

Sensor/actuator cable - SAC-5P-MS/ 2,0-28R/FS SCO RAIL - 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
- ✓ Safety thanks to flame retardancy: PA 6.6 grip and radiation-cross-linked cables satisfy the most stringent requirements
- ✓ 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



Key Commercial Data

| | |
|--------------|---|
| Packing unit | 1 pc |
| GTIN |  4 046356 774536 |
| GTIN | 4046356774536 |

Technical data

Dimensions

| | |
|-----------------|-----|
| Length of cable | 2 m |
|-----------------|-----|

Ambient conditions

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

General

| | |
|-----------------------|---|
| Note | Further products with variable cable type and variable cable length can be found in the accessories section |
| Rated current at 40°C | 4 A |
| Rated voltage | 48 V AC |
| | 60 V DC |
| Number of positions | 5 |

Sensor/actuator cable - SAC-5P-MS/ 2,0-28R/FS SCO RAIL - 1407337

Technical data

General

| | |
|------------------------------|-------------------------------|
| Color handle area | black |
| Insulation resistance | ≥ 100 MΩ |
| Coding | A - standard |
| Standards/regulations | M12 connector IEC 61076-2-101 |
| | Shock, vibration EN 50155 |
| Status display | No |
| Protective circuit/component | unwired |
| Overvoltage category | II |
| Degree of pollution | 3 |
| Insertion/withdrawal cycles | ≥ 100 |
| Torque | 0.4 Nm (M12 connector) |

Material

| | |
|--|---|
| Flammability rating according to UL 94 | V0 |
| Contact material | CuSn |
| Contact surface material | Ni/Au |
| Contact carrier material | PA 6.6 |
| Material of grip body | PA 6.6 |
| Material, knurls | Zinc die-cast, nickel-plated |
| Sealing material | NBR |
| 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) |

Standards and Regulations

| | |
|--|-------------------------------|
| Standards/specifications | M12 connector IEC 61076-2-101 |
| | Shock, vibration EN 50155 |
| Flammability rating according to UL 94 | V0 |
| Standards/regulations | acc. to DIN EN 45545-2 |

Cable

| | |
|--|---|
| Cable type | Shielded black RADOX® |
| Cable type (abbreviation) | 28R |
| Conductor cross section | 5x 0.5 mm ² |
| AWG signal line | 20 |
| Conductor structure signal line | 19x 0.18 mm |
| Core diameter including insulation | 1.43 mm |
| Wire colors | White 1, white 2, white 3, white 4, white 5 |
| Overall twist | 5 cores, twisted |
| Shielding | Tinned copper braided shield |
| External sheath, color | black |
| External cable diameter D | 6.2 mm ±0.3 mm |
| Minimum bending radius, fixed installation | 3 x D |

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Technical data

Cable

| | |
|---|--|
| Minimum bending radius, flexible installation | 4 x D |
| Cable weight | 70 kg/km |
| Outer sheath, material | PE-X |
| Material conductor insulation | PE-X |
| Conductor material | Tin-plated Cu litz wires |
| Conductor resistance | ≤ 40.1 Ω/km |
| Nominal voltage, cable | 600 V AC (Core-ground, U ₀) |
| | 1000 V AC (Core-ground, U) |
| | ≤ 720 V AC (core-ground) |
| | ≤ 1200 V AC (Core-ground, U _m) |
| | ≤ 900 V DC (Core-ground, V ₀) |
| | ≤ 1500 V DC (core-core) |
| Test voltage, cable | 3500 V AC (50 Hz, 5 min.) |
| | 8400 V DC (50 Hz, 5 min.) |
| 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) |
| 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) |
| Halogen-free | According to EN 50267-2-1 |
| Resistance to oil | according to IRM 902, 72 h at 100 °C |
| Other resistance | Resistance to fuels according to IRM 903, 168 h at 70 °C |
| Concentration of fumes | BS 6853 D.8.7 |
| | EN 61034-2 |
| | UL 1685, 12 (FT4) |
| Fume corrosiveness | EN 50267-2-2 |
| Fume toxicity | BS 6853 B.1 |
| | EN 50305, 9.2 |
| Ambient temperature (operation) | -50 °C ... 120 °C (cable, fixed installation) |
| | -25 °C ... 90 °C (cable, flexible installation) |

Sensor/actuator cable - SAC-5P-MS/ 2,0-28R/FS SCO RAIL - 1407337

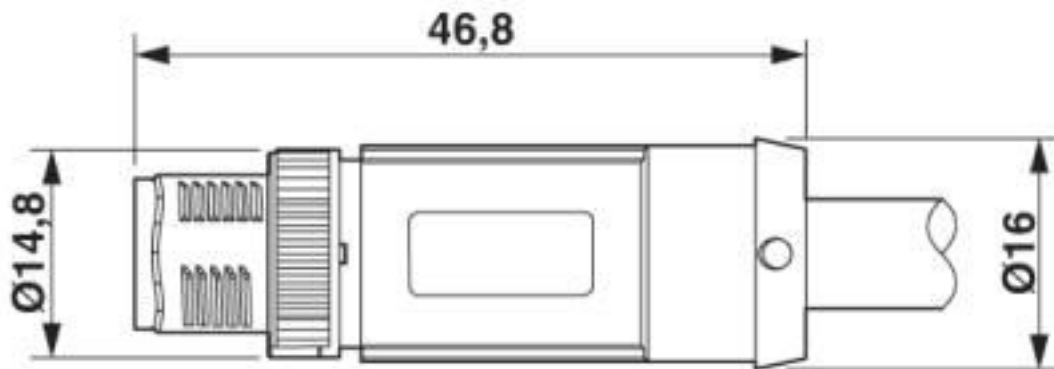
Technical data

Environmental Product Compliance

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

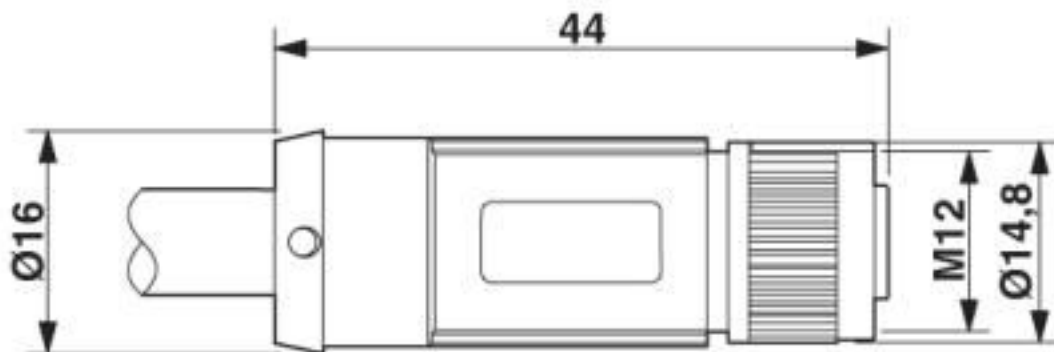
Drawings

Dimensional drawing



M12 SPEEDCON plug, straight, shielded

Dimensional drawing



Socket M12-SPEEDCON, straight, shielded

Sensor/actuator cable - SAC-5P-MS/ 2,0-28R/FS SCO RAIL - 1407337

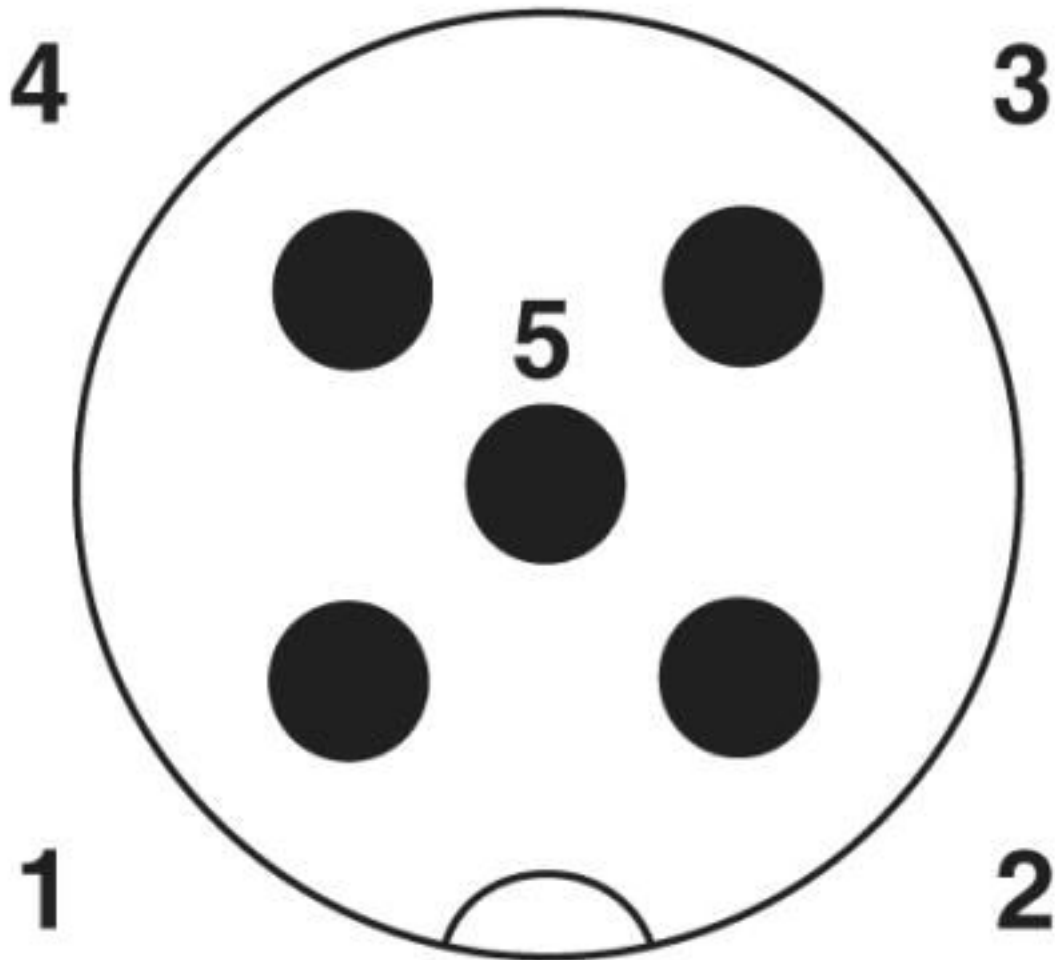
Circuit diagram



Contact assignment of the M12 plug and the M12 socket

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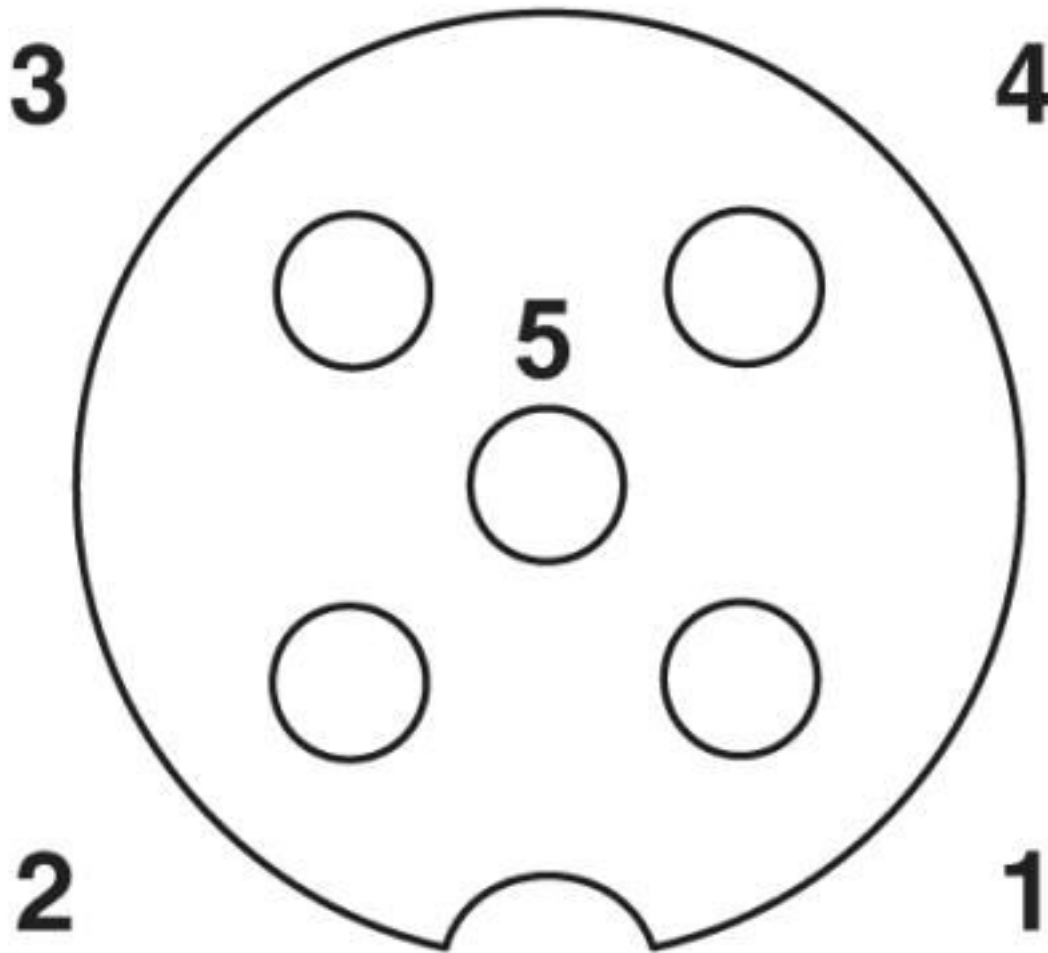
Schematic diagram



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

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Schematic diagram



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

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Cable cross section



Shielded black RADOX® [28R]

Classifications

eCl@ss

| | |
|---------------|----------|
| eCl@ss 10.0.1 | 27060311 |
| eCl@ss 4.0 | 27060300 |
| eCl@ss 4.1 | 27060300 |
| eCl@ss 5.0 | 27061800 |
| eCl@ss 5.1 | 27061800 |
| eCl@ss 6.0 | 27279200 |
| eCl@ss 7.0 | 27279218 |
| eCl@ss 8.0 | 27279218 |
| eCl@ss 9.0 | 27060311 |

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Classifications

ETIM

| | |
|----------|----------|
| ETIM 3.0 | EC001855 |
| ETIM 4.0 | EC001855 |
| ETIM 5.0 | EC001855 |
| ETIM 6.0 | EC001855 |
| ETIM 7.0 | EC001855 |

UNSPSC

| | |
|---------------|----------|
| UNSPSC 6.01 | 31251501 |
| UNSPSC 7.0901 | 31251501 |
| UNSPSC 11 | 31251501 |
| UNSPSC 12.01 | 31251501 |
| UNSPSC 13.2 | 31251501 |
| UNSPSC 19.0 | 31251501 |
| UNSPSC 20.0 | 31251501 |
| UNSPSC 21.0 | 31251501 |

Approvals

Approvals

Approvals

EAC-RoHS / EAC

Ex Approvals

Approval details

| | | |
|----------|--|--------------------------|
| EAC-RoHS | | RU D- DE.HB35.B.00387 |
|----------|--|--------------------------|

| | | |
|-----|--|--------------------------|
| EAC | | RU C- DE.BL08.B.00286 |
|-----|--|--------------------------|

Accessories

Accessories

Conductor marking

Sensor/actuator cable - SAC-5P-MS/ 2,0-28R/FS SCO RAIL - 1407337

Accessories

Cable marker - WMTB HF (40X12)R YE - 0830408



Cable marker, Roll, yellow, unlabeled, can be labeled with: THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, THERMOMARK ROLL X1, THERMOMARK ROLL 2.0, THERMOMARK ROLL, mounting type: Assembly with cable binders, cable diameter: ≥ 6 mm, lettering field size: 40 x 12 mm, Number of individual labels: 1000

Cable marker - WMTB HF (55X15)R YE - 0830410



Cable marker, Roll, yellow, unlabeled, can be labeled with: THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, THERMOMARK ROLL X1, THERMOMARK ROLL 2.0, THERMOMARK ROLL, mounting type: Assembly with cable binders, cable diameter: ≥ 6 mm, lettering field size: 55 x 15 mm, Number of individual labels: 1000

Cable marker - WMTB HF (55X25)R YE - 0830412



Cable marker, Roll, yellow, unlabeled, can be labeled with: THERMOMARK ROLLMASTER 300/600, THERMOMARK X1.2, THERMOMARK ROLL X1, THERMOMARK ROLL 2.0, THERMOMARK ROLL, mounting type: Assembly with cable binders, cable diameter: ≥ 6 mm, lettering field size: 55 x 25 mm, Number of individual labels: 500

Conductor marking - UCT-WMCO 5,4 (23X8) - 0832105



Conductor 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

Conductor marking - UCT-WMCO 6,1 (23X8) - 0832106



Conductor 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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Accessories

Conductor marking - UCT-WMCO 6,8 (23X8) - 0832107



Conductor 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

Conductor marking - UCT-WMCO 7,5 (23X8) - 0832108



Conductor 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

Cable marker - WMTB-AL (40X15) - 0830524



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

Cable marker - WMTB-AL (60X15) - 0830525



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

Cable marker - LS-WMTB-AL (40X15) - 0831501



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

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Accessories

Cable marker - LS-WMTB-AL (40X15) BK - 0831509



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

Cable marker - LS-WMTB-AL (60X15) - 0831502



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

Cable marker - LS-WMTB-AL (60X15) BK - 0831510



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

Cable marker - LS-WMTB-AL (100X15) - 0831503



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

Cable marker - LS-WMTB-AL (100X15) BK - 0831511



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

Marker carrier cable

Sensor/actuator cable - SAC-5P-MS/ 2,0-28R/FS SCO RAIL - 1407337

Accessories

Cable marker carrier - KMK HP (25X6) - 0830720



Cable marker carrier, transparent, unlabeled, mounting type: Assembly with cable binders, cable diameter: ≥ 6 mm, lettering field size: 25 mm x 6 mm

Cable marker carrier - KMK HP (29X8) - 0830721



Cable marker carrier, transparent, unlabeled, mounting type: Assembly with cable binders, cable diameter: ≥ 6 mm, lettering field size: 29 x 8 mm

Marker pen

Marker pen - B-STIFT - 1051993



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

Plug for cable screw gland

Screw plug - PROT-M12 MS-PA-CHAIN - 1430899

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



Protective cap

Sealing cap - PROT-M12 FS-PA-CHAIN - 1430873

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



Safety locking

Sensor/actuator cable - SAC-5P-MS/ 2,0-28R/FS SCO RAIL - 1407337

Accessories

Locking clip - SAC-M12-EXCLIP-M - 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

Locking clip - SAC-M12-EXCLIP-F - 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

Screwdriver tools

Adapter insert - TSD-M SAC-BIT ADAPTER - 1212600



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

Tool - SAC BIT M12-D15 - 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

Sensor/actuator cable

Sensor/actuator cable - SAC-5P-MS SCO RAIL/.../... - 1412174



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

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Accessories

Sensor/actuator cable - SAC-5P-MR SCO RAIL/.../... - 1412175



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

Sensor/actuator cable - SAC-5P-FS SCO RAIL/.../... - 1412172



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

Sensor/actuator cable - SAC-5P-FR SCO RAIL/.../... - 1412173



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

Sensor/actuator cable - SAC-5P-MS-FS SCO RAIL/.../... - 1412176



Sensor/actuator cable, 5-position, Variable cable type, 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

Torque tool

Torque screwdriver - TSD 04 SAC - 1208429



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

Sensor/actuator cable - SAC-5P-MS/ 2,0-28R/FS SCO RAIL - 1407337

Accessories

Torque screwdriver - TSD-M 1,2NM - 1212224



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

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