



ATM90-PUF13x11

ATM90

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.



Illustration may differ

Ordering information

Type	part no.
ATM90-PUF13x11	1032655

Other models and accessories → www.sick.com/ATM90

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	2,048 (11 bit)
Max. resolution (number of steps per revolution x number of revolutions)	13 bit x 11 bit (8,192 x 2,048)
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⁾
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, 3x, M14, 7-pin, radial
Supply voltage	10 ... 32 V
Power consumption	≤ 2 W (without load)

Mechanics

Mechanical design	Through hollow shaft
Shaft diameter	1/2"
Weight	0.6 kg ¹⁾
Shaft material	Stainless steel
Flange material	Aluminum
Start up torque	0.5 Ncm (+20 °C)
Operating torque	0.4 Ncm (+20 °C)
Operating speed	≤ 3,000 min ⁻¹ ²⁾
Moment of inertia of the rotor	153 gcm ²
Bearing lifetime	3.6 x 10 ⁹ revolutions
Angular acceleration	≤ 600,000 rad/s ²

¹⁾ Based on encoder with male connector.

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	IP65, with shaft seal (IEC 60529) ¹⁾
Permissible relative humidity	98 %
Operating temperature range	-20 °C ... +80 °C
Storage temperature range	-40 °C ... +100 °C, without package
Resistance to shocks	6 g, 20 ms (EN 60068-2-27)
Resistance to vibration	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

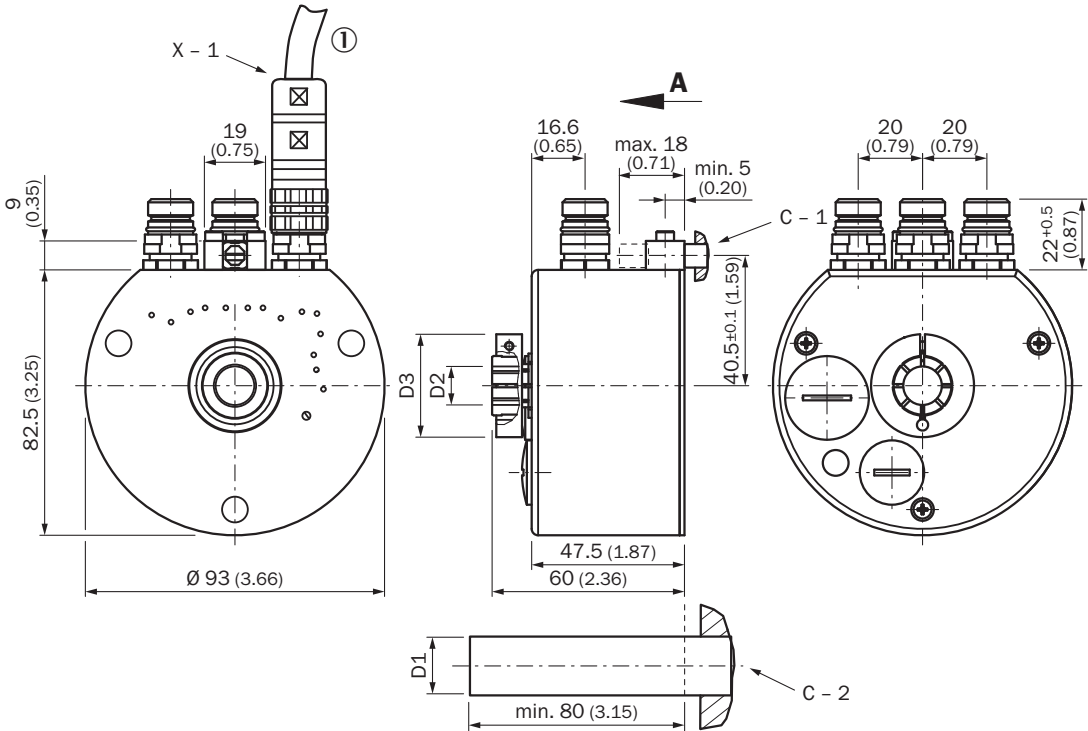
¹⁾ With mating connector fitted.

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

Dimensional drawing

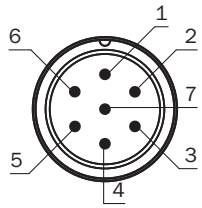


Dimensions in mm (inch)

① Minimum bend radius 40 mm

Hollow shaft	D1	D2	D3
12 mm	12,0 ^{h7}	12,0 ^{F7}	29,5
1/2"	12,7 ^{h7}	12,7 ^{F7}	29,5
16 mm	16,0 ^{h7}	16,0 ^{F7}	32,0
-	-	-	-
C - 1	-	-	-
C - 2	-	-	-
X - 1	-	-	-
A	-	-	-

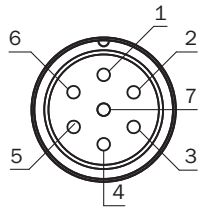
PIN assignment



PIN	Signal	Explanation
1	U _S (24 V)	Operating voltage
2	N.c.	Not assigned
3	GND (0 V)	0 V (GND)
4	N.c.	Not assigned
5	RTS	Request to Send ¹⁾
6	N.c.	Not assigned
7	N.c.	Not assigned

¹⁾Signal is optional, used for direction detection of a fiber optic connection

PIN assignment

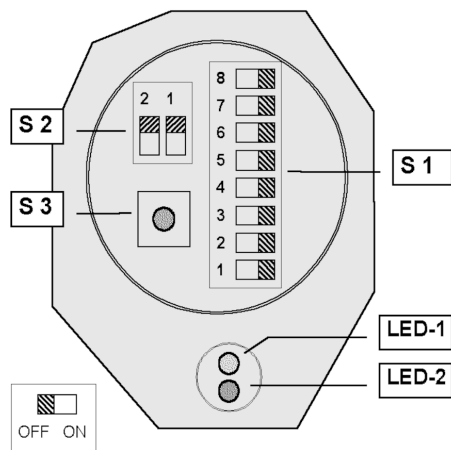


PIN	Signal	Explanation
1	RTS	Request to Send ¹⁾
2	A	A-cable PROFIBUS DP
3	N.c.	Not assigned
4	B	B-cable PROFIBUS DP
5	2M	0 V (potential free) ²⁾
6	2P5	+ 5 V (potential free) ²⁾
7	N.c.	Not assigned

¹⁾Use for external bus termination or supplying the senders/receivers of fiber optic transmission

²⁾Signal is optional, used for direction detection of a fiber optic connection

Adjustments



Recommended accessories

Other models and accessories → www.sick.com/ATM90

	Brief description	Type	part no.
connectors and cables			
	• 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: Female connector, M14, 7-pin, straight, A-coded • Signal type: PROFIBUS DP, PROFIBUS DP, PROFIBUS DP • Description: PROFIBUS DP, shieldedPROFIBUS DP • Connection systems: Solder connection	DOS-1507-G	6027536
	• Connection type head A: Female connector, M14, 7-pin, A-coded • Signal type: PROFIBUS DP • Items supplied: Sales kit includes: 2 pcs. male connector M14, 7-pin (6027535) 1 pc. female connector M14, 7-pin (6027536) • Description: PROFIBUS DP, unshielded • Note: Set of connectors	DSC-1507-G	2029199
	• Connection type head A: Male connector, M14, 7-pin, straight, A-coded • Signal type: PROFIBUS DP • Description: PROFIBUS DP, shielded • Connection systems: Solder connection	STE-1507-G	6027535

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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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