

SAC-5P-MS/ 2,0-28R/FS SCO RAIL - Sensor/actuator cable



1407337

<https://www.phoenixcontact.com/us/products/1407337>

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Sensor/actuator cable, 5-position, PE-X halogen-free, black, shielded, Plug straight M12 SPEEDCON, coding: A, on Socket straight M12 SPEEDCON, coding: A, cable length: 2 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	1407337
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	BF03
Product key	BF1CDA
Catalog page	Page 132 (C-4-2013)
GTIN	4046356774536
Weight per piece (including packing)	168.1 g
Weight per piece (excluding packing)	174.1 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	Sensor/actuator cable
Application	Railway applications
Number of positions	5
No. of cable outlets	1
Shielded	yes
Coding	A

Insulation characteristics

Overvoltage category	II
Degree of pollution	3

Material specifications

Flammability rating according to UL 94	V0
Seal material	NBR
Material of grip body	PA 6.6
Contact material	CuSn
Contact surface material	Ni/Au
Contact carrier material	PA 6.6
Material for screw connection	Zinc die-cast, nickel-plated

Electrical properties

Insulation resistance	$\geq 100 \text{ M}\Omega$
Nominal voltage U_N	48 V AC
	60 V DC
Nominal current I_N	4 A

Mechanical properties

Mechanical data

Insertion/withdrawal cycles	≥ 100
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Signaling

Status display	No
Status display present	No

Connection data

Conductor connection

Tightening torque	0.4 Nm (M12 connector)
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Connector

Connection 1

Type	Plug straight M12 SPEEDCON
Number of positions	5
Locking type	SPEEDCON
Coding type	A

Connection 2

Type	Socket straight M12 SPEEDCON
Number of positions	5
Locking type	SPEEDCON
Coding type	A

Cable/line

Cable length	2 m
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Shielded black RADOX® [28R]

Dimensional drawing	
Cable weight	70 kg/km
Number of positions	5
Shielded	yes
Cable type	Shielded black RADOX® [28R]
Conductor structure signal line	19x 0.18 mm
AWG signal line	20
Conductor cross section	5x 0.5 mm²
Wire diameter incl. insulation	1.43 mm
External cable diameter	6.20 mm ±0.3 mm
Outer sheath, material	PE-X
External sheath, color	black
Conductor material	Tin-plated Cu litz wires
Material wire insulation	PE-X
Single wire, color	white 1, white 2, white 3, white 4, white 5
Overall twist	5 cores, twisted
Max. conductor resistance	≤ 40.1 Ω/km
Nominal voltage, cable	600 V AC (Core-ground, U ₀) 1000 V AC (Core-ground, U)

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	≤ 720 V AC (core-ground)
	≤ 1200 V AC (Core-ground, U _m)
	≤ 900 V DC (Core-ground, V ₀)
	≤ 1500 V DC (Line-line)
Test voltage	3500 V AC (50 Hz, 5 min.)
	8400 V DC (50 Hz, 5 min.)
Minimum bending radius, fixed installation	3 x D
Minimum bending radius, flexible installation	4 x D
Smallest bending radius, fixed installation	19 mm
Smallest bending radius, movable installation	25 mm
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 ... 120 °C (cable, fixed installation)
	-25 °C ... 90 °C (Cable, flexible installation)

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP65
Ambient temperature (operation)	-40 °C ... 85 °C (Plug / socket)

Standards and regulations

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M12

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

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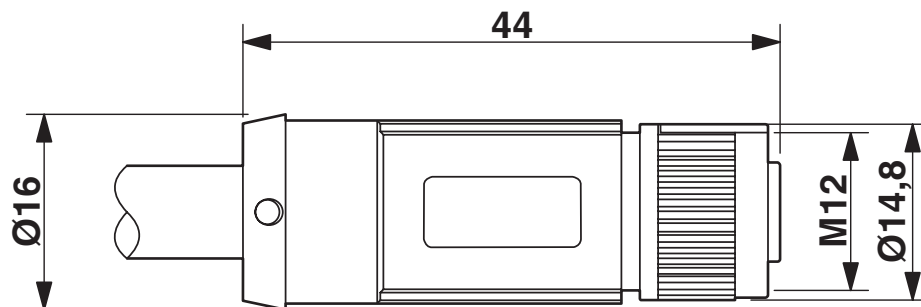
<https://www.phoenixcontact.com/us/products/1407337>

Drawings

Circuit diagram



Dimensional drawing



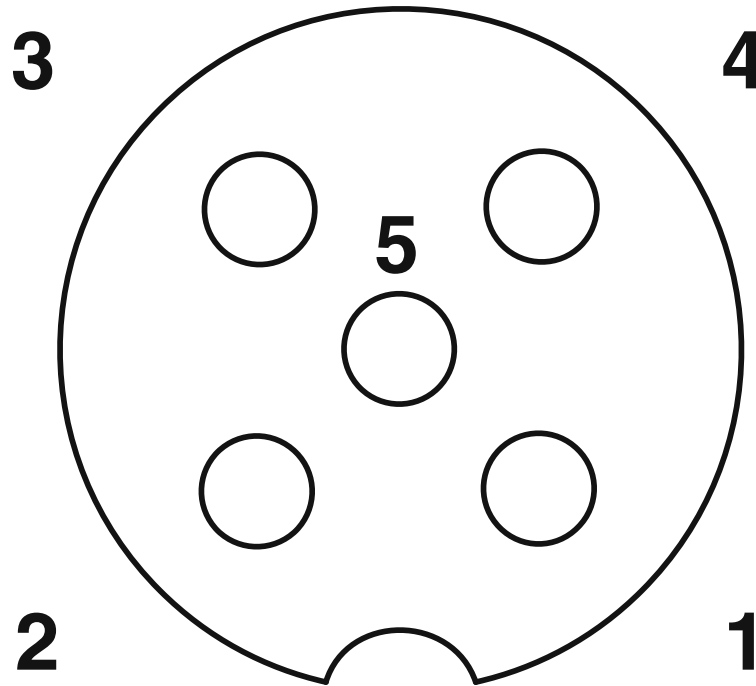
Socket M12-SPEEDCON, straight, shielded

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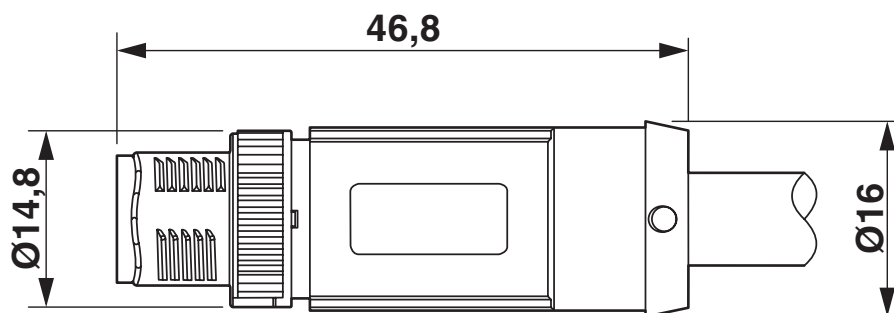
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Schematic diagram



Pin assignment M12 socket, 5-pos., A-coded, socket side view

Dimensional drawing



M12 SPEEDCON plug, straight, shielded

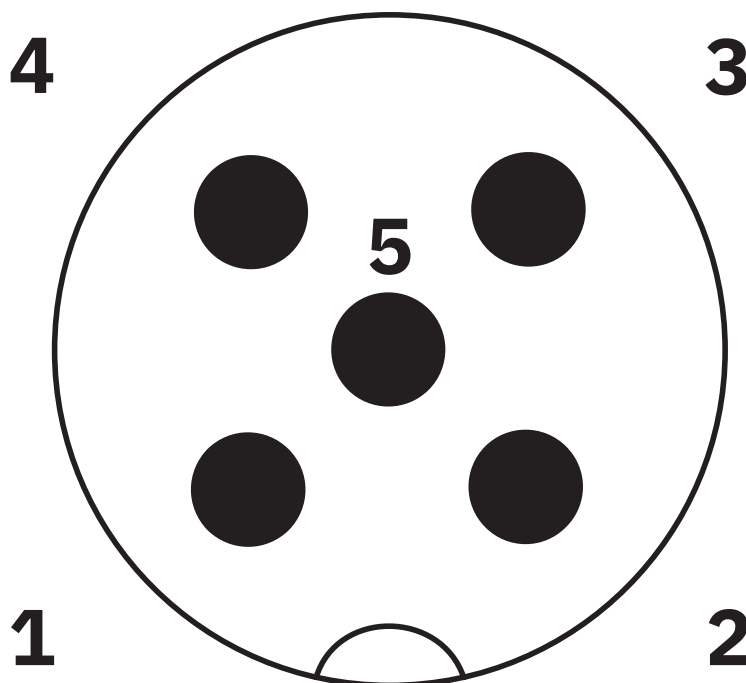
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Schematic diagram



Pin assignment M12 male connector, 5-pos., A-coded, male side

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Approvals

📄 To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1407337>



EAC-RoHS

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

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Classifications

ECLASS

ECLASS-11.0	27060311
ECLASS-12.0	27060311
ECLASS-13.0	27060311

ETIM

ETIM 9.0	EC001855
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UNSPSC

UNSPSC 21.0	26121600
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Environmental product compliance

EU RoHS	
Fulfills EU RoHS substance requirements	Yes, No exemptions
China RoHS	
Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits
EU REACH SVHC	
REACH candidate substance (CAS No.)	6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol(CAS: 119-47-1)
SCIP	c9529007-8f2d-4a00-8b42-ec6ff9da3c38

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Accessories

SAC-5P-MR SCO RAIL/.../... - Sensor/actuator cable

1412175

<https://www.phoenixcontact.com/us/products/1412175>



Sensor/actuator cable, 5-position, shielded, Plug angled M12 SPEEDCON, coding: A, on free cable end, cable length: Free input (0.2 ... 40.0 m), For railway applications

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1412172

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Sensor/actuator cable, 5-position, shielded, free cable end, on Socket straight M12 SPEEDCON, coding: A, cable length: Free input (0.2 ... 40.0 m), For railway applications

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SAC-5P-FR SCO RAIL/.../... - Sensor/actuator cable

1412173

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Sensor/actuator cable, 5-position, shielded, free cable end, on Socket angled M12 SPEEDCON, coding: A, cable length: Free input (0.2 ... 40.0 m), For railway applications

SAC-5P-MS-FS SCO RAIL/.../... - Sensor/actuator cable

1412176

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Sensor/actuator cable, 5-position, shielded, Plug straight M12 SPEEDCON, coding: A, on Socket straight M12 SPEEDCON, coding: A, 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



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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PROT-M12 MS-PA-CHAIN - Screw plug

1430899

<https://www.phoenixcontact.com/us/products/1430899>

M12 sealing cap with fixing band, for sensor cables, for free M12 sockets



SAC-M12-EXCLIP-F - Locking clip

1558991

<https://www.phoenixcontact.com/us/products/1558991>

Locking clip for the socket 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: ≥ 6 mm, lettering field size: 25 x 6 mm



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: ≥ 6 mm, lettering field size: 29 x 8 mm



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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: ≥ 6 mm, lettering field size: 40 x 12 mm, Number of individual labels: 1000

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: ≥ 6 mm, lettering field size: 55 x 15 mm, Number of individual labels: 1000

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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: ≥ 6 mm, lettering field size: 55 x 25 mm, Number of individual labels: 500

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

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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

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

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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

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

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

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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

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

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

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

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

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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

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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