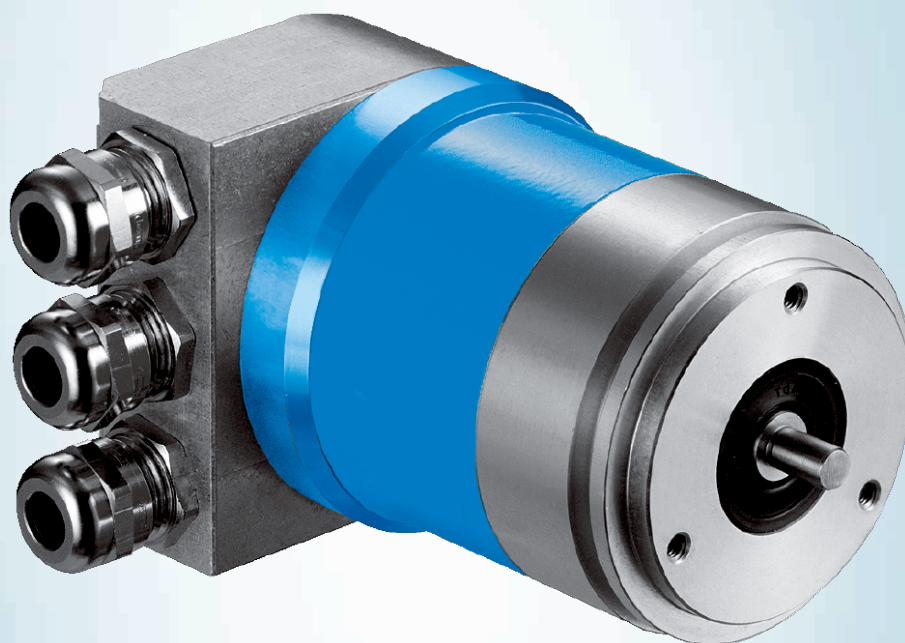




ATM60-P1H13X13

ATM60

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.

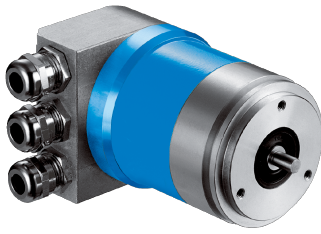
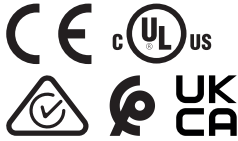


Illustration may differ



Ordering information

Type	part no.
ATM60-P1H13X13	1030014

Other models and accessories → www.sick.com/ATM60

Detailed technical data

Safety-related parameters

MTTF_D (mean time to dangerous failure)	150 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)	8,192 (13 bit)
Number of revolutions	8,192 (13 bit)
Max. resolution (number of steps per revolution x number of revolutions)	13 bit x 13 bit (8,192 x 8,192)
Measuring step	0.043°
Error limits G	± 0.25° ¹⁾
Repeatability standard deviation σ_r	0.1° 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	PROFIBUS DP
Communication Interface detail	DPV0
Data protocol	Profile for encoders (07hex) – Class 2
Address setting	0 ... 127, DIP switches or protocol
Data transmission rate (baud rate)	9.6 kBaud ... 12 MBaud, automatic detection
Initialization time	1,250 ms ¹⁾
Position forming time	0.25 ms
Status information	LED green (operation), LED red (bus activity)
Bus termination	DIP switch ²⁾

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

²⁾ Should only be connected in the final device.

Set (electronic adjustment)	Via PRESET push button or protocol
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¹⁾ Valid positional data can be read once this time has elapsed.

²⁾ Should only be connected in the final device.

Electronics

Connection type	Bus adapter ¹⁾
Supply voltage	10 ... 32 V
Power consumption	≤ 2 W (without load)
Reverse polarity protection	✓

¹⁾ Order bus adapter separately.

Mechanics

Mechanical design	Solid shaft, Servo flange
Shaft diameter	6 mm
Shaft length	10 mm
Weight	0.59 kg ¹⁾
Shaft material	Stainless steel
Flange material	Aluminum
Start up torque	2.5 Ncm (+20 °C), with shaft seal 0.5 Ncm (+20 °C), without shaft seal ²⁾
Operating torque	1.8 Ncm (+20 °C), with shaft seal 0.3 Ncm (+20 °C), without shaft seal ²⁾
Permissible shaft loading	300 N (radial) 50 N (axial)
Operating speed	≤ 6,000 min ⁻¹ ³⁾
Moment of inertia of the rotor	35 gcm ²
Bearing lifetime	3.6 x 10 ⁹ revolutions
Angular acceleration	≤ 500,000 rad/s ²

¹⁾ Based on encoder with male connector.

²⁾ If the shaft seal has been removed by the customer.

³⁾ Allow for self-heating of 3.3 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, with shaft seal (IEC 60529) ¹⁾ IP43, without shaft seal, on encoder flange not sealed (IEC 60529) ¹⁾ IP66, without shaft seal, on encoder flange sealed (IEC 60529) ¹⁾
Permissible relative humidity	98 %
Operating temperature range	-20 °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)

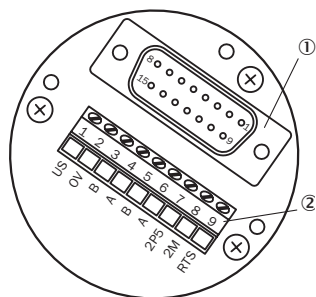
¹⁾ With mating connector fitted.

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China-RoHS	✓
cULus certificate	✓

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

Dimensions in mm (inch)

PIN assignment



① Internal plug connector to encoder

② external connection to the bus

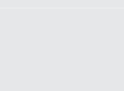
Encoders with a PROFIBUS connection adapter have screw connections (metric/PG) for connecting the bus and supply cables. The bus adapter from the complete device is screwed on to connect the cables. The adjacent figure shows the pin assignment within the bus adapter.

Terminal strip	Connector 4-pin	Connector 5-pin	Female connector 5 pin	Signal	Explanation
1	1	-	-	U _S (24 V)	Operating voltage 10 ... 32 V
2	3	-	-	0 V (GND)	Ground (0 V)
3	-	-	4	B	B-cable PROFIBUS DP (out)
4	-	-	2	A	A-cable PROFIBUS DP (out)
5	-	4	-	B	B-cable PROFIBUS DP (out)
6	-	2	-	A	A-cable PROFIBUS DP (out)
7	-	-	1	2P5 ¹⁾	+ 5 V (potential free)
8	-	-	3	2M ¹⁾	0 V (potential free)
-	2	1	-	N.C.	-
-	4	3	-	N.C.	-
-	-	5	5	Screen	Housing potential

¹⁾Use for external bus terminations or to supply the sender/receiver with a optical fiber transmission

Recommended accessories

Other models and accessories → www.sick.com/ATM60

	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: Flying leads Connection type head B: Flying leads Signal type: PROFIBUS DP Items supplied: By the meter Cable: 2-wire, PUR Description: PROFIBUS DP, shielded	LTG-2102-MW	6021355
	Connection type head A: Male connector, M12, 5-pin, straight, B-coded Signal type: PROFIBUS DP Description: PROFIBUS DP, shielded Connection systems: Screw-type terminals Permitted cross-section: ≤ 0.75 mm²	STE-1205-GQ	6021354
	Connection type head A: Female connector, M12, 5-pin, straight, B-coded Signal type: PROFIBUS DP Description: PROFIBUS DP, shielded Connection systems: Screw-type terminals Permitted cross-section: ≤ 0.75 mm²	DOS-1205-GQ	6021353
	Connection type head A: Female connector, M12, 5-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 12 m, 2-wire, PUR, halogen-free Description: Fieldbus, twisted pair, shieldedPROFIBUS DP Connection systems: Flying leads Application: Zones with oils and lubricants	DOL-1205-G12MQ	6032636
	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, PVC Description: Sensor/actuator cable, unshielded Application: Zones with chemicals, Uncontaminated zones	YF2A14-050VB3XLEAX	2096235
	Connection type head A: Male connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 15 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YM2B22-150P-B1XLEAX	2106276
	Connection type head A: Male connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 5 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YM2B22-050P-B1XLEAX	2106270
	Connection type head A: Male connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 10 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YM2B22-100P-B1XLEAX	2106271
	Connection type head A: Female connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 10 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YF2B22-100P-B1XLEAX	2106269
	Connection type head A: Female connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 15 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP	YF2B22-150P-B1XLEAX	2106272

	Brief description	Type	part no.
	Application: Drag chain operation, Zones with oils and lubricants Connection type head A: Female connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 20 m, 2-wire, PUR, halogen-free Description: Fieldbus, shielded PROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YF2B22-200P-B1XLEAX	2106273
	Connection type head A: Female connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 5 m, 2-wire, PUR, halogen-free Description: Fieldbus, shielded PROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YF2B22-050P-B1XLEAX	2121936
integration modules and adapters			
		AD-ATM60-KA3PR	2029225
		AD-ATM60-SR3PR	2031985
shaft adaptation			
	Product segment: Shaft adaptation Product: Shaft couplings Description: Bellows coupling, shaft diameter 6 mm / 6 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. speed 10,000 rpm, -30°C to $+120^\circ\text{C}$, max. torque 120 Ncm; material: stainless steel bellows, aluminum hub	KUP-0606-B	5312981
	Product segment: Shaft adaptation Product: Shaft couplings Description: Bellows coupling, shaft diameter 6 mm / 10 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. speed 10,000 rpm, -30°C to $+120^\circ\text{C}$, max. torque 120 Ncm; material: stainless steel bellows, aluminum hub	KUP-0610-B	5312982
	Product segment: Shaft adaptation Product: Shaft couplings Description: Spring washer coupling, shaft diameter 6 mm / 10 mm, Maximum shaft offset: radial ± 0.3 mm, axial ± 0.4 mm, angular $\pm 2.5^\circ$; max. speed 12,000 rpm, -10° 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
Mounting systems			
	Description: Mounting bell for encoder with servo flange, 50 mm spigot Items supplied: Mounting kit included	BEF-MG-50	5312987
	Description: Half-shell servo clamps (2 pcs.) for servo flanges with a 50 mm centering hub	BEF-WG-SF050	2029165
	Description: Servo clamps, large, for servo flange (clamps, eccentric fastener), 3 pcs, without mounting material Items supplied: Without mounting hardware	BEF-WK-SF	2029166

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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