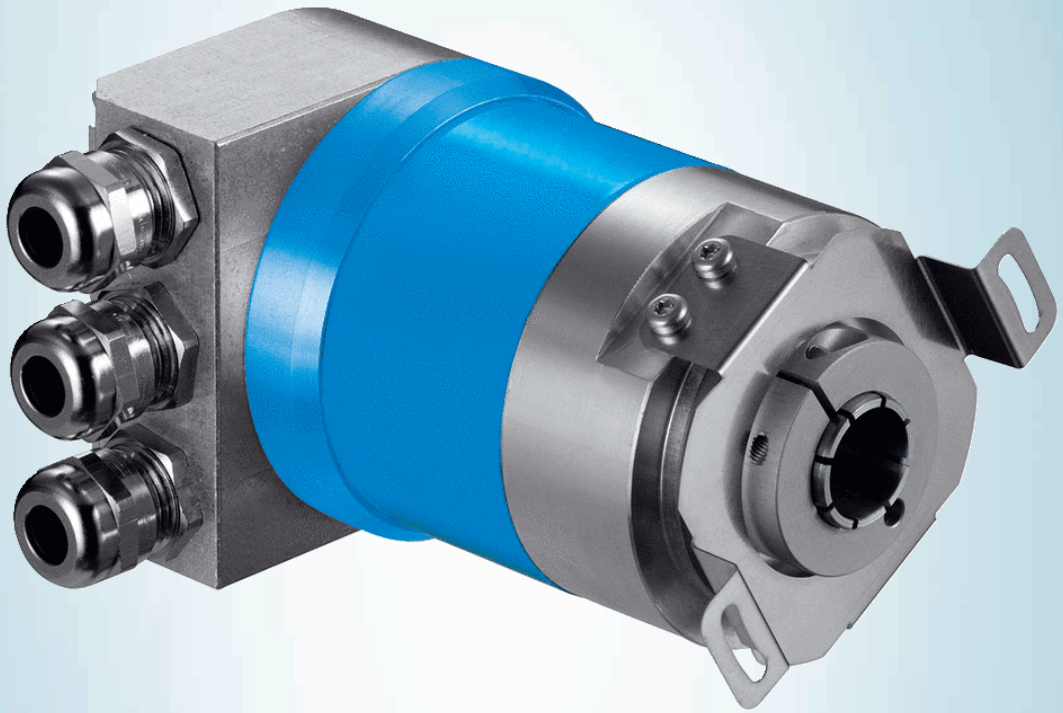
Product data sheet



ATM60-PAH13X13

ATM60 PROFIBUS

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.

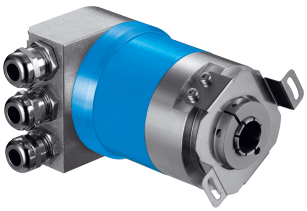


Illustration may differ

Ordering information

Type	Part no.
ATM60-PAH13X13	1030015

Other models and accessories ➜ www.sick.com/ATM60_PROFIBUS

Detailed technical data

Performance

Max. resolution (number of steps per revolution x number of revolutions)	13 bit x 13 bit (8,192 x 8,192)
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
Status information	LED green (operation), LED red (bus activity)
Bus termination	DIP switch [1]
Initialization time	1,250 ms [2]
Position forming time	+ 0.25 ms
SSI	
Set (electronic adjustment)	Via PRESET push button or protocol

[1] Should only be connected in the final device.
[2] Valid positional data can be read once this time has elapsed.

Electrical data

Connection type	Connection adapter for PROFIBUS [1]
Supply voltage	10 ... 32 V

[1] Please order the bus adaptor seperately.
[2] 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.

MTTFd: mean time to dangerous failure	150 years (EN ISO 13849-1) [2]

[1] Please order the bus adaptor seperately.

[2] 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	Blind hollow shaft
Shaft diameter	15 mm [1]
Weight	0.59 kg
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum die cast
Start up torque	1.2 Ncm, with shaft seal
Operating torque	0.8 Ncm, with shaft seal
Permissible shaft movement, axial static/dynamic	± 0.5 mm, ± 0.2 mm
Permissible shaft movement, radial static/dynamic	± 0.3 mm, ± 0.1 mm
Permissible Load capacity of shaft	300 N / radial 50 N / axial
Moment of inertia of the rotor	55 gcm²
Bearing lifetime	3.6 x 10^9 revolutions
Angular acceleration	≤ 500,000 rad/s²
Operating speed	≤ 3,000 min^{-1} [2]

[1] Collets for 6, 8, 10, 12, 14 mm and 1/4", 3/8" and 1/2" as accessories, separate order item. For 15 mm shaft diameter collet is not needed.

[2] 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 (according to IEC 60529) [1] IP43, without shaft seal, on encoder flange not sealed (according to IEC 60529) [1] IP66, without shaft seal, on encoder flange sealed (according to IEC 60529) [1]
Permissible relative humidity	98 %
Operating temperature range	–20 °C ... +85 °C
Storage temperature range	0 °C ... +125 °C, without package
Resistance to shocks	100 g, 6 ms (according to EN 60068-2-27)
Resistance to vibration	20 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

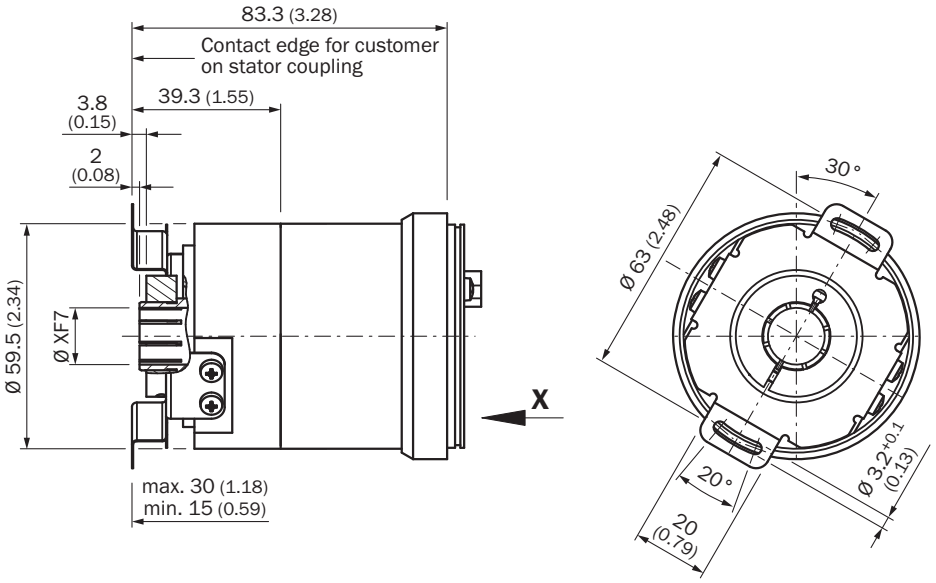
[1] With mating connector inserted.

Classifications

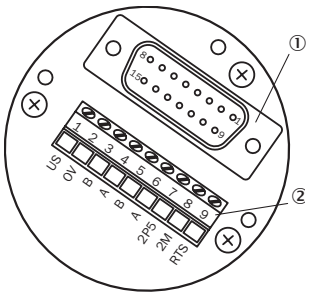
ECl@ss 5.0	27270502
ECl@ss 5.1.4	27270502
ECl@ss 6.0	27270590
ECl@ss 6.2	27270590
ECl@ss 7.0	27270502

ECl@ss 8.0	27270502
ECl@ss 8.1	27270502
ECl@ss 9.0	27270502
ETIM 5.0	EC001486
ETIM 6.0	EC001486
UNSPSC 16.0901	41112113

Dimensional drawing (Dimensions in mm (inch))



PIN assignment



① Internal plug connector to encoder
② External connection to the bus

Encoders with a PROFIBUS adapter are equipped with screws (metric/PG) for connecting bus and supply cables. The adapter is unscrewed from the full device toconnect the cables. The following figure shows how the pins are assigned within the 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)

Encoders with a PROFIBUS adapter are equipped with screws (metric/PG) for connecting bus and supply cables. The adapter is unscrewed from the full device toconnect the cables. The following figure shows how the pins are assigned within the Adapter.					
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_PROFIBUS

	Brief description	Type	Part no.
Shaft adaptation			
	Collet for blind hollow shaft, shaft diameter 6 mm, outer diameter 15 mm	SPZ-006-AD-A	2029174
	Collet for blind hollow shaft, shaft diameter 8 mm, outer diameter 15 mm	SPZ-008-AD-A	2029176
	Collet for blind hollow shaft, shaft diameter 10 mm, outer diameter 15 mm	SPZ-010-AD-A	2029178
	Collet for blind hollow shaft, shaft diameter 12 mm, outer diameter 15 mm	SPZ-012-AD-A	2029179
	Collet for blind hollow shaft, shaft diameter 14 mm, outer diameter 15 mm	SPZ-014-AD-A	2048863
	Collet for blind hollow shaft, shaft diameter 1/2" (12.7 mm), outer diameter 15 mm	SPZ-1E2-AD-A	2029180
	Collet for blind hollow shaft, shaft diameter 1/4" (6.35 mm), outer diameter 15 mm	SPZ-1E4-AD-A	2029175
	Collet for blind hollow shaft, shaft diameter 3/8" (9.525 mm), outer diameter 15 mm	SPZ-3E8-AD-A	2029177
Adapters and distributors			
		AD-ATM60-KA3PR	2029225
		AD-ATM60-SR3PR	2031985
Plug connectors and cables			
	Head A: Flying leads Head B: Flying leads Cable: PROFIBUS DP, PUR, shielded	LTG-2102-MW	6021355

	Brief description	Type	Part no.
	Head A: female connector, M12, 5-pin, straight, B-coded Head B: Flying leads Cable: PROFIBUS DP, twisted pair, PUR, halogen-free, shielded, 5 m	DOL-1205-G05MQ	6026006
	Head A: female connector, M12, 5-pin, straight, B-coded Head B: Flying leads Cable: PROFIBUS DP, twisted pair, PUR, halogen-free, shielded, 10 m	DOL-1205-G10MQ	6026008
	Head A: male connector, M12, 5-pin, straight, B-coded Head B: Flying leads Cable: PROFIBUS DP, twisted pair, PUR, halogen-free, shielded, 5 m Wire shield Al-Pt film, overall shield C-screen tin-plated	STL-1205-G05MQ	6026005
	Head A: male connector, M12, 5-pin, straight, B-coded Head B: Flying leads Cable: PROFIBUS DP, twisted pair, PUR, halogen-free, shielded, 10 m Wire shield Al-Pt film, overall shield C-screen tin-plated	STL-1205-G10MQ	6026007
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF2A14-050VB3XLEAX	2096235
	Head A: female connector, M12, 4-pin, straight Head B: - Cable: unshielded	DOS-1204-G	6007302
	Head A: female connector, M12, 5-pin, straight, B-coded Head B: - Cable: PROFIBUS DP, shielded	DOS-1205-GQ	6021353
	Head A: male connector, M12, 5-pin, straight, B-coded Head B: - Cable: PROFIBUS DP, shielded	STE-1205-GQ	6021354

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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Contacts and other locations –www.sick.com