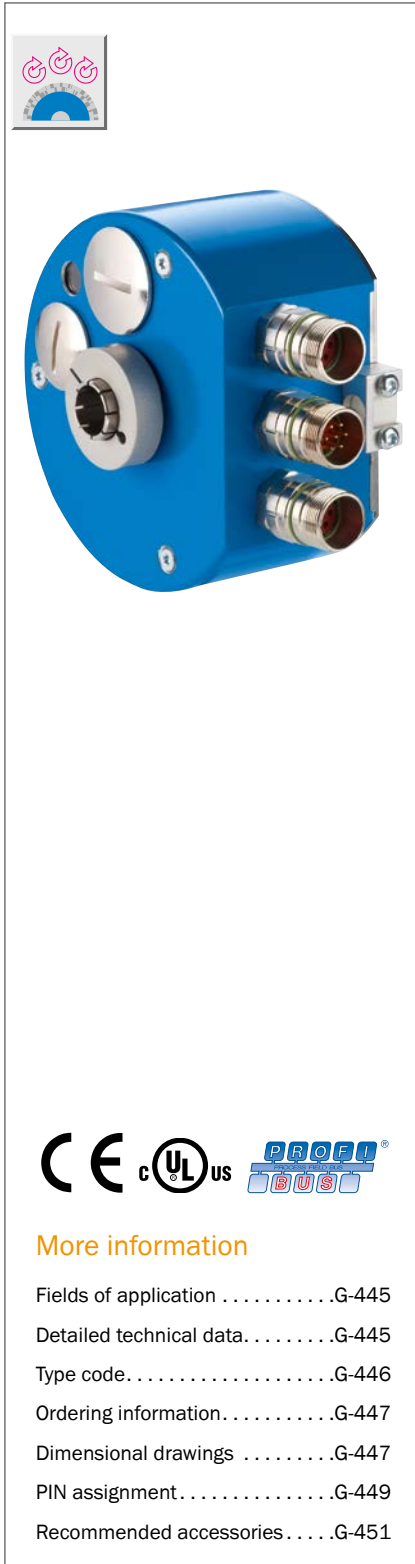


RELIABLE, ESTABLISHED, AND MODULAR



Product description

The ATM90 PROFIBUS complements the through hollow shaft variants in the ATM60 product family. The ATM90 operates reliably even under harsh ambient conditions. Its rugged mechanical design ensures maximum reliability and a long service life. Magnetic singleturn scanning allows a maximum resolution of up to 13 bits within one revolution. The number of revolutions, maximum of 13 bit, is output and recorded using

a mechanical and almost completely wear-free transmission. This means that the ATM90 can be operated without a battery. A shallow installation depth of 60 mm combined with high shock and vibration resistance enable the ATM90 to be used in applications with high mechanical stress and distinct climate fluctuations

At a glance

- Extremely rugged, tried-and-tested absolute multiturn encoder with a resolution of up to 26 bits
- Mechanical interface: through hollow shaft with shallow installation depth
- Zero-set and preset functions via hardware or software
- Electrical interface: PROFIBUS DP as per IEC61158 / RS-485 , electrically isolated
- Electronically adjustable, configurable resolution
- Magnetic scanning

Your benefits

- Fewer variants are required since one freely programmable encoder offers all singleturn and multiturn resolutions
- Easy setup due to various electrical connection adapters (cable, M23)
- Maintenance-free encoder, long service life
- Quick commissioning using the zero set/preset function either at the press of the button on the device or via software
- Increased productivity due to highly reliable shock and vibration resistance
- Worldwide availability and service ensure quick and reliable customer service



More information

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Fields of application

- Measurement of absolute position in various machines and system such as wind power and solar plants, material

transport equipment, textile machines, packaging systems, rollers, harbor facilities, printing machines

Detailed technical data

Performance

Max. number of steps per revolution	≤ 8,192
Max. number of revolutions	8,192
Resolution	13 bit x 13 bit
Error limits	± 0.25°
Repeatability	0.1°
Measurement step	0.043°
Initialization time	1,250 ms ¹⁾

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

Interfaces

Electrical interface	PROFIBUS
Bus interface	PROFIBUS DP, RS-485 ^{1) 2) 3)}
Set (electronic adjustment)	Via PRESET pushbutton or protocol
Data protocol	Profile for encoder (07hex) – Class 2
Address setting	0 ... 127, DIP switch or protocol
Data transmission rate (baud rate)	9.6 kBaud to 12 Mbaud, autodetect
Status information	LED green (running), LED red (bus activity)
Bus termination	DIP switch ⁴⁾

¹⁾ EN 50 170-2.

²⁾ DIN 19245 Part 1-3.

³⁾ Electrically isolated through optocoupler.

⁴⁾ Should only be connected in the final device.

Electrical data

Connection type	Bus adapter with 3 x M14 screw fixings Bus adapter with 3 cable screw fixings
Operating voltage range	10 V ... 32 V
Max. power consumption without load	≤ 2 W
Reverse polarity protection	✓
MTTFd: mean time to dangerous failure	150 years (EN ISO 13849-1) ¹⁾

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 devices, average ambient temperature 40 °C, frequency of use 8,760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.



Mechanical data

Shaft diameter		
	Through hollow shaft	12, 16 mm and 1/2"
Shaft material		Stainless steel
Flange material		Aluminum
Housing material		Aluminum
Mass ¹⁾		
	Connector outlet	0.6 kg
	Cable outlet	0.8 kg
Start up torque at 20 °C		0.5 Ncm
Operating torque at 20 °C		0.4 Ncm
Max. angular acceleration		≤ 600,000 rad/s ²
Max. operating speed ²⁾		3,000 rpm
Rotor moment of inertia		153 gcm ²
Bearing lifetime		3,6 x 10 ⁹ revolutions

¹⁾ Relates to devices with cable outlet.

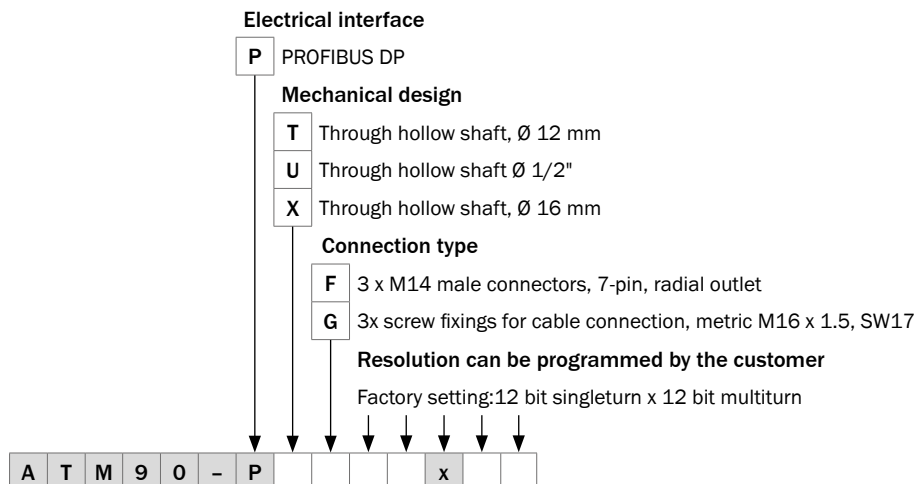
²⁾ Take into account self-warming of 3.3 K per 1,000 rpm when designing operating temperature range

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP 65 with shaft seal (acc. to IEC 60529)
Permissible relative humidity	98%
Operating temperature range	-20 °C ... +80 °C
Storage temperature range	-40 °C ... +100 °C, without packaging
Resistance to shocks	6 g/20 ms (according to EN 60068-2-27)
Resistance to vibrations	20 g/ 10 Hz ... 2,000 Hz



Type code



Ordering information

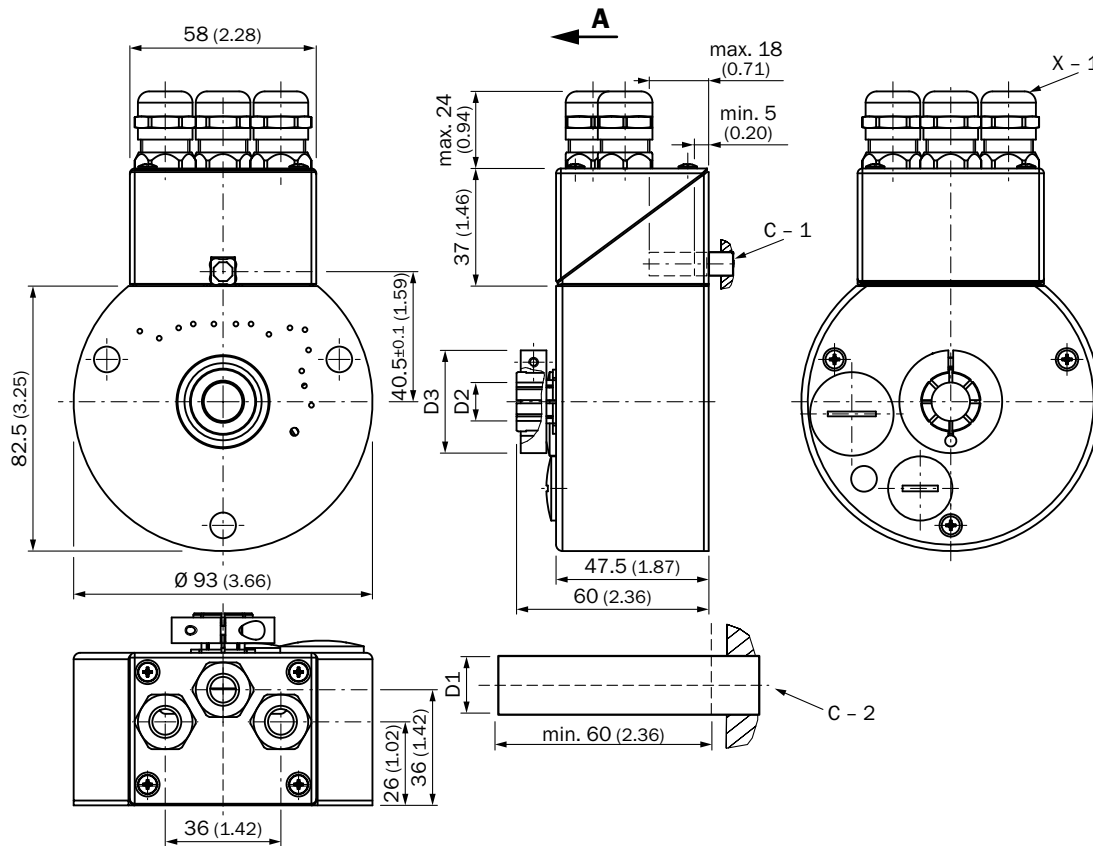
Through hollow shaft

- **Electrical interface:** 10 V ... 32 V, PROFIBUS
- **Number of steps:** ≤ 8,192
- **Resolution:** 8,192 x 8,192

Shaft diameter	Connection type	Type	Part no.
1/2"	Bus adapter with 3 cable screw fixings	ATM90-PUG13X13	1030046
	Bus adapter with 3 x M14 screw fixings	ATM90-PUF13X13	1030043
12 mm	Bus adapter with 3 cable screw fixings	ATM90-PTG13X13	1030045
	Bus adapter with 3 x M14 screw fixings	ATM90-PTF13X13	1030042
16 mm	Bus adapter with 3 cable screw fixings	ATM90-PXG13X13	1030047
	Bus adapter with 3 x M14 screw fixings	ATM90-PXF13X13	1030044

Dimensional drawings (dimensions in mm)

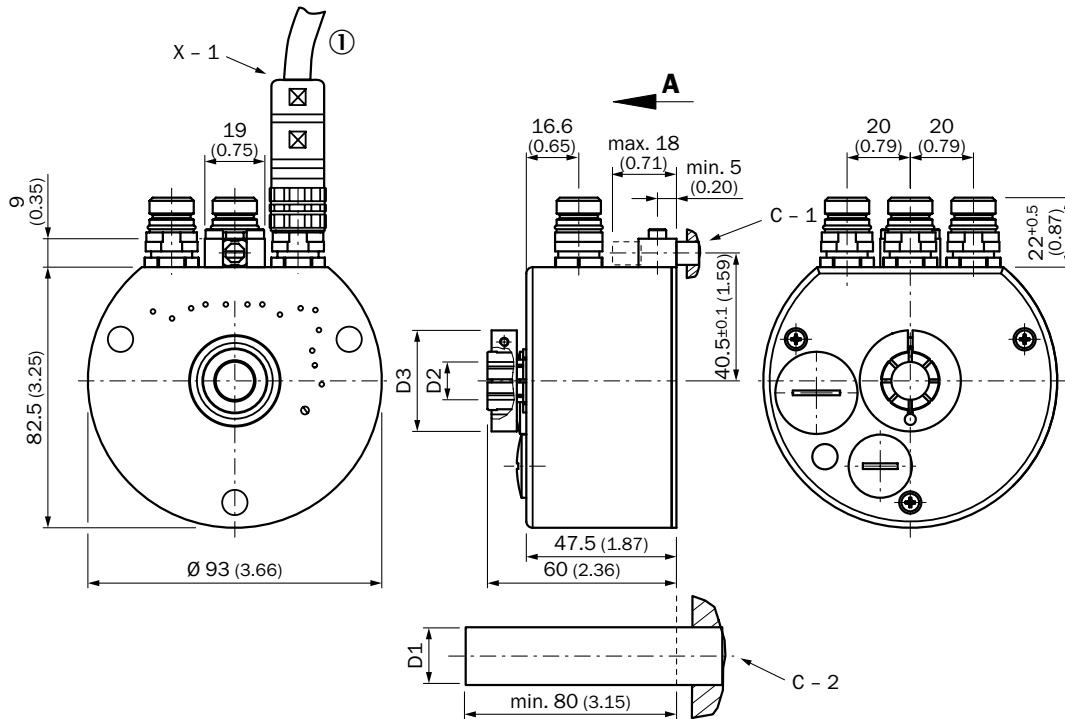
Cable outlet



General tolerances according to DIN ISO 2768-mk



Connector outlet



General tolerances according to DIN ISO 2768-mk

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	Stator coupling via cylindrical pin, (customer), $\varnothing 6_{m6}$ as per DIN EN ISO 8734
C - 2	Drive shaft (customer)
X - 1	3x screw fixings for cable connection, metric M16 x 1.5, SW 17
A	When looking at the base plate (is used to define the direction of rotation)

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PIN assignment

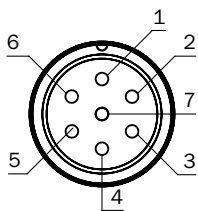
PROFIBUS DP (in/out)

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

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

²⁾ Signal is optional, serves to detect the direction of an optical fiber connection.

N. C. = Not connected.

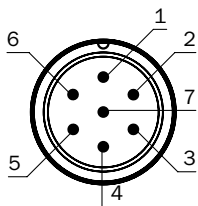


U_s

PIN	Signal	Explanation
1	U_s (24 V)	Operating voltage
2	N. C.	Not connected
3	GND (0 V)	0 V (Gnd)
4	N. C.	Not connected
5	RTS	Request To Send ¹⁾
6	N. C.	Not connected
7	N. C.	Not connected

¹⁾ Signal is optional, serves to detect the direction of an optical fiber connection.

N. C. = Not connected.

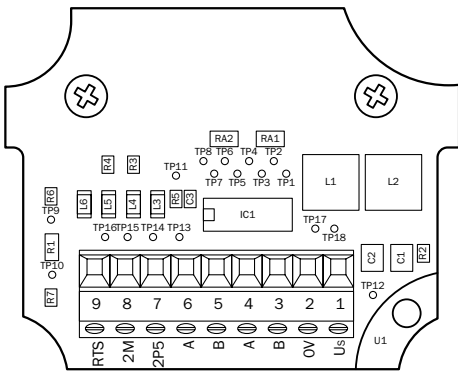


Connection adapter

PIN	Signal	Explanation
1	U _s (24 V)	Operating voltage
2	GND (0 V)	0 V (Gnd)
3	B	B cable PROFIBUS DP (out)
4	A	A cable PROFIBUS DP (out)
5	B	B cable PROFIBUS DP (in)
6	A	A cable PROFIBUS DP (in)
7	2P5	+ 5 V (potential free) ¹⁾
8	2M	0 V (potential free) ¹⁾
9	RTS	Request To Send ²⁾

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

²⁾ Signal is optional, serves to detect the direction of an optical fiber connection.




Recommended accessories

Connectivity

Plug connectors and cables

Connecting cables with female connector

Figure	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M12, 5-pin, straight Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, 2 x 0.34 mm ² , Ø 8.0 mm	5 m	DOL-1205-G05MQ	6026006
		10 m	DOL-1205-G10MQ	6026008
		12 m	DOL-1205-G12MQ	6032636
		15 m	DOL-1205-G15MQ	6032637
		20 m	DOL-1205-G20MQ	6032638
		30 m	DOL-1205-G30MQ	6032639
		50 m	DOL-1205-G50MQ	6032861




Dimensional drawings → [page K-725](#)

Connecting cables with male connector

Figure	Brief description	Length of cable	Type	Part no.
	Head A: male connector, M12, 5-pin, straight, B-coded Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, 2 x 0.34 mm ² , Ø 8.0 mm Wire shielding: AL-PT foil, total shield, tin-plated C shield	5 m	STL-1205-G05MQ	6026005
		10 m	STL-1205-G10MQ	6026007
		12 m	STL-1205-G12MQ	6032635

Dimensional drawings → [page K-725](#)

Female connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: female connector, M12, 4-pin, straight, unshielded, for power supply, for cable diameter 4 mm ... 6 mm Head B: -	DOS-1204-G	6007302
	Head A: female connector, M12, 5-pin, straight, B-coded, shielded, for cable diameter 4 mm ... 9 mm Head B: -	DOS-1205-GQ	6021353
	Head A: female connector, M14, 7-pin, straight, shielded, for cable diameter 4 mm ... 8 mm Head B: -	DOS-1507-G	6027536

Dimensional drawings → [page K-725](#)



Cables (ready to assemble)

Figure	Brief description	Length of cable	Type	Part no.
	Head A: cable Head B: cable Cable: suitable for drag chain, PUR, shielded, 2 x 0.25 mm ² , Ø 8.0 mm	By the meter	LTG-2102-MW	6021355

Other plug connectors and cables

Figure	Brief description	Type	Part no.
	Sales kit consisting of: 2 M14 male cable connectors, 7-pin (6027535) 1 M14 female cable connector, 7-pin (6027535)	DSC-1507-G	2029199

Male connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: male connector, M12, 5-pin, straight, B-coded, shielded, for cable diameter 4 mm ... 9 mm Head B: -	STE-1205-GQ	6021354
	Head A: male connector, M14, 7-pin, straight, shielded, for cable diameter 4 mm ... 8 mm Head B: -	STE-1507-G	6027535

Dimensional drawings → [page K-725](#)

→ [For additional accessories, please see page K-668 onwards](#)

