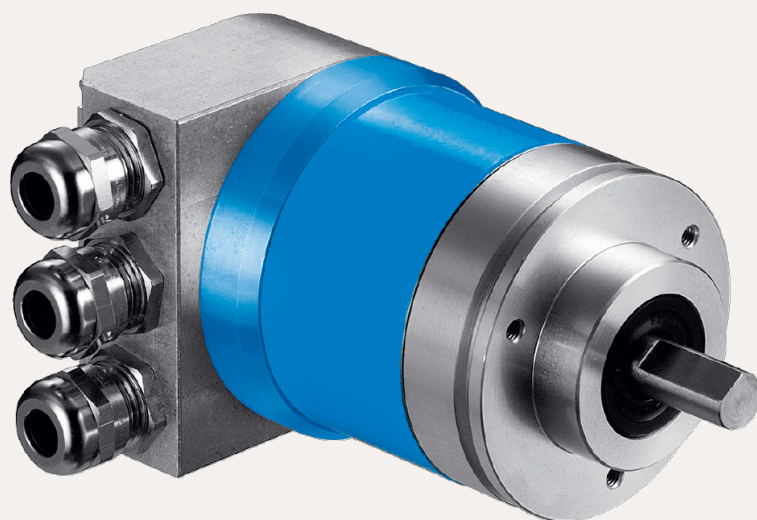




DATA SHEET

ATM60-P4H13X13

ATM60
Absolute encoders

SICK Sensor Intelligence



Illustration may differ

ABSOLUTE ENCODERS

ATM60-P4H13X13

ORDERING INFORMATION

Type	part no.
ATM60-P4H13X13	1030013

Further device versions and accessories at 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	DPVO
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⁾

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

²⁾ Should only be connected in the final device.

Position forming time	0.25 ms
Status information	LED green (operation), LED red (bus activity)
Bus termination	DIP switch ²⁾
Set (electronic adjustment)	Via PRESET push button or protocol

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, face mount flange
Shaft diameter	10 mm
Shaft length	19 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

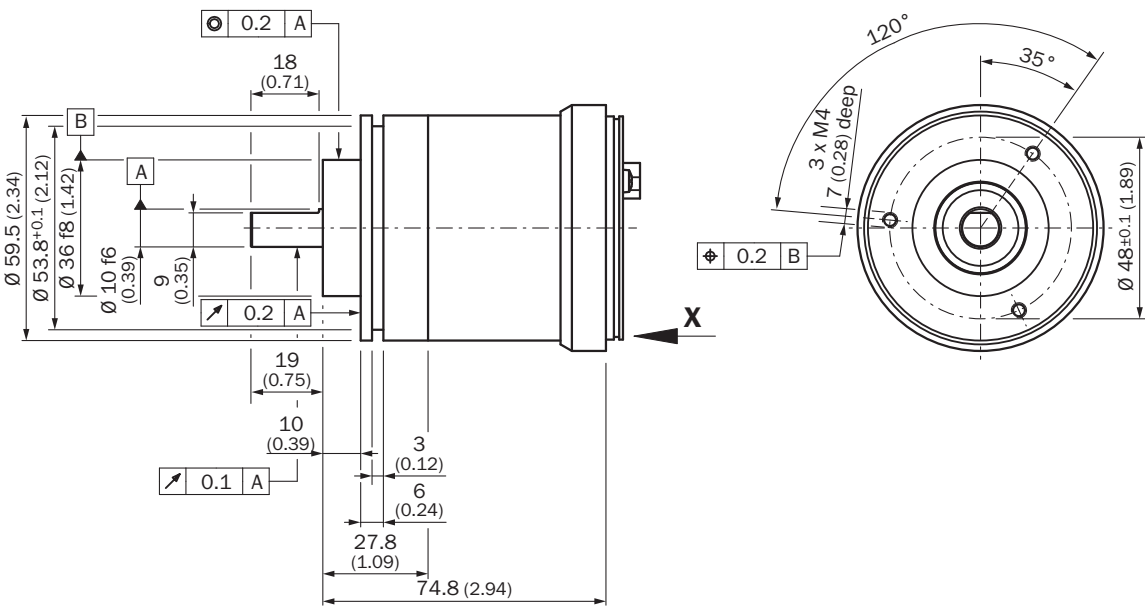
EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP67, with shaft seal (IEC 60529) ¹⁾ IP43, without shaft seal, on encoder flange not sealed (IEC 60529) ¹⁾ IP66, without shaft seal, on encoder flange sealed (IEC 60529) ¹⁾
Permissible relative humidity	98 %
Operating temperature range	-20 °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.

CERTIFICATES

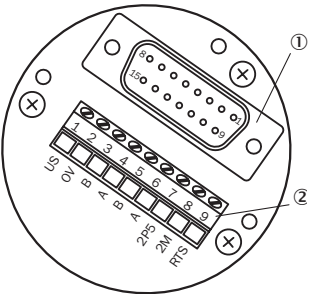
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
cULus certificate	✓

DIMENSIONAL DRAWING



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)

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.

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

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1030013



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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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