# ZK1093-3131-1xxx | EtherCAT cable, PUR, AWG22, drag-chain suitable

## M8, plug, straight, male, 4-pin, A-coded – M8, plug, straight, male, 4-pin, A-coded

## Plugs

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

| | | |
|---|---|---|
| Mating cycles | ≥ 100 | ≥ 100 |
| Way of locking | screw | screw |
| Weight | 0.028 kg (0.0617 lb) | 0.028 kg (0.0617 lb) |
| Body color | black | black |
| Body material | TPU, UL94 | TPU, UL94 |
| Coupling nut material | GD-Zn, Ni | GD-Zn, Ni |
| Seal | FPM | FPM |
| Contact carrier color | green | green |
| Contact carrier material | PA 6, UL 94 V0 | PA 6, UL 94 V0 |
| 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 | 600 V |
| Operating voltage | ≤ 125 V (peak value, not for high voltage purposes) |
| Attenuation of shielding | ≥ 40 dB |
| Insulation resistance | ≥ 500 MΩ/km |
| Unbalanced capacitance to ground | 1600 pF/km |
| Mutual capacitance | 52 nF/km (1 kHz) |
| Characteristic impedance (Ethernet) | 100 Ω ±15 Ω (100 MHz) |
| Loop resistance (Ethernet) | ≤ 115 Ω/km |
| Differential impedance (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) | 5.3 ns/m |
| Electrical parameters (Ethernet) | based on Cat.5 |

| | |
|---|---|
| Test voltage | ≥ 2000 V |
| **Mechanical data** | |
| Cable structure (Ethernet) | star quad |
| Conductor construction (Ethernet) | 7 x 0.25 mm |
| Cross-section (Ethernet) | 1 x 4 x 0.34 mm² (AWG22) |
| Outer cable diameter | 6.5 mm ± 0.2 mm (0.2559" ± 0.0079") |
| Min. bending radius, moved | 8 x outer cable diameter |
| Min. bending radius, moved in drag-chain | 15 x outer cable diameter |
| Min. bending radius, fixed installation | 5 x outer cable diameter |
| Weight | 61.0 kg/km (41.0 lb/1000 ft) |
| Conductor material (Ethernet) | tinned copper |
| Shielding | aluminum-clad foil, braiding of tinned copper wires |
| Optical covering factor of shielding (Ethernet) | ≥ 85 % |
| Use | drag-chain suitable |
| Max. acceleration | 4 m/s² |
| Max. speed | 4 m/s |
| Max. travel distance | 4.5 m |
| Max. number of cycles | 3 million |
| Wall thickness of wire insulation (Ethernet) | 0.375 mm |
| Jacket color | yellow |
| Material jacket | PUR (polyurethane) |
| Wire color code | yellow, orange, white, blue |
| Wire insulation material | PP (polypropylene) |
| Printing on the jacket | BECKHOFF ZB9024 Industrial Ethernet<br>/ EtherCAT Trailing Cable * CAT5PLUS * 22AWG (SHIELDED) (UL) E119100 CMX 75°C VERIFIED (UL) CAT 5E PATCH CABLE FRNC *"length in meters" |
| Printing color | black |
| Torsion angle in °/m | max. ± 30 °/m |
| **Environmental data** | |
| Operation temperature range, moved | -30...+80°C, -22...+176°F |
| Operation temperature range, fixed installation | -40...+80°C, -40...+176°F |
| UV resistance | yes |
| Oil resistance | according to DIN EN 60811-404 (7x24 h/90 °C) |
| Acid, lye and solvent resistance | depends on medium, concentration, temperature and duration |
| LABS-free | yes |

| | |
|---|---|
| Flame-retardant | VW-1 Flame Test UL 1581 section 1080 and IEC 60332-1-2 |
| CFC-free | yes |
| Halogen-free | yes |
| Silicone-free | yes |
| RoHS compliant | yes |
| UL | yes, UL E-file number: E119100 |
| Approvals | UL, CMX according to UL 444 |

## Attenuation

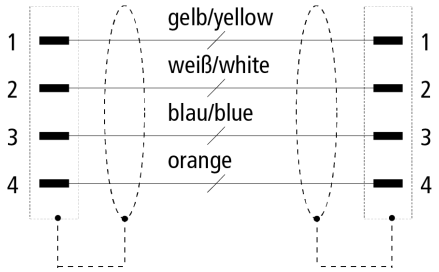
Max. insertion loss

| Frequency [MHz] | **1** | **4** | **10** | **16** | **20** | **31.25** | **62.5** | **100** |
|---|---|---|---|---|---|---|---|---|
| [db/100 m] | 2.1 | 4.0 | 6.3 | 8.0 | 9.0 | 11.4 | 16.5 | 21.3 |
| [db/100 ft] | 0.6 | 1.2 | 1.9 | 2.4 | 2.7 | 3.5 | 5 | 6.5 |

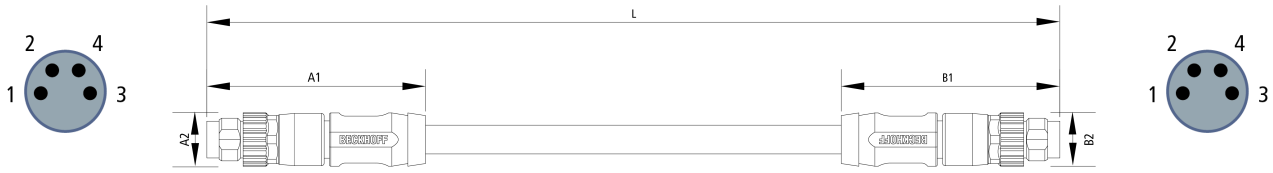
Min. near-end crosstalk attenuation

| Frequency [MHz] | **1** | **4** | **10** | **16** | **20** | **31.25** | **62.5** | **100** |
|---|---|---|---|---|---|---|---|---|
| [db/100 m] | 80 | 76.0 | 70.0 | 65.0 | 63.0 | 60.0 | 55.0 | 50.0 |
| [db/100 ft] | 24.4 | 23.2 | 21.3 | 19.8 | 19.2 | 18.3 | 16.8 | 15.2 |

## Pin assignment




## Dimensions




| | |
|---|---|
| A1 | 41.00 mm |
| A2 | Ø 10.1 mm |

| | |
|---|---|
| B1 | 41.00 mm |
| B2 | Ø 10.1 mm |

## 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: E499669 |

| Ordering information | Length |
|---|---|
| ZK1093-3131-1003 | 0.30 m |
| ZK1093-3131-1005 | 0.50 m |
| ZK1093-3131-1010 | 1.00 m |
| ZK1093-3131-1030 | 3.00 m |
| ZK1093-3131-1150 | 15.00 m |
| ZK1093-3131-1250 | 25.00 m |
| ZK1093-3131-1500 | 50.00 m |
| ZK1093-3131-1999 | 100 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 |
| 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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