



# AHM36B-S5AC012x12

AHS/AHM36

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

| Type              | part no. |
|-------------------|----------|
| AHM36B-S5AC012x12 | 1084453  |

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

### Detailed technical data

#### Safety-related parameters

|                                                          |                                          |
|----------------------------------------------------------|------------------------------------------|
| <b>MTTF<sub>D</sub> (mean time to dangerous failure)</b> | 230 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.

#### 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>            | SSI                                 |
| <b>Initialization time</b>                | 100 ms <sup>1)</sup>                |
| <b>Position forming time</b>              | 125 µs                              |
| <b>Process data</b>                       | Position                            |
| <b>Code type</b>                          | Gray                                |
| <b>Code sequence parameter adjustable</b> | CW/CCW (V/R) configurable via cable |

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

<sup>2)</sup> Minimum, LOW level (Clock +): 250 ns.

|                                                |                                                    |
|------------------------------------------------|----------------------------------------------------|
| <b>Clock frequency</b>                         | 2 MHz <sup>2)</sup>                                |
| <b>Set (electronic adjustment)</b>             | H-active (L = 0 - 3 V, H = 4,0 - U <sub>s</sub> V) |
| <b>CW/CCW (counting sequence when turning)</b> | L-active (L = 0 - 1 V, H = 2,0 - U <sub>s</sub> V) |

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

<sup>2)</sup> Minimum, LOW level (Clock +): 250 ns.

## Electronics

|                                    |                                       |
|------------------------------------|---------------------------------------|
| <b>Connection type</b>             | Male connector, M12, 8-pin, universal |
| <b>Supply voltage</b>              | 4.5 ... 32 V DC                       |
| <b>Power consumption</b>           | ≤ 1.5 W (without load)                |
| <b>Reverse polarity protection</b> | ✓                                     |

## Mechanics

|                                       |                                         |
|---------------------------------------|-----------------------------------------|
| <b>Mechanical design</b>              | Solid shaft, face mount flange          |
| <b>Shaft diameter</b>                 | 8 mm                                    |
| <b>Shaft length</b>                   | 12 mm                                   |
| <b>Characteristics of the shaft</b>   | With flat                               |
| <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 shaft loading</b>      | 40 N (radial)<br>20 N (axial)           |
| <b>Operating speed</b>                | ≤ 6,000 min <sup>-1</sup> <sup>2)</sup> |
| <b>Moment of inertia of the rotor</b> | 2.5 gcm <sup>2</sup>                    |
| <b>Bearing lifetime</b>               | 3.6 x 10 <sup>8</sup> revolutions       |
| <b>Angular acceleration</b>           | ≤ 500,000 rad/s <sup>2</sup>            |

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

<sup>2)</sup> Allow for self-heating of 3.5 K per 1,000 rpm when designing the operating temperature range.

## Ambient data

|                                      |                                            |
|--------------------------------------|--------------------------------------------|
| <b>EMC</b>                           | According to EN 61000-6-2 and EN 61000-6-3 |
| <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)    |

## Certificates

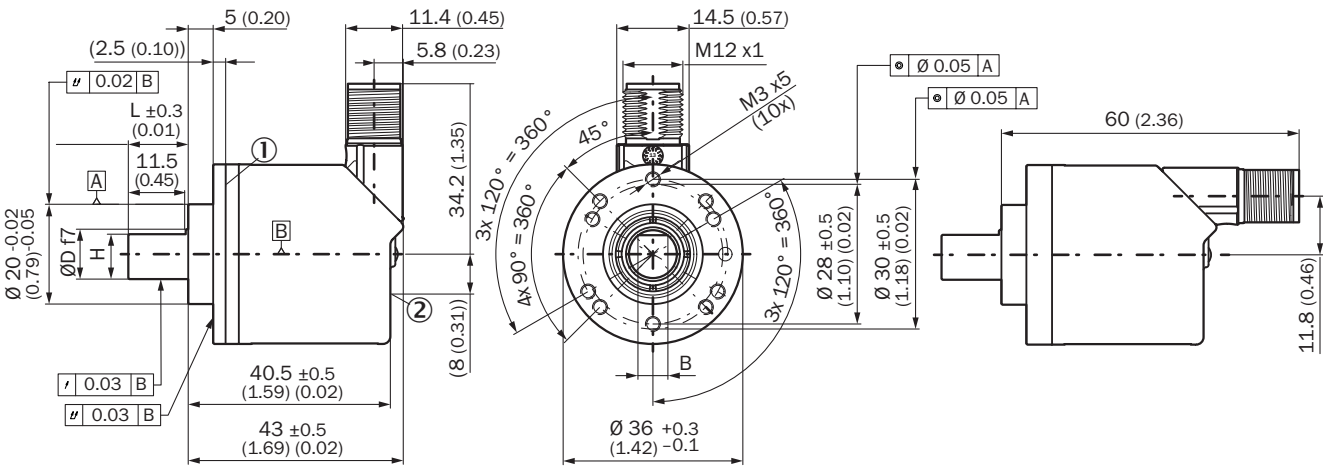
|                                     |   |
|-------------------------------------|---|
| <b>EU declaration of conformity</b> | ✓ |
| <b>UK declaration of conformity</b> | ✓ |

|                                                                       |   |
|-----------------------------------------------------------------------|---|
| ACMA declaration of conformity                                        | ✓ |
| Moroccan declaration of conformity                                    | ✓ |
| China-RoHS                                                            | ✓ |
| cTUVus certificate                                                    | ✓ |
| Information according to Art. 3 of Data Act (Regulation EU 2023/2854) | ✓ |

Classifications

|                |          |
|----------------|----------|
| ECLASS 5.0     | 27270502 |
| ECLASS 5.1.4   | 27270502 |
| ECLASS 6.0     | 27270590 |
| ECLASS 6.2     | 27270590 |
| ECLASS 7.0     | 27270502 |
| ECLASS 8.0     | 27270502 |
| ECLASS 8.1     | 27270502 |
| ECLASS 9.0     | 27270502 |
| ECLASS 10.0    | 27270502 |
| ECLASS 11.0    | 27270502 |
| ECLASS 12.0    | 27270502 |
| ETIM 5.0       | EC001486 |
| ETIM 6.0       | EC001486 |
| ETIM 7.0       | EC001486 |
| ETIM 8.0       | EC001486 |
| UNSPSC 16.0901 | 41112113 |

solid shaft, face mount flange, male connector

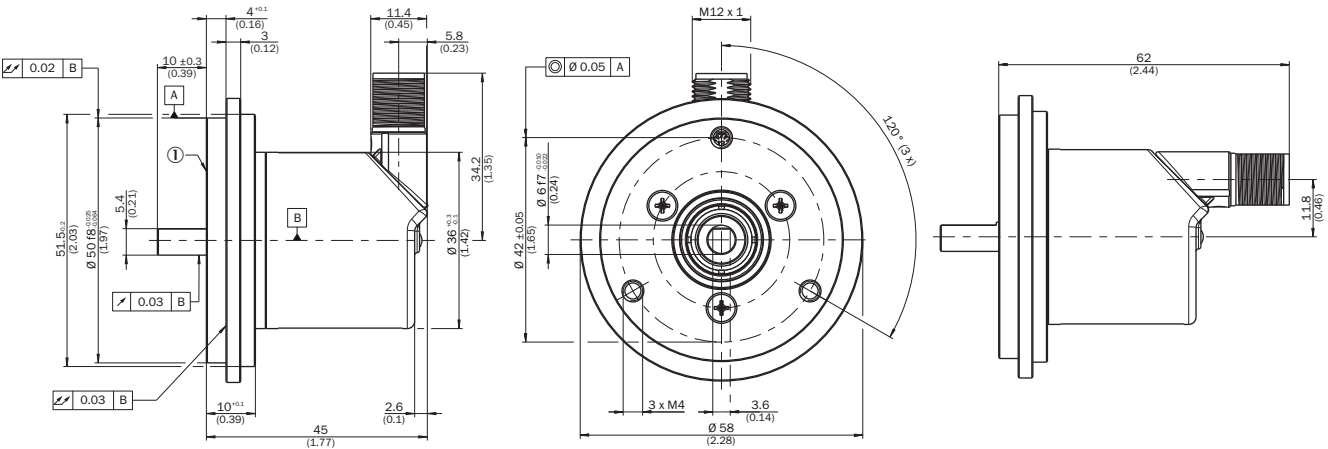


Dimensions in mm (inch)  
① Measuring point for operating temperature  
② measuring point for vibrations

| Type              | Shaft diameterØ D f7 | B      | H      |
|-------------------|----------------------|--------|--------|
| AHx36x-S1xxxxxxxx | 6 mm                 | 3,6 mm | 5,4 mm |

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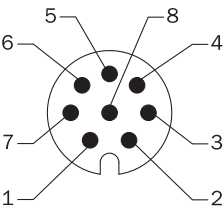
Attachment specifications Solid shaft, face mount flange with flange adapter, centering collar D20 on D50 (BEF-FA-020-050, 2072297)



order example for 6 mm shaft diameter: AHx36x-S3xx0xxxxx + BEF-FA-020-050 (adapter is not pre-assembled)

① Measuring point for operating temperature

Anschlussbelegung M12 male connector, 8-pin and cable, 8-wire, SSI/Gray



view of M12 male device connector on encoder

| PIN | Wire colors (cable connection) | Signal         | Explanation                                                                       |
|-----|--------------------------------|----------------|-----------------------------------------------------------------------------------|
| 1   | Brown                          | Data -         | Interface signals                                                                 |
| 2   | White                          | Data +         | Interface signals                                                                 |
| 3   | Black                          | V/R            | Sequence in direction of rotation                                                 |
| 4   | Pink                           | SET            | Electronic adjustmentInterface signals                                            |
| 5   | Yellow                         | Clock +        | Interface signals                                                                 |
| 6   | Purple                         | Clock -        | Interface signals                                                                 |
| 7   | Blue                           | GND            | Ground connection                                                                 |
| 8   | Red                            | U <sub>S</sub> | Operating voltage                                                                 |
| -   | -                              | Shielding      | Screen connected to housing on encoder side. Connected to ground on control side. |

## Recommended accessories

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

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Type             | part no. |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------|
| connectors and cables                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |          |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Flying leads</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, TTL, HTL, Incremental</li> <li><b>Items supplied:</b> By the meter</li> <li><b>Cable:</b> 12-wire, UV and saltwater-resistant, PUR, halogen-free</li> <li><b>Description:</b> SSI, shielded, TTL, HTL, Incremental</li> </ul>                                                                                                         | LTG-2612-MW      | 6028516  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Flying leads</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> SSI, Incremental, HIPERFACE®</li> <li><b>Items supplied:</b> By the meter</li> <li><b>Cable:</b> 8-wire, PUR, halogen-free</li> <li><b>Description:</b> SSI, shielded, Incremental, HIPERFACE®</li> </ul>                                                                                                                                  | LTG-2308-MWENC   | 6027529  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 8-pin, straight, A-coded</li> <li><b>Signal type:</b> Incremental, SSI</li> <li><b>Cable:</b> CAT5, CAT5e</li> <li><b>Description:</b> Incremental, shielded SSI</li> <li><b>Connection systems:</b> IDC quick connection</li> <li><b>Permitted cross-section:</b> 0.14 mm² ... 0.34 mm²</li> </ul>                                                                                                                | DOS-1208-GA01    | 6045001  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Incremental, SSI</li> <li><b>Cable:</b> 25 m, 8-wire, PUR, halogen-free</li> <li><b>Description:</b> Incremental, shielded, SSI</li> <li><b>Connection systems:</b> Flying leads</li> </ul>                                                                                                                      | DOL-1208-G25MAC1 | 6067859  |
|   | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Incremental, SSI</li> <li><b>Cable:</b> 20 m, 8-wire, PUR, halogen-free</li> <li><b>Description:</b> Incremental, shielded, SSI</li> <li><b>Connection systems:</b> Flying leads</li> </ul>                                                                                                                      | DOL-1208-G20MAC1 | 6032869  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Incremental, SSI</li> <li><b>Cable:</b> 10 m, 8-wire, PUR, halogen-free</li> <li><b>Description:</b> Incremental, shielded, SSI</li> <li><b>Connection systems:</b> Flying leads</li> </ul>                                                                                                                      | DOL-1208-G10MAC1 | 6032868  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Incremental, SSI</li> <li><b>Cable:</b> 5 m, 8-wire, PUR, halogen-free</li> <li><b>Description:</b> Incremental, shielded, SSI</li> <li><b>Connection systems:</b> Flying leads</li> </ul>                                                                                                                       | DOL-1208-G05MAC1 | 6032867  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Incremental, SSI</li> <li><b>Cable:</b> 2 m, 8-wire, PUR, halogen-free</li> <li><b>Description:</b> Incremental, shielded, SSI</li> <li><b>Connection systems:</b> Flying leads</li> </ul>                                                                                                                       | DOL-1208-G02MAC1 | 6032866  |
| shaft adaptation                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                  |          |
|  | <ul style="list-style-type: none"> <li><b>Product segment:</b> Shaft adaptation</li> <li><b>Product:</b> Shaft couplings</li> <li><b>Description:</b> Double loop coupling, shaft diameter 8 mm / 10 mm, max. shaft offset: radially +/- 0,25 mm, axially +/- 0,4 mm, angle +/- 4 degrees; max. speed 10.000 rpm, -30 to +120 degrees Celsius, torsional spring stiffness of 150 Nm/rad</li> </ul>                                                                                                              | KUP-0810-D       | 5326704  |
|  | <ul style="list-style-type: none"> <li><b>Product segment:</b> Shaft adaptation</li> <li><b>Product:</b> Shaft couplings</li> <li><b>Description:</b> Claw coupling, shaft diameter 8 mm / 10 mm, damping element 80 shore blue, maximum shaft offset: radial ± 0.22 mm, axial ± 1 mm angular ± 1.3°, max. speed 19,000 rpm, angle of twist max. 10°, -30 °C to +80 °C, max. torque 800 Ncm, tightening torque of screws: ISO 4029 150 Ncm, material: aluminum flange, damping element: polyurethane</li> </ul> | KUP-0810-J       | 2128267  |

## 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.”**

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