



# AHS36A-S1AL003600

AHS/AHM36

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



### Ordering information

| Type              | Part no. |
|-------------------|----------|
| AHS36A-S1AL003600 | 1118566  |

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

Illustration may differ



### Detailed technical data

#### Performance

|   |                                |
|---|--------------------------------|
| <b>Number of steps per revolution (max. resolution)</b>       | 3,600                          |
| <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 µs   |
| <b>Process data</b>                            | Position   |
| <b>Code type</b>                               | Gray   |
| <b>Code sequence parameter adjustable</b>      | CW/CCW (V/R) configurable via 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.

#### Electrical data

|                          |                               |
|--------------------------|-------------------------------|
| <b>Connection type</b>   | Cable, 8-wire, universal, 3 m |
| <b>Supply voltage</b>    | 4.5 ... 32 V DC               |
| <b>Power consumption</b> | ≤ 1.5 W (without load)        |

<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.

|  |  |
|--|--|
| <b>Reverse polarity protection</b>           | ✓  |
| <b>MTTFd: 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.

## Mechanical data

|                                       |                                   |
|---------------------------------------|-----------------------------------|
| <b>Mechanical design</b>              | Solid shaft, Servo flange         |
| <b>Shaft diameter</b>                 | 6 mm                              |
| <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>Material, cable</b>                | PUR                               |
| <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 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 ... +100 °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)    |

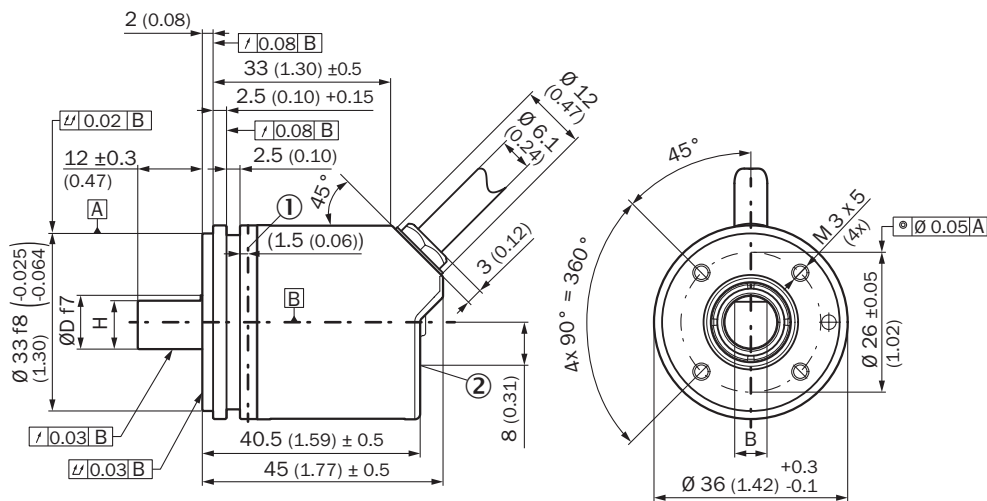
## Classifications

|                     |          |
|---------------------|----------|
| <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))

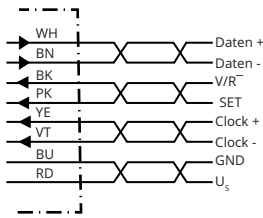
Solid shaft, servo flange, cable



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

| Type  | Shaft diameter<br>Ø D f7 | B       | H      |
|---|--------------------------|---------|--------|
| AHx36x-S1xxxxxxxx<br>AHx36x-S3xxxxxxxx                      | 6 mm                     | 3,6 mm  | 5,4 mm |
| AHx36x-S9xxxxxxxx<br>AHx36x-S5xxxxxxxx                      | 8 mm                     | 3,9 mm  | 7,5 mm |
| AHx36x-S2xxxxxxxx<br>AHx36x-S4xxxxxxxx<br>AHx36x-SCxxxxxxxx | 10 mm                    | 6 mm    | 9 mm   |
| AHx36x-SAxxxxxxxx<br>AHx36x-S8xxxxxxxx                      | 1/4"                     | 3,85 mm | 5,7 mm |
| AHx36x-SBxxxxxxxx<br>AHx36x-S7xxxxxxxx                      | 3/8"                     | 4,35 mm | 9 mm   |




### PIN assignment






| 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   |
|     |                                | Screen         | 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. |
|---|---|---------------|----------|
| <b>Other mounting accessories</b>   |   |               |          |
|  | Servo clamps, small, for servo flange (clamps, eccentric fastener), 3 pcs, without mounting material, without mounting hardware   | BEF-WK-RESOL  | 2039082  |
| <b>Plug connectors and cables</b>   |   |               |          |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M12, 8-pin, straight, A-coded</li> <li><b>Signal type:</b> Incremental</li> <li><b>Cable:</b> CAT5, CAT5e</li> <li><b>Description:</b> Incremental, shielded, Head A: male connector, M12, 8-pin, straight, A coded, shielded, for cable diameter 4 mm ... 8 mm Head B: - Operating temperature: -40 °C ... +85 °C</li> <li><b>Connection systems:</b> IDC quick connection</li> <li><b>Permitted cross-section:</b> 0.14 mm<sup>2</sup> ... 0.34 mm<sup>2</sup></li> </ul> | STE-1208-GA01 | 6044892  |
| <b>Shaft adaptation</b>   |   |               |          |
|  | Bellows coupling, shaft diameter 6 mm / 6 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular +/- 4°; max. speed 10,000 rpm, -30 °C to +120 °C, max. torque 120 Ncm; material: stainless steel bellows, aluminum hub  | KUP-0606-B    | 5312981  |
|   | Bellows coupling, shaft diameter 6 mm / 10 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular +/- 4°; max. speed 10,000 rpm, -30 °C to +120 °C, max. torque 120 Ncm; material: stainless steel bellows, aluminum hub   | KUP-0610-B    | 5312982  |

|   | Brief description  | Type       | Part no. |
|---|--|------------|----------|
|  | Double loop coupling, shaft diameter 6 mm / 10 mm, max. shaft offset: radially +/- 2,5 mm, axially +/-3 mm, angle +/- 10 degrees;max. speed 3.000 rpm, -30 to +80 degrees Celsius, torsional spring stiffness of 25 Nm/rad   | KUP-0610-D | 5326697  |
|  | Spring washer coupling, shaft diameter 6 mm / 10 mm, Maximum shaft offset: radial +/- 0.3 mm, axial +/- 0.4 mm, angular +/- 2.5°; max. speed 12,000 rpm, -10° to +80 °C, max. torque 60 Ncm; material: aluminum flange, glass fiber-reinforced polyamide membrane and hardened steel coupling pin  | KUP-0610-F | 5312985  |
|  | Claw coupling, shaft diameter 6 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 | KUP-0610-J | 2127056  |

## 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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