# ZK7825-3031-0xxx | B40, ECP cable, PUR, 5 G 16.0 mm² + (1 x 4 x AWG22), drag-chain suitable, key 2 (400 V AC)

## B40, plug, straight, male+male, pins 4+PE+4, EtherCAT P-coded – B40, plug, straight, female+ female, pins 4+PE+4, EtherCAT P-coded



## Plugs

| Electrical data | Head A | Head B |
|---|---|---|
| Rated voltage (Ethernet) | 24 V DC | 24 V DC |
| Rated current (Ethernet) | 3 A at 40°C | 3 A at 40°C |
| Rated voltage (power) | 630 V AC / 850 V DC, 600V AC / DC (UL) | 630 V AC / 850 V DC, 600V AC / DC (UL) |
| Rated current (power) | 66 A at 50°C | 66 A at 50°C |
| Rated impulse voltage (power) | 6.0 kV | 6.0 kV |
| Rated impulse voltage (Ethernet) | 1.0 kV | 1.0 kV |
| Voltage proof (contact/contact) | 1.5 kV (power - Ethernet), 3.31 kV AC (power), 1.0 kV AC (Ethernet) | 1.5 kV (power - Ethernet), 3.31 kV AC (power), 1.0 kV AC (Ethernet) |
| Shielding (Ethernet) | yes | yes |
| Contact resistance | < 10 mΩ (signal), < 5 mΩ (power) | < 10 mΩ (signal), < 5 mΩ (power) |
| Insulation resistance | ≥ 100 MΩ (according to IEC 60512) | ≥ 100 MΩ (according to IEC 60512) |
| **Mechanical data** | | |

| | | |
|---|---|---|
| Installation size | B40 | B40 |
| Connector type | plug | plug |
| Configuration | straight | straight |
| Contact type | male+male | female+ female |
| Number of positions (face) | pins 4+PE+4 | pins 4+PE+4 |
| Coding | EtherCAT P-coded | EtherCAT P-coded |
| Mechanical coding | key 2 (400 V AC) | key 2 (400 V AC) |
| Wire termination | crimp connection | crimp connection |
| Mating cycles | ≥ 100 | ≥ 100 |
| Way of locking | bayonet | bayonet |
| Weight | 0.520 kg (1.146 lb) | 0.520 kg (1.146 lb) |
| Body color | black | black |
| Body material | PA6, UL94 V0 | PA6, UL94 V0 |
| Coupling nut material | GD-Zn, Ni | GD-Zn, Ni |
| Seal | NBR | NBR |
| Contact carrier material | PA, UL 94 | PA, UL 94 |
| Contact carrier color (Ethernet) | red | red |
| Contact carrier color (power) | red | red |
| Contact plating | Au over Ni | Au over Ni |
| Contact material | copper alloy | copper alloy |
| **Environmental data** | | |
| Shock resistance | 50 g (490 m/s$^2$) conforms to IEC 60512-6c, 11 ms; 18 shocks per direction, 3 axes | 50 g (490 m/s$^2$) conforms to IEC 60512-6c, 11 ms; 18 shocks per direction, 3 axes |
| Vibration resistance | 5 g (50 m /s$^2$) conforms to IEC 60512-6d, 10 Hz. ... 500 Hz.; 10 cycles per axis; 6 h full duration | 5 g (50 m /s$^2$) conforms to IEC 60512-6d, 10 Hz. ... 500 Hz.; 10 cycles per axis; 6 h full duration |
| RoHS compliant | yes | yes |
| Ambient temperature (operation) | -30...+90°C, -22...+194°F | -30...+90°C, -22...+194°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

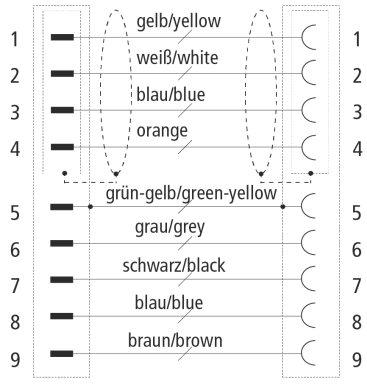
| **Electrical data** | |
|---|---|
| Mutual capacitance wire/wire (Ethernet) | 50 ±15 pF/m at 800 Hz (EN 50289-1-5) |
| Attenuation of shielding | ≥ 65 dB (30...100 MHz) |
| Insulation resistance | ≥ 500 MΩ * km (DIN EN 50395) |
| Wire resistance (power) | ≤ 1.21 Ω/km |

| | |
|---|---|
| Wire resistance (Ethernet) | ≤ 58.0 Ω/km according to DIN EN 50395 |
| Characteristic impedance (Ethernet) | 100 Ω ±15 Ω (100 MHz) |
| Dielectric strength wire/wire (power) | 4 kV 50 Hz 5 min. (DIN VDE 0472 T.509C) |
| Dielectric strength wire/shield (power) | 4 kV 50 Hz 5 min. (DIN VDE 0472 T.509C) |
| **Mechanical data** | |
| Cable structure (Ethernet) | star quad |
| Conductor construction (Ethernet) | 7-strand |
| Cross-section (power) | 5 x 16.0 mm² (approx. AWG5) |
| Cross-section (Ethernet) | 1 x 4 x 0.34 mm² (AWG22) |
| Outer cable diameter | 24.0 mm ± 0.5 mm (0.9448" ± 0.01969") |
| Min. bending radius, moved | 7 x outer cable diameter |
| Min. bending radius, fixed installation | 4 x outer cable diameter |
| Weight | 1100 kg/km (739.1 lb/1000 ft) |
| Conductor material (power) | copper bare, Class 6 according to DIN EN 60228 |
| Conductor material (Ethernet) | tinned copper |
| Shielding | braiding of tinned copper wires, metallized plastic fleece, aluminum-clad foil |
| Optical covering factor of shielding (Ethernet) | ≥ 85 % |
| Optical covering factor of shielding (total) | no |
| Use | drag-chain suitable |
| UL-Style | UL758 (AWM) Style 21223 (jacket) and Style 10492 (core) |
| Max. acceleration | 30 m/s² by 5 m travel distance<br>15 m/s² by 10 m travel distance<br>5 m/s² by 20 m travel distance |
| Max. speed | 4 m/s |
| Max. travel distance | 20 m (horizontal)<br>5 m (vertical) |
| Max. number of cycles | 5 million |
| Wall thickness of wire insulation (power) | 0.65 mm |
| Wall thickness of wire insulation (Ethernet) | 0.4 mm |
| Jacket color | black (similar to RAL 9005) with red stripe (similar to RAL 3020) |
| Material jacket | PUR (polyurethane) |
| Wire color code | Ethernet: white, yellow, blue, orange Power: red, blue, gray, black, green/yellow |
| Wire insulation material | PP (polypropylene) |
| Printing on the jacket | 00000M Beckhoff Automation GmbH & Co. KG - Germany -ZB7400 +90°C 5 G 16 + (4xAWG22)/C E170315 cRUus AWM Style 21223 AWM I/II A/B 80°C 1000V FT1 MM/YY CE |
| Printing color | white |
| Torsion angle in °/m | max. ± 30 °/m |

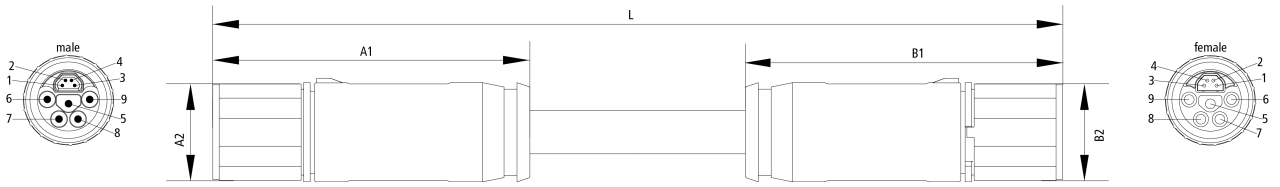
| Environmental data | |
|---|---|
| Operation temperature range, moved | -30...+90°C, -22...+194°F; in drag-chain with mechanical strain: -20...+60°C, -4...+140°F |
| Operation temperature range, fixed installation | -40...+90°C, -40...+194°F |
| UV resistance | yes |
| Oil resistance | according to DIN EN 60811-404 |
| Flame-retardant | according to IEC 60332-1-2 |
| CFC-free | yes |
| Halogen-free | according to DIN VDE 0472 part 815 |
| Silicone-free | yes |
| Approvals | cRUus |

| Attenuation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Max. insertion loss | | | | | | | | |
| Frequency [MHz] | **1** | **4** | **10** | **16** | **20** | **31.25** | **62.5** | **100** |
| [db/100 m] | 2.3 | 4.2 | 6.8 | 8.6 | 9.7 | 12.3 | 18.0 | 23.6 |
| [db/100 ft] | 0.7 | 1.3 | 2.1 | 2.6 | 3 | 3.7 | 5.5 | 7.2 |
| 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 | 131.50 mm |
| A2 | 47.00 mm |
| B1 | 131.50 mm |
| B2 | 47.00 mm |

### Mechanical coding

Mechanical keying uses defined keyways that only allow insertion and subsequent locking rotation when correctly aligned. For more information, please refer to the keying guide for correct use.

## Notes

- Depending on the cable length (L), the following length tolerances apply:
0 m...3.0 m: + 100 mm | 3.0...10.0 m: ± 100 mm | ≥ 10.0 m: ± 2%
- Illustrations similar
- Further cable length on request. The last three digits of the ordering information is the cable length in decimeters, e.g. ZKxxxx-xxxx-x020 = cable length 2.00 m
- The design of the pre-assambled cable shown here may differ from the products supplied, despite technically identical specifications.

| CE, UL | |
|---|---|
| CE | yes |

| Ordering information | Length |
|---|---|
| ZK7825-3031-0xxx | – |

Further length on request

| Accessories | |
|---|---|
| ZS7400-B003 | B40 protection cap, plug, plastic, IP67, packaging unit = 10 pieces, including loss protection |
| ZS7400-B004 | B40 protection cap, plug, metal, IP67, packaging unit = 5 pieces, including loss protection |
| ZS7400-B005 | B40 color coding connector/square flange, red, packaging unit = 10 pieces |
| ZS7400-B006 | B40 color coding connector/square flange, yellow, packaging unit = 10 pieces |
| ZS7400-B007 | B40 color coding connector/square flange, blue, packaging unit = 10 pieces |
| ZS7400-B008 | B40 color coding connector/square flange, green, packaging unit = 10 pieces |

| | |
|---|---|
| ZS7400-B015 | B40 color coding connector/square flange, orange, packaging unit = 10 pieces |
| ZS7400-B016 | B40 color coding connector/square flange, gray, packaging unit = 10 pieces |



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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