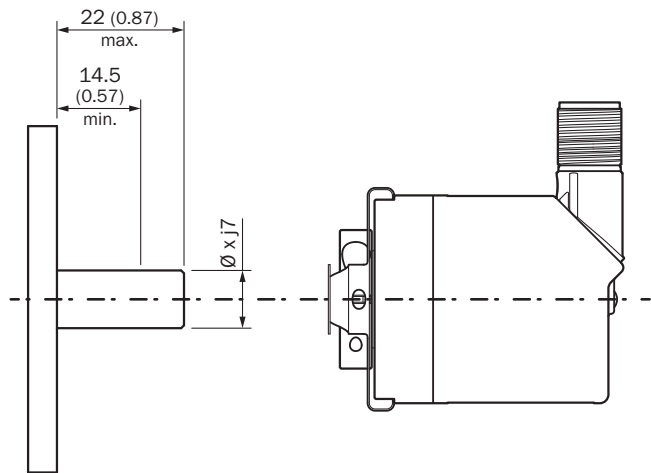
Blind hollow shaft, male connector



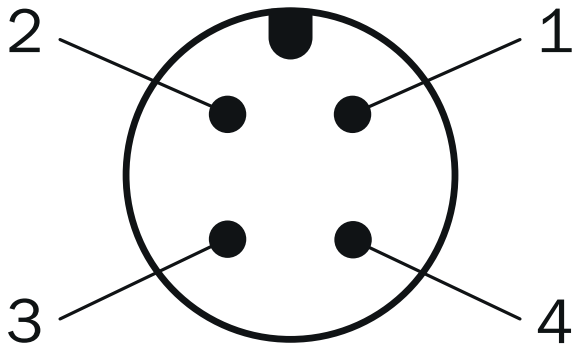
- ① Measuring point for operating temperature
- ② Measuring point for vibrations

| Type              | Shaft diameter<br>$\varnothing D F7$ |
|-------------------|--------------------------------------|
| AHx36x-BAxxxxxxxx | 6 mm                                 |
| AHx36x-BBxxxxxxxx | 8 mm                                 |
| AHx36x-BCxxxxxxxx | 1/4"                                 |
| AHx36x-BDxxxxxxxx | 10 mm                                |
| AHx36x-BKxxxxxxxx | 3/8"                                 |

Attachment specifications



PIN assignment



| PIN | Wire color | Signal | Function                             |   |                             |
|-----|------------|--------|--------------------------------------|---|-----------------------------|
|     |            |        | Basic                                | Advanced  | Advanced Smart Task         |
| 1   | Brown      | L+     | Encoder supply voltage 18-30 V (+Us) |   |                             |
| 2   | White      | I/Q    | Not connected - no function          | Multifunctional pin (configurable as switching input or switching output) |                             |
| 3   | Blue       | L-     | Encoder supply voltage 0 V (GND)     |   |                             |
| 4   | Black      | C/Q    | IO-Link communication                |   | Switching output (SIO mode) |
|     |            |        | -                                    |   |                             |

### Recommended accessories

Other models and accessories → [www.sick.com/AHS\\_AHM36](http://www.sick.com/AHS_AHM36)

|   | Brief description  | Type               | Part no. |
|---|--|--------------------|----------|
| Flanges   |  |                    |          |
|    | Standard stator coupling, AHS/AHM36  | BEF-DS16-AHX       | 2108615  |
| Plug connectors and cables  |  |                    |          |
|    | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight</li> <li>• <b>Description:</b> Unshielded, Head A: female connector, M12, 4-pin, straight, unshielded, for power supply, for cable diameter 4 mm ... 6 mm Head B: -</li> <li>• <b>Connection systems:</b> Screw-type terminals</li> <li>• <b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li> </ul>  | DOS-1204-G         | 6007302  |
| Others  |  |                    |          |
|    | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation, Robot</li> </ul>  | YF2A14-020UB3M2A14 | 2096000  |
|    | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation, Robot</li> </ul>  | YF2A14-050UB3M2A14 | 2096001  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Male connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation, Robot</li> </ul> | YF2A14-100UB3M2A14 | 2096002  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation, Robot</li> </ul>                                   | YF2A14-020UB3XLEAX | 2095607  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation, Robot</li> </ul>                                   | YF2A14-050UB3XLEAX | 2095608  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation, Robot</li> </ul>                                  | YF2A14-100UB3XLEAX | 2095609  |

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

## WORLDWIDE PRESENCE:

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