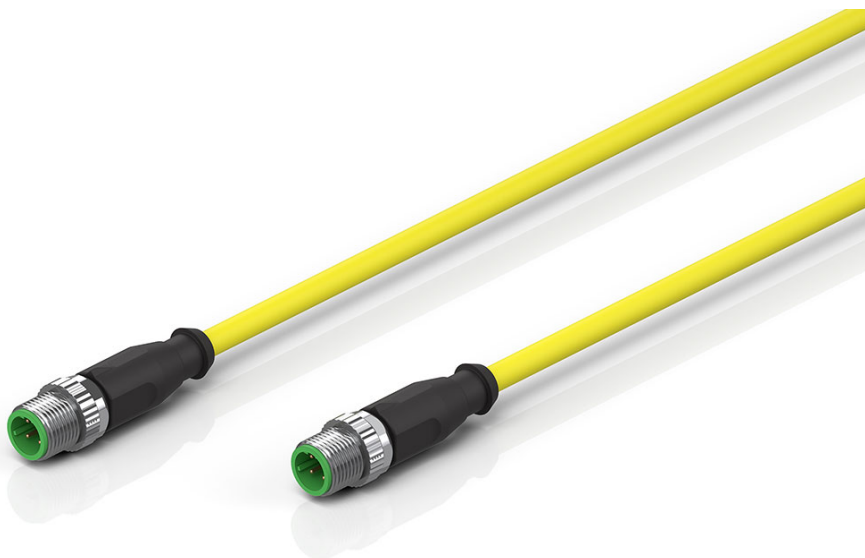


# ZK1093-6161-4xxx | EtherCAT cable, PUR, AWG26, drag-chain suitable



M12, plug, straight, male, 4-pin, D-coded – M12, plug, straight, male, 4-pin, D-coded



## Plugs

| Electrical data            | Head A                                     | Head B                                     |
|----------------------------|--|--|
| Rated voltage              | 160 V (according to IEC 61076-2-101)       | 160 V (according to IEC 61076-2-101)       |
| Rated current              | 4 A at 40°C (according to IEC 61076-2-101) | 4 A at 40°C (according to IEC 61076-2-101) |
| Rated impulse voltage      | 2.5 kV                                     | 2.5 kV                                     |
| Shielding                  | yes  | yes  |
| Contact resistance         | < 5 mΩ                                     | < 5 mΩ                                     |
| Insulation resistance      | ≥ 10 GΩ (according to IEC 60512-2)         | ≥ 10 GΩ (according to IEC 60512-2)         |
| Mechanical data            |  |  |
| Installation size          | M12  | M12  |
| Connector type             | plug                                       | plug                                       |
| Configuration              | straight                                   | straight                                   |
| Contact type               | male                                       | male                                       |
| Number of positions (face) | 4-pin                                      | 4-pin                                      |
| Coding                     | D-coded                                    | D-coded                                    |

|                                 |   |   |
|---------------------------------|---|---|
| Recommended torque, nut         | 0.6 Nm  | 0.6 Nm  |
| Mating cycles                   | ≥ 100 (according to IEC 60512-9a)                     | ≥ 100 (according to IEC 60512-9a)                     |
| 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           | green   | green   |
| Contact carrier material        | TPU GF, UL 94   | TPU GF, UL 94   |
| Contact plating                 | Ni, Au gal.   | Ni, Au gal.   |
| Contact material                | CuZn  | CuZn  |
| <b>Environmental data</b>       |   |   |
| RoHS compliant                  | yes   | yes   |
| Ambient temperature (operation) | -30...+80°C, -22...+176°F                             | -30...+80°C, -22...+176°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

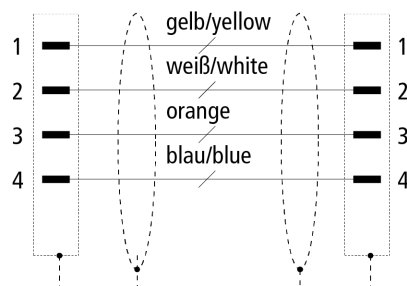
|  |                                     |  |
|--|-------------------------------------|--|
| <b>Electrical data</b>                     |                                     |  |
| Rated voltage                              | 30 V (according to IEC 61076-2-101) |  |
| Attenuation of shielding                   | ≥ 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 ±5 Ω (100 MHz)                |  |
| Loop resistance (Ethernet)                 | 250 Ω/km                            |  |
| Unbalanced resistance (Ethernet)           | < 3 %                               |  |
| 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                               |  |
| <b>Mechanical data</b>                     |                                     |  |
| Cable structure (Ethernet)                 | star quad                           |  |
| Conductor construction (Ethernet)          | 19 x 0.1 mm                         |  |

|   |   |
|---|---|
| Cross-section (Ethernet)                        | 1 x 4 x 0.14 mm <sup>2</sup> (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  | 41 kg/km (27 lb/1000 ft)  |
| Conductor material (Ethernet)                   | copper, tinned  |
| Shielding                                       | aluminum-clad foil, braiding of tinned copper wires   |
| Optical covering factor of shielding (Ethernet) | 90 %  |
| Use   | drag-chain suitable   |
| Max. acceleration                               | 15 m/s <sup>2</sup>   |
| Max. speed                                      | 15 m/s  |
| Max. number of cycles                           | 20 million  |
| Wall thickness of wire insulation (Ethernet)    | 0.25 mm   |
| Jacket color                                    | yellow  |
| Material jacket                                 | PUR (polyurethane)  |
| Wire color code                                 | yellow, orange, white, blue   |
| Wire insulation material                        | PP (polypropylene)  |
| Printing on the jacket                          | "sequential length in metres" Industrial Ethernet Cat5 trailing * E130266 AWM 20963 80 °C 30 V *ZB9035 "month/year" "internal order number" |
| Printing color                                  | black   |
| <b>Environmental data</b>                       |   |
| Operation temperature range, moved              | -40...+80°C, -40...+176°F   |
| Operation temperature range, fixed installation | -40...+80°C, -40...+176°F   |
| Acid, lye and solvent resistance                | depends on medium, concentration, temperature and duration  |
| LABS-free                                       | yes   |
| CFC-free  | yes   |
| Halogen-free                                    | yes   |
| Silicone-free                                   | yes   |
| RoHS compliant                                  | yes   |
| UL  | yes, UL E-file number: E130266  |
| Approvals                                       | UL-Style AWM 20963  |

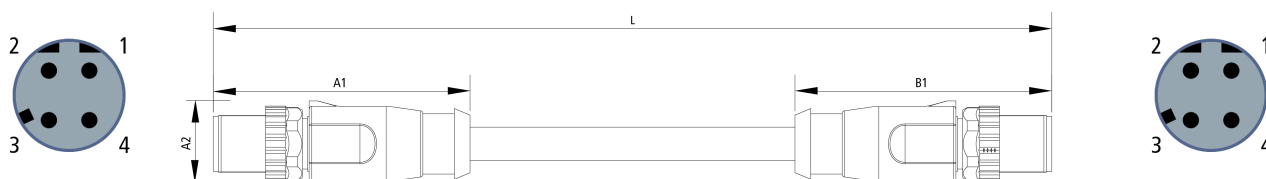
|                     |  |
|---------------------|--|
| <b>Attenuation</b>  |  |
| Max. insertion loss |  |
| Frequency [MHz]     | 1      4      10      16      20      31.25      62.5      100 |

|                                     |      |      |      |      |      |       |      |      |
|-------------------------------------|------|------|------|------|------|-------|------|------|
| [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  |

### Contact assembly



### Dimensions



|    |           |
|----|-----------|
| A1 | 49.00 mm  |
| A2 | Ø14.50 mm |
| B1 | 49.00 mm  |
| B2 | Ø14.50 mm |

## Notes

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

### CE, UL

|    |     |
|----|-----|
| CE | yes |
|----|-----|

UL yes, UL E-file number: E499669

| Ordering information | Length  |
|----------------------|---------|
| ZK1093-6161-4005     | 0.50 m  |
| ZK1093-6161-4010     | 1.00 m  |
| ZK1093-6161-4020     | 2.00 m  |
| ZK1093-6161-4030     | 3.00 m  |
| ZK1093-6161-4050     | 5.00 m  |
| ZK1093-6161-4070     | 7.00 m  |
| ZK1093-6161-4100     | 10.00 m |
| ZK1093-6161-4150     | 15.00 m |
| ZK1093-6161-4200     | 20.00 m |
| ZK1093-6161-4250     | 25.00 m |
| ZK1093-6161-4300     | 30.00 m |
| ZK1093-6161-4350     | 35.00 m |

| Accessories |  |
|-------------|--|
| ZB8801-0000 | torque wrench for hexagonal plugs, adjustable                                      |
| ZB8801-0002 | torque cable key, M12/wrench size 13, for ZB8801-0000                              |
| ZB8803-0003 | Flange/Panel feed-through for M12 pre-assembled, for fixing the connector, plastic |



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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