



# AHM36A-S3PC014x12

AHS/AHM36

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

Type	Part no.
AHM36A-S3PC014x12	1066007

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>	SSI
<b>Initialization time</b>	100 ms <sup>1)</sup>
<b>Position forming time</b>	125 µs
<b>Process data</b>	Position
<b>Parameterising data</b>	Number of steps per revolution Number of revolutions PRESET Counting direction Code type Offset of position bits Position error bit Round axis functionality SSI mode
<b>Code type</b>	Gray, binary
<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>

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

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

<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>	Male connector, M12, 8-pin, universal
<b>Supply voltage</b>	4.5 ... 32 V DC
<b>Power consumption</b>	≤ 1.5 W (without load)
<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, face mount 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>Start up torque</b>	1 Ncm (+20 °C)
<b>Operating torque</b>	< 1 Ncm (+20 °C)
<b>Permissible shaft loading</b>	40 N (radial) 20 N (axial)
<b>Operating speed</b>	≤ 6,000 min <sup>-1</sup> <sup>2)</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.

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

## Ambient data

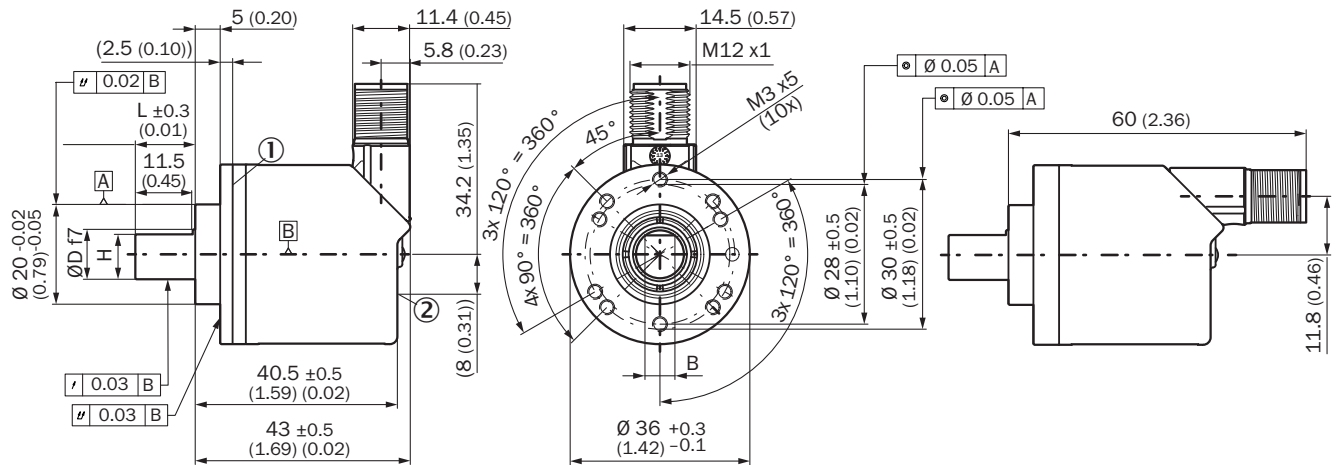
<b>EMC</b>	According to EN 61000-6-2 and EN 61000-6-3
<b>Enclosure rating</b>	IP66 (IEC 60529) IP67 (IEC 60529)
<b>Permissible relative humidity</b>	90 % (Condensation not permitted)
<b>Operating temperature range</b>	-40 °C ... +100 °C
<b>Storage temperature range</b>	-40 °C ... +100 °C, without package
<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>eCl@ss 5.0</b>	27270502
<b>eCl@ss 5.1.4</b>	27270502
<b>eCl@ss 6.0</b>	27270590
<b>eCl@ss 6.2</b>	27270590
<b>eCl@ss 7.0</b>	27270502
<b>eCl@ss 8.0</b>	27270502
<b>eCl@ss 8.1</b>	27270502
<b>eCl@ss 9.0</b>	27270502
<b>eCl@ss 10.0</b>	27270502
<b>eCl@ss 11.0</b>	27270502
<b>eCl@ss 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, face mount flange, male connector



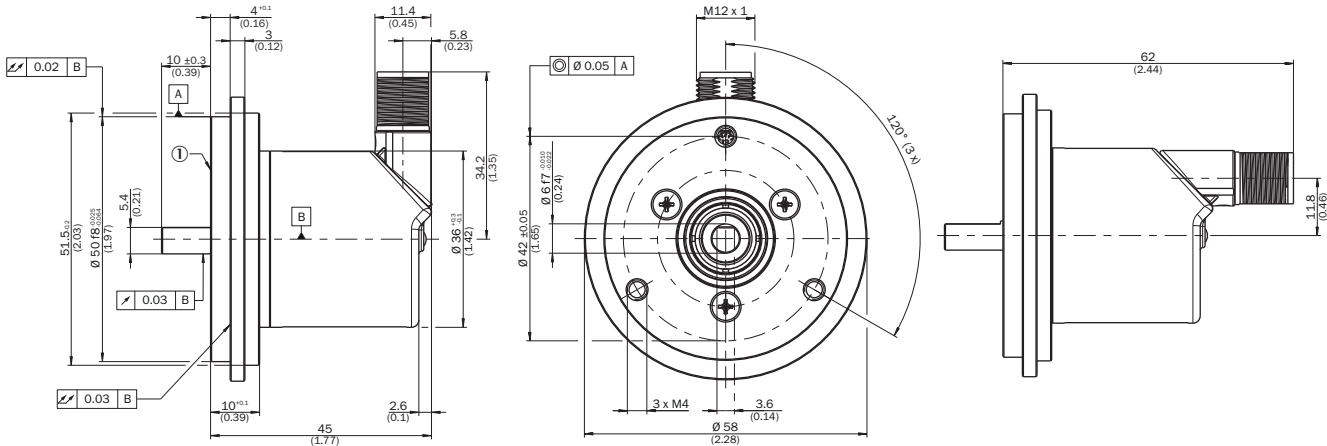
- ① Measuring point for operating temperature
- ② Measuring point for vibrations

Type	Shaft diameter $\varnothing D f7$	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	1/4"	3,85 mm	5,7 mm

Type	Shaft diameter Ø D f7	B	H
AHx36x-S8xxxxxxx	3/8"	4,35 mm	9 mm
AHx36x-SBxxxxxxx			
AHx36x-S7xxxxxxx			

Attachment specifications

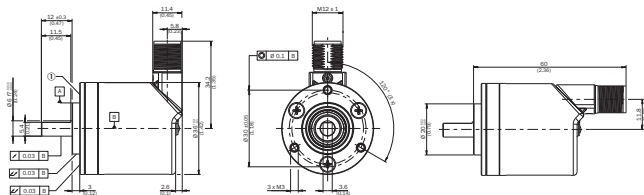
Solid shaft, face mount flange with flange adapter, centering collar D20 on D50 (BEF-FA-020-050, 2072297)



Order example for 6 mm shaft diameter: AHx36x-S3xx0xxxxx + BEF-FA-020-050 (adapter is not pre-assembled)

① Measuring point for operating temperature

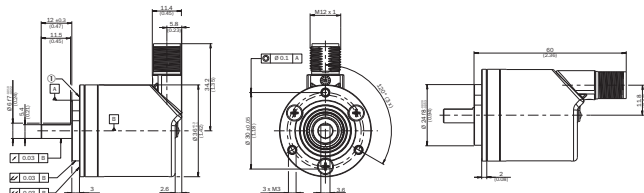
Solid shaft, face mount flange with flange adapter, centering collar D20 on D36, 2 mm high (BEF-FA-020-036-002, 2072296)



Order example for 6 mm shaft diameter: AHx36x-S3xx0xxxxx + BEF-FA-020-036-002 (adapter is not pre-assembled)

① Measuring point for operating temperature

Solid shaft, face mount flange with flange adapter, centering collar D20 on D24 (BEF-FA-020-024, 2072294)

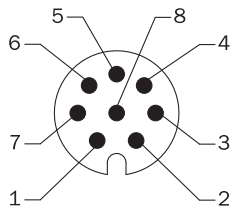


Order example for 6 mm shaft diameter: AHx36x-S3xx0xxxxx + BEF-FA-020-024 (adapter is not pre-assembled)

① Measuring point for operating temperature

### 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 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>Programming and configuration tools</b>			
	USB programming unit, for programmable SICK encoders AFS60, AFM60, DFS60, VFS60, DFV60 and wire draw encoders with programmable encoders	PGT-08-S	1036616
	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.	PGT-10-Pro	1072254
<b>Plug connectors and cables</b>			
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, HIPERFACE®, PUR, halogen-free, shielded	LTG-2308-MWENC	6027529
	Head A: cable Head B: Flying leads Cable: SSI, TTL, HTL, Incremental, PUR, halogen-free, shielded	LTG-2612-MW	6028516
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 2 m	DOL-1208-G02MAC1	6032866

	Brief description	Type	Part no.
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 5 m	DOL-1208-G05MAC1	6032867
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 10 m	DOL-1208-G10MAC1	6032868
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 20 m	DOL-1208-G20MAC1	6032869
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 25 m	DOL-1208-G25MAC1	6067859
	Head A: female connector, M12, 8-pin, straight Head B: male connector, D-Sub, 9-pin, straight Cable: SSI, PUR, halogen-free, shielded, 0.5 m Suitable for use with SSI interfaces, not suitable for use with SSI + Incremental interface or SSI + Sin/Cos., programming adapter cable for programming tool PGT-10-Pro and PGT-08-S	DSL-2D08-G0M5AC2	2048439
	Head A: female connector, M12, 8-pin, straight, A-coded Cable: Incremental, SSI, shielded	DOS-1208-GA01	6045001
<b>Shaft adaptation</b>			
	Bellows coupling, shaft diameter 6 mm / 6 mm, maximum shaft offset: radial $\pm 0.25$ mm, axial $\pm 0.4$ mm, angular $\pm 4^\circ$ ; max. speed 10,000 rpm, $-30^\circ\text{C}$ to $+120^\circ\text{C}$ , 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 $\pm 0.25$ mm, axial $\pm 0.4$ mm, angular $\pm 4^\circ$ ; max. speed 10,000 rpm, $-30^\circ\text{C}$ to $+120^\circ\text{C}$ , 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 $\pm 2.5$ mm, axially $\pm 3$ mm, angle $\pm 10$ 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 $\pm 0.3$ mm, axial $\pm 0.4$ mm, angular $\pm 2.5^\circ$ ; max. speed 12,000 rpm, $-10^\circ$ to $+80^\circ\text{C}$ , 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 $\pm 0.22$ mm, axial $\pm 1$ mm angular $\pm 1.3^\circ$ , max. speed 19,000 rpm, angle of twist max. $10^\circ$ , $-30^\circ\text{C}$ to $+80^\circ\text{C}$ , 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.”

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