

# NBC-MSD/ 5,0-937/MSD SCO RAIL - Network cable



1407343

<https://www.phoenixcontact.com/us/products/1407343>

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Network cable, PROFINET CAT5 (100 Mbps), Ethernet CAT5 (100 Mbps), 4-position, shielded, Plug straight M12 SPEEDCON, coding: D / IP65, on Plug straight M12 SPEEDCON, coding: D / IP65, cable length: 5 m, For railway applications

## Your advantages

- Easy and safe: 100 % electrically tested plug-in components
- Securely locked by special vibration brake
- Resistant to temperature influences – tested for an extended temperature range and for resistance to temperature shocks
- Reliable signal transmission – 360° shielding in environments with electromagnetic interference

## Commercial data

Item number	1407343
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	BF04
Product key	BF1CJN
Catalog page	Page 133 (C-4-2013)
GTIN	4046356774598
Weight per piece (including packing)	353 g
Weight per piece (excluding packing)	353 g
Customs tariff number	85444290
Country of origin	PL

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## Technical data

### Notes

General	Further products with variable cable type and variable cable length can be found in the accessories section
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### Product properties

Product type	Data cable preassembled
Sensor type	PROFINET
Number of positions	4
Application	Railway applications
No. of cable outlets	1
Shielded	yes
Coding	D

### Insulation characteristics

Overvoltage category	II
Degree of pollution	3

### Interfaces

Bus system	PROFINET
	Ethernet
Signal type/category	PROFINET CAT5 (IEC 11801), 100 Mbps
	Ethernet CAT5 (IEC 11801), 100 Mbps

### Signaling

Status display	No
Status display present	No

### Electrical properties

Nominal voltage $U_N$	48 V AC
	60 V DC
Nominal current $I_N$	4 A
Transmission medium	Copper
Transmission characteristics (category)	CAT5 (IEC 11801:2002)

### Material specifications

Flammability rating according to UL 94	V0
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### Connector

#### Connection 1

Type	Plug straight M12 SPEEDCON / IP65
Number of positions	4
Locking type	SPEEDCON

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Coding type	D (Data)
Shielded	yes
Handle color	black
Material	CuSn (Contact) Ni/Au (Contact surface) PA 6.6 (Contact carriers) PA 6.6 (Grip) Zinc die-cast, nickel-plated (Screw connection)
Standards/regulations	PA 6.6: Fire protection in rail vehicles - requirement sets R22, R23, and R24 acc. to DIN EN 45545-2 (Risk level HL1 - HL3)
Insertion/withdrawal cycles	≥ 100
Contact resistance	≤ 5 mΩ
Insulation resistance	≥ 100 MΩ
Tightening torque	0.4 Nm
Degree of protection	IP65
Ambient temperature (operation)	-40 °C ... 85 °C

## Connection 2

Type	Plug straight M12 SPEEDCON / IP65
Number of positions	4
Locking type	SPEEDCON
Coding type	D (Data)
Shielded	yes
Handle color	black
Material	CuSn (Contact) Ni/Au (Contact surface) PA 6.6 (Contact carriers) PA 6.6 (Grip) Zinc die-cast, nickel-plated (Screw connection)
Standards/regulations	PA 6.6: Fire protection in rail vehicles - requirement sets R22, R23, and R24 acc. to DIN EN 45545-2 (Risk level HL1 - HL3)
Insertion/withdrawal cycles	≥ 100
Contact resistance	≤ 5 mΩ
Insulation resistance	≥ 100 MΩ
Tightening torque	0.4 Nm
Degree of protection	IP65
Ambient temperature (operation)	-40 °C ... 85 °C

## Cable/line

Cable length	5 m
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PROFINET RADOX<sup>®</sup> railway application CAT5 [937]

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Dimensional drawing	
Cable weight	70 kg/km
Number of positions	4
Shielded	yes
Cable type	PROFINET RADOX <sup>®</sup> railway application CAT5 [937]
Conductor structure	1x4xAWG22/7, SF/TQ
Signal speed	75 c
Conductor structure signal line	7x 0.25 mm
AWG signal line	22
Conductor cross section	4x 0.34 mm <sup>2</sup>
Wire diameter incl. insulation	approx. 1.5 mm
External cable diameter	6.6 mm ±0.4 mm
Outer sheath, material	PE-X
External sheath, color	black RAL 9005
Conductor material	silver-plated Cu litz wires
Material wire insulation	Foamed PE
Single wire, color	white-blue, orange-yellow
Thickness, outer sheath	approx. 1 mm
Overall twist	Star quad
Max. conductor resistance	≤ 54.4 Ω/km
Coupling resistance	200.00 mΩ/m (f ≤ 30 MHz)
Wave impedance	100 Ω ±5 Ω (f = 100 MHz)
Working capacitance	≤ 65 pF (Line-line) ≤ 100 pF (Line-shield)
Nominal voltage, cable	300 V AC
Test voltage	2000 V AC (50 Hz, 5 minutes)
Minimum bending radius, fixed installation	6 x D
Smallest bending radius, fixed installation	40 mm
Near end crosstalk attenuation (NEXT)	73 dB (with 1 MHz) 70 dB (at 4 MHz) 65 dB (at 10 MHz) 57 dB (at 31.5 MHz) 52 dB (at 62.5 MHz) 48 dB (at 100 MHz)
Return attenuation (RL)	25 dB (at 4 MHz) 30 dB (at 10 MHz) 30 dB (at 31.5 MHz)

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	30 dB (at 62.5 MHz)
	28 dB (at 100 MHz)
Remote crosstalk attenuation (FEXT)	78 dB (with 1 MHz)
	77 dB (at 4 MHz)
	70 dB (at 10 MHz)
	65 dB (at 31.5 MHz)
	56 dB (at 62.5 MHz)
	48 dB (at 100 MHz)
Shield attenuation	2 dB (with 1 MHz)
	4.4 dB (at 4 MHz)
	7.4 dB (at 10 MHz)
	14 dB (at 31.5 MHz)
	20 dB (at 62.5 MHz)
	26 dB (at 100 MHz)
	40 dB (30 MHz ≤ f ≤ 100 MHz)
Halogen-free	in accordance with EN 50267-2-1
Flame resistance	EN 60332-1-2
	EN 50266
	EN 60332-3-25
	NF C32-070, 2.1
	NF C32-070, 2.2
	UL 1685, 12 (FT4)
	in accordance with ISO 6722-1 5.22 (UN ECE-R 118.01)
Fume corrosiveness	EN 50267-2-2
Fume toxicity	BS 6853 B.1
	EN 50305, 9.2
Concentration of fumes	BS 6853 D.8.7
	EN 61034-2
	UL 1685, 12 (FT4)
Resistance to oil	according to IRM 902, 72 h at 100 °C
Fire protection in rail vehicles	BS 6853 (Category Ia, Ib, II)
	GM/RT 2130 (Category Ia, Ib, II)
	EN 45545 (Risk level HL1 - HL3)
	DIN 5510 (Fire protection level 1, 2, 3, 4)
	NF F16-101 (Category A1, A2, B)
	NF F16-101 (Class C/F0)
	NFPA 130
	UNI CEI 11170 (Risk level LR1 - LR4)
Other resistance	Resistance to fuels (according to IRM 903, 168 h at 70 °C)
Ambient temperature (operation)	-50 °C ... 90 °C (cable, fixed installation)
	-40 °C ... 90 °C (Cable, flexible installation)
Ambient temperature (installation)	-25 °C ... 90 °C

## Environmental and real-life conditions

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## Ambient conditions

Degree of protection	IP65
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## Standards and regulations

### M12

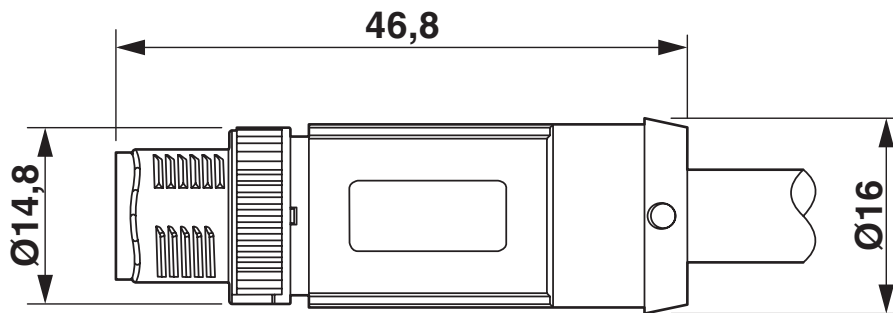
Standard designation	M12 connector
Standards/specifications	IEC 61076-2-101
Standard designation	Shock, vibration
Standards/specifications	EN 50155

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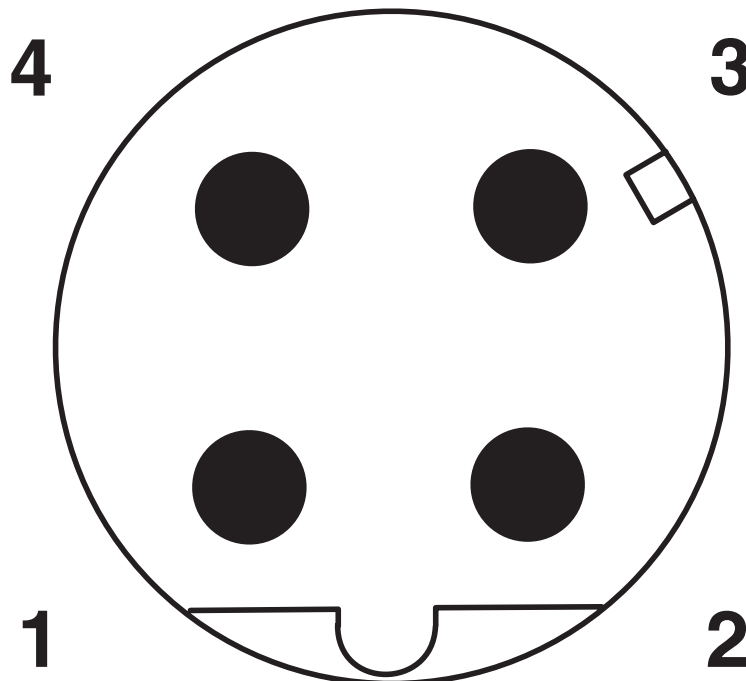
## Drawings

Dimensional drawing



M12 SPEEDCON plug, straight, shielded

Schematic diagram

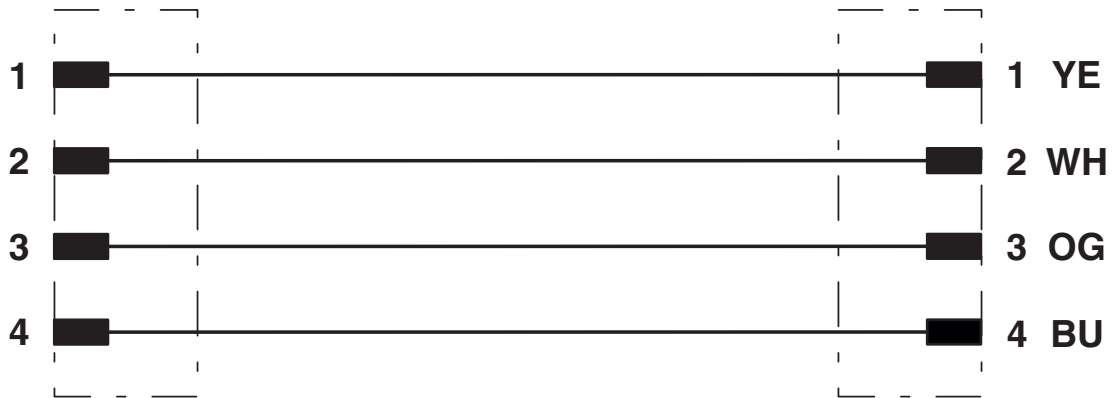


Pin assignment M12 male connector, 4-pos., D-coded, male side

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Circuit diagram



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1407343>



**EAC-RoHS**

Approval ID: RU D-DE.HB35.B.00387

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## Classifications

### ECLASS

ECLASS-11.0	27060307
ECLASS-12.0	27060307
ECLASS-13.0	27060307

### ETIM

ETIM 9.0	EC001855
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### UNSPSC

UNSPSC 21.0	26121600
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## Environmental product compliance

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

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## Accessories

### NBC-MSD SCO RAIL/.../... - Network cable

1412178

<https://www.phoenixcontact.com/us/products/1412178>



Network cable, PROFINET CAT5 (100 Mbps), Ethernet CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug straight M12 SPEEDCON, coding: D / IP65, on free cable end, cable length: Free input (0.2 ... 40.0 m), For railway applications

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1412179

<https://www.phoenixcontact.com/us/products/1412179>



Network cable, PROFINET CAT5 (100 Mbps), Ethernet CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug angled M12 SPEEDCON, coding: D / IP65, on free cable end, cable length: Free input (0.2 ... 40.0 m), For railway applications

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### NBC-MSD-MSD SCO RAIL/.../... - Network cable

1412177

<https://www.phoenixcontact.com/us/products/1412177>



Network cable, PROFINET CAT5 (100 Mbps), Ethernet CAT5 (100 Mbps), 4-position, Variable cable type, shielded, Plug straight M12 SPEEDCON, coding: D / IP65, on Plug straight M12 SPEEDCON, coding: D / IP65, cable length: Free input (0.2 ... 40.0 m), For railway applications

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### NBC-FSD SCO RAIL/.../... - Network cable

1412181

<https://www.phoenixcontact.com/us/products/1412181>



Network cable, PROFINET CAT5 (100 Mbps), Ethernet CAT5 (100 Mbps), 4-position, Variable cable type, shielded, free cable end, on Socket straight M12 SPEEDCON, coding: D / IP65, cable length: Free input (0.2 ... 40.0 m), For railway applications

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## PROT-M12 FS-PA-CHAIN - Sealing cap

1430873

<https://www.phoenixcontact.com/us/products/1430873>

M12 sealing cap made of plastic with fixing band, for sensor cables, for free M12 plugs



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## SAC-M12-EXCLIP-M - Locking clip

1558988

<https://www.phoenixcontact.com/us/products/1558988>

Locking clip for the pin side of sensor/actuator cables with M12 connector and M12 connectors for assembly, for knurl diameter: 15 mm or for Allen key with a wrench size of 14 mm, prevents the disconnection of plug-in connections without tools



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## KMK HP (25X6) - Cable marker carrier

0830720

<https://www.phoenixcontact.com/us/products/0830720>

Cable marker carrier, transparent, unlabeled, mounting type: Assembly with cable ties, cable diameter:  $\geq 6$  mm, lettering field size: 25 x 6 mm



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## KMK HP (29X8) - Cable marker carrier

0830721

<https://www.phoenixcontact.com/us/products/0830721>

Cable marker carrier, transparent, unlabeled, mounting type: Assembly with cable ties, cable diameter:  $\geq 6$  mm, lettering field size: 29 x 8 mm



# NBC-MSD/ 5,0-937/MSD SCO RAIL - Network cable



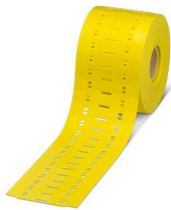
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## WMTB HF (40X12)R YE - Cable marker

0830408

<https://www.phoenixcontact.com/us/products/0830408>



Cable marker, Roll, yellow, unlabeled, can be labeled with: THERMOMARK E. 300 (D)/600 (D), THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, mounting type: Assembly with cable ties, cable diameter:  $\geq 6$  mm, lettering field size: 40 x 12 mm, Number of individual labels: 1000

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## WMTB HF (55X15)R YE - Cable marker

0830410

<https://www.phoenixcontact.com/us/products/0830410>



Cable marker, Roll, yellow, unlabeled, can be labeled with: THERMOMARK E. 300 (D)/600 (D), THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, mounting type: Assembly with cable ties, cable diameter:  $\geq 6$  mm, lettering field size: 55 x 15 mm, Number of individual labels: 1000

# NBC-MSD/ 5,0-937/MSD SCO RAIL - Network cable



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## WMTB HF (55X25)R YE - Cable marker

0830412

<https://www.phoenixcontact.com/us/products/0830412>



Cable marker, Roll, yellow, unlabeled, can be labeled with: THERMOMARK E. 300 (D)/600 (D), THERMOMARK ROLL 2.0, THERMOMARK ROLL, THERMOMARK ROLL X1, THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, mounting type: Assembly with cable ties, cable diameter:  $\geq 6$  mm, lettering field size: 55 x 25 mm, Number of individual labels: 500

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## UCT-WMCO 5,4 (23X8) - Wire marking

0832105

<https://www.phoenixcontact.com/us/products/0832105>



Wire marking, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: clip on, cable diameter range: 4.7 ... 5.4 mm, lettering field size: 23 x 8 mm, Number of individual labels: 18

# NBC-MSD/ 5,0-937/MSD SCO RAIL - Network cable



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## UCT-WMCO 6,1 (23X8) - Wire marking

0832106

<https://www.phoenixcontact.com/us/products/0832106>



Wire marking, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: clip on, cable diameter range: 5.4 ... 6.1 mm, lettering field size: 23 x 8 mm, Number of individual labels: 18

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## UCT-WMCO 6,8 (23X8) - Wire marking

0832107

<https://www.phoenixcontact.com/us/products/0832107>



Wire marking, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: clip on, cable diameter range: 6.1 ... 6.8 mm, lettering field size: 23 x 8 mm, Number of individual labels: 15

# NBC-MSD/ 5,0-937/MSD SCO RAIL - Network cable



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## UCT-WMCO 7,5 (23X8) - Wire marking

0832108

<https://www.phoenixcontact.com/us/products/0832108>



Wire marking, Sheet, white, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, THERMOMARK PRIME, THERMOMARK CARD 2.0, THERMOMARK CARD, mounting type: clip on, cable diameter range: 6.8 ... 7.5 mm, lettering field size: 23 x 8 mm, Number of individual labels: 15

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## WMTB-AL (40X15) - Cable marker

0830524

<https://www.phoenixcontact.com/us/products/0830524>



Cable marker, Aluminum label, aluminum color, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, mounting type: Assembly with cable ties, cable diameter: > 4.6 mm, lettering field size: 40 x 15 mm

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## WMTB-AL (60X15) - Cable marker

0830525

<https://www.phoenixcontact.com/us/products/0830525>



Cable marker, Aluminum label, aluminum color, unlabeled, can be labeled with: BLUEMARK ID COLOR, BLUEMARK ID, BLUEMARK CLED, mounting type: Assembly with cable ties, cable diameter: > 4.6 mm, lettering field size: 60 x 15 mm

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## LS-WMTB-AL (40X15) - Cable marker

0831501

<https://www.phoenixcontact.com/us/products/0831501>



Cable marker, Aluminum label, aluminum color, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: Assembly with cable ties, cable diameter: > 4.6 mm, lettering field size: 40 x 15 mm, Number of individual labels: 16

# NBC-MSD/ 5,0-937/MSD SCO RAIL - Network cable



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## LS-WMTB-AL (40X15) BK - Cable marker

0831509

<https://www.phoenixcontact.com/us/products/0831509>



Cable marker, Aluminum label, black, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: Assembly with cable ties, cable diameter: > 4.6 mm, lettering field size: 40 x 15 mm, Number of individual labels: 16

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## LS-WMTB-AL (60X15) - Cable marker

0831502

<https://www.phoenixcontact.com/us/products/0831502>



Cable marker, Aluminum label, aluminum color, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: Assembly with cable ties, cable diameter: > 4.6 mm, lettering field size: 60 x 15 mm, Number of individual labels: 16

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## LS-WMTB-AL (60X15) BK - Cable marker

0831510

<https://www.phoenixcontact.com/us/products/0831510>

Cable marker, Aluminum label, black, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: Assembly with cable ties, cable diameter: > 4.6 mm, lettering field size: 60 x 15 mm, Number of individual labels: 16



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## LS-WMTB-AL (100X15) - Cable marker

0831503

<https://www.phoenixcontact.com/us/products/0831503>

Cable marker, Aluminum label, aluminum color, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: Assembly with cable ties, cable diameter: > 4.6 mm, lettering field size: 100 x 15 mm, Number of individual labels: 8



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## LS-WMTB-AL (100X15) BK - Cable marker

0831511

<https://www.phoenixcontact.com/us/products/0831511>

Cable marker, Aluminum label, black, unlabeled, can be labeled with: TOPMARK NEO, TOPMARK LASER, mounting type: Assembly with cable ties, cable diameter: > 4.6 mm, lettering field size: 100 x 15 mm, Number of individual labels: 8



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## TSD 04 SAC - Torque screwdriver

1208429

<https://www.phoenixcontact.com/us/products/1208429>

Torque screwdriver, with preset torque of 0.4 Nm and 4 mm hexagonal drive for M12 connectors



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## TSD-M 1,2NM - Torque screwdriver

1212224

<https://www.phoenixcontact.com/us/products/1212224>



Torque screw driver, accuracy as per EN ISO 6789 standard, adjustable from 0.3 - 1.2 Nm

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## TSD-M SAC-BIT ADAPTER - Adapter insert

1212600

<https://www.phoenixcontact.com/us/products/1212600>



Adapter bit for TSD-M...torque tools, E6.3-1/4" drive with 4 mm hexagon to accommodate SAC bits

# NBC-MSD/ 5,0-937/MSD SCO RAIL - Network cable



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## SAC BIT M12-D15 - Tool

1208432

<https://www.phoenixcontact.com/us/products/1208432>



Nut for assembling sensor/actuator cables with M12 connector and M12 connectors for assembly, with a knurl diameter of 15 mm, for 4 mm hexagonal drive

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## B-STIFT - Marker pen

1051993

<https://www.phoenixcontact.com/us/products/1051993>



Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm

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