



AHM36A-S5QC014x12

AHS/AHM36

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

Type	part no.
AHM36A-S5QC014x12	1101533

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

Detailed technical data

Safety-related parameters

MTTF_D (mean time to dangerous failure)	240 years (EN ISO 13849-1) ¹⁾
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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.

Performance

Number of steps per revolution (max. resolution)	16,384 (14 bit)
Number of revolutions	4,096 (12 bit)
Max. resolution (number of steps per revolution x number of revolutions)	14 bit x 12 bit (16,384 x 4,096)
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	IO-Link
Communication Interface detail	IO-Link V1.1
Initialization time	2 s ¹⁾
Cycle time	≤ 3.2 ms
Smart Sensor	Efficient communication, Enhanced Sensing, diagnosis

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

Process data	Position, speed, electronic cams, limit values, linear position, linear speed, errors and warnings, switching signals on pin 2
Parameterising data	Number of steps per revolution Number of revolutions PRESET Counting direction Sampling rate for speed calculation Unit for output of the speed value Round axis functionality Electronic cams(2 channels x 8 cams) Limit values Linear measuring length per 360° Pin 2 configuration
Available diagnostics data	Minimum and maximum temperature Maximum speed Power-on counter Operating hours counter power-on/motion Counter of direction changes/number of movements cw/number of movements ccw Minimum and maximum operating voltage Distance covered
Status information	Via status LED
Switching input/Switching output	✓
Pin 2 input frequency	≤ 100 Hz
Output frequency pin 2	≤ 100 Hz

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

Electronics

Connection type	Male connector, M12, 4-pin, universal
Supply voltage	18 ... 30 V
Power consumption	≤ 1.5 W
Reverse polarity protection	✓

Mechanics

Mechanical design	Solid shaft, face mount flange
Shaft diameter	8 mm
Shaft length	12 mm
Characteristics of the shaft	With flat
Weight	0.12 kg ¹⁾
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Zinc
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
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.

Ambient data

EMC	According to EN 61000-6-2, EN 61000-6-3 and EN 61131-9
Enclosure rating	IP66 (IEC 60529) IP67 (IEC 60529)
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–40 °C ... +85 °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)

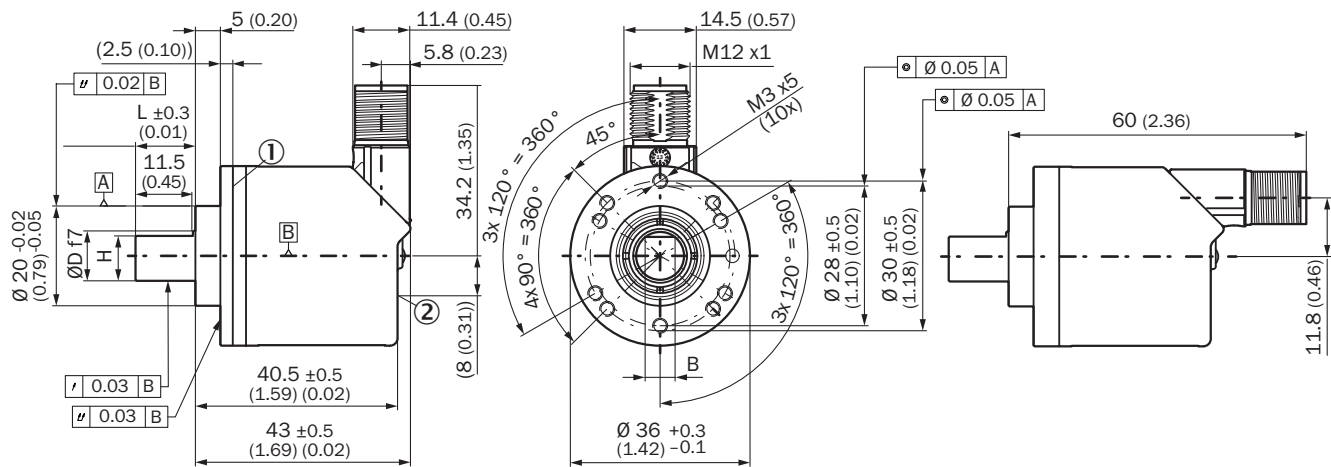
Certificates

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
IO-Link certificate	✓
cTUVus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

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

solid shaft, face mount flange, male connector



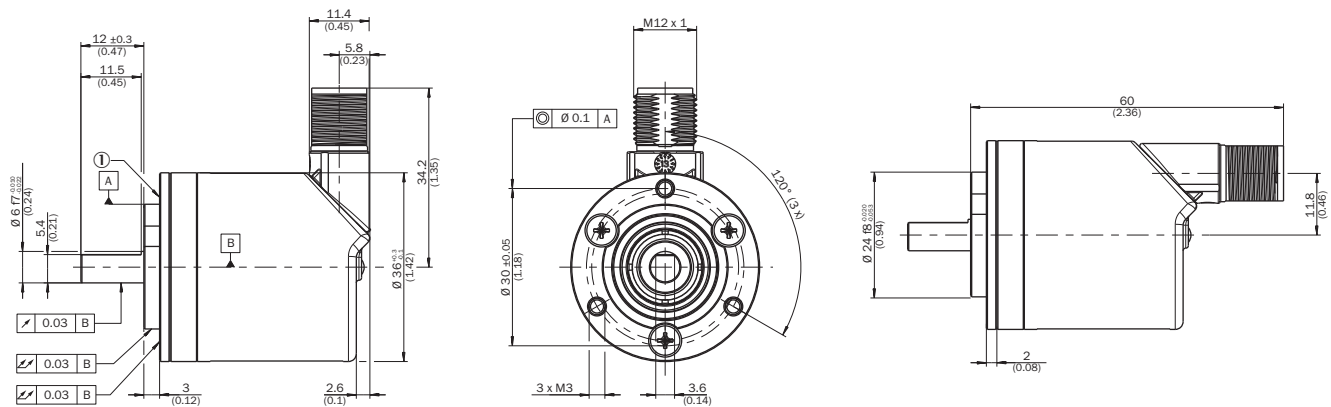
Dimensions in mm (inch)

① Measuring point for operating temperature

② measuring point for vibrations

Type	Shaft diameter Ø D f7	B	H
AHx36x-S1xxxxxxxxx AHx36x-S3xxxxxxxxx	6 mm	3,6 mm	5,4 mm
AHx36x-S9xxxxxxxxx AHx36x-S5xxxxxxxxx	8 mm	3,9 mm	7,5 mm
AHx36x-S2xxxxxxxxx AHx36x-S4xxxxxxxxx AHx36x-SCxxxxxxxxx	10 mm	6 mm	9 mm
AHx36x-SAxxxxxxxxx AHx36x-S8xxxxxxxxx	1/4"	3,85 mm	5,7 mm
AHx36x-SBxxxxxxxxx AHx36x-S7xxxxxxxxx	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, 2072294)



order example for 6 mm shaft diameter: AHx36x-S3x0xxxxx + BEF-FA-020-024 (adapter is not pre-assembled)

① Measuring point for operating temperature

① Measuring point for operating temperature

Technical drawing of a 1/2" NPT 304 stainless steel ball valve. The drawing includes three views: a front view (left), a top view (middle), and a side view (right). Dimensions are provided in millimeters (mm) and inches (in).

Front View (Left):

- Overall length: 51.5^{+0.2}_{-0.2} (2.03)
- Flange thickness: 10^{+0.3}_{-0.3} (0.39)
- Flange outer diameter: Ø 50.78^{+0.2}_{-0.2} (2.0)
- Flange inner diameter: Ø 42.40^{+0.05}_{-0.05} (1.67)
- Flange hole diameter: Ø 6.17^{+0.02}_{-0.02} (0.24)
- Flange hole spacing: 3 x M4
- Flange hole diameter: Ø 58 (2.28)
- Flange hole spacing: 3.6 (0.14)
- Flange hole diameter: Ø 5.8 (0.23)
- Flange hole spacing: 11.4 (0.45)
- Flange hole diameter: Ø 4.0 (0.16)
- Flange hole spacing: 3 (0.12)
- Flange hole diameter: Ø 3.6^{+0.3}_{-0.3} (1.42)
- Flange hole spacing: 34.2 (1.35)
- Flange hole diameter: Ø 2.6 (0.1)
- Flange hole spacing: 45 (1.77)
- Flange hole diameter: Ø 1.8 (0.07)
- Flange hole spacing: 62 (2.44)
- Flange hole diameter: Ø 11.8 (0.46)
- Flange hole spacing: 120° (3 x)

Top View (Middle):

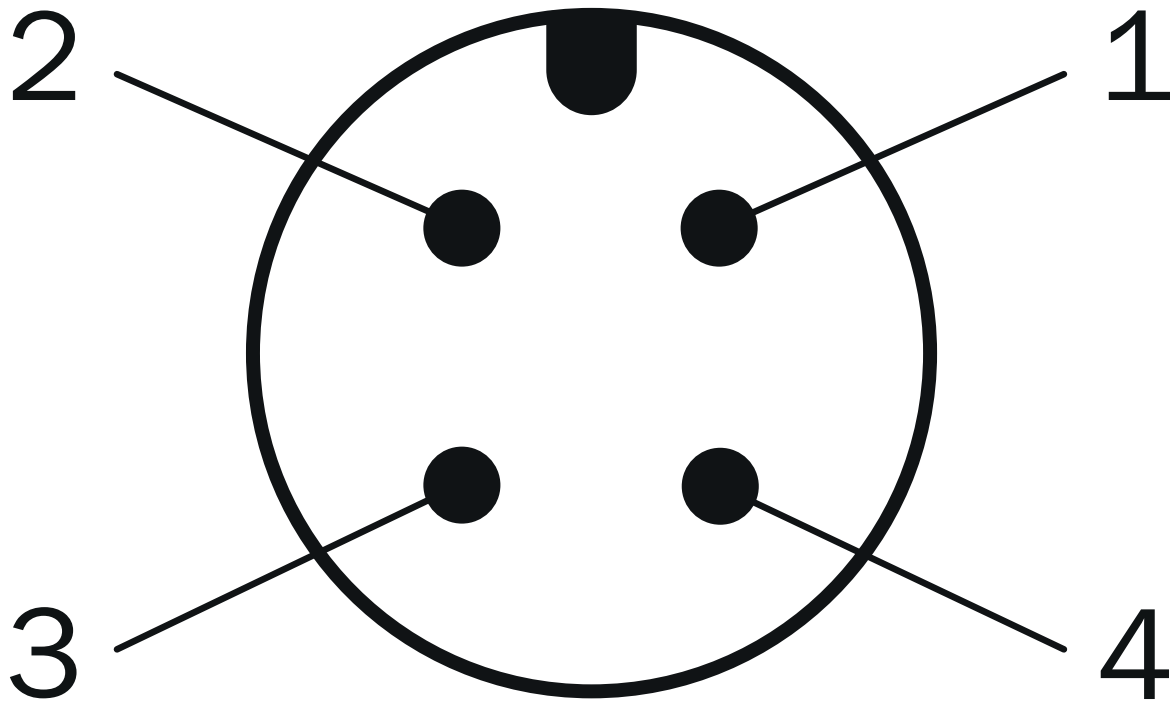
- Overall diameter: Ø 58 (2.28)
- Flange hole diameter: Ø 6.17^{+0.02}_{-0.02} (0.24)
- Flange hole spacing: 3 x M4
- Flange hole diameter: Ø 5.8 (0.23)
- Flange hole spacing: 11.4 (0.45)
- Flange hole diameter: Ø 4.0 (0.16)
- Flange hole spacing: 3 (0.12)
- Flange hole diameter: Ø 3.6^{+0.3}_{-0.3} (1.42)
- Flange hole spacing: 34.2 (1.35)
- Flange hole diameter: Ø 2.6 (0.1)
- Flange hole spacing: 45 (1.77)
- Flange hole diameter: Ø 1.8 (0.07)
- Flange hole spacing: 62 (2.44)
- Flange hole diameter: Ø 11.8 (0.46)
- Flange hole spacing: 120° (3 x)

Side View (Right):

- Overall length: 51.5^{+0.2}_{-0.2} (2.03)
- Flange thickness: 10^{+0.3}_{-0.3} (0.39)
- Flange outer diameter: Ø 50.78^{+0.2}_{-0.2} (2.0)
- Flange inner diameter: Ø 42.40^{+0.05}_{-0.05} (1.67)
- Flange hole diameter: Ø 6.17^{+0.02}_{-0.02} (0.24)
- Flange hole spacing: 3 x M4
- Flange hole diameter: Ø 58 (2.28)
- Flange hole spacing: 3.6 (0.14)
- Flange hole diameter: Ø 5.8 (0.23)
- Flange hole spacing: 11.4 (0.45)
- Flange hole diameter: Ø 4.0 (0.16)
- Flange hole spacing: 3 (0.12)
- Flange hole diameter: Ø 3.6^{+0.3}_{-0.3} (1.42)
- Flange hole spacing: 34.2 (1.35)
- Flange hole diameter: Ø 2.6 (0.1)
- Flange hole spacing: 45 (1.77)
- Flange hole diameter: Ø 1.8 (0.07)
- Flange hole spacing: 62 (2.44)
- Flange hole diameter: Ø 11.8 (0.46)
- Flange hole spacing: 120° (3 x)

① Measuring point for operating temperature

Anschlussbelegung



PIN	Wire color	Signal	Function		
–	–	–	Basic	Advanced	Advanced Smart Task
1	Brown	L+	Encoder supply voltage 18-30 V (+Us)		
2	White	I/Q	Not connect- ed - no function	Multifunctional pin (configurable as switching input or switching output)	
3	Blue	L-			
4	Black	C/Q	Encoder supply voltage 0 V (GND)		
			IO-Link communication		
		–	-		Switching out- put (SIO mode)

Recommended accessories

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

	Brief description	Type	part no.
connectors and cables			
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Description: Unshielded Connection systems: Screw-type terminals Permitted cross-section: ≤ 0.75 mm²	DOS-1204-G	6007302
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Male connector, M12, 4-pin, straight, A-coded Signal type: Sensor/actuator cable Cable: 2 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A14-020UB3M2A14	2096000
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Male connector, M12, 4-pin, straight, A-coded Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A14-050UB3M2A14	2096001
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Male connector, M12, 4-pin, straight, A-coded Signal type: Sensor/actuator cable Cable: 10 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A14-100UB3M2A14	2096002
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 2 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A14-020UB3XLEAX	2095607
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A14-050UB3XLEAX	2095608
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 10 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A14-100UB3XLEAX	2095609
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 0.6 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A14-C60UB3XLEAX	2145654
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 1 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A14-010UB3XLEAX	2145655
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 3 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Drag chain operation, Zones with oils and lubricants, Robot, Drag chain operation	YF2A14-030UB3XLEAX	2145656

	Brief description	Type	part no.
shaft adaptation			
	• Product segment: Shaft adaptation • Product: Shaft couplings • Description: Double loop coupling, shaft diameter 8 mm / 10 mm, max. shaft offset: radially +/- 0,25 mm, axially +/- 0,4 mm, angle +/- 4 degrees; max. speed 10.000 rpm, -30 to +120 degrees Celsius, torsional spring stiffness of 150 Nm/rad	KUP-0810-D	5326704
	• Product segment: Shaft adaptation • Product: Shaft couplings • Description: Claw coupling, shaft diameter 8 mm / 10 mm, damping element 80 shore blue, maximum shaft offset: radial ± 0.22 mm, axial ± 1 mm angular $\pm 1.3^\circ$, 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-0810-J	2128267

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