



ZB9021 | Industrial Ethernet/EtherCAT cable, shielded, PUR, 1 x 4 x AWG22, capable of torsion, CAT5, green

Electrical data	
Rated voltage	30 V
Insulation resistance	$\geq 5\text{G}\Omega \cdot \text{km}$
Mutual capacitance	48 nF/km
Characteristic impedance (Ethernet)	$100\ \Omega \pm 15\ \Omega$
Loop resistance (Ethernet)	$\leq 115\ \Omega/\text{km}$
Signal running time (Ethernet)	5.3 ns/m
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)	$1 \times 4 \times 0.34\ \text{mm}^2$ (AWG 22)
Min. bending radius, moved	8 x outer cable diameter
Min. bending radius, moved in drag chain	8 x outer cable diameter
Outer cable diameter	$6.3\ \text{mm} \pm 0.2\ \text{mm}$ (0.248" \pm 0.0079")
Conductor material (Ethernet)	copper, tinned
Shielding	Two layers of conductive wrapping and braiding of special wires
Optical covering factor of shielding (Ethernet)	$\geq 85\ \%$
Use	robotic application
Jacket colour	green
Material jacket	PUR (polyurethane)
Material jacket, further characteristics of	halogen-free, flame-retardant, matt and low adhesion
Wire colour code	yellow, orange, white, blue
Wire insulation material	PO (Polyolefine)
Printing on the jacket	XXXX Bechhoff Automation GmbH & Co. KG-Germany-ZB9021 EtherCAT Cat5e Torsion AWG22/19 E170315 AWM20963 AWM I/II A/B 80°C 30V
Printing colour	black
Torsion angle in °/m	max. $\pm 180^\circ/\text{m}$
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 respectively DIN VDE 0472 part 815
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

Notes

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

Ordering information	Length
ZB9021	sold by the metre

Beckhoff®, TwinCAT®, EtherCAT®, EtherCAT G®, EtherCAT G10®, EtherCAT P®, Safety over EtherCAT®, TwinSAFE®, XFC®, XTS® and XPlanar® are registered trademarks of and licensed by Beckhoff Automation GmbH. Other designations used in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owners.

© Beckhoff Automation GmbH & Co. KG 02/2021

The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual application do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.