

# ZK1093-6161-2xxx | EtherCAT cable, PUR, AWG26, fixed installation, comfortable installation at short distances



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



## Plugs

Electrical data	Head A	Head B
Rated voltage	250 V (according to IEC 61076-2-101)	250 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)
Shielding	no	no
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	A-coded	A-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, self-extinguishing	TPU, self-extinguishing
Coupling nut material	CuZn, Ni	CuZn, Ni
Seal	FPM	FPM
Contact carrier color	red	red
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>		
Special features	halogen-free, flame-resistant as per IEC 60332-1-2, oil-resistant as per DIN EN 60811-2-1	halogen-free, flame-resistant as per IEC 60332-1-2, oil-resistant as per DIN EN 60811-2-1
RoHS compliant	yes	yes
Ambient temperature (operation)	-25...+80°C, -13...+176°F	-25...+80°C, -13...+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

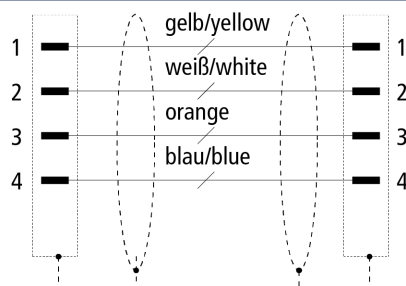
<b>Electrical data</b>		
Rated voltage	30 V (according to IEC 61076-2-101)	
Attenuation of shielding	≥ 50 dB (30...100 MHz)	
Insulation resistance	≥ 500 MΩ/km	
Unbalanced capacitance to ground	≤ 2000 pF/km	
Mutual capacitance	nom. 50 nF/km	
Characteristic impedance (Ethernet)	100 Ω ±15 Ω	
Loop resistance (Ethernet)	≤ 260 Ω/km	
Unbalanced resistance (Ethernet)	2 %	
Dielectric strength wire/wire (Ethernet)	1 kV AC (50 Hz, 1 min.)/1 kV DC (50 Hz)	
Dielectric strength wire/shield (Ethernet)	1 kV AC (50 Hz, 1 min.)/1 kV DC (50 Hz)	
Signal running time (Ethernet)	4.8 ns/m	
Electrical parameters (Ethernet)	based on Cat.5	
Test voltage	1000 V, 50 Hz, 1 min.	
<b>Mechanical data</b>		
Cable structure (Ethernet)	star quad	

Conductor construction (Ethernet)	7-strand
Cross-section (Ethernet)	1 x 4 x 0.14 mm <sup>2</sup> (AWG26)
Outer cable diameter	3.65 mm ± 0.15 mm (0.1496" ± 0.0059")
Min. bending radius, moved	15 x outer cable diameter
Min. bending radius, fixed installation	8 x outer cable diameter, 2.5 x outer cable diameter (fixed with single bend)
Weight	30 kg/km (20.2 lb/1000 ft)
Conductor material	copper bare
Shielding	braiding of tinned copper wires
Optical covering factor of shielding (Ethernet)	≥ 85 %
Use	fixed installation
Jacket color	yellow
Material jacket	PUR (polyurethane)
Wire color code	yellow, orange, white, blue
Wire insulation material	PO (Polyolefine)
Printing on the jacket	00000m Beckhoff Automation GmbH & Co. KG - Germany – Industrial Ethernet / EtherCAT ZB9037 Cat5e AWG26/7 E170315 AWM 20963 AWM I A/B 80°C 30V Fa.No.xxxxx
Printing color	black
<b>Environmental data</b>	
Operation temperature range, moved	-30...+70°C, -22...+158°F
Operation temperature range, fixed installation	-40...+80°C, -40...+176°F
UV resistance	good
Oil resistance	according to DIN EN 60811-404 (7x24 h/90 °C)
Acid, lye and solvent resistance	depends on medium, concentration, temperature and duration
Flame-retardant	Horizontal flame test according to UL 1581 part 1090
CFC-free	yes
Halogen-free	according to IEC 60754 or DIN VDE 0472 part 815
Silicone-free	yes
UL	yes, UL E-file number: E170315

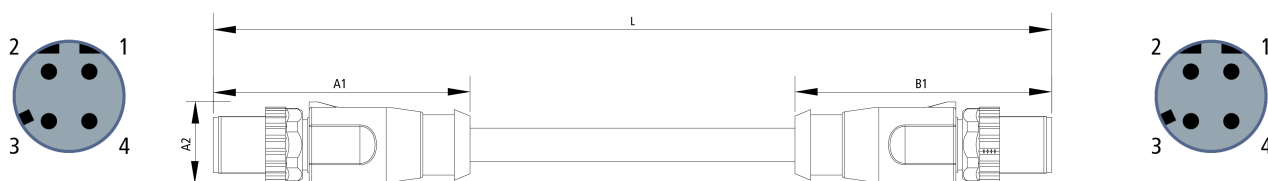
<b>Attenuation</b>	
Max. insertion loss	
Frequency [MHz]	1      4      10      16      20      31.25      62.5      100
[db/100 m]	3.2      6.2      10.5      13.4      14.7      18.8      27.2      35.0
[db/100 ft]	1      1.9      3.2      4.1      4.5      5.7      8.3      10.7
Min. near-end crosstalk attenuation	
Frequency [MHz]	1      4      10      16      20      31.25      62.5      100

[db/100 m]	65	56.3	50.3	47.2	45.8	42.9	38.4	35.3
[db/100 ft]	19.8	17.2	15.3	14.4	14	13.1	11.7	10.8

### Contact assembly



### Dimensions



A1	50.00 mm
A2	19.30 mm
B1	50.00 mm
B2	19.30 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
ZK1093-6161-2005	0.50 m

---

ZK1093-6161-2015	1.50 m
ZK1093-6161-2030	3.00 m
ZK1093-6161-2035	3.50 m
ZK1093-6161-2040	4.00 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.

Beckhoff®, TwinCAT®, TwinCAT/BSD®, TC/BSD®, 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 03/2024

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.