# ZK1090-3166-0xxx | EtherCAT cable, PUR, AWG26, drag-chain suitable

## M8, plug, straight, male, 4-pin, A-coded – M12, flange, straight, female, 4-pin, D-coded



## Plugs

| Electrical data | Head A | Head B |
|---|---|---|
| Rated voltage | 50 V AC/60 V DC (according to IEC 61076-2-104) | 160 V (according to IEC 61076-2-101) |
| Rated current | 4 A at 40°C (according to IEC 61076-2-104) | 4 A at 40°C (according to IEC 61076-2-101) |
| Shielding | yes | yes |
| Insulation resistance | ≥ 100 GΩ (according to IEC 60512) | ≥ 100 MΩ (according to IEC 60512) |
| **Mechanical data** | | |
| Installation size | M8 | M12 |
| Connector type | plug | flange |
| Configuration | straight | straight |
| Contact type | male | female |
| Number of positions (face) | 4-pin | 4-pin |
| Coding | A-coded | D-coded |
| Recommended torque, nut | 0.4 Nm | 1...1.2 Nm |

| | | |
|---|---|---|
| Mating cycles | ≥ 100 | ≥ 100 (according to IEC 60512-9a) |
| Way of locking | screw | screw |
| Weight | 0.028 kg (0.0617 lb) | - |
| Body color | black | metal |
| Body material | TPU, UL94 | CuZn, Ni |
| Coupling nut material | GD-Zn, Ni | CuZn, Ni |
| Seal | FPM | FPM |
| Contact carrier color | green | green |
| Contact carrier material | PA 6, UL 94 V0 | PBT GF, UL 94 |
| Contact plating | Ni, Au gal. | Ni, Au gal. |
| Contact material | CuZn | CuZn |
| **Environmental data** | | |
| Special features | halogen-free, flame-resistant as per IEC 60332-1-2, oil-resistant as per DIN EN 60811-2-1 | halogen-free, flame-resistant as per IEC 60332-1-2, oil-resistant as per DIN EN 60811-2-1 |
| RoHS compliant | yes | yes |
| Ambient temperature (operation) | -30...+70°C, -22...+158°F | -30...+70°C, -22...+158°F |
| Protection rating | IP65/67 in screwed condition (according to IEC 60529) | IP65/67 in screwed condition (according to IEC 60529) |
| Pollution level | 3/2 (according to IEC 60664-1) | 3/2 (according to IEC 60664-1) |

## Cable

| | |
|---|---|
| **Electrical data** | |
| Rated voltage | 30 V (according to IEC 61076-2-101) |
| Attenuation of shielding | ≥ 43 dB |
| Insulation resistance | ≥ 150 MΩ/km |
| Unbalanced capacitance to ground | 3400 pF/km |
| Mutual capacitance | 51 pF/m at 1 kHz |
| Characteristic impedance (Ethernet) | 100 Ω ±15 Ω (100 MHz) |
| Loop resistance (Ethernet) | 250 Ω/km |
| Unbalanced resistance (Ethernet) | 2 % |
| Dielectric strength wire/wire (Ethernet) | 1000 V DC/700 V AC |
| Dielectric strength wire/shield (Ethernet) | 1000 V DC/700 V AC |
| Signal running time (Ethernet) | 5.55 ns/m |
| Electrical parameters (Ethernet) | based on Cat.5 |
| Test voltage | 700 V |
| **Mechanical data** | |

| | |
|---|---|
| Cable structure (Ethernet) | star quad |
| Conductor construction (Ethernet) | 19 x 0.1 mm |
| Cross-section (Ethernet) | 1 x 4 x 0.14 mm² (AWG26) |
| Outer cable diameter | 5.4 mm ± 0.3 mm (0.213" ±0.0118") |
| Min. bending radius, moved | 20 x outer cable diameter |
| Min. bending radius, fixed installation | 4 x outer cable diameter |
| Weight | 40 kg/km (26.9 lb/1000 ft) |
| Conductor material (Ethernet) | tinned copper |
| Shielding | braiding of tinned copper wires |
| Optical covering factor of shielding (Ethernet) | 90 % |
| Use | drag-chain suitable |
| Max. acceleration | 10 m/s² |
| Max. speed | 15 m/s |
| Max. number of cycles | 20 million (5 million with 14 x D, v = 5 m/s and a = 15 m/s², min. 1 million with 9.5 x D, a = 1 m/s², travel distance = 1 m) |
| Wall thickness of wire insulation (Ethernet) | 0.25 mm |
| Jacket color | green |
| Material jacket | PUR (polyurethane) |
| Wire color code | yellow, orange, white, blue |
| Wire insulation material | PP (polypropylene) |
| Printing on the jacket | "sequential length in meters" Industrial Ethernet Cat5 trailing * E130266 “UL Recognized” UL AWM 20963 80 °C 30V * ZB9032 “month/year” “ internal order number” |
| Printing color | black |
| **Environmental data** | |
| Operation temperature range, moved | -40...+80°C, -40...+176°F |
| Oil resistance | according to DIN EN 60811-404 (7x24 h/90 °C) |
| Acid, lye and solvent resistance | depends on medium, concentration, temperature and duration |
| Flame-retardant | according to AWM Style 20963 |
| CFC-free | yes |
| Halogen-free | according to IEC 60754-1 and -3 |
| Silicone-free | yes |
| RoHS compliant | yes |
| CE | yes |
| UL | yes, UL E-file number: E130266 |
| Approvals | UL-Style AWM 20963 |

## Attenuation

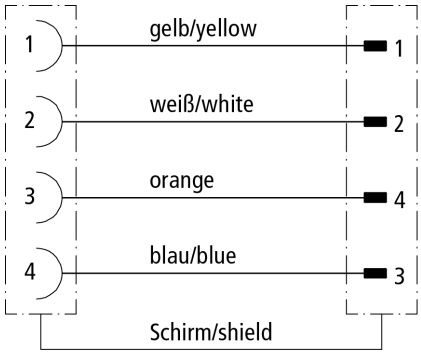
Max. insertion loss

| Frequency [MHz] | 1 | 4 | 10 | 16 | 20 | 31.25 | 62.5 | 100 |
|---|---|---|---|---|---|---|---|---|
| [db/100 m] | 3.1 | 6.5 | 9.9 | 12.3 | 13.8 | 17.7 | 25.6 | 33.0 |
| [db/100 ft] | 0.9 | 2 | 3 | 3.7 | 4.2 | 5.4 | 7.8 | 10.1 |

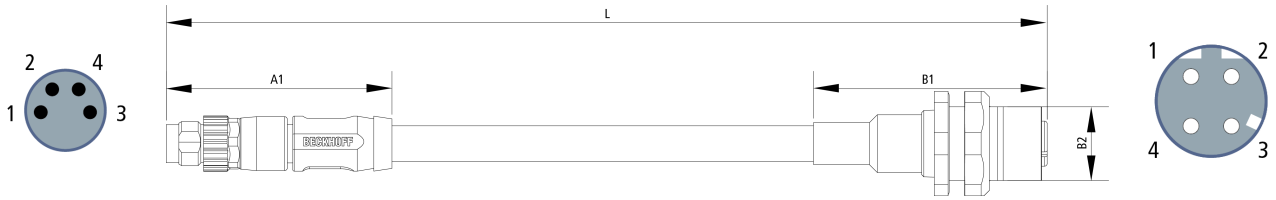
Min. near-end crosstalk attenuation

| Frequency [MHz] | 1 | 4 | 10 | 16 | 20 | 31.25 | 62.5 | 100 |
|---|---|---|---|---|---|---|---|---|
| [db/100 m] | 62 | 53.0 | 47.0 | 44.0 | 42.0 | 40.0 | 35.0 | 32.0 |
| [db/100 ft] | 18.9 | 16.2 | 14.3 | 13.4 | 12.8 | 12.2 | 10.7 | 9.8 |

## Pin assignment




## Dimensions




| | |
|---|---|
| A1 | 41.00 mm |
| A2 | Ø 10.1 mm |
| B1 | 43.00 mm |
| B2 | M12 inner diameter, M16 outer diameter |

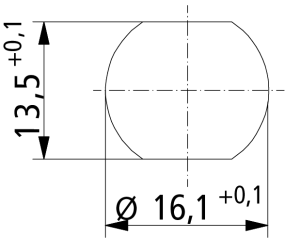
# Notes

- Depending on the cable length (L), the following length tolerances apply:
  0 m...<0.2 m: ± 10 mm | 0.2...4.0 m: + 40 mm | ≥ 4.0 m: + 1%
- Illustrations similar
- Further cable length on request.

## CE, UL

| | |
|---|---|
| CE | yes |
| UL | yes, UL E-file number: E480185 |

## Installation dimensions




| Ordering information | Length |
|---|---|
| ZK1090-3166-0002 | 0.20 m |
| ZK1090-3166-0003 | 0.30 m |
| ZK1090-3166-0004 | 0.40 m |
| ZK1090-3166-0006 | 0.60 m |
| ZK1090-3166-0008 | 0.80 m |
| ZK1090-3166-0009 | 0.90 m |
| ZK1090-3166-0010 | 1.00 m |
| ZK1090-3166-0015 | 1.50 m |
| ZK1090-3166-0020 | 2.00 m |
| ZK1090-3166-0030 | 3.00 m |
| ZK1090-3166-0040 | 4.00 m |
| ZK1090-3166-0100 | 10.00 m |
| ZK1090-3166-0200 | 20.00 m |

Further length on request

| Accessories | |
|---|---|
| ZB8801-0000 | torque wrench for hexagonal plugs, adjustable |
| ZB8801-0001 | torque cable key, M8/wrench size 9, for ZB8801-0000 |
| ZB8801-0002 | torque cable key, M12/wrench size 13, for ZB8801-0000 |
| ZB8803-0001 | Flange/Panel feed-through for M8 pre-assembled, for fixing the connector, plastic, including screws, washers and lock nuts |



Products marked with a crossed-out wheeled bin shall not be discarded with the normal waste stream. The device is considered as waste electrical and electronic equipment. The national regulations for the disposal of waste electrical and electronic equipment must be observed.

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