

AHM36A-S2PC014x12

AHS/AHM36

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

Type	part no.
AHM36A-S2PC014x12	1097262

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

Detailed technical data

Safety-related parameters

MTTF_D (mean time to dangerous failure)	230 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	SSI
Initialization time	100 ms ¹⁾
Position forming time	125 μ s
Process data	Position
Parameterising data	Number of steps per revolution Number of revolutions PRESET Counting direction

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

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

	Code type Offset of position bits Position error bit Round axis functionality SSI mode
Code type	Gray, binary
Code sequence parameter adjustable	CW/CCW (V/R) configurable via programming tool or 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.

Electronics

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	✓

Mechanics

Mechanical design	Solid shaft, Servo flange
Shaft diameter	10 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 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	IP66 (IEC 60529) IP67 (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)

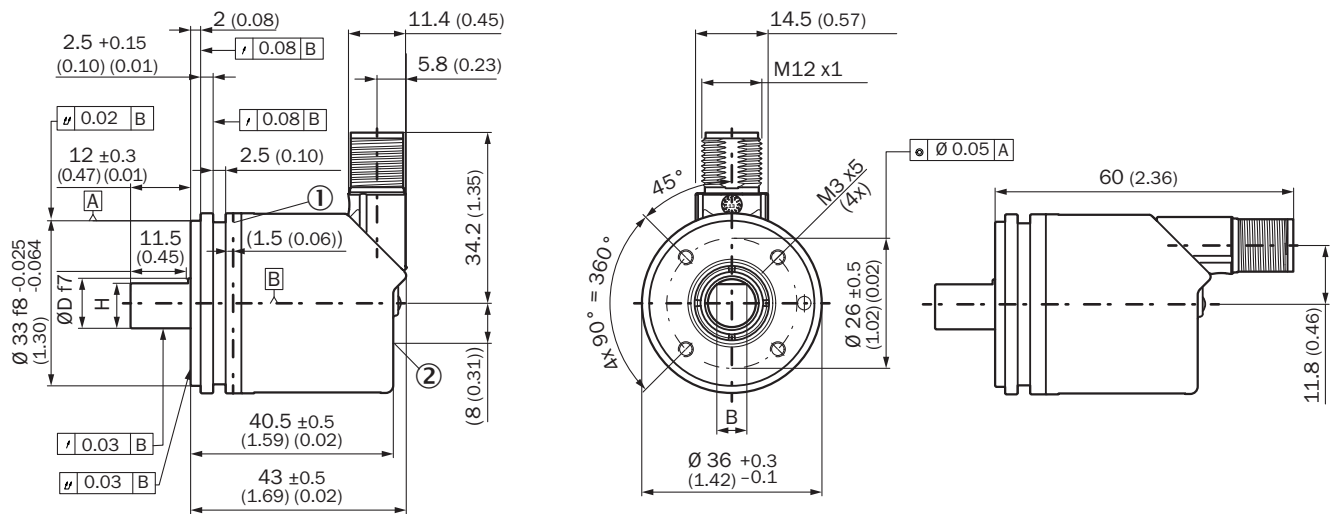
Certificates

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
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, servo flange, male connector

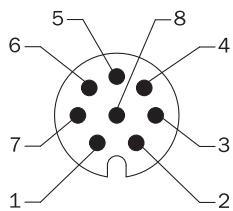


Dimensions in mm (inch)

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

Type	Shaft diameter $\varnothing D \text{ f7}$	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

Anschlussbelegung 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



PIN	Wire colors (cable connection)	Signal	Explanation
7	Blue	GND	Ground connection
8	Red	U _S	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

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> • Connection type head A: Flying leads • Connection type head B: Flying leads • Signal type: SSI, TTL, HTL, Incremental • Items supplied: By the meter • Cable: 12-wire, UV and saltwater-resistant, PUR, halogen-free • Description: SSI, shielded, TTL, HTL, Incremental 	LTG-2612-MW	6028516
	<ul style="list-style-type: none"> • Connection type head A: Flying leads • Connection type head B: Flying leads • Signal type: SSI, Incremental, HIPERFACE® • Items supplied: By the meter • Cable: 8-wire, PUR, halogen-free • Description: SSI, shielded, Incremental, HIPERFACE® 	LTG-2308-MWENC	6027529
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 8-pin, straight, A-coded • Signal type: Incremental, SSI • Cable: CAT5, CAT5e • Description: Incremental, shielded SSI • Connection systems: IDC quick connection • Permitted cross-section: 0.14 mm² ... 0.34 mm² 	DOS-1208-GA01	6045001
	<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: 25 m, 8-wire, PUR, halogen-free • Description: Incremental, shielded, SSI • Connection systems: Flying leads • Application: Drag chain operation, Zones with oils and lubricants 	DOL-1208-G25MAC1	6067859
	<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, shielded, SSI • Connection systems: Flying leads • Application: Drag chain operation, Zones with oils and lubricants 	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: 10 m, 8-wire, PUR, halogen-free • Description: Incremental, shielded, SSI • Connection systems: Flying leads • Application: Drag chain operation, Zones with oils and lubricants 	DOL-1208-G10MAC1	6032868
	<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, shielded, SSI • Connection systems: Flying leads • Application: Drag chain operation, Zones with oils and lubricants 	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: 2 m, 8-wire, PUR, halogen-free • Description: Incremental, shielded, SSI • Connection systems: Flying leads • Application: Drag chain operation, Zones with oils and lubricants 	DOL-1208-G02MAC1	6032866
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M12, 8-pin, straight • Connection type head B: Male connector, D-Sub, 9-pin, straight • Signal type: SSI • Cable: 0.5 m, 8-wire, PUR, halogen-free • Description: SSI, shielded • Note: 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

	Brief description	Type	part no.
programming devices			
	<ul style="list-style-type: none"> Product segment: Programming devices Product family: PGT-10 Pro Description: 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. Items supplied: 1 x PGT-10-Pro stand-alone programming tool, 4 x alkaline type batteries, 1.5 V Mignon (AA) 	PGT-10-Pro	1072254
	<ul style="list-style-type: none"> Product segment: Programming devices Product family: PGT-08-S Description: 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. 	PGT-08-S	1036616
Mounting systems			
	<ul style="list-style-type: none"> Description: Servo clamps, small, for servo flange (clamps, eccentric fastener), 3 pcs, without mounting material Items supplied: Without mounting hardware 	BEF-WK-RESOL	2039082

	Brief description	Type	part no.
shaft adaptation			
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Bellows coupling, shaft diameter 6 mm / 10 mm, maximum shaft offset: radial \pm 0.25 mm, axial \pm 0.4 mm, angular \pm 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
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: 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
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: 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°; 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
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Bellows coupling, shaft diameter 10 mm/10 mm; maximum shaft offset: radial \pm 0.25 mm, axial \pm 0.4 mm, angular \pm 4°; max. revolutions 10,000 rpm, -30° to +120 °C, max. torque 120 Ncm; material: stainless steel bellows, aluminum clamping hubs 	KUP-1010-B	5312983
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Double loop coupling, shaft diameter 10 mm / 10 mm, Maximum shaft offset: radial \pm 2.5 mm, axial \pm 3 mm, angular \pm 10°; max. speed 3,000 rpm, -30° to +80 °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange 	KUP-1010-D	5326703
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Spring washer coupling, shaft diameter 10 mm / 10 mm, maximum shaft offset, radial \pm 0.3 mm, axial \pm 0.4 mm, angle \pm 2.5°, torsion spring stiffness 30 Nm/rad; material: aluminum flange, glass-fiber reinforced polyamide membrane and hardened steel coupling pin 	KUP-1010-F	5312986
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: 10 mm / 12 mm; maximum shaft offset: radial \pm 0.25 mm, axial \pm 0.4 mm, angular \pm 4°; max. revolutions 10,000 rpm, -30° to +120 °C, max. torque 120 Ncm; material: stainless steel bellows, aluminum clamping hubs 	KUP-1012-B	5312984
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Double loop coupling, shaft diameter 10 mm / 12 mm, Maximum shaft offset: radial \pm 2.5 mm, axial \pm 3 mm, angular \pm 10°; max. speed 3,000 rpm, -30° to +80 °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange 	KUP-1012-D	5326702
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Double loop coupling, shaft diameter 8 mm / 10 mm, max. shaft offset: radially \pm 0,25 mm, axially \pm 0,4 mm, angle \pm 4 degrees; max. speed 10.000 rpm, -30 to +120 degrees Celsius, torsional spring stiffness of 150 Nm/rad 	KUP-0810-D	5326704
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: 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°, 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
	<ul style="list-style-type: none"> 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 \pm 0.22 mm, axial \pm 1 mm angular \pm 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-0810-J	2128267
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Claw coupling, shaft diameter 10 mm / 10 mm, damping element 80 shore blue, maximum shaft offset: radial \pm 0.22 mm, axial \pm 1 mm angular \pm 1.3°, max. speed 19,000 rpm, 	KUP-1010-J	2127054

	Brief description	Type	part no.
	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		
	<ul style="list-style-type: none"> • Product segment: Shaft adaptation • Product: Shaft couplings • Description: Claw coupling, shaft diameter 10 mm / 12 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-1012-J	2128265

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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