



AHM36I-S4AC013X12

AHS/AHM36

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

| Type | Part no. |
|-------------------|----------|
| AHM36I-S4AC013X12 | 1130127 |

Other models and accessories → www.sick.com/AHS_AHM36

Detailed technical data

Performance

| | |
|---|---------------------------------|
| Number of steps per revolution (max. resolution) | 4,096 (13 bit) |
| Number of revolutions | 2,048 (12 bit) |
| Max. resolution (number of steps per revolution x number of revolutions) | 13 bit x 12 bit (4,096 x 2,048) |
| Error limits G | 0.35° (at 20 °C) ¹⁾ |
| Repeatability standard deviation σ_r | 0.2° (at 20 °C) ²⁾ |

¹⁾ 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.

²⁾ In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

Interfaces

| | |
|--|--|
| Communication interface | SSI |
| Initialization time | 100 ms ¹⁾ |
| Position forming time | 125 μ s |
| Process data | Position |
| Code type | Gray |
| Code sequence parameter adjustable | CW/CCW (V/R) configurable via cable |
| Clock frequency | 2 MHz ²⁾ |
| Set (electronic adjustment) | H-active (L = 0 - 3 V, H = 4,0 - U _s V) |
| CW/CCW (counting sequence when turning) | L-active (L = 0 - 1 V, H = 2,0 - U _s V) |

¹⁾ Valid positional data can be read once this time has elapsed.

²⁾ Minimum, LOW level (Clock +): 250 ns.

Electrical data

| | |
|--|--|
| Connection type | Male connector, M12, 8-pin, universal |
| Supply voltage | 4.5 ... 32 V DC |
| Power consumption | ≤ 1.5 W (without load) |
| Reverse polarity protection | ✓ |
| MTTFd: mean time to dangerous failure | 230 years (EN ISO 13849-1) ¹⁾ |

¹⁾ 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

| | |
|---------------------------------------|---|
| Mechanical design | Solid shaft, face mount flange |
| Shaft diameter | 6 mm |
| Shaft length | 12 mm |
| Weight | 0.2 kg ¹⁾ |
| Shaft material | Stainless steel 1,4305 |
| Flange material | Stainless steel 1,4305 |
| Housing material | Stainless steel 1,4305 |
| Start up torque | 1 Ncm (+20 °C) |
| Operating torque | < 1 Ncm (+20 °C) |
| Permissible shaft loading | 40 N (radial) 20 N (axial) |
| Operating speed | ≤ 6,000 min ⁻¹ ²⁾ |
| Moment of inertia of the rotor | 2.5 gcm ² |
| Bearing lifetime | 3.6 x 10 ⁸ revolutions |
| Angular acceleration | ≤ 500,000 rad/s ² |

¹⁾ Based on devices with male connector.

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

Ambient data

| | |
|--------------------------------------|---|
| EMC | According to EN 61000-6-2 and EN 61000-6-3 |
| Enclosure rating | IP67 (IEC 60529) IP69K (IEC 60529) |
| Permissible relative humidity | 90 % (Condensation not permitted) |
| Operating temperature range | -40 °C ... +100 °C |
| Storage temperature range | -40 °C ... +100 °C, without package |
| Resistance to shocks | 100 g, 6 ms (EN 60068-2-27) |
| Resistance to vibration | 20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6) ¹⁾ |

¹⁾ 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.

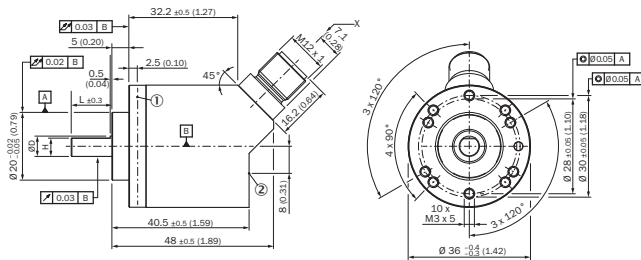
Classifications

| | |
|---------------------|----------|
| 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 |

Dimensional drawing (Dimensions in mm (inch))

Solid shaft, face mount flange, male connector



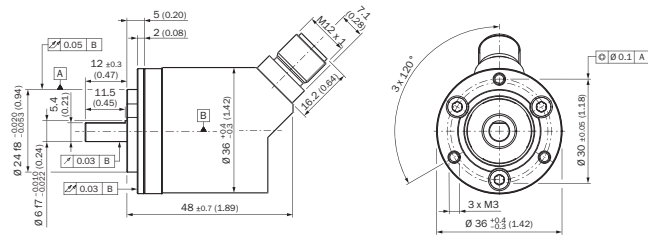
Non-tolerated dimensions according to DIN-ISO 2768-mk

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

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

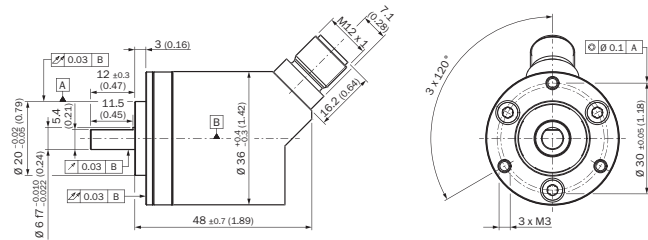
Attachment specifications

Solid shaft, face mount flange with flange adapter, centering collar D20 on D24 (BEF-FA-020-024-I, 2103982)



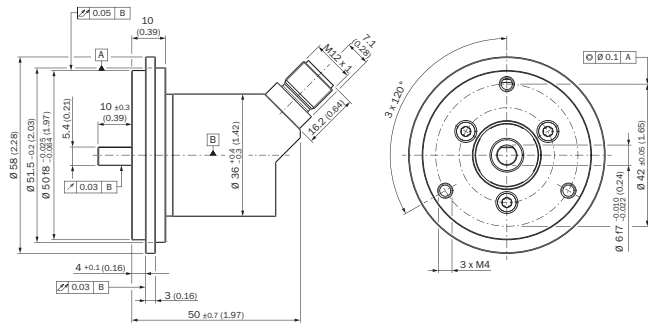
Order example for 6 mm shaft diameter: AHx36I-S3xx0xxxx + BEF-FA-020-024-I (adapter is not pre-assembled)

Solid shaft, face mount flange with flange adapter, centering collar D20 on D36, 2 mm high (BEF-FA-020-036-2-I, 2103984)



Order example for 6 mm shaft diameter: AHx36I-S3xx0xxxx + BEF-FA-020-036-2-I (adapter is not pre-assembled)

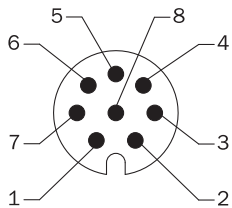
Solid shaft, face mount flange with flange adapter, centering collar D20 on D50 (BEF-FA-020-050-I, 2103985)



Order example for 6 mm shaft diameter: AHx36I-S3xx0xxxx + BEF-FA-020-050-I (adapter is not pre-assembled)

PIN assignment

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 adjustment |

| PIN | Wire colors (cable connection) | Signal | Explanation |
|-----|--------------------------------|----------------|---|
| 5 | Yellow | Clock + | Interface signals |
| 6 | Purple | Clock - | Interface signals |
| 7 | Blue | GND | Ground connection |
| 8 | Red | U _S | 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

| | Brief description | Type | Part no. |
|---|--|--------------------|----------|
| Plug connectors and cables | | | |
|  | <ul style="list-style-type: none"> Connection type head A: Female connector, M12, 8-pin, straight, A-coded Description: Shielded Connection systems: Screw-type terminals Permitted cross-section: 0.25 mm² ... 0.5 mm² Application: Hygienic and washdown zones | YF12ES8-0050S5586A | 2097334 |
|  | <ul style="list-style-type: none"> Connection type head A: Male connector, M12, 8-pin, straight, A-coded Description: Shielded Connection systems: Screw-type terminals Permitted cross-section: ≤ 0.5 mm² Application: Hygienic and washdown zones | YM12ES8-0050S5586A | 2097337 |
| Shaft adaptation | | | |
|  | 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 |
|  | 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 |

| | Brief description | Type | Part no. |
|---|---|------------------|----------|
| Others | | | |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 8-pin, straight • Connection type head B: Flying leads • Signal type: Incremental, SSI • Cable: 20 m, 8-wire, PUR, halogen-free • Description: Incremental, SSI, shielded, Head A: female connector, M12, 8-pin, straight Head B: cable Cable: suitable for drag chain, PVC, shielded, 4 x 2 x 0.25 mm², Ø 7.0 mm • Connection systems: Flying leads | DOL-1208-G20MAC1 | 6032869 |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 8-pin, straight • Connection type head B: Flying leads • Signal type: Incremental, SSI • Cable: 2 m, 8-wire, PUR, halogen-free • Description: Incremental, SSI, shielded, Head A: female connector, M12, 8-pin, straight Head B: cable Cable: suitable for drag chain, PVC, shielded, 4 x 2 x 0.25 mm², Ø 7.0 mm • Connection systems: Flying leads | DOL-1208-G02MAC1 | 6032866 |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 8-pin, straight • Connection type head B: Flying leads • Signal type: Incremental, SSI • Cable: 5 m, 8-wire, PUR, halogen-free • Description: Incremental, SSI, shielded, Head A: female connector, M12, 8-pin, straight Head B: cable Cable: suitable for drag chain, PVC, shielded, 4 x 2 x 0.25 mm², Ø 7.0 mm • Connection systems: Flying leads | DOL-1208-G05MAC1 | 6032867 |
|  | <ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 8-pin, straight • Connection type head B: Flying leads • Signal type: Incremental, SSI • Cable: 10 m, 8-wire, PUR, halogen-free • Description: Incremental, SSI, shielded, Head A: female connector, M12, 8-pin, straight Head B: cable Cable: suitable for drag chain, PVC, shielded, 4 x 2 x 0.25 mm², Ø 7.0 mm • Connection systems: Flying leads | DOL-1208-G10MAC1 | 6032868 |

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