



BTF13-K1EM20PP

HighLine

WIRE DRAW ENCODERS

SICK
Sensor Intelligence.



Ordering information

| Type | Part no. |
|----------------|----------|
| BTF13-K1EM20PP | 1060995 |

Included in delivery: ACM60B-S1KE13x06 (1), MRA-F130-120D1 (1)

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

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



Detailed technical data

Performance

| | |
|---|--------------------------|
| Measurement range | 0 m ... 20 m |
| Encoder | Absolute encoders |
| Resolution (wire draw + encoder) | 0.04 mm ^{1) 2)} |
| Repeatability | ≤ 2 mm ³⁾ |
| Linearity | ≤ ± 2 mm ³⁾ |
| Hysteresis | ≤ 5 mm ³⁾ |

¹⁾ The values shown have been rounded.

²⁾ Example calculation based on the BTF08 with PROFINET: 200 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

| | |
|----------------------------------|---|
| Programmable/configurable | ✓ |
|----------------------------------|---|

Electrical data

| | |
|--|--|
| Connection type | Male connector, M12, 5-pin, radial |
| Supply voltage | 18 V DC ... 33 V DC |
| Operating current | ≤ 80 mA (without load) |
| MTTFd: mean time to dangerous failure | 600 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 | 5.4 kg |
| Measuring wire material | Highly flexible stranded steel 1,4401 stainless steel V4A |

¹⁾ These values were measured 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 | 0.81 mm |
| Weight (measuring wire) | 2.6 g/m |
| Housing material, wire draw mechanism | Aluminum (anodised), plastic |
| Spring return force | 10 N ... 20 N ¹⁾ |
| Length of wire pulled out per revolution | 332.4 mm |
| Life of wire draw mechanism | Typ. 1,000,000 cycles ^{2) 3)} |
| Actual wire draw length | 20.2 m |
| Wire acceleration | 30 m/s ² |
| Operating speed | 6 m/s |
| Mounted encoder | ACM60, ACM60B-S1KE13X06, 6045312 |
| Mounted mechanic | MRA-F130-120D1, 6028628 |

¹⁾ These values were measured 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

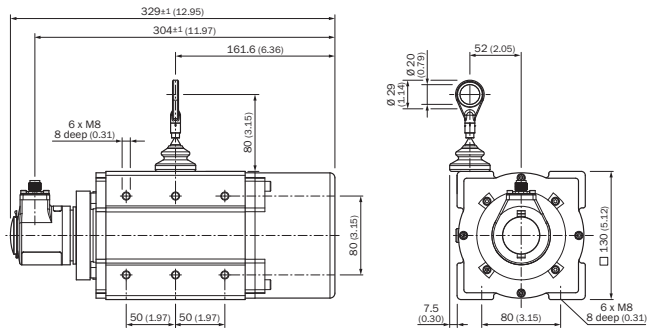
| | |
|------------------------------------|---|
| EMC | According to EN 61000-6-2 and EN 61000-6-4 |
| Enclosure rating | IP64, mounted mechanic IP67, Encoder (IEC 60529) ¹⁾ |
| Operating temperature range | -30 °C ... +70 °C |

¹⁾ With mating connector fitted.

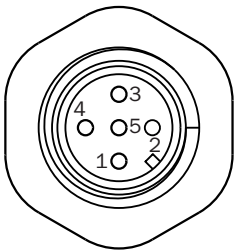
Classifications

| | |
|-----------------------|----------|
| eCI@ss 5.0 | 27270590 |
| eCI@ss 5.1.4 | 27270590 |
| eCI@ss 6.0 | 27270590 |
| eCI@ss 6.2 | 27270590 |
| eCI@ss 7.0 | 27270590 |
| eCI@ss 8.0 | 27270590 |
| eCI@ss 8.1 | 27270590 |
| eCI@ss 9.0 | 27270590 |
| eCI@ss 10.0 | 27270613 |
| eCI@ss 11.0 | 27270503 |
| eCI@ss 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))



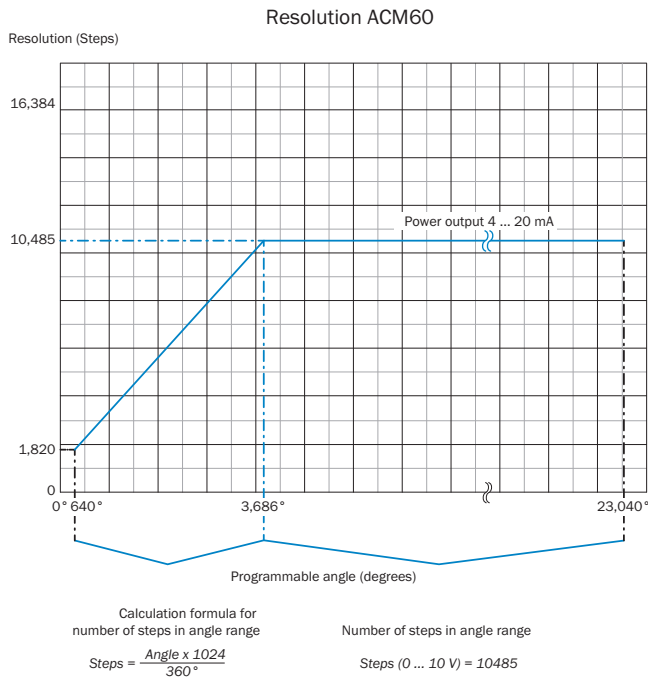
PIN assignment



- ① GND
- ② + 24 V
- ③ Output signal GND
- ④ Output signal 4 ... 20 mA
- ⑤ N.C.






Diagrams


Current output



Recommended accessories

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

| | Brief description | Type | Part no. |
|---|--|--|----------|
| Wire draw mechanism | | | |
|  | HighLine wire draw mechanism for servo flange with 6 mm shaft, measuring range 0 m ... 20 m | MRA-F130-120D1 | 6028628 |
| Flanges | | | |
|  | Flange adapter for HighLine 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-020-050WDE | 2073776 |
| Other mounting accessories | | | |
|  | Joint ball for later insertion in wire end ring with 20 mm diameter. The use of this joint ball enables movement in multiple levels of freedom. | Joint protection for wire rope BTF/PRF/MRA | 5318683 |
|  | Compressed air attachment for MRA-F080... and MRA-F130... HighLine wire draw mechanism | MRA-F-P | 6073769 |
|  | Additional brush attachment for wire draw mechanism MRA-F130 (5 m, 10 m, 20 m and 30 m from HighLine series) | MRA-F130-B | 6038562 |

| | Brief description | Type | Part no. |
|---|--|------------|----------|
|  | Wire draw deflection pulley for wire draw mechanism MRA-F130 (5m, 10m, 20m and 30m from HighLine series) | MRA-F130-R | 6028631 |

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