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Network cable, PROFINET CAT5 (100 Mbps), 4-position, PE-X halogen-free, black, shielded, Plug straight M12 SPEEDCON / IP65, coding: D, on Plug straight M12 SPEEDCON / IP65, coding: D, cable length: 4.8 m, Product tested according to customer specification/rail application



Key Commercial Data

Packing unit	1 pc
Minimum order quantity	50 pc
GTIN	4 055626 274461
GTIN	4055626274461
Weight per Piece (excluding packing)	350.130 g
Custom tariff number	85444290
Country of origin	Poland
Note	Made to Order (non-returnable)

Technical data

Dimensions

Length of cable	4.8 m
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General data

Note	The cable is 100% electrically tested for continuity.
Rated current at 40°C	4 A
Rated voltage	48 V AC
	60 V DC
Number of positions	4
Signal type/category	PROFINET CAT5 (IEC 11801), 100 Mbps
Standards/regulations	M12 connector IEC 61076-2-101
Overvoltage category	II
Degree of pollution	3

Characteristics head 1



Technical data

Characteristics head 1

Head type	Plug straight M12 SPEEDCON / IP65
No. of positions (pin connector pattern)	4
Coding	D (Data)
Color	black
Material (component)	CuSn (Contact)
	Ni/Au (Contact surface)
	PA (Contact carriers)
	TPU, hardly inflammable, self-extinguishing (Grip)
	Zinc die-cast, nickel-plated (Screw connection)
Shielded	yes
Insulation resistance	≥ 100 MΩ
Test voltage	500 V DC ±15 V DC (for 60 s, insulation resistance according to DIN EN 60512-3-1)
	1.4 kV AC (for 60 s, dielectric strength according to DIN EN 60512-4-1)
Insertion/withdrawal cycles	≥ 100 (Quantity: 500 with Phoenix Contact mating connector)
Torque	0.4 Nm
Ambient temperature (operation)	-40 °C 90 °C
Weight	10 g ±5 g

Characteristics head 2

Head type	Plug straight M12 SPEEDCON / IP65
No. of positions (pin connector pattern)	4
Coding	D (Data)
Color	black
Material (component)	CuSn (Contact)
	Ni/Au (Contact surface)
	PA (Contact carriers)
	TPU, hardly inflammable, self-extinguishing (Grip)
	Zinc die-cast, nickel-plated (Screw connection)
Shielded	yes
Insulation resistance	≥ 100 MΩ
Test voltage	500 V DC ±15 V DC (for 60 s, insulation resistance according to DIN EN 60512-3-1)
	1.4 kV AC (for 60 s, dielectric strength according to DIN EN 60512-4-1)
Insertion/withdrawal cycles	≥ 100 (Quantity: 500 with Phoenix Contact mating connector)
Torque	0.4 Nm
Ambient temperature (operation)	-40 °C 90 °C
Weight	10 g ±5 g

Standards and Regulations

Standard designation	M12 connector
Standards/regulations	IEC 61076-2-101



Technical data

Standards and Regulations

Cable type PROFINET railway applications Cable type (abbreviation) 939 Signal type/category PROFINET CATS (IEC 11801), 100 Mbps Cable structure 1x4xAWG22/7: SF/TQ Conductor cross section 4x 0.34 mm² AVO signal line 22 Core diameter including insulation 1.4 mm ±0.1 mm Wire colors white-blue, crange-yellow Overall twist Star quad Shielding Auminum-lined polyester foil, tinned copper braided shield External sheath, color black Outer sheath hickness 1 mm External sheath pickness 1 mm External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, fixed installation 6 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Timplated Cu litz wires Insulation resistance < 5 GP/km	Flammability rating according to UL 94	V0
Cable type (abbreviation) 939 Signal type/category PROFINET CATS (IEC 11801), 100 Mbps Cable structure 1x4xAWG22/T; SF/TQ Conductor cross section 4x 0.34 mm² AWG signal line 22 Conductor structure signal line 7x 0.25 mm Core diameter including insulation 1.4 mm ±0.1 mm Wire colors white-blue, orange-yellow Overall twist Star quad Shielding Aluminum-lined polyester foil, tinned copper braided shield External shath, color black Outer sheath thickness 1 mm External stable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, fixed installation 5 x D Tensile strength GRP ≤ 60 N (temporary) ≤ 15 N (Permanent) Cubure sheath, material Cubic evight 71 kg/km Outers sheath, material PE X Material conductor insulation Cull PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GU*m Cable capac	Cable	
Signal type/category PROFINET CAT5 (IEC 11801), 100 Mbps Cable structure 1x4xAWG227; SFTTQ Conductor cross section 4x 0.34 mm² AWG signal line 22 Core diameter including insulation 1.4 mm ±0.1 mm Wire colors white-blue, orange-yellow Overall twist Star quad Sheldling Aluminum-lined polyester foil, tinned copper braided sheld External sheath, color black Cuter sheath thickness 1 mm External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, flexible installation 5 x D Minimum bending radius, flexible installation 5 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≤ 5 Ω Cl km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (wit 1 MHz)	Cable type	PROFINET railway applications
Cable structure 1x4xAWG22/7: SFTTQ Conductor cross section 4x 0.34 mm² AWG signal line 22 Conductor structure signal line 7x 0.25 mm Core diameter including insulation 1.4 mm ±0.1 mm Wire colors white-blue, orange-yellow Overall twist Star quad Shielding Aluminum-lined polyester foil, tinned copper braided shield External sheath, color black Outer sheath thickness 1 mm External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, fixed installation 6 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tim-plated Cu litz wires Insulation resistance ≤ 5 GΩ*km Conductor resistance ≤ 5 GΩ*km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (f = 100 MHz) Near end crosstalk attenuation (N	Cable type (abbreviation)	939
Conductor cross section 4x 0.34 mm² AWG signal line 22 Conductor structure signal line 7x 0.25 mm Core diameter including insulation 1.4 mm ±0.1 mm Wire colors white-blue, orange-yellow Overall twist Star quad Shielding Aluminum-lined polyester foll, tinned copper braided shield External sheath, color black Cuter sheath thickness 1 mm External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, fixed installation 6 x D Tensile strength GRP < 60 N (temporary)	Signal type/category	PROFINET CAT5 (IEC 11801), 100 Mbps
AWG signal line 22 Conductor structure signal line 7x 0.25 mm Core diameter including insulation 1.4 mm ±0.1 mm Wire colors white-blue, orange-yellow Overall twist Star quad Shielding Aluminum-lined polyester foll, tinned copper braided shield External sheath, color black Outer sheath thickness 1 mm External acible diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, fixed installation 6 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≤ 5 GC/km Conductor resistance ≤ 5 GC/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (fe = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) Age and crosstalk attenuation (NEXT) 52 dB (at 62.5 MHz)	Cable structure	1x4xAWG22/7; SF/TQ
Conductor structure signal line 7x 0.25 mm Core diameter including insulation 1.4 mm ±0.1 mm Wire colors white-blue, orange-yellow Overall twist Star quad Shielding Aluminum-lined polyester foil, tinned copper braided shield External sheath, color black Outer sheath thickness 1 mm External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, fixed installation 6 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Cuter sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≤ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Conductor resistance ≤ 54.4 Ω/km Conductor resistance ≤ 54.4 Ω/km Conductor resistance ≤ 60 lk (with 1 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) Near end crosstalk attenuation (NEXT) 64 dB (at 100 MHz) <td>Conductor cross section</td> <td>4x 0.34 mm²</td>	Conductor cross section	4x 0.34 mm²
Core diameter including insulation 1.4 mm ±0.1 mm Wire colors white-blue, orange-yellow Overall twist Star quad Shielding Aluminum-lined polyester foil, tinned copper braided shield External sheath, color black Outer sheath thickness 1 mm External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, flexible installation 6 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≤ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 4 dB (at 10 MHz) 56 dB (at 1 5 MHz) 5 dB (at 62.5 MHz) 45 dB (at 100 MHz) 4 dB (at 200 MHz) 42 dB (at 200 MHz)	AWG signal line	22
Wire colors white-blue, orange-yellow Overall twist Star quad Shielding Aluminum-lined polyester foil, tinned copper braided shield External sheath, color black Outer sheath thickness 1 mm External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, flexible installation 6 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GΩ*km Conductor resistance ≤ 54 4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ±5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 60 dB (at 16 MHz) 66 dB (at 10 MHz) 60 dB (at 15 MHz) 48 dB (at 100 MHz) 60 dB (at 155 MHz) 45 dB (at 155 MHz) 42 dB (at 100 MHz) 45 dB (at 155 MHz) 60 dB	Conductor structure signal line	7x 0.25 mm
Overall twist Star quad Shielding Aluminum-lined polyester foil, tinned copper braided shield External sheath, color black Outer sheath thickness 1 mm External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, fixed installation 6 x D Tensile strength GRP ≤ 60 N (temporary) ≤ 15 N (Permanent) € 50 N (temporary) Cable weight 71 kg/km Outer sheath, material PEX Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 6 d B (at 10 MHz) 60 dB (at 16 MHz) 6 d B (at 16 MHz) 52 dB (at 25 MHz) 48 dB (at 100 MHz) 45 dB (at 156 MHz) 6 dB (at 16 MHz) 45 dB (at 156 MHz) 6 dB (at 16	Core diameter including insulation	1.4 mm ±0.1 mm
Shielding Aluminum-lined polyester foil, tinned copper braided shield External sheath, color black Outer sheath thickness 1 mm External cable diameter D 6.6 mm ± 0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, flexible installation 6 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≤ 5 GΩ*km Conductor resistance ≤ 5 4.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 64 dB (at 10 MHz) 64 dB (at 10 MHz) 65 dB (at 3.125 MHz) 48 dB (at 25 MHz) 42 dB (at 200 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)	Wire colors	white-blue, orange-yellow
External sheath, color black Outer sheath thickness 1 mm External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, fixeb installation 6 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GΩ*km Conductor resistance ≤ 54 4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (* = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) For dB (at 4 MHz) 60 dB (at 16 MHz) 56 dB (at 2.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 60 dB (at 4 MHz) 68 dB (at 4 MHz)	Overall twist	Star quad
Outer sheath thickness 1 mm External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, flexible installation 6 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 4 dB (at 10 MHz) 60 dB (at 16 MHz) 5 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 4 dB (at 100 MHz) 48 dB (at 100 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 6 dB (at 4 MHz) 68 dB (at 4 MHz)	Shielding	Aluminum-lined polyester foil, tinned copper braided shield
External cable diameter D 6.6 mm ±0.2 mm Minimum bending radius, fixed installation 5 x D Minimum bending radius, flexible installation 6 x D Tensile strength GRP ≤ 60 N (temporary) ≤ 15 N (Permanent) Cable weight Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 64 dB (at 40 MHz) 64 dB (at 100 MHz) 65 dB (at 81.25 MHz) 52 dB (at 62.5 MHz) 64 dB (at 100 MHz) 45 dB (at 155 MHz) 64 dB (at 100 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)	External sheath, color	black
Minimum bending radius, fixed installation 5 x D Minimum bending radius, flexible installation 6 x D Tensile strength GRP ≤ 60 N (temporary) ≤ 15 N (Permanent) Cable weight Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≤ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 64 dB (at 40 MHz) 64 dB (at 10 MHz) 65 dB (at 8 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)	Outer sheath thickness	1 mm
Minimum bending radius, flexible installation 6 x D Tensile strength GRP ≤ 60 N (temporary) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 4 dB (at 10 MHz) 60 dB (at 4 6 MHz) 56 dB (at 31.25 MHz) 56 dB (at 31.25 MHz) 48 dB (at 100 MHz) 48 dB (at 100 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 60 dB (at 4 MHz) 68 dB (at 4 MHz)	External cable diameter D	6.6 mm ±0.2 mm
Tensile strength GRP ≤ 60 N (temporary) ≤ 15 N (Permanent) Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ±5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 4 dB (at 4 MHz) 64 dB (at 100 MHz) 6 dB (at 13.25 MHz) 52 dB (at 62.5 MHz) 4 dB (at 100 MHz) 48 dB (at 100 MHz) 4 dB (at 125 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)	Minimum bending radius, fixed installation	5 x D
Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ±5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 71 dB (at 4 MHz) 64 dB (at 10 MHz) 60 dB (at 16 MHz) 56 dB (at 31.25 MHz) 64 dB (at 100 MHz) 48 dB (at 100 MHz) 64 dB (at 100 MHz) 45 dB (at 155 MHz) 65 dB (at 200 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)	Minimum bending radius, flexible installation	6 x D
Cable weight 71 kg/km Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω±5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 64 dB (at 10 MHz) 64 dB (at 10 MHz) 65 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)	Tensile strength GRP	≤ 60 N (temporary)
Outer sheath, material PE-X Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 GΩ*km Conductor resistance ≤ 54.4 Ω/km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ± 5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 1 dB (at 4 MHz) 64 dB (at 10 MHz) 6 dB (at 16 MHz) 56 dB (at 31.25 MHz) 5 dB (at 62.5 MHz) 48 dB (at 100 MHz) 4 dB (at 100 MHz) 45 dB (at 155 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)		≤ 15 N (Permanent)
Material conductor insulation Cell PE Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 Ω *km Conductor resistance ≤ 54.4 Ω /km Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ±5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 71 dB (at 4 MHz) 64 dB (at 10 MHz) 60 dB (at 16 MHz) 56 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)	Cable weight	71 kg/km
Conductor material Tin-plated Cu litz wires Insulation resistance ≥ 5 $GΩ^*km$ Conductor resistance ≤ 54.4 $Ω/km$ Cable capacity 44 nF/km (core-core) Wave impedance 100 $Ω ± 5 Ω (f = 100 MHz)$ Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 64 dB (at 4 MHz) 64 dB (at 10 MHz) 60 dB (at 16 MHz) 66 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)	Outer sheath, material	PE-X
Insulation resistance≥ 5 GΩ*kmConductor resistance≤ 54.4 Ω /kmCable capacity44 nF/km (core-core)Wave impedance $100 \Omega \pm 5 \Omega$ (f = 100 MHz)Near end crosstalk attenuation (NEXT)76 dB (with 1 MHz)71 dB (at 4 MHz)64 dB (at 10 MHz)60 dB (at 16 MHz)60 dB (at 16 MHz)56 dB (at 31.25 MHz)52 dB (at 62.5 MHz)48 dB (at 100 MHz)48 dB (at 100 MHz)45 dB (at 155 MHz)42 dB (at 200 MHz)Power-summated near end crosstalk attenuation (PSNEXT)73 dB (with 1 MHz)68 dB (at 4 MHz)	Material conductor insulation	Cell PE
Conductor resistance $≤ 54.4 \ \Omega/km$ Cable capacity $44 \ nF/km$ (core-core) Wave impedance $100 \ \Omega \pm 5 \ \Omega$ (f = $100 \ MHz$) Near end crosstalk attenuation (NEXT) $76 \ dB$ (with $1 \ MHz$) $71 \ dB$ (at $4 \ MHz$) $64 \ dB$ (at $10 \ MHz$) $60 \ dB$ (at $10 \ MHz$) $60 \ dB$ (at $16 \ MHz$) $60 \ dB$ (at $16 \ MHz$) $60 \ dB$ (at $10 \ MHz$)	Conductor material	Tin-plated Cu litz wires
Cable capacity 44 nF/km (core-core) Wave impedance 100 Ω ±5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 71 dB (at 4 MHz) 64 dB (at 10 MHz) 60 dB (at 16 MHz) 60 dB (at 31.25 MHz) 56 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)	Insulation resistance	≥ 5 GΩ*km
Wave impedance 100 Ω ±5 Ω (f = 100 MHz) Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 71 dB (at 4 MHz) 64 dB (at 10 MHz) 60 dB (at 16 MHz) 60 dB (at 16 MHz) 56 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz) 68 dB (at 4 MHz)	Conductor resistance	≤ 54.4 Ω/km
Near end crosstalk attenuation (NEXT) 76 dB (with 1 MHz) 71 dB (at 4 MHz) 64 dB (at 10 MHz) 60 dB (at 16 MHz) 60 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz)	Cable capacity	44 nF/km (core-core)
71 dB (at 4 MHz) 64 dB (at 10 MHz) 60 dB (at 16 MHz) 56 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz)	Wave impedance	100 Ω ±5 Ω (f = 100 MHz)
64 dB (at 10 MHz) 60 dB (at 16 MHz) 56 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz)	Near end crosstalk attenuation (NEXT)	76 dB (with 1 MHz)
60 dB (at 16 MHz) 56 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz)		71 dB (at 4 MHz)
56 dB (at 31.25 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz)		64 dB (at 10 MHz)
52 dB (at 62.5 MHz) 48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz)		60 dB (at 16 MHz)
48 dB (at 100 MHz) 45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz)		56 dB (at 31.25 MHz)
45 dB (at 155 MHz) 42 dB (at 200 MHz) Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz)		52 dB (at 62.5 MHz)
Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz)		48 dB (at 100 MHz)
Power-summated near end crosstalk attenuation (PSNEXT) 73 dB (with 1 MHz) 68 dB (at 4 MHz)		45 dB (at 155 MHz)
68 dB (at 4 MHz)		42 dB (at 200 MHz)
	Power-summated near end crosstalk attenuation (PSNEXT)	73 dB (with 1 MHz)
61 dB (at 10 MHz)		68 dB (at 4 MHz)
		61 dB (at 10 MHz)



Technical data

Cable

53 dB 49 dB 45 dB 42 dB 39 dB Attenuation 1.5 dB 3.3 dB 5.3 dB 6.9 dB 9.9 dB 14.5 dI 18.8 dI 23.6 dI	(at 16 MHz) (at 31.25 MHz) (at 62.5 MHz) (at 100 MHz) (at 155 MHz) (at 200 MHz) (at 4 MHz) (at 10 MHz) (at 4 MHz) (at 4 MHz) (at 4 MHz) (at 4 MHz) (at 10 MHz)
49 dB 45 dB 42 dB 39 dB Attenuation 1.5 dB 3.3 dB 5.3 dB 6.9 dB 9.9 dB 14.5 d 18.8 d 23.6 d 27.3 d	(at 62.5 MHz) (at 100 MHz) (at 155 MHz) (at 200 MHz) (at 4 MHz) (at 4 MHz) (at 16 MHz) (at 16 MHz) (at 16 MHz) (at 16 MHz) (at 31.25 MHz) (at 100 MHz) (at 100 MHz) (at 4 MHz) (at 4 MHz) (at 4 MHz) (with 1 MHz) (at 4 MHz) (at 4 MHz)
45 dB 42 dB 39 dB Attenuation 1.5 dB 3.3 dB 5.3 dB 6.9 dB 9.9 dB 14.5 dl 18.8 dl 23.6 dl	(at 100 MHz) (at 155 MHz) (at 200 MHz) (at 4 MHz) (at 4 MHz) (at 10 MHz) (at 10 MHz) (at 16 MHz) (at 31.25 MHz) (at 31.25 MHz) (at 100 MHz) (at 100 MHz) (at 4 MHz) (with 1 MHz) (with 1 MHz) (at 4 MHz) (at 4 MHz)
42 dB 39 dB Attenuation 1.5 dB 3.3 dB 5.3 dB 6.9 dB 9.9 dB 14.5 dl 18.8 dl 23.6 dl 27.3 dl	(at 155 MHz) (at 200 MHz) (at 200 MHz) (at 4 MHz) (at 4 MHz) (at 10 MHz) (at 16 MHz) (at 31.25 MHz) (at 31.25 MHz) (at 100 MHz) (at 100 MHz) (at 4 MHz) (with 1 MHz) (at 4 MHz) (at 4 MHz)
39 dB Attenuation 1.5 dB 3.3 dB 5.3 dB 6.9 dB 9.9 dB 14.5 d 18.8 dl 23.6 dl	(at 200 MHz) B (with 1 MHz) B (at 4 MHz) B (at 10 MHz) B (at 16 MHz) B (at 31.25 MHz) B (at 62.5 MHz) B (at 100 MHz) B (at 155 MHz) B (at 200 MHz) (with 1 MHz) (at 4 MHz)
Attenuation 1.5 dB 3.3 dB 5.3 dB 5.3 dB 6.9 dB 9.9 dB 14.5 dl 18.8 dl 23.6 dl 27.3 dl	B (with 1 MHz) B (at 4 MHz) B (at 10 MHz) B (at 16 MHz) B (at 31.25 MHz) B (at 62.5 MHz) B (at 100 MHz) B (at 155 MHz) B (at 200 MHz) (with 1 MHz) (at 4 MHz)
3.3 dB 5.3 dB 6.9 dB 9.9 dB 14.5 d 18.8 d 23.6 d 27.3 d	B (at 4 MHz) B (at 10 MHz) B (at 16 MHz) B (at 31.25 MHz) B (at 62.5 MHz) B (at 100 MHz) B (at 155 MHz) B (at 200 MHz) (with 1 MHz) (at 4 MHz)
5.3 dB 6.9 dB 9.9 dB 14.5 dl 18.8 dl 23.6 dl	B (at 10 MHz) B (at 16 MHz) B (at 31.25 MHz) B (at 62.5 MHz) B (at 100 MHz) B (at 155 MHz) B (at 200 MHz) (with 1 MHz) (at 4 MHz)
6.9 dB 9.9 dB 14.5 dl 18.8 dl 23.6 dl 27.3 dl	B (at 16 MHz) B (at 31.25 MHz) B (at 62.5 MHz) B (at 100 MHz) B (at 155 MHz) B (at 200 MHz) (with 1 MHz) (at 4 MHz)
9.9 dB 14.5 dl 18.8 dl 23.6 dl 27.3 dl	B (at 31.25 MHz) B (at 62.5 MHz) B (at 100 MHz) B (at 155 MHz) B (at 200 MHz) (with 1 MHz) (at 4 MHz)
14.5 dl 18.8 dl 23.6 dl 27.3 dl	B (at 62.5 MHz) B (at 100 MHz) B (at 155 MHz) B (at 200 MHz) (with 1 MHz) (at 4 MHz)
18.8 dl 23.6 dl 27.3 dl	B (at 100 MHz) B (at 155 MHz) B (at 200 MHz) (with 1 MHz) (at 4 MHz)
23.6 dl 27.3 dl	B (at 155 MHz) B (at 200 MHz) (with 1 MHz) (at 4 MHz)
27.3 dl	B (at 200 MHz) (with 1 MHz) (at 4 MHz)
	(with 1 MHz) (at 4 MHz)
	(at 4 MHz)
Return loss (RL) 25 dB	
25 dB	(at 10 MHz)
28 dB	
28 dB	(at 16 MHz)
27 dB	(at 31.25 MHz)
26 dB	(at 62.5 MHz)
25 dB	(at 100 MHz)
25 dB	(at 155 MHz)
23 dB	(at 200 MHz)
Signal speed 0.75 c	
Signal runtime 4.4 ns/	/m
Shield attenuation 60 dB	(up to 1000 MHz)
Coupling resistance < 13.0	0 mΩ/m (f = 1 MHz)
< 8.00	mΩ/m (f = 10 MHz 100 MHz)
Cable impedance 100Ω	±15 Ω (f = 0.5 MHz 3 MHz)
Nominal voltage, cable 125 V	
Test voltage Core/Core 1000 \	V AC (50 Hz, 1 min.)
Test voltage Core/Shield 1000 \	V AC (50 Hz, 1 min.)
Fire protection in rail vehicles BS 688	53 (Internal cable Ia, Ib, II/external cable Ia, Ib, II)
DIN 55	510-2 (Fire protection level 1, 2, 3, 4)
EN 45.	545-2 (Risk level HL1 - HL3)
EN 503	306-4
NF F1	6-101 (Classification C/F1)
NF F1	6-101 (Internal cable A1, A2, B/external cable A1, A2, B)
NFPA	130



Technical data

Cable

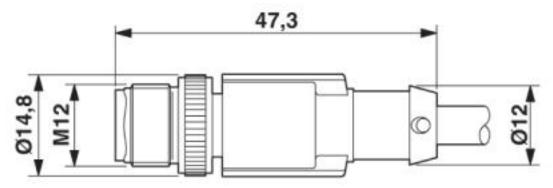
	PN-K-02511
	UIC 564-2 (Class A)
Flame resistance	according to EN 60332-1-2
	according to EN 50266-2-5
	according to ISO 14572 5.21 (UN ECE-R 118.01)
Halogen-free	According to EN 50267-2-1
	according to EN 60684-2
Resistance to oil	according to EN 60684-2, 72 h at 100 °C, IRM 902
Other resistance	Resistant to fuel according to EN 60684-2, 72 h at 100 °C, IRM 903
	Resistant to ozone according to EN 50306-4, 72 h at 40 $^{\circ}$ C, procedure B, volume concentration 200 x 10 $^{\circ}$
Concentration of fumes	EN 61034-2
Ambient temperature (operation)	-40 °C 85 °C (cable, fixed installation)
	-25 °C 70 °C (cable, flexible installation)

Environmental Product Compliance

China RoHS	Environmentally friendly use period: unlimited = EFUP-e
	No hazardous substances above threshold values

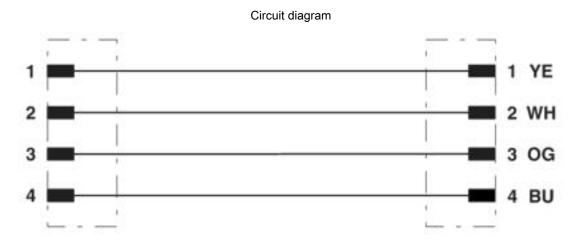
Drawings

Dimensional drawing

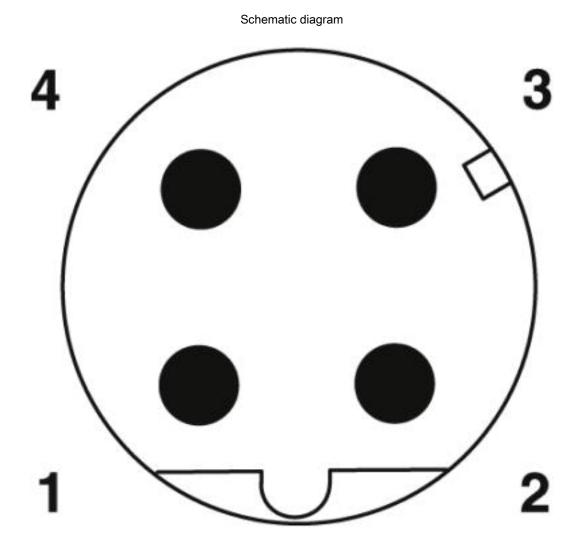


M12 SPEEDCON plug, straight, shielded





Contact assignment of the M12 plugs



Pin assignment M12 male connector, 4-pos., D-coded, male side



Cable cross section



PROFINET railway applications [939]

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