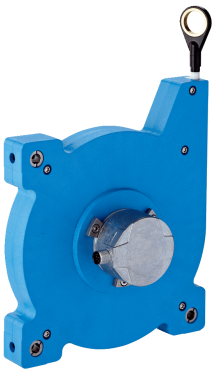
Product data sheet

# BCG19-A1CM1007

EcoLine

WIRE DRAW ENCODERS

SICK
Sensor Intelligence.



## Ordering information

| Type | Part no. |
|---|---|
| BCG19-A1CM1007 | 1061039 |

**Included in delivery:** MRA-G190-110D3 (1), AFM60B-S1AC004096 (1)

Product is supplied fully assembled. See individual components for further technical data

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

## Detailed technical data

### Performance

| | |
|---|---|
| **Measurement range** | 0 m ... 10 m |
| **Encoder** | Absolute encoders |
| **Resolution (wire draw + encoder)** | 0.14 mm [1) 2)] |
| **Repeatability** | ≤ 0.2 mm [3)] |
| **Linearity** | ≤ ± 2 mm [3)] |
| **Hysteresis** | ≤ 0.4 mm [3)] |

[1)] The values shown have been rounded.
[2)] Example calculation based on the BCG08 with PROFINET: 230 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).
[3)] Value applies to wire draw mechanism.

### Interfaces

| | |
|---|---|
| **Communication interface** | SSI |

### Electrical data

| | |
|---|---|
| **Connection type** | Male connector, M12, 8-pin, radial |
| **Supply voltage** | 4.5 V DC ... 32 V DC |
| **Power consumption** | ≤ 0.7 W (without load) |
| **MTTFd: mean time to dangerous failure** | 250 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 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

| | |
|---|---|
| **Weight** | 2.2 kg |
| **Measuring wire material** | Highly flexible stranded steel 1,4401 stainless steel V4A |

[1)] These values were measred at an ambient temperature of 25 °C. There may be variations at other temperatures.
[2)] Average values, which depend on the application.
[3)] The service life depends on the type of load. This is influenced by environmental conditions, the installation location, the measuring range in use, the traversing speed, and acceleration.

| | |
|---|---|
| **Measuring wire diameter** | 0.55 mm |
| **Weight (measuring wire)** | 7.1 g/m |
| **Housing material, wire draw mechanism** | Plastic, Noryl |
| **Spring return force** | 9 N ... 12 N [1] |
| **Length of wire pulled out per revolution** | 555 mm |
| **Life of wire draw mechanism** | Typ. 1,000,000 cycles [2] [3] |
| **Actual wire draw length** | 10.2 m |
| **Wire acceleration** | 8 m/s² |
| **Operating speed** | 3 m/s |
| **Mounted encoder** | AFM60 SSI, AFM60B-S1AC004096, 1037869 |
| **Mounted mechanic** | MRA-G190-110D3, 5326242 |

[1] These values were measred at an ambient temperature of 25 °C. There may be variations at other temperatures.
[2] Average values, which depend on the application.
[3] The service life depends on the type of load. This is influenced by environmental conditions, the installation location, the measuring range in use, the traversing speed, and acceleration.

## Ambient data

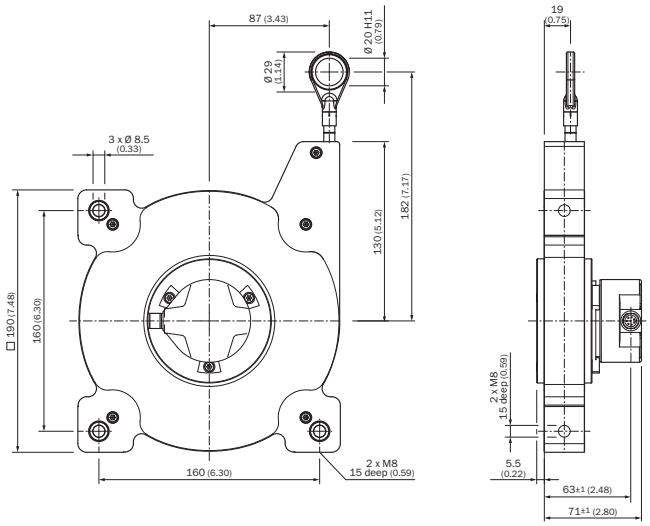
| | |
|---|---|
| **EMC** | According to EN 61000-6-2 and EN 61000-6-3 [1] |
| **Enclosure rating** | IP50, mounted mechanic<br>IP67, Encoder (IEC 60529) [2] |
| **Operating temperature range** | –30 °C ... +70 °C |

[1] EMC according to the standards quoted is achieved if shielded cables are used.
[2] For devices with male connector: with mounted mating connector.

## Classifications

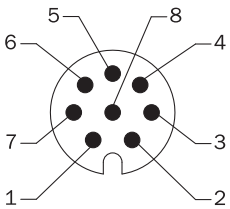
| | |
|---|---|
| **ECLASS 5.0** | 27270590 |
| **ECLASS 5.1.4** | 27270590 |
| **ECLASS 6.0** | 27270590 |
| **ECLASS 6.2** | 27270590 |
| **ECLASS 7.0** | 27270590 |
| **ECLASS 8.0** | 27270590 |
| **ECLASS 8.1** | 27270590 |
| **ECLASS 9.0** | 27270590 |
| **ECLASS 10.0** | 27270613 |
| **ECLASS 11.0** | 27270503 |
| **ECLASS 12.0** | 27270503 |
| **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))




## PIN assignment

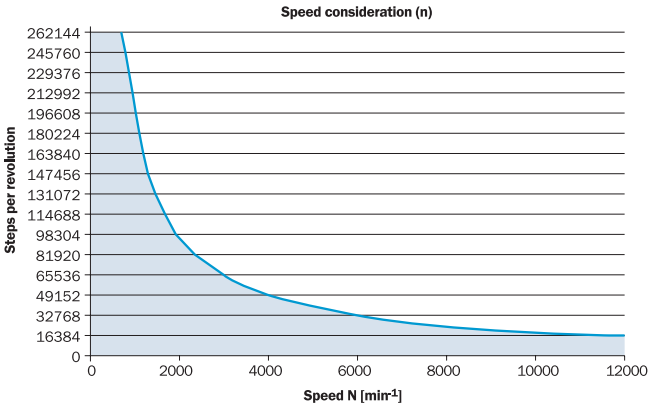
M12 male connector, 8-pin and cable, 8-wire, SSI/Gray




View of M12 male device connector on encoder

| PIN | Wire colors (cable connection) | Signal | Explanation |
|---|---|---|---|
| 1 | Brown | Data - | Interface signals |
| 2 | White | Data + | Interface signals |
| 3 | Black | V/R | Sequence in direction of rotation |
| 4 | Pink | SET | Electronic adjustment<br>Interface signals |
| 5 | Yellow | Clock + | Interface signals |
| 6 | Purple | Clock - | Interface signals |
| 7 | Blue | GND | Ground connection |
| 8 | Red | $U_S$ | Operating voltage |
| | | Screen | Screen connected to housing on encoder side. Connected to ground on control side. |

## Diagrams




The maximum speed is also dependent on the shaft type.

## Recommended accessories

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

| | Brief description | Type | Part no. |
|---|---|---|---|
| Spare parts | | | |
|  | Spare mounting set for MRA-G190 (10 m EcoLine) | BEF-MK-MRA-G01 | 5326294 |
| Wire draw mechanism | | | |
|  | EcoLine wire draw mechanism for servo flange with 6 mm shaft, measuring range 0 m ... 10 m | MRA-G190-110D3 | 5326242 |
| Flanges | | | |
|  | Flange adapter for EcoLine wire draw mechanisms, adaption of face mount flange with centering hub 20 mm to 50 mm servo flange, Aluminum, including 3 countersunk screws M3 x 10 | BEF-FA-020-050-007 | 2073774 |
| Plug connectors and cables | | | |
|  | • **Connection type head A:** Flying leads<br>• **Connection type head B:** Flying leads<br>• **Signal type:** SSI, Incremental, HIPERFACE®<br>• **Cable:** 8-wire, PUR, halogen-free<br>• **Description:** SSI, Incremental, HIPERFACE®, shielded | LTG-2308-MWENC | 6027529 |
|  | • **Connection type head A:** Female connector, M12, 8-pin, straight<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Incremental, SSI<br>• **Cable:** 2 m, 8-wire, PUR, halogen-free<br>• **Description:** Incremental, SSI, shielded, Head A: female connector, M12, 8-pin, straight Head B: cable Cable: suitable for drag chain, PVC, shielded, 4 x 2 x 0.25 mm², Ø 7.0 mm<br>• **Connection systems:** Flying leads | DOL-1208-G02MAC1 | 6032866 |

| | Brief description | Type | Part no. |
|---|---|---|---|
| | • **Connection type head A:** Female connector, M12, 8-pin, straight<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Incremental, SSI<br>• **Cable:** 5 m, 8-wire, PUR, halogen-free<br>• **Description:** Incremental, SSI, shielded, Head A: female connector, M12, 8-pin, straight Head B: cable Cable: suitable for drag chain, PVC, shielded, 4 x 2 x 0.25 mm², Ø 7.0 mm<br>• **Connection systems:** Flying leads | DOL-1208-G05MAC1 | 6032867 |
| | • **Connection type head A:** Female connector, M12, 8-pin, straight<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Incremental, SSI<br>• **Cable:** 10 m, 8-wire, PUR, halogen-free<br>• **Description:** Incremental, SSI, shielded, Head A: female connector, M12, 8-pin, straight Head B: cable Cable: suitable for drag chain, PVC, shielded, 4 x 2 x 0.25 mm², Ø 7.0 mm<br>• **Connection systems:** Flying leads | DOL-1208-G10MAC1 | 6032868 |
| | • **Connection type head A:** Female connector, M12, 8-pin, straight<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Incremental, SSI<br>• **Cable:** 20 m, 8-wire, PUR, halogen-free<br>• **Description:** Incremental, SSI, shielded, Head A: female connector, M12, 8-pin, straight Head B: cable Cable: suitable for drag chain, PVC, shielded, 4 x 2 x 0.25 mm², Ø 7.0 mm<br>• **Connection systems:** Flying leads | DOL-1208-G20MAC1 | 6032869 |
| | • **Connection type head A:** Female connector, M12, 8-pin, straight<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Incremental, SSI<br>• **Cable:** 25 m, 8-wire, PUR, halogen-free<br>• **Description:** Incremental, SSI, shielded, Head A: female connector, M12, 8-pin, straight Head B: cable Cable: suitable for drag chain, PVC, shielded, 4 x 2 x 0.25 mm², Ø 7.0 mm<br>• **Connection systems:** Flying leads | DOL-1208-G25MAC1 | 6067859 |
|  | • **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded<br>• **Signal type:** Incremental, SSI<br>• **Cable:** CAT5, CAT5e<br>• **Description:** Incremental, SSI, shielded, Head A: female connector, M12, 8-pin, straight, A encoded, shielded, for cable diameter 4 mm ... 8 mm Head B: - Operating temperature: –40 °C ... +85 °C<br>• **Connection systems:** IDC quick connection<br>• **Permitted cross-section:** 0.14 mm² ... 0.34 mm² | DOS-1208-GA01 | 6045001 |

# 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



SICK
Sensor Intelligence.