

BCV08-E1BM03N200

VarioLine

WIRE DRAW ENCODERS





Ordering information

| Туре | Part no. |
|------------------|----------|
| BCV08-E1BM03N200 | 1133455 |

Included in delivery: MRA-V080-103D3 (1), AFM60A-S1EB018x12 (1)

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



Detailed technical data

Performance

| Measurement range | 0 m 3 m |
|----------------------------------|----------------------------|
| Encoder | Absolute encoders |
| Resolution (wire draw + encoder) | 0.0009 mm ^{1) 2)} |
| Repeatability | ≤ 0.3 mm ³⁾ |
| Linearity | ≤ ± 2 mm ³⁾ |
| Hysteresis | ≤ 1.2 mm ³⁾ |

¹⁾ The values shown have been rounded.

Interfaces

| Communication interface | EtherCAT® / CoE (CAN over EtherCAT®) |
|---------------------------|--------------------------------------|
| Programmable/configurable | ✓ |

Electrical data

| Connection type | Male connector, Female connector, 1x, 2x, M12, M12, 4-pin, 4-pin, axial, axial 1) 2) |
|---------------------------------------|--|
| Supply voltage | 10 V DC 30 V DC |
| Power consumption | ≤ 3 W (without load) |
| MTTFd: mean time to dangerous failure | 80 years (EN ISO 13849-1) 3) |

 $^{^{1)}}$ A-coded.

²⁾ Example calculation based on the BCV08 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).

 $^{^{}m 3)}$ Value applies to wire draw mechanism.

²⁾ D-coded.

³⁾ 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 | 0.8 kg |
|--|---|
| Measuring wire material | Stainless steel 1.4401 |
| Measuring wire diameter | 0.81 mm |
| Housing material, wire draw mechanism | Stainless steel 1.4301 |
| Spring return force | 8 N 10 N ¹⁾ |
| Length of wire pulled out per revolution | 230 mm |
| Life of wire draw mechanism | Typ. 1,000,000 cycles ^{2) 3)} |
| Actual wire draw length | 3.2 m |
| Operating speed | 4 m/s |
| Mounted encoder | AFM60 EtherCAT®, AFM60A-S1EB018X12, 1059061 |
| Mounted mechanic | MRA-V080-103D3, 5347779 |

 $^{^{1)}}$ These values were measred at an ambient temperature of 25 $^{\circ}$ C. There may be variations at other temperatures.

Ambient data

| EMC | According to EN 61000-6-2 and EN 61000-6-3 $^{1)}$ |
|-----------------------------|--|
| Enclosure rating | IP30, mounted mechanic IP67, Encoder (IEC 60529) ²⁾ |
| Operating temperature range | -30 °C +70 °C |

 $^{^{1)}}$ The EMC according to the standards quoted is achieved if screened cables are used.

Classifications

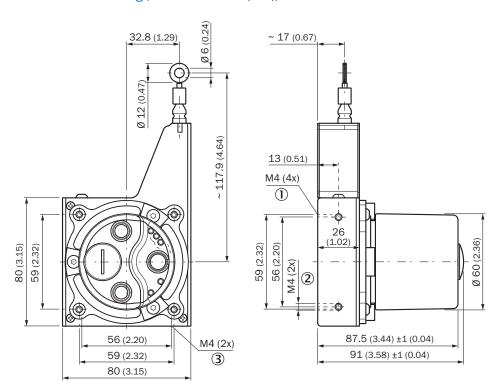
| ECLASS 5.0 | 27270590 |
|----------------|----------|
| ECLASS 5.1.4 | 27270590 |
| ECLASS 6.0 | 27270590 |
| ECLASS 6.2 | 27270590 |
| ECLASS 7.0 | 27270590 |
| ECLASS 8.0 | 27270590 |
| ECLASS 8.1 | 27270590 |
| ECLASS 9.0 | 27270590 |
| ECLASS 10.0 | 27270613 |
| ECLASS 11.0 | 27270503 |
| ECLASS 12.0 | 27270503 |
| ETIM 5.0 | EC001486 |
| ETIM 6.0 | EC001486 |
| ETIM 7.0 | EC001486 |
| ETIM 8.0 | EC001486 |
| UNSPSC 16.0901 | 41112113 |

 $^{^{2)}}$ 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.

 $^{^{2)}}$ With mating connector fitted.

Dimensional drawing (Dimensions in mm (inch))



PIN assignment

Male connector



Supply voltage

| PIN | Wire color | Signal |
|-----|------------|--------------------------|
| 1 | Brown | U _S 10 V 30 V |
| 2 | White | Not assigned |
| 3 | Blue | GND |
| 4 | Black | Not assigned |

Female connector

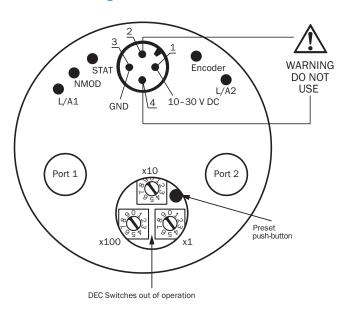


Port 1, Port 2

| PIN | Wire color | Signal |
|-----|------------|--------|
| 1 | Yellow | T x D+ |
| 2 | White | R x D+ |

| PIN | Wire color | Signal |
|-----|------------|--------|
| 3 | Orange | T x D- |
| 4 | Blue | R x D- |

Connection diagram



Recommended accessories

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

| | Brief description | Туре | Part no. | |
|---|--|------------------------|----------|--|
| Plug connecto | ors and cables | | | |
| • Connection to Signal type: E • Cable: 2 m, 4 • Description: E • Application: I • Connection to Signal type: E • Cable: 5 m, 4 • Description: I • Connection to Signal type: E • Cable: 10 m, 9 • Description: I | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Flying leads Signal type: Ethernet, PROFINET Cable: 2 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 020PN1XLEAX | 2106171 | |
| | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Flying leads Signal type: Ethernet, PROFINET Cable: 5 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 050PN1XLEAX | 2106172 | |
| | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Flying leads Signal type: Ethernet, PROFINET Cable: 10 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 100PN1XLEAX | 2106173 | |

| | Brief description | Туре | Part no. |
|---------------|--|------------------------|----------|
| | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Connection type head B: Flying leads Signal type: Ethernet, PROFINET Cable: 2 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YN2D24- 020PN1XLEAX | 2106174 |
| | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Connection type head B: Flying leads Signal type: Ethernet, PROFINET Cable: 5 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YN2D24- 050PN1XLEAX | 2106175 |
| | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Connection type head B: Flying leads Signal type: Ethernet, PROFINET Cable: 10 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YN2D24- 100PN1XLEAX | 2106176 |
| | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Connection type head B: Flying leads Signal type: Ethernet, PROFINET Cable: 25 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YN2D24- 250PN1XLEAX | 2106180 |
| (a) (b) | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Connection type head B: Male connector, M12, 4-pin, angled, D-coded Signal type: PROFINET Cable: 5 m, 4-wire, CAT5, CAT5e, PUR, halogen-free Description: PROFINET, shielded, Head A: male connector, M12, 4-pin, angled, D coded Head B: male connector, M12, 4-pin, angled, D coded Cable: PUR, halogen-free, shielded, 4 x 0.34 mm², Ø 6.5 mm | SSL-1204-W05MZ | 6050636 |
| | Connection type head A: Male connector, RJ45, 4-pin, straight Connection type head B: Male connector, M12, 4-pin, angled, D-coded Signal type: PROFINET, EtherCAT[®] Cable: 30 m, 4-wire, CAT5, CAT5e, PVC Description: PROFINET, EtherCAT[®], shielded | SSL-2J04-F30MZ | 6059450 |
| To the second | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Male connector, RJ45, 4-pin, straight Signal type: PROFINET Cable: 5 m, 4-wire, CAT5, CAT5e, PVC Description: PROFINET, shielded, Head A: male connector, M12, 4-pin, straight, D coded Head B: male connector, RJ45, 4-pin, straight Cable: PVC, shielded, 4 x 0.34 mm², Ø 6.5 mm | SSL-2J04-G05MZ60 | 6048245 |
| 66 | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Male connector, M12, 4-pin, straight, D-coded Signal type: Ethernet, PROFINET Cable: 2 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 020PN1M2D24 | 2106159 |
| 88 | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Male connector, RJ45, 4-pin, straight Signal type: Ethernet, PROFINET Cable: 2 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 020PN1MRJA4 | 2106182 |
| 6.8 | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Male connector, M12, 4-pin, angled, D-coded Signal type: Ethernet, PROFINET Cable: 2 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 020PN1N2D24 | 2106165 |

| | Brief description | Туре | Part no. |
|-----|---|------------------------|----------|
| 66 | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Male connector, M12, 4-pin, straight, D-coded Signal type: Ethernet, PROFINET Cable: 5 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 050PN1M2D24 | 2106160 |
| 6.8 | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Male connector, M12, 4-pin, angled, D-coded Signal type: Ethernet, PROFINET Cable: 5 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 050PN1N2D24 | 2106166 |
| 4 4 | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Male connector, M12, 4-pin, straight, D-coded Signal type: Ethernet, PROFINET Cable: 10 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 100PN1M2D24 | 2106161 |
| 10 | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Male connector, RJ45, 4-pin, straight Signal type: Ethernet, PROFINET Cable: 10 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 100PN1MRJA4 | 2106185 |
| 6.0 | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Connection type head B: Male connector, M12, 4-pin, angled, D-coded Signal type: Ethernet, PROFINET Cable: 10 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YM2D24- 100PN1N2D24 | 2106167 |
| 96 | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Connection type head B: Male connector, RJ45, 4-pin, straight Signal type: Ethernet, PROFINET Cable: 2 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YN2D24- 020PN1MRJA4 | 2106162 |
| | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Connection type head B: Male connector, M12, 4-pin, angled, D-coded Signal type: Ethernet, PROFINET Cable: 2 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YN2D24- 020PN1N2D24 | 2106168 |
| 36 | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Connection type head B: Male connector, RJ45, 4-pin, straight Signal type: Ethernet, PROFINET Cable: 5 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YN2D24- 050PN1MRJA4 | 2106163 |
| | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Connection type head B: Male connector, RJ45, 4-pin, straight Signal type: Ethernet, PROFINET Cable: 10 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YN2D24- 100PN1MRJA4 | 2106164 |
| | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Connection type head B: Male connector, M12, 4-pin, angled, D-coded Signal type: Ethernet, PROFINET Cable: 10 m, 4-wire, PUR, halogen-free Description: Ethernet, PROFINET, shielded Application: Drag chain operation, Zones with oils and lubricants | YN2D24- 100PN1N2D24 | 2106170 |

| | Brief description | Туре | Part no. |
|--------|--|------------------------|----------|
| | Connection type head A: Female connector, M12, 4-pin, straight, D-coded Signal type: PROFINET Cable: CAT5, CAT5e Description: PROFINET, shielded, Head A: female connector, M12, 4-pin, straight, D-coded, shielded, PROFINET, EtherCAT, for cable diameter 4 mm 8 mm Connection systems: IDC quick connection Permitted cross-section: 0.14 mm² 0.34 mm² | DOS-1204-GZ | 6048263 |
| | Connection type head A: Female connector, M12, 4-pin, angled Description: Unshielded, Head A: female connector, M12, 4-pin, angled, unshielded, for power supply, for cable diameter 3 mm 6.5 mm Head B: - Connection systems: Screw-type terminals Permitted cross-section: ≤ 0.75 mm² | DOS-1204-W | 6007303 |
| | Connection type head A: Female connector, M12, 4-pin, angled, D-coded Signal type: PROFINET Cable: CAT5, CAT5e Description: PROFINET, shielded, Head A: female connector, M12, 4-pin, angled, D-coded, shielded, for cable diameter 4 mm 8 mm Connection systems: IDC quick connection Permitted cross-section: 0.14 mm² 0.34 mm² | DOS-1204-WZ | 6048264 |
| | Connection type head A: Male connector, RJ45, 4-pin, straight Signal type: Ethernet, PROFINET, EtherCAT® Cable: CAT5, CAT5e Description: Ethernet, PROFINET, EtherCAT®, shielded, Head A: male connector, RJ45, 4-pin, straight, shielded, PROFINET, EtherCAT, for cable diameter 4.5 mm 8 mm Connection systems: IDC quick connection Permitted cross-section: 4 mm² 8 mm² | STE-0J04-GZ | 6048260 |
| | Connection type head A: Male connector, M12, 4-pin, straight, D-coded Signal type: PROFINET Cable: CAT5, CAT5e Description: PROFINET, shielded, Head A: male connector, M12, 4-pin, straight, D coded, shielded, for cable diameter 4 mm 8 mm Connection systems: IDC quick connection Permitted cross-section: 0.14 mm² 0.34 mm² | STE-1204-GZ | 6048261 |
| | Connection type head A: Male connector, M12, 4-pin, angled, D-coded Signal type: PROFINET Cable: CAT5, CAT5e Description: PROFINET, shielded, Head A: male connector, M12, 4-pin, angled, D coded, shielded, for cable diameter 4 mm 8 mm Connection systems: IDC quick connection Permitted cross-section: 0.14 mm² 0.34 mm² | STE-1204-WZ | 6048262 |
| | Connection type head A: Male connector, M23, 12-pin, straight Signal type: HIPERFACE[®], SSI, Incremental Description: HIPERFACE[®], SSI, Incremental, shielded, Head A: male connector, M23, 12-pin, straight, for cable diameter 5.5 mm 10.5 mm Head B: - Operating temperature: -40 °C +125 °C Connection systems: Solder connection | STE-2312-G01 | 2077273 |
| Others | | | |
| No. | Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 2 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Zones with oils and lubricants, Drag chain operation, Robot | YF2A14- 020UB3XLEAX | 2095607 |
| | Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Zones with oils and lubricants, Drag chain operation, Robot | YF2A14- 050UB3XLEAX | 2095608 |

| | Brief description | Туре | Part no. |
|-----|---|--|----------|
| No. | Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 10 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Zones with oils and lubricants, Drag chain operation, Robot | YF2A14- 100UB3XLEAX | 2095609 |
| | Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 25 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Zones with oils and lubricants, Drag chain operation, Robot | YF2A14- 250UB3XLEAX | 2095615 |
| | Connection type head A: Female connector, M12, 4-pin, angled, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 2 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Zones with oils and lubricants, Drag chain operation, Robot | YG2A14- 020UB3XLEAX | 2095766 |
| 9 | Connection type head A: Female connector, M12, 4-pin, angled, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Zones with oils and lubricants, Drag chain operation, Robot | YG2A14- 050UB3XLEAX | 2095767 |
| | Connection type head A: Female connector, M12, 4-pin, angled, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 10 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Zones with oils and lubricants, Drag chain operation, Robot | YG2A14- 100UB3XLEAX | 2095768 |
| 7 | Connection type head A: Female connector, M12, 4-pin, angled, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 25 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Zones with oils and lubricants, Drag chain operation, Robot | YG2A14- 250UB3XLEAX | 2095771 |
| 00 | Connection type head A: Female connector, M12, 4-pin, D-coded Connection type head B: Female connector, RJ45, 8-pin Signal type: Ethernet Cable: CAT5, CAT5e Description: Ethernet, shielded Note: Cabinet through | Feedthrough fe- male connector Ethernet RJ45 | 6048180 |

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