



# AHM36A-BDCK014x12

AHS/AHM36

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



Illustration may differ



## Ordering information

| Type              | part no. |
|-------------------|----------|
| AHM36A-BDCK014x12 | 1069025  |

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> | 270 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>                         | 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>            | CANopen                                                                                    |
| <b>Data protocol</b>                      | CANopen CiA DS-301 V4.02, CiA DSP-305 LSS, Encoder Profile: - CiA DS-406, V3.2. - Class C2 |
| <b>Address setting</b>                    | 0 ... 127, default: 5                                                                      |
| <b>Data transmission rate (baud rate)</b> | 20 kbit/s ... 1,000 kbit/s, default: 125 kbit/s                                            |
| <b>Initialization time</b>                | 2 s <sup>1)</sup>                                                                          |

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

<sup>2)</sup> See accessories.

|                                   |                                                                                                                                                                                                                                          |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Process data</b>               | Position, speed, Temperature                                                                                                                                                                                                             |
| <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) |
| <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  |
| <b>Status information</b>         | CANopen status via status LED                                                                                                                                                                                                            |
| <b>Bus termination</b>            | Via external terminator <sup>2)</sup>                                                                                                                                                                                                    |

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

<sup>2)</sup> See accessories.

## Electronics

|                                    |                                 |
|------------------------------------|---------------------------------|
| <b>Connection type</b>             | Cable, 5-wire, universal, 1.5 m |
| <b>Supply voltage</b>              | 10 ... 30 V                     |
| <b>Power consumption</b>           | ≤ 1.5 W (without load)          |
| <b>Reverse polarity protection</b> | ✓                               |

## Mechanics

|                                       |                                         |
|---------------------------------------|-----------------------------------------|
| <b>Mechanical design</b>              | Blind hollow shaft                      |
| <b>Shaft diameter</b>                 | 10 mm                                   |
| <b>Characteristics of the shaft</b>   | Front clamp                             |
| <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>Material, cable</b>                | PUR                                     |
| <b>Start up torque</b>                | 1 Ncm (+20 °C)                          |
| <b>Operating torque</b>               | < 1 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> <sup>2)</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.

<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>              | 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) |

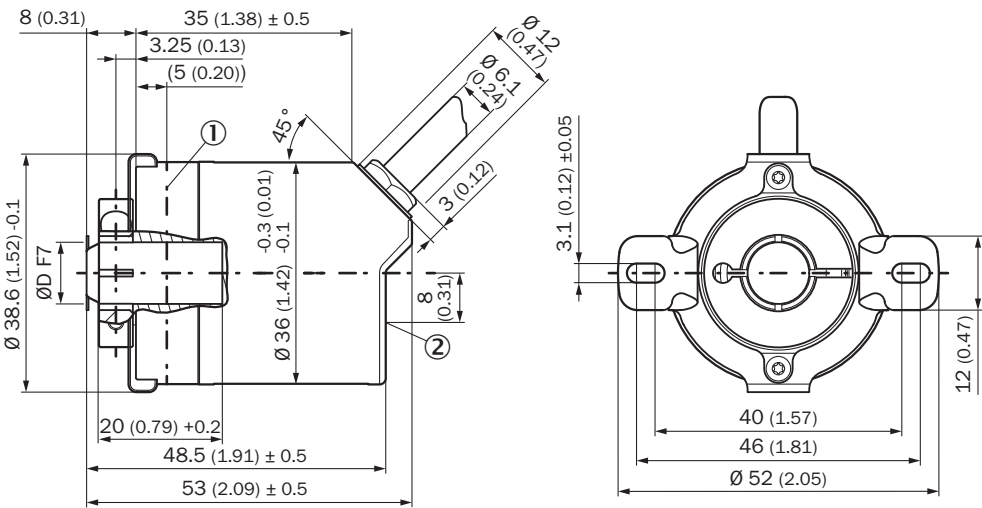
### Classifications

|                       |          |
|-----------------------|----------|
| <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 |

### Certificates

|                                                                              |   |
|------------------------------------------------------------------------------|---|
| <b>EU declaration of conformity</b>                                          | ✓ |
| <b>UK declaration of conformity</b>                                          | ✓ |
| <b>ACMA declaration of conformity</b>                                        | ✓ |
| <b>Moroccan declaration of conformity</b>                                    | ✓ |
| <b>China-RoHS</b>                                                            | ✓ |
| <b>cTUVus certificate</b>                                                    | ✓ |
| <b>CANopen certificate</b>                                                   | ✓ |
| <b>ECE test certificate</b>                                                  | ✓ |
| <b>Information according to Art. 3 of Data Act (Regulation EU 2023/2854)</b> | ✓ |

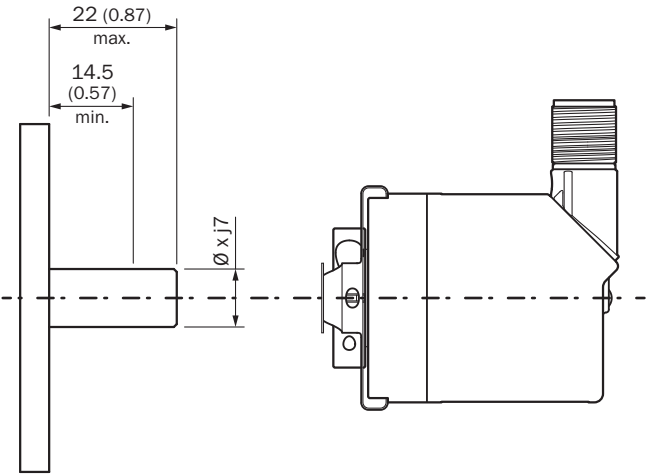
Dimensional drawing Blind hollow shaft, cable



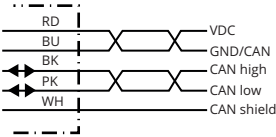
Dimensions in mm (inch)  
① Measuring point for operating temperature  
② measuring point for vibrations

| Type              | Shaft diameterØ D F7 |
|-------------------|----------------------|
| AHx36x-BAxxxxxxxx | 6 mm                 |
| AHx36x-BBxxxxxxxx | 8 mm                 |
| AHx36x-BCxxxxxxxx | 1/4"                 |
| AHx36x-BDxxxxxxxx | 10 mm                |
| AHx36x-BKxxxxxxxx | 3/8"                 |

Attachment specifications



Anschlussbelegung

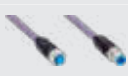
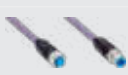


| PIN     | Signal      | Wire colors (cable connection) | Function                                 |
|---------|-------------|--------------------------------|------------------------------------------|
| 1       | CAN Shield  | White                          | Shielding                                |
| 2       | VDC         | Red                            | Supply voltageEncoder10 V DC ... 30 V DC |
| 3       | GND/CAN GND | Blue                           | 0 V (GND)                                |
| 4       | CAN high    | Black                          | CAN signal                               |
| 5       | CAN low     | Pink                           | CAN signal                               |
| Housing | -           | -                              | Shielding                                |

Recommended accessories

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

|                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type       | part no. |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| programming devices |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |          |
|                     | <ul style="list-style-type: none"><li>• <b>Product segment:</b> Programming devices</li><li>• <b>Product family:</b> PGT-12 Pro</li><li>• <b>Description:</b> Hand-held programming device for the programmable SICK AHS/AHM36 CANopen encoders, TMS/TMM61 CANopen inclination sensors, TMS/TMM88 CANopen, TMS/TMM88 Analog, and wire draw encoders with AHS/AHM36 CANopen. Compact dimensions, low weight, and intuitive operation.</li><li>• <b>Items supplied:</b> 1 x PGT-12-Pro standalone programming tool, 4 x 1.5 V (AA) alkaline mignon batteries</li></ul> | PGT-12-Pro | 1076313  |

|                                                                                     | 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> CANopen, DeviceNet™</li> <li><b>Items supplied:</b> By the meter</li> <li><b>Cable:</b> 4-wire, twisted pair</li> <li><b>Description:</b> CANopen, shielded, DeviceNet™</li> <li><b>Note:</b> Wire shield Al-Pt film, overall shield C-screen tin-plated</li> </ul>                                                        | LTG-2804-MW         | 6028328  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Signal type:</b> CANopen, DeviceNet™</li> <li><b>Description:</b> CANopen, shielded DeviceNet™</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm²</li> </ul>                                                                                                                                        | DOS-1205-GA         | 6027534  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 5-pin, straight, A-coded</li> <li><b>Signal type:</b> CANopen, DeviceNet™</li> <li><b>Description:</b> CANopen, shielded DeviceNet™</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> ≤ 0.75 mm²</li> </ul>                                                                                                                                          | STE-1205-GA         | 6027533  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 5-pin, straight</li> <li><b>Signal type:</b> CANopen</li> <li><b>Description:</b> CANopen, unshielded</li> </ul>                                                                                                                                                                                                                                                                                     | CAN male connector  | 6021167  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, A-coded</li> <li><b>Connection type head B:</b> Female connector, M12, 5-pin, A-coded</li> <li><b>Connection type head C:</b> Male connector, M12, 5-pin, A-coded</li> <li><b>Description:</b> Unshielded</li> </ul>                                                                                                                                                                        | DSC-1205T000025KMC  | 6030664  |
|   | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, CANopen, DeviceNet™</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, CANopen, DeviceNet™</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                   | YF2A15-020C1BXLEAX  | 2106283  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, CANopen, DeviceNet™</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, CANopen, DeviceNet™</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                   | YF2A15-050C1BXLEAX  | 2106284  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Fieldbus, CANopen, DeviceNet™</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, CANopen, DeviceNet™</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>                                  | YF2A15-100C1BXLEAX  | 2106286  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 5-pin, straight, A-coded</li> <li><b>Signal type:</b> Fieldbus, CANopen, DeviceNet™</li> <li><b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, CANopen, DeviceNet™</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>  | YF2A15-020C1B-M2A15 | 2106279  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 5-pin, straight, A-coded</li> <li><b>Signal type:</b> Fieldbus, CANopen, DeviceNet™</li> <li><b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, CANopen, DeviceNet™</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul>  | YF2A15-050C1B-M2A15 | 2106281  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Male connector, M12, 5-pin, straight, A-coded</li> <li><b>Signal type:</b> Fieldbus, CANopen, DeviceNet™</li> <li><b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li><b>Description:</b> Fieldbus, shielded, CANopen, DeviceNet™</li> <li><b>Application:</b> Drag chain operation, Zones with oils and lubricants</li> </ul> | YF2A15-100C1B-M2A15 | 2106282  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 5-pin, A-coded</li> <li><b>Connection type head B:</b> Female connector, M12, 5-pin, A-coded</li> <li><b>Connection type head C:</b> Male connector, M12, 5-pin, A-coded</li> <li><b>Cable:</b> 0.5 m, TPU</li> </ul>                                                                                                                                                                              | Y-CAN cable         | 6083185  |

|                                                                                   | Brief description                                                                                                                                                                                                                                                                                                                      | Type             | part no. |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------|
|  | <ul style="list-style-type: none"><li>• <b>Description:</b> Shielded</li></ul>                                                                                                                                                                                                                                                         | DDL-0D04-G0M5BC9 | 2083355  |
|                                                                                   | <ul style="list-style-type: none"><li>• <b>Connection type head A:</b> Female connector, terminal box, 8-pin, straight</li><li>• <b>Connection type head B:</b> Female connector, D-Sub, 9-pin, straight</li><li>• <b>Signal type:</b> CANopen</li><li>• <b>Cable:</b> 0.4 m</li><li>• <b>Description:</b> CANopen, shielded</li></ul> |                  |          |
| Mounting systems                                                                  |                                                                                                                                                                                                                                                                                                                                        |                  |          |
|  | <ul style="list-style-type: none"><li>• <b>Product family:</b> Stator couplings</li><li>• <b>Description:</b> Stator coupling on hole circle 63 mm</li></ul>                                                                                                                                                                           | BEF-DS08         | 2072206  |
|  | <ul style="list-style-type: none"><li>• <b>Product family:</b> Stator couplings</li><li>• <b>Description:</b> Standard stator coupling, AHS/AHM36</li></ul>                                                                                                                                                                            | BEF-DS16-AHX     | 2108615  |



## 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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