

# ATM90-PUG11x13

ATM90

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.

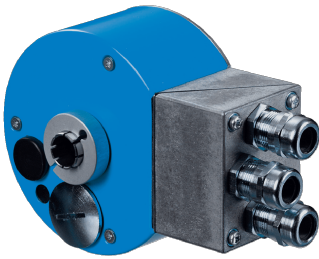


Illustration may differ

### Ordering information

| Type           | part no. |
|----------------|----------|
| ATM90-PUG11x13 | 1032900  |

Other models and accessories → [www.sick.com/ATM90](http://www.sick.com/ATM90)

### Detailed technical data

#### Safety-related parameters

|  |  |
|--|--|
| <b>MTTF<sub>D</sub> (mean time to dangerous failure)</b> | 150 years (EN ISO 13849-1) <sup>1)</sup> |
|--|--|

<sup>1)</sup> 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

|   |                                 |
|---|---------------------------------|
| <b>Number of steps per revolution (max. resolution)</b>                         | 2,048 (11 bit)                  |
| <b>Number of revolutions</b>  | 8,192 (13 bit)                  |
| <b>Max. resolution (number of steps per revolution x number of revolutions)</b> | 11 bit x 13 bit (2,048 x 8,192) |
| <b>Measuring step</b>   | 0.043°                          |
| <b>Error limits G</b>   | ± 0.25° <sup>1)</sup>           |
| <b>Repeatability standard deviation <math>\sigma_r</math></b>                   | 0.1° <sup>2)</sup>              |

<sup>1)</sup> 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.

<sup>2)</sup> In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

#### Interfaces

|   |  |
|---|--|
| <b>Communication interface</b>            | PROFIBUS DP                                    |
| <b>Communication Interface detail</b>     | DPV0   |
| <b>Data protocol</b>                      | Profile for encoders (07hex) – Class 2         |
| <b>Address setting</b>                    | 0 ... 127, DIP switches or protocol            |
| <b>Data transmission rate (baud rate)</b> | 9.6 kBaud ... 12 MBaud, automatic detection    |
| <b>Initialization time</b>                | 1,250 ms <sup>1)</sup>                         |
| <b>Position forming time</b>              | 0.25 ms  |
| <b>Status information</b>                 | LED green (operation), LED red ( bus activity) |
| <b>Bus termination</b>                    | DIP switch <sup>2)</sup>                       |
| <b>Set (electronic adjustment)</b>        | Via PRESET push button or protocol             |

<sup>1)</sup> Valid positional data can be read once this time has elapsed.

<sup>2)</sup> Should only be connected in the final device.

## Electronics

|                          |                           |
|--------------------------|---------------------------|
| <b>Connection type</b>   | Cable gland <sup>1)</sup> |
| <b>Supply voltage</b>    | 10 ... 32 V               |
| <b>Power consumption</b> | ≤ 2 W (without load)      |

<sup>1)</sup> Metrisch M16 x 1,5; SW17.

## Mechanics

|                                       |   |
|---------------------------------------|---|
| <b>Mechanical design</b>              | Through hollow shaft                    |
| <b>Shaft diameter</b>                 | 1/2"                                    |
| <b>Weight</b>                         | 0.8 kg <sup>1)</sup>                    |
| <b>Shaft material</b>                 | Stainless steel                         |
| <b>Flange material</b>                | Aluminum                                |
| <b>Start up torque</b>                | 0.5 Ncm (+20 °C)                        |
| <b>Operating torque</b>               | 0.4 Ncm (+20 °C)                        |
| <b>Operating speed</b>                | ≤ 3,000 min <sup>-1</sup> <sup>2)</sup> |
| <b>Moment of inertia of the rotor</b> | 153 gcm <sup>2</sup>                    |
| <b>Bearing lifetime</b>               | 3.6 x 10 <sup>9</sup> revolutions       |
| <b>Angular acceleration</b>           | ≤ 600,000 rad/s <sup>2</sup>            |

<sup>1)</sup> Based on encoder with male connector.

<sup>2)</sup> Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

## Ambient data

|                                      |   |
|--------------------------------------|---|
| <b>EMC</b>                           | According to EN 61000-6-2 and EN 61000-6-3      |
| <b>Enclosure rating</b>              | IP65, with shaft seal (IEC 60529) <sup>1)</sup> |
| <b>Permissible relative humidity</b> | 98 %  |
| <b>Operating temperature range</b>   | -20 °C ... +80 °C                               |
| <b>Storage temperature range</b>     | -40 °C ... +100 °C, without package             |
| <b>Resistance to shocks</b>          | 6 g, 20 ms (EN 60068-2-27)                      |
| <b>Resistance to vibration</b>       | 20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)         |

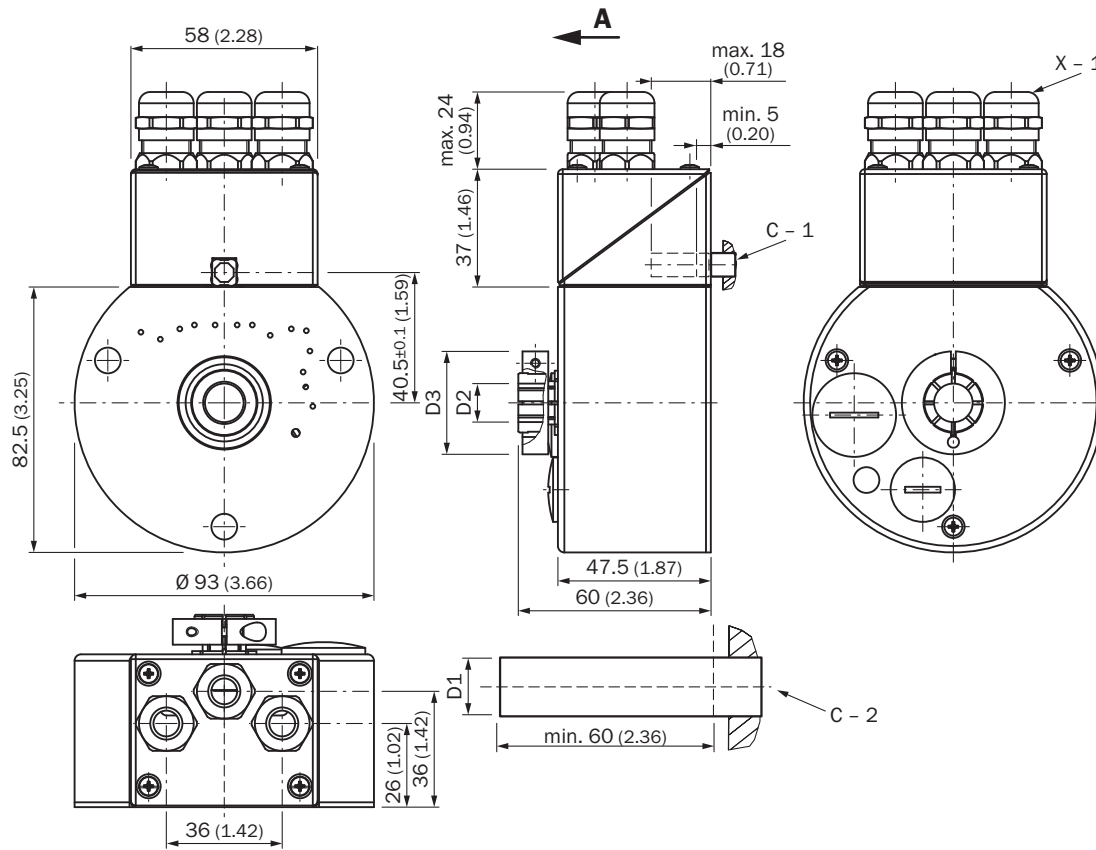
<sup>1)</sup> With mating connector fitted.

## Classifications

|                     |          |
|---------------------|----------|
| <b>ECLASS 5.0</b>   | 27270502 |
| <b>ECLASS 5.1.4</b> | 27270502 |
| <b>ECLASS 6.0</b>   | 27270590 |
| <b>ECLASS 6.2</b>   | 27270590 |
| <b>ECLASS 7.0</b>   | 27270502 |
| <b>ECLASS 8.0</b>   | 27270502 |
| <b>ECLASS 8.1</b>   | 27270502 |
| <b>ECLASS 9.0</b>   | 27270502 |
| <b>ECLASS 10.0</b>  | 27270502 |
| <b>ECLASS 11.0</b>  | 27270502 |

|                       |          |
|-----------------------|----------|
| <b>ECLASS 12.0</b>    | 27270502 |
| <b>ETIM 5.0</b>       | EC001486 |
| <b>ETIM 6.0</b>       | EC001486 |
| <b>ETIM 7.0</b>       | EC001486 |
| <b>ETIM 8.0</b>       | EC001486 |
| <b>UNSPSC 16.0901</b> | 41112113 |

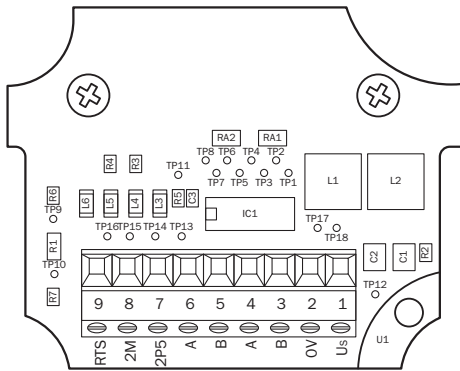
### Dimensional drawing



Dimensions in mm (inch)

| Hollow shaft | D1                 | D2                 | D3   |
|--------------|--------------------|--------------------|------|
| 12 mm        | 12,0 <sup>h7</sup> | 12,0 <sup>F7</sup> | 29,5 |
| 1/2"         | 12,7 <sup>h7</sup> | 12,7 <sup>F7</sup> | 29,5 |
| 16 mm        | 16,0 <sup>h7</sup> | 16,0 <sup>F7</sup> | 32,0 |
| -            | -                  | -                  | -    |
| C - 1        | -                  | -                  | -    |
| C - 2        | -                  | -                  | -    |
| X - 1        | -                  | -                  | -    |
| A            | -                  | -                  | -    |

PIN assignment

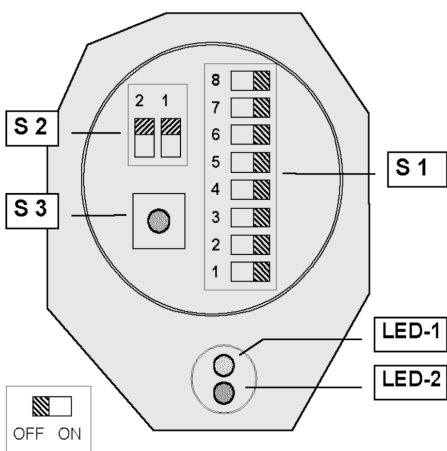


| PIN | Signal                | Explanation                          |
|-----|-----------------------|--------------------------------------|
| 1   | U <sub>S</sub> (24 V) | Operating voltage                    |
| 2   | GND (0 V)             | 0 V (GND)                            |
| 3   | B                     | B-cable PROFIBUS DP (out)            |
| 4   | A                     | B-cable PROFIBUS DP (out)            |
| 5   | B                     | B-cable PROFIBUS DP (in)             |
| 6   | A                     | B-cable PROFIBUS DP (in)             |
| 7   | 2P5                   | + 5 V (potential free) <sup>1)</sup> |
| 8   | 2M                    | 0 V (potential free) <sup>1)</sup>   |
| 9   | RTS                   | Request to Send <sup>2)</sup>        |

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

<sup>2)</sup>Signal is optional, used for direction detection of a fiber optic connection

Adjustments



### Recommended accessories

Other models and accessories → [www.sick.com/ATM90](http://www.sick.com/ATM90)

|   | Brief description   | Type        | part no. |
|---|---|-------------|----------|
| connectors and cables   |   |             |          |
|  | <ul style="list-style-type: none"><li>• <b>Description:</b> PROFIBUS DP, shielded</li><li>• <b>Connection type head A:</b> Flying leads</li><li>• <b>Connection type head B:</b> Flying leads</li><li>• <b>Signal type:</b> PROFIBUS DP</li><li>• <b>Items supplied:</b> By the meter</li><li>• <b>Cable:</b> 2-wire, PUR</li></ul> | LTG-2102-MW | 6021355  |

## 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.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)