

# AHS36I-BDPJ016384

AHS/AHM36

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

| Type              | part no. |
|-------------------|----------|
| AHS36I-BDPJ016384 | 1099385  |

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>       | 16,384 (14 bit)                |
| <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> | SSI                                                                                                                                      |
| <b>Initialization time</b>     | 100 ms <sup>1)</sup>                                                                                                                     |
| <b>Position forming time</b>   | 125 $\mu$ s                                                                                                                              |
| <b>Process data</b>            | Position                                                                                                                                 |
| <b>Parameterising data</b>     | Number of steps per revolution<br>PRESET<br>Counting direction<br>Code type<br>Offset of position bits<br>Position error bit<br>SSI mode |
| <b>Code type</b>               | Gray, binary                                                                                                                             |

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

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

|                                                |                                                         |
|------------------------------------------------|---------------------------------------------------------|
| <b>Code sequence parameter adjustable</b>      | CW/CCW (V/R) configurable via programming tool or cable |
| <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>             | Cable, 8-wire, universal, 0.5 m |
| <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>              | Blind hollow shaft                      |
| <b>Shaft diameter</b>                 | 10 mm                                   |
| <b>Characteristics of the shaft</b>   | Front clamp                             |
| <b>Weight</b>                         | 0.2 kg <sup>1)</sup>                    |
| <b>Shaft material</b>                 | Stainless steel 1,4305                  |
| <b>Flange material</b>                | Stainless steel 1,4305                  |
| <b>Material, stator coupling</b>      | Stainless steel 1,4305                  |
| <b>Housing material</b>               | Stainless steel 1,4305                  |
| <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> | 23 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>              | IP67 (IEC 60529)<br>IP69K (IEC 60529)      |
| <b>Permissible relative humidity</b> | 90 % (Condensation not permitted)          |
| <b>Operating temperature range</b>   | -40 °C ... +100 °C                         |
| <b>Storage temperature range</b>     | -40 °C ... +100 °C, without package        |

<sup>1)</sup> For side-mounted encoders (horizontal encoder shaft, vertical stator coupling), additional damping measures may be required in some cases as resonances can arise. Furthermore, the cable must be fastened with the shortest possible distance to the encoder.

|                                |                                                       |
|--------------------------------|-------------------------------------------------------|
| <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) <sup>1)</sup> |

<sup>1)</sup> For side-mounted encoders (horizontal encoder shaft, vertical stator coupling), additional damping measures may be required in some cases as resonances can arise. Furthermore, the cable must be fastened with the shortest possible distance to the encoder.

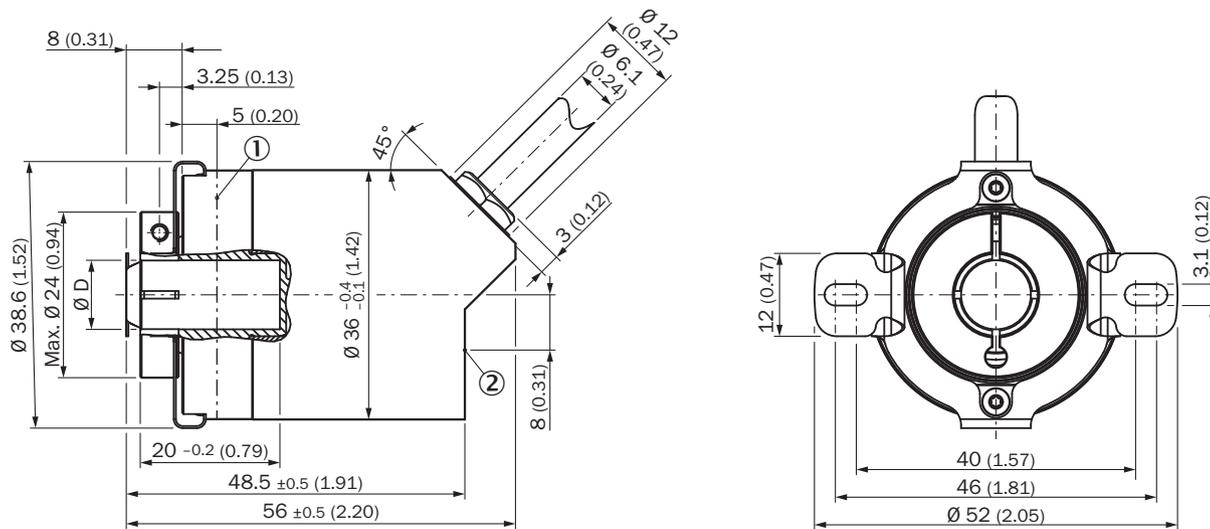
### Certificates

|                                                                              |   |
|------------------------------------------------------------------------------|---|
| <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>Information according to Art. 3 of Data Act (Regulation EU 2023/2854)</b> | ✓ |

### 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 Blind hollow shaft, cable



Dimensions in mm (inch)

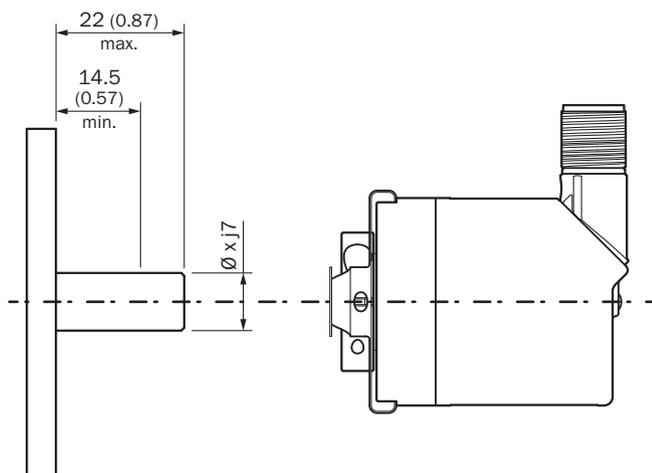
Non-tolerated dimensions according to DIN-ISO 2768-mk

① Measuring point for operating temperature

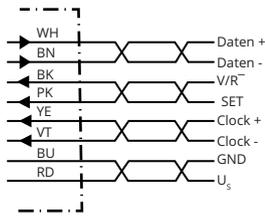
② measuring point for vibrations

| Type             | Shaft diameter $\varnothing$ D F7 |
|------------------|-----------------------------------|
| AHx36x-BAxxxxxxx | 6 mm                              |
| AHx36x-BBxxxxxxx | 8 mm                              |
| AHx36x-BCxxxxxxx | 1/4"                              |
| AHx36x-BDxxxxxxx | 10 mm                             |
| AHx36x-BKxxxxxxx | 3/8"                              |

Attachment specifications



### Anschlussbelegung



| 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 adjustment<br>Interface 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      | Shielding 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. |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|
| <b>connectors and cables</b>                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |          |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight, A-coded</li> <li>• <b>Description:</b> Shielded</li> <li>• <b>Connection systems:</b> Screw-type terminals</li> <li>• <b>Permitted cross-section:</b> 0.25 mm<sup>2</sup> ... 0.5 mm<sup>2</sup></li> <li>• <b>Application:</b> Hygienic and washdown zones</li> </ul>                                                                                     | YF12ES8-0050S5586A | 2097334  |
|  | <ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 8-pin, straight, A-coded</li> <li>• <b>Description:</b> Shielded</li> <li>• <b>Connection systems:</b> Screw-type terminals</li> <li>• <b>Permitted cross-section:</b> ≤ 0.5 mm<sup>2</sup></li> <li>• <b>Application:</b> Hygienic and washdown zones</li> </ul>                                                                                                             | YM12ES8-0050S5586A | 2097337  |
|  | <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> Male connector, D-Sub, 9-pin, straight</li> <li>• <b>Signal type:</b> SSI + incremental</li> <li>• <b>Cable:</b> 0.5 m, 4-wire, PVC</li> <li>• <b>Description:</b> SSI + incremental, shielded</li> <li>• <b>Note:</b> Programming adapter cable for programming tool PGT-10-Pro and PGT-08-S</li> </ul> | DSL-0D08-G0M5AC3   | 2061739  |
| <b>Mounting systems</b>                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |          |
|  | <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  |

|                                                                                   | 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-10 Pro</li> <li>• <b>Description:</b> Programming unit display for programmable SICK DFS60, DFV60, AFS/AFM60, AHS/AHM36 encoders, and wire draw encoder with DFS60, AFS/AFM60 and AHS/AHM36. Compact dimensions, low weight, and intuitive operation.</li> <li>• <b>Items supplied:</b> 1 x PGT-10-Pro stand-alone programming tool, 4 x alkaline type batteries, 1.5 V Mignon (AA)</li> </ul> | PGT-10-Pro | 1072254  |
|  | <ul style="list-style-type: none"> <li>• <b>Product segment:</b> Programming devices</li> <li>• <b>Product family:</b> PGT-08-S</li> <li>• <b>Description:</b> USB programming unit, for programmable SICK encoders AFS60, AFM60, DFS60, VFS60, DFV60 and wire draw encoders with programmable encoders. Not compatible with the portable SOPAS ET versions.</li> </ul>                                                                                                                                                   | PGT-08-S   | 1036616  |

## 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:

Contacts and other locations –[www.sick.com](http://www.sick.com)