# ZK7000-0303-6xxx | EtherCAT P cable, AWG22, PUR, capable of torsion

## M8, plug, angled, male, 4-pin, EtherCAT P-coded – M8, plug, angled, male, 4-pin, EtherCAT P-coded



## Plugs

| Electrical data | Head A | Head B |
|---|---|---|
| Rated voltage | 24 V DC (according to IEC 61076-2-104) | 24 V DC (according to IEC 61076-2-104) |
| Rated current | 3 A at 40°C (according to IEC 61076-2-104) | 3 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 | angled | angled |
| Contact type | male | male |
| Number of positions (face) | 4-pin | 4-pin |
| Coding | EtherCAT P-coded | EtherCAT P-coded |
| Recommended torque, nut | 0.4 Nm | 0.4 Nm |
| Mating cycles | ≥ 100 | ≥ 100 |

| | | |
|---|---|---|
| Way of locking | screw | screw |
| Body color | black | black |
| Body material | TPU, UL 94 | TPU, UL 94 |
| Coupling nut material | CuZn, Ni | CuZn, Ni |
| Seal | FPM | FPM |
| Contact carrier color | red | red |
| Contact carrier material | PA, UL 94 | PA, UL 94 |
| Contact plating | Ni, Au gal. | Ni, Au gal. |
| Contact material | CuZn | CuZn |
| **Environmental data** | | |
| UV resistance | yes | yes |
| RoHS compliant | yes | yes |
| Ambient temperature (operation) | -40...+85°C, -40...+185°F | -40...+85°C, -40...+185°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 |
| Insulation resistance | ≥ 5GΩ * km |
| Unbalanced capacitance to ground | 48 nF/km |
| Mutual capacitance | 48 nF/km |
| Characteristic impedance (Ethernet) | 100 Ω ±15 Ω |
| Loop resistance | ≤ 115 Ω/km |
| Dielectric strength wire/wire (Ethernet) | 1.5 kV (50 Hz, 1 min) |
| Dielectric strength wire/shield (Ethernet) | 1.5 kV ( 50 Hz, 1 min) |
| Electrical parameters (Ethernet) | based on Cat.5 |
| Test voltage | 1500 V, 50 Hz, 1 min. |
| **Mechanical data** | |
| Cable structure (Ethernet) | star quad |
| Conductor construction (Ethernet) | 19-strand |
| Cross-section (Ethernet) | 1 x 4 x 0.34 mm² (AWG22) |
| Outer cable diameter | 6.3 mm ± 0.2 mm (0.248" ± 0.0079") |
| Min. bending radius, moved | 10 x outer cable diameter |
| Min. bending radius, fixed installation | 5 x outer cable diameter |

| | |
|---|---|
| Conductor material (Ethernet) | tinned copper |
| Shielding | aluminum-clad foil, braiding of tinned copper wires, coupling |
| Optical covering factor of shielding (Ethernet) | ≥ 85 % |
| Use | suitable for torsion/robotic applications |
| Jacket color | black (similar to RAL 9005) with red stripe (similar to RAL 3020) |
| Material jacket | PUR (polyurethane) |
| Material jacket, further characteristics of | halogen-free, flame-retardant, matt and low adhesion |
| Wire color code | yellow, orange, white, blue |
| Wire insulation material | PO (Polyolefine) |
| Printing on the jacket | XXXX Beckhoff Automation GmbH & Co. KG – Germany – ZB7004 EtherCAT Cat5e Torsion AWG22/19 E170315 AWM 20963 AWM I/II A/B 80°C 30V MM/YY RoHS |
| Printing color | white |
| Torsion angle in °/m | max. ± 180°/m |
| Torsion speed | 36 cycle/min. |
| Number of torsion cycles | 5 million |
| Load weight | 20 N |
| Claimed torsion length | 1 m |
| **Environmental data** | |
| Operation temperature range, moved | -30...+70°C, -22...+158°F |
| Oil resistance | according to DIN EN 60811-404 (7x24 h/90 °C) |
| Flame-retardant | VW-1 Flame Test UL 1581 section 1080 and IEC 60332-1-2 |
| Halogen-free | according to IEC 60754 or DIN VDE 0472 part 815 |
| UL | yes, UL E-file number: E170315 |
| Approvals | c(UL)us AWM Style 20963 |

**Attenuation**

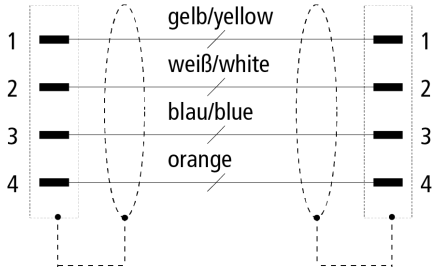
Max. insertion loss

| Frequency [MHz] | **1** | **4** | **10** | **16** | **20** | **31.25** | **62.5** | **100** |
|---|---|---|---|---|---|---|---|---|
| [db/100 m] | - | 4.9 | 7.8 | 9.9 | 11.1 | 14.1 | 62.5 | 26.4 |
| [db/100 ft] | - | 1.5 | 2.4 | 3 | 3.4 | 4.3 | 19.1 | 8 |

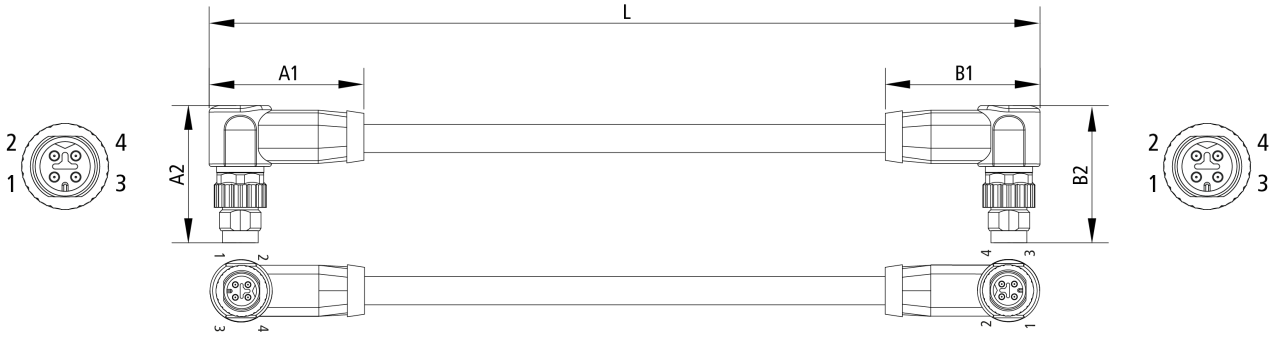
Min. near-end crosstalk attenuation

| Frequency [MHz] | **1** | **4** | **10** | **16** | **20** | **31.25** | **62.5** | **100** |
|---|---|---|---|---|---|---|---|---|
| [db/100 m] | - | 56.3 | 50.3 | 47.2 | 45.8 | 42.9 | 38.4 | 35.3 |
| [db/100 ft] | - | 17.2 | 15.3 | 14.4 | 14 | 13.1 | 11.7 | 10.8 |

**Pin assignment**




## Dimensions




| | |
|---|---|
| A1 | 29.80 mm |
| A2 | 26.30 mm |
| B1 | 29.80 mm |
| B2 | 26.30 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 |
|---|---|
| ZK7000-0303-6003 | 0.30 m |
| ZK7000-0303-6005 | 0.50 m |
| ZK7000-0303-6010 | 1.00 m |
| ZK7000-0303-6015 | 1.50 m |
| ZK7000-0303-6020 | 2.00 m |
| ZK7000-0303-6025 | 2.50 m |

| | |
|---|---|
| ZK7000-0303-6030 | 3.00 m |
| ZK7000-0303-6040 | 4.00 m |
| ZK7000-0303-6045 | 4.50 m |
| ZK7000-0303-6060 | 6.00 m |
| ZK7000-0303-6130 | 13.00 m |
| ZK7000-0303-6150 | 15.00 m |
| ZK7000-0303-6200 | 20.00 m |
| ZK7000-0303-6250 | 25.00 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 |



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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