ZK1093-6163-4xxx | EtherCAT cable, PUR, AWG26, drag-chain suitable



M12, plug, straight, male, 4-pin, D-coded – M12, plug, angled, 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 G Ω (according to IEC 60512-2)	≥ 10 G Ω (according to IEC 60512-2)
Mechanical data		
Installation size	M12	M12
Connector type	plug	plug
Configuration	straight	angled
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 Environmental data Evaluation halogen-free, flame-resistant as per IEC 60332-1-2, oil-resistant as per IEC 6033				
Way of lockingscrewscrewBody colorblackblackBody materialTPU, UL 94TPU, UL 94Coupling nut materialCuZn, NiCuZn, NiSealFPMFPMContact carrier colorgreengreenContact carrier materialTPU GF, UL 94TPU GF, UL 94Contact platingNi, Au gal.Ni, Au gal.Contact materialCuZnCuZnEnvironmental dataSpecial features-halogen-free, flame-resistant as per IEC 60332-1-2, oil-resistant as per IEC 60332-1-2, oil-resistant as per DIN EN 60811-2-1RoHS compliantyesyesAmbient temperature (operation)-30+80°C, -22+176°F-30+80°C, -22+176°FProtection ratingIP65/67 in screwed condition (according to IEC 60529)IP65/67 in screwed condition (according to IEC 60529)	Recommended torque, nut	0.6 Nm	0.6 Nm	
Body color Body material TPU, UL 94 TPU, UL 94 Coupling nut material CuZn, Ni CuZn, Ni CuZn, Ni FPM FPM Contact carrier color green Green TPU GF, UL 94 TPU GF, UL 94 TPU GF, UL 94 Contact plating Ni, Au gal. Contact material CuZn CuZn CuZn CuZn CuZn Environmental data Special features Ambient temperature (operation) 1P65/67 in screwed condition (according to lEC 60529) IPO, UL 94 TPU GF, UL 94	Mating cycles	≥ 100 (according to IEC 60512-9a)	≥ 100 (according to IEC 60512-9a)	
Body materialTPU, UL 94TPU, UL 94Coupling nut materialCuZn, NiCuZn, NiSealFPMFPMContact carrier colorgreengreenContact carrier materialTPU GF, UL 94TPU GF, UL 94Contact platingNi, Au gal.Ni, Au gal.Contact materialCuZnCuZnEnvironmental data-halogen-free, flame-resistant as per IEC 60332-1-2, oil-resistant as per DIN EN 60811-2-1RoHS compliantyesyesAmbient temperature (operation)-30+80°C, -22+176°F-30+80°C, -22+176°FProtection ratingIP65/67 in screwed condition (according to IEC 60529)IP65/67 in screwed condition (according to IEC 60529)	Way of locking	screw	screw	
Coupling nut material CuZn, Ni CuZn FPM FPM Contact carrier color green green TPU GF, UL 94 TPU GF, UL 94 Contact plating Ni, Au gal. CuZn CuZn CuZn Environmental data Special features CuZn CuZn Anbient temperature (operation) -30+80°C, -22+176°F Protection rating LUZn CuZn CuZn LuZn CuZn Anbient temperature (operation) -30+80°C, -22+176°F -30+80°C, -22+176°F Protection rating LuZn CuZn CuZn LuZn CuZn LuZn	Body color	black	black	
SealFPMFPMContact carrier colorgreengreenContact carrier materialTPU GF, UL 94TPU GF, UL 94Contact platingNi, Au gal.Ni, Au gal.Contact materialCuZnCuZnEnvironmental data-halogen-free, flame-resistant as per IEC 60332-1-2, oil-resistant as per DIN EN 60811-2-1RoHS compliantyesyesAmbient temperature (operation)-30+80°C, -22+176°F-30+80°C, -22+176°FProtection ratingIP65/67 in screwed condition (according to IEC 60529)IP65/67 in screwed condition (according to IEC 60529)	Body material	TPU, UL 94	TPU, UL 94	
Contact carrier color Contact carrier material TPU GF, UL 94 TPU GF, UL 94 Contact plating Ni, Au gal. Ni, Au gal. CuZn CuZn CuZn Environmental data Special features	Coupling nut material	CuZn, Ni	CuZn, Ni	
Contact carrier material TPU GF, UL 94 TPU GF, UL 94 Ni, Au gal. Contact plating CuZn CuZn CuZn Environmental data Special features	Seal	FPM	FPM	
Contact plating Ni, Au gal. CuZn CuZn Environmental data Special features - 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) -30+80°C, -22+176°F -30+80°C, -22+176°F Protection rating IP65/67 in screwed condition (according to IEC 60529) IP65/29)	Contact carrier color	green	green	
Contact material CuZn CuZn Environmental data CuZn Fee, flame-resistant as per IFC 60322-1-2, oil-resistant as per OIN EN 60811-2-1 See Country CuZn CuCn CuZn CuZ	Contact carrier material	TPU GF, UL 94	TPU GF, UL 94	
Environmental data Special features - 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) -30+80°C, -22+176°F Protection rating IP65/67 in screwed condition (according to IEC 60529) IP65/29)	Contact plating	Ni, Au gal.	Ni, Au gal.	
Special features - 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) -30+80°C, -22+176°F -30+80°C, -22+176°F Protection rating IP65/67 in screwed condition (according to IEC 60529) IP65/29)	Contact material	CuZn	CuZn	
Special features - IEC 60332-1-2, oil-resistant as per DIN EN 60811-2-1 RoHS compliant yes yes Ambient temperature (operation) -30+80°C, -22+176°F Protection rating IP65/67 in screwed condition (according to IEC 60529) IP65/29) IEC 60529	Environmental data			
Ambient temperature (operation) -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)	Special features	-	IEC 60332-1-2, oil-resistant as per	
Protection rating IP65/67 in screwed condition (according to IEC 60529) IP65/67 in screwed condition (according to IEC 60529)	RoHS compliant	yes	yes	
IEC 60529) IEC 60529)	Ambient temperature (operation)	-30+80°C, -22+176°F	-30+80°C, -22+176°F	
Pollution level 3/2 (according to IEC 60664-1) 3/2 (according to IEC 60664-1)	Protection rating	——————————————————————————————————————	_	
	Pollution level	3/2 (according to IEC 60664-1)	3/2 (according to IEC 60664-1)	

Cable

Electrical data	
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
Mechanical data	



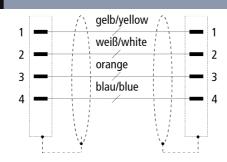
Cable structure (Ethernet)	star quad
Conductor construction (Ethernet)	19 x 0.1 mm
Cross-section (Ethernet)	1 x 4 x 0.14 mm ² (AWG26)
Outer cable diameter	5.4 mm ± 0.3 mm (0.213" ±0.0118")
Min. bending radius, moved	20 x outer cable diameter
Min. bending radius, fixed installation	4 x outer cable diameter
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 ²
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
Environmental data	
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

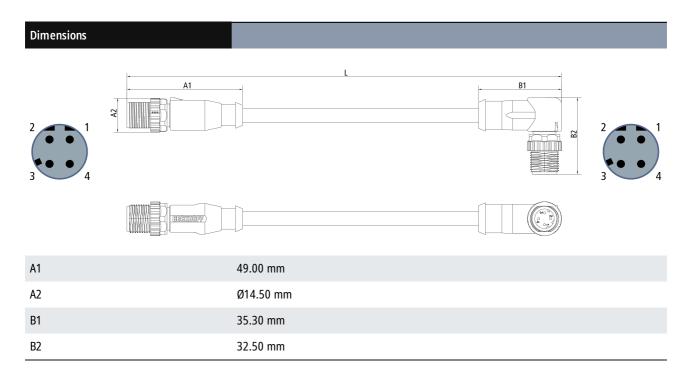
Attenuation



Max. insertio	n 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	d crosstalk atte	nuation						
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





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: \pm 40 mm | \geq 4.0 m: \pm 1%
- Illustrations similar
- Further cable length on request.



CE, UL	
CE	yes

Ordering information	Length
ZK1093-6163-4030	3.00 m

Accessories	
ZB8801-0000	torque wrench for hexagonal plugs, adjustable
ZB8801-0002	torque cable key, M12/wrench size 13, for ZB8801-0000



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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