



# AHM36A-SBQC014x12

AHS/AHM36

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

| Type              | Part no. |
|-------------------|----------|
| AHM36A-SBQC014x12 | 1101485  |

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>                         | 16,384 (14 bit)                  |
| <b>Number of revolutions</b>  | 4,096 (12 bit)                   |
| <b>Max. resolution (number of steps per revolution x number of revolutions)</b> | 14 bit x 12 bit (16,384 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>                   | 0.2° (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, diagnosis  |
| <b>Process data</b>                   | Position, speed, electronic cams, limit values, linear position, linear speed, errors and warnings, switching signals on pin 2  |
| <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<br>Round axis functionality<br>Electronic cams(2 channels x 8 cams)<br>Limit values<br>Linear measuring length per 360°<br>Pin 2 configuration |

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

|   |   |
|---|---|
| <b>Available diagnostics data</b>       | Minimum and maximum temperature<br>Maximum speed<br>Power-on counter<br>Operating hours counter power-on/motion<br>Counter of direction changes/number of movements cw/number of movements ccw<br>Minimum and maximum operating voltage<br>Distance covered |
| <b>Status information</b>               | Via status LED  |
| <b>Switching input/Switching output</b> | ✓   |
| <b>Pin 2 input frequency</b>            | ≤ 100 Hz  |
| <b>Pin 2 output frequency</b>           | ≤ 100 Hz  |

<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>              | Solid shaft, Servo flange         |
| <b>Shaft diameter</b>                 | 3/8"                              |
| <b>Shaft length</b>                   | 12 mm                             |
| <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>                | < 1 Ncm (+20 °C)                  |
| <b>Operating torque</b>               | < 1 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>         |
| <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.

## Ambient data

|                                      |  |
|--------------------------------------|--|
| <b>EMC</b>                           | According to EN 61000-6-2, EN 61000-6-3 and EN 61131-9 |
| <b>Enclosure rating</b>              | IP66 (IEC 60529)<br>IP67 (IEC 60529)                   |
| <b>Permissible relative humidity</b> | 90 % (Condensation not permitted)                      |
| <b>Operating temperature range</b>   | -40 °C ... +85 °C                                      |

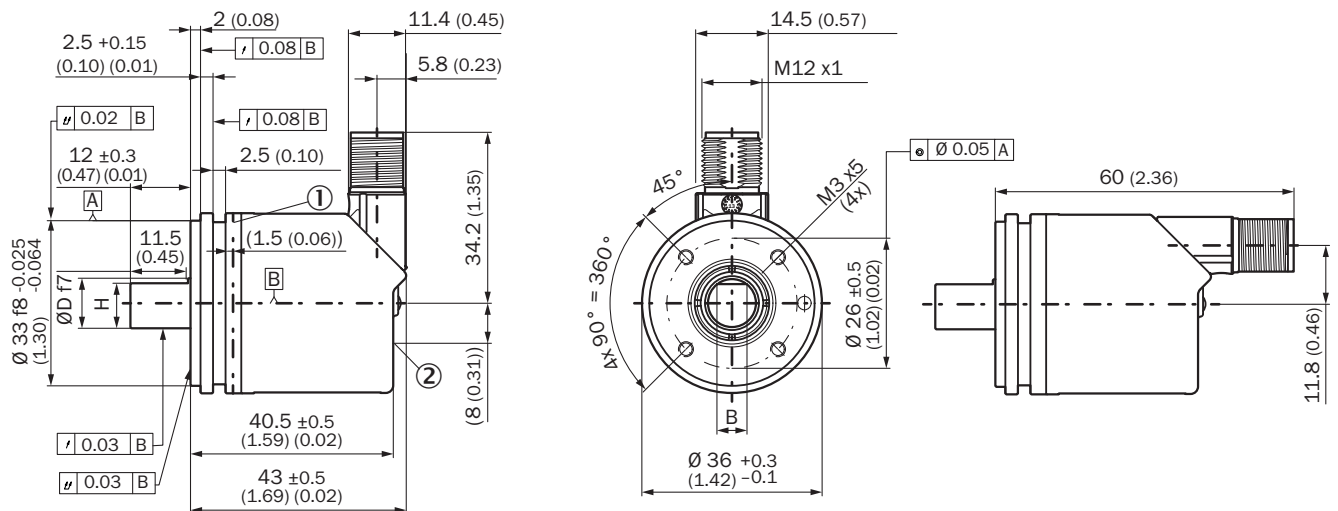
|                                  |   |
|----------------------------------|---|
| <b>Storage temperature range</b> | -40 °C ... +100 °C, without package     |
| <b>Resistance to shocks</b>      | 100 g, 6 ms (EN 60068-2-27)             |
| <b>Resistance to vibration</b>   | 20 g, 10 Hz ... 2,000 Hz (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))

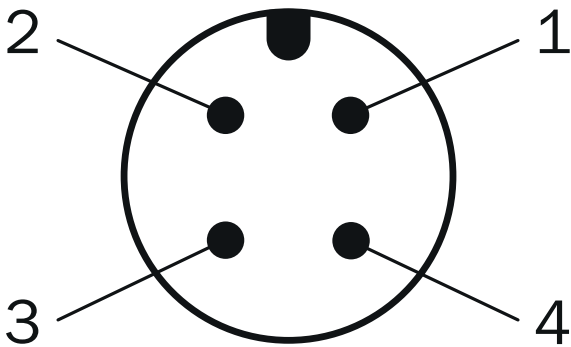
Solid shaft, servo flange, male connector



| Type                                 | Shaft diameter<br>Ø D f7 | B      | H      |
|--------------------------------------|--------------------------|--------|--------|
| AHx36x-S1xxxxxxx<br>AHx36x-S3xxxxxxx | 6 mm                     | 3,6 mm | 5,4 mm |

| Type   | Shaft diameter<br>Ø D f7 | B       | H      |
|--|--------------------------|---------|--------|
| AHx36x-S9xxxxxxx<br>AHx36x-S5xxxxxxx                     | 8 mm                     | 3,9 mm  | 7,5 mm |
| AHx36x-S2xxxxxxx<br>AHx36x-S4xxxxxxx<br>AHx36x-SCxxxxxxx | 10 mm                    | 6 mm    | 9 mm   |
| AHx36x-SAxxxxxxx<br>AHx36x-S8xxxxxxx                     | 1/4"                     | 3,85 mm | 5,7 mm |
| AHx36x-SBxxxxxxx<br>AHx36x-S7xxxxxxx                     | 3/8"                     | 4,35 mm | 9 mm   |

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. |
|---|--|--------------------|----------|
| 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.

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