



## ZB7301-xxxx | EtherCAT cable, no total screen, PUR, drag chain suitable, 4G4 mm<sup>2</sup> + 2 x 2.5 mm<sup>2</sup> + (1 x 4 x AWG22), black with yellow stripe, OD = 14,1 (±0.2 mm)

Electrical data	
Operating voltage	≤ 1000 V AC
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)
Mutual capacitance	AWG 22: 50 ± 15 pF/m at 800 Hz according to EN 50289-1-5
Wire resistance (power)	≤ 4.95 Ω/km (DIN EN 50395)
Wire resistance (signal/24V)	≤ 7.98 Ω/km according to DIN EN 50395
Wire resistance (Ethernet)	≤ 58.0 Ω/km according to DIN EN 50395
Characteristic impedance (Ethernet)	100 Ω ±5 Ω (100 MHz) (EN 50289-1-11)
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)
Dielectric strength wire/wire (Ethernet)	2 kV ( 50 Hz, 1 min)
Dielectric strength wire/shield (Ethernet)	2 kV ( 50 Hz, 1 min)
Mechanical data	
Cable structure (Ethernet)	star quad
Conductor construction (Ethernet)	7-strand
Cross section (power)	4 x 4.0 mm <sup>2</sup> (approx. AWG12)
Cross section (signal)	2 x 2.5 mm <sup>2</sup> (approx. AWG 14)
Cross section (Ethernet)	1 x 4 x 0.34 mm <sup>2</sup> (AWG 22)
Min. bending radius, moved	7 x outer cable diameter
Min. bending radius, fixed installation	4 x outer cable diameter
Weight	350 kg/km (235.19 lb/1000 ft)
Outer cable diameter	15.6 mm ± 0.4 mm (0.6142" ± 0.0157")
Conductor material (power)	copper bare, Class 6 according to DIN EN 60228
Conductor material (signal/24V)	copper bare, Class 6 according to DIN EN 60228

Conductor material (Ethernet)	copper, tinned
Shielding	braiding of tinned copper wires, metallised plastic fleece, aluminium-clad foil
Optical covering factor of shielding (Ethernet)	≥ 85 %
Optical covering factor of shielding (total)	no
Use	drag-chain suitable
UL-Style Conductor	UL758 (AWM) Style 21223 (jacket) and Style 10492 (core)
Max. acceleration	30 m/s <sup>2</sup> by 5 m travel distance 15 m/s <sup>2</sup> by 10 m travel distance 5 m/s <sup>2</sup> by 20 m travel distance
Max. speed	4 m/s
Max. travel distance	20 m (horizontal) 5 m (vertical)
Max. number of cycles	3 million
Wall thickness of wire insulation (power)	0.4 mm
Wall thickness of wire insulation (Ethernet)	0.4 mm
Jacket colour	black (similar to RAL 9005) with yellow stripe (similar to RAL 1003)
Material jacket	PUR (polyurethane)
Wire colour code	Ethernet: white, yellow, blue, orange Power: brown, blue, white, green/yellow Signal: red, black
Wire insulation material	PP (polypropylene)
Printing on the jacket	XXXX Beckhoff Automation GmbH & Co. KG-Germany- 4G4+2x2,5 + (4xAWG22)/C E170315 AWM 20233 AWM I/II A/B 80°C 300V FT1 RoHS MM/JJ CE
Printing colour	white
Torsion angle in °/m	max. ± 30 °/m

Environmental data	
Operation temperature range, moved	-30...+80 °C, -22...+176 °F, in drag-chain applications: -20...+60 °C, -4...+140 °F
Operation temperature range, fixed installation	-40...+80 °C, -40...+176 °F
UV resistance	yes
Oil resistance	according to DIN EN 60811-404
LABS-free	yes
Flame-retardant	yes
CFC-free	yes
Halogen-free	yes
Silicone-free	yes
Approvals	cRUus

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

## Notes

- The following length tolerances apply: 2-3 %
- Illustrations similar

Ordering information	Length
ZB7301-0050	5.00 m
ZB7301-0100	10.00 m
ZB7301-0250	25.00 m
ZB7301-0500	50.00 m
ZB7301-R001	100 m
ZB7301-R002	250 m
ZB7301-R003	500 m
ZB7301-R004	1000 m

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