

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



Sensor/actuator cable, 3-position, Variable cable type, free cable end, on Socket straight M12, coding: A, PIN 2+4 bridged, cable length: Free input (0.2 ... 40.0 m)

Your advantages

- Easy and safe: 100 % electrically tested plug-in components
- Efficient integration of bridging functions directly in the connector

Commercial data

| | |
|------------------------|--------------------------------|
| Item number | 1696691 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Note | Made to order (non-returnable) |
| Sales key | BF17 |
| Product key | AF1CBA |
| Customs tariff number | 85444290 |
| Country of origin | PL |

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

Technical data

Product properties

| | |
|----------------------|------------------------|
| Product type | Sensor/actuator cable |
| Application | Standard |
| | Robots and drag chains |
| Number of positions | 3 |
| No. of cable outlets | 1 |
| Shielded | no |
| Coding | A |

Insulation characteristics

| | |
|----------------------|----|
| Overvoltage category | II |
| Degree of pollution | 3 |

Material specifications

| | |
|--|---|
| Flammability rating according to UL 94 | HB |
| Seal material | NBR |
| Material of grip body | TPU, hardly inflammable, self-extinguishing |
| Contact material | CuSn |
| Contact surface material | Ni/Au |
| Contact carrier material | TPU GF |
| Material for screw connection | Zinc die-cast, nickel-plated |

Electrical properties

| | |
|-----------------------|----------------------------|
| Insulation resistance | $\geq 100 \text{ M}\Omega$ |
| Nominal voltage U_N | 250 V AC |
| | 250 V DC |
| Nominal current I_N | 4 A |
| Test voltage | 2500 V |

Mechanical properties

Mechanical data

| | |
|-----------------------------|------------|
| Insertion/withdrawal cycles | ≥ 100 |
|-----------------------------|------------|

Signaling

| | |
|------------------------|----|
| Status display | no |
| Status display present | no |

Connection data

Conductor connection

| | |
|-------------------|------------------------|
| Tightening torque | 0.4 Nm (M12 connector) |
|-------------------|------------------------|

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

Connector

Connection 1

| | |
|------|----------------|
| Type | free cable end |
|------|----------------|

Connection 2

| | |
|-------------|---------------------|
| Type | Socket straight M12 |
| Coding type | A |

Cable/line

| | |
|--------------|-----------------------------|
| Cable length | Free input (0.2 ... 40.0 m) |
|--------------|-----------------------------|

PUR halogen-free black [PUR]

| | |
|---|---|
| Cable weight | 23 kg/km |
| UL AWM Style | 20549 |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PUR halogen-free black [PUR] PUR halogen-free black PUR |
| Conductor structure signal line | 42x 0.10 mm |
| AWG signal line | 22 |
| Conductor cross-section | 3x 0.34 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.27 mm ±0.02 mm (Signal line) |
| External cable diameter | 3.85 mm ±0.15 mm |
| Outer sheath, material | PUR |
| External sheath, color | black-gray RAL 7021 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PP |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.21 mm (Core insulation) approx. 0.50 mm (Outer cable sheath) |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 58 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 100 GΩ*km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage | ≥ 3000 V |
| Smallest bending radius, fixed installation | 19 mm |
| Smallest bending radius, movable installation | 38 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 10000000, Bending radius: 38 mm, Bending radius: 10 x D, Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s ² |
| Dynamic load capacity (torsion) | Torsion: ±180 °/m, Torsion cycles: ≥5000000, Torsional frequency: 35 cycles/min. |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |
| Flame resistance | in accordance with UL 758/1581 FT2 |

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

| | |
|---------------------------------|---|
| | DIN EN 60332-2-2 (20 s) |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Other resistance | Highly resistant to acids, alkaline solutions and solvents |
| | hydrolysis and microbe resistant |
| | partly UV-resistant (in accordance with DIN EN ISO 4892-2-A) |
| Special properties | Flexible cable conduit capable |
| | Silicone-free |
| | Free of substances which would hinder coating with paint or varnish |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) |
| | -25 °C ... 80 °C (Cable, flexible installation) |

PUR/PVC orange [110]

| | |
|---|---|
| Cable weight | 37 kg/km |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PUR/PVC orange [110] |
| | PUR/PVC orange 110 |
| Conductor structure signal line | 42x 0.10 mm |
| AWG signal line | 22 |
| Conductor cross-section | 0.34 mm ² |
| Wire diameter incl. insulation | 1.52 mm ±0.02 mm |
| External cable diameter | 5.2 mm |
| | 5.20 mm |
| Outer sheath, material | PUR |
| External sheath, color | orange RAL 2003 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PVC |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) |
| | ≥ 0.38 mm (Outer cable sheath) |
| | approx. 0.45 mm (Inner sheath) |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 57.3 Ω/km |
| Insulation resistance | ≥ 100 MΩ*km |
| Nominal voltage, cable | 300 V |
| Test voltage | 2500 V |
| Smallest bending radius, fixed installation | 52 mm |
| Smallest bending radius, movable installation | 52 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 2000000, Bending radius: 52 mm, Traversing path: 5 m, Traversing rate: 3 m/s |
| Ambient temperature (operation) | -25 °C ... 80 °C (cable, fixed installation) |
| | -5 °C ... 80 °C (Cable, flexible installation) |

PUR/PVC yellow [140]

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

| | |
|---|---|
| Cable weight | 37 kg/km |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PUR/PVC yellow [140] |
| | PUR/PVC yellow 140 |
| Conductor structure signal line | 42x 0.10 mm |
| AWG signal line | 22 |
| Conductor cross-section | 0.34 mm ² |
| Wire diameter incl. insulation | 1.52 mm ±0.02 mm |
| External cable diameter | 5.20 mm ±0.2 mm |
| Outer sheath, material | PUR |
| External sheath, color | yellow |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PVC |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) |
| | ≥ 0.38 mm (Outer cable sheath) |
| | approx. 0.45 mm (Inner sheath) |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 57.3 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 100 MΩ*km (at 20 °C) |
| Nominal voltage, cable | 300 V |
| Test voltage | 2500 V |
| Smallest bending radius, fixed installation | 52 mm |
| Smallest bending radius, movable installation | 52 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 2000000, Bending radius: 52 mm, Traversing path: 5 m, Traversing rate: 3 m/s |
| Ambient temperature (operation) | -25 °C ... 80 °C (cable, fixed installation) |
| | -5 °C ... 80 °C (Cable, flexible installation) |

PUR irradiated halogen-free orange [150]

| | |
|---------------------------------|--|
| Number of positions | 3 |
| Shielded | no |
| Cable type | PUR irradiated halogen-free orange [150] |
| | PUR irradiated halogen-free orange 150 |
| Conductor structure signal line | 42x 0.10 mm |
| AWG signal line | 22 |
| Conductor cross-section | 3x 0.34 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.05 mm ±0.05 mm (Signal line) |
| External cable diameter | 4.40 mm ±0.2 mm |
| Outer sheath, material | PUR |
| External sheath, color | orange RAL 2003 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PE |

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

| | |
|---|---|
| Single wire, color | brown, blue, black |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 57 Ω/km |
| Nominal voltage, cable | 250 V (AC) |
| Test voltage | 2000 V (50 Hz, 5 minutes) |
| Smallest bending radius, fixed installation | 13.5 mm |
| Smallest bending radius, movable installation | 53 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 5000000, Bending radius: 44 mm, Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s ² |
| Flame resistance | according to DIN VDE 0472 Part 804 |
| Other resistance | UV resistant |
| Special properties | Silicone-free |
| | Irradiated |
| Ambient temperature (operation) | -50 °C ... 105 °C (cable, fixed installation) |
| | -40 °C ... 105 °C (Cable, flexible installation) |

PUR halogen-free gray [280]

| | |
|---------------------------------|--|
| Cable weight | 26 kg/km |
| UL AWM Style | 20549 |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PUR halogen-free gray [280] |
| | PUR halogen-free gray 280 |
| Conductor structure signal line | 42x 0.10 mm |
| AWG signal line | 22 |
| Conductor cross-section | 0.34 mm ² |
| Wire diameter incl. insulation | 1.27 mm ±0.02 mm |
| External cable diameter | 4.40 mm ±0.15 mm |
| Outer sheath, material | PUR |
| External sheath, color | gray RAL 7001 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | TPE |
| Single wire, color | brown, blue, black |
| Thickness, insulation | 0.21 mm (Core insulation) |
| | approx. 0.80 mm (Outer cable sheath) |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 58 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 10 GΩ*km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage | ≥ 3000 V |
| Dynamic load capacity (bending) | Max. bending cycles: 10000000 |
| Dynamic load capacity (torsion) | Torsion: ±180 °/m, Torsion cycles: ≥5000000, Torsional frequency: 35 cycles/min. |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

| | |
|---|---|
| Ambient temperature (operation) | -25 °C ... 80 °C (cable, fixed installation) |
| PVC black [PVC] | |
| Cable weight | 40 kg/km |
| UL AWM Style | 2464 / 1729 (80°C/300 V) |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PVC black [PVC] PVC black PVC |
| Conductor structure signal line | 19x 0.15 mm |
| AWG signal line | 22 |
| Conductor cross-section | 3x 0.34 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.26 mm ±0.05 mm |
| External cable diameter | 4.30 mm ±0.2 mm |
| Outer sheath, material | PVC |
| External sheath, color | black RAL 9005 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PVC |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) |
| Thickness, outer sheath | ≥ 0.76 mm |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 57 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 100 MΩ*km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage | ≥ 2500 V |
| Minimum bending radius, fixed installation | 5 x D |
| Minimum bending radius, flexible installation | 10 x D |
| Smallest bending radius, fixed installation | 22 mm |
| Smallest bending radius, movable installation | 43 mm |
| Flame resistance | As per UL-Style 2464 |
| Ambient temperature (operation) | -25 °C ... 80 °C (cable, fixed installation) -10 °C ... 80 °C (Cable, flexible installation) |

PVC gray [500]

| | |
|---------------------------------|---------------------------------------|
| Cable weight | 40 kg/km |
| UL AWM Style | 2464 / 1729 (80°C/300 V) |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PVC gray [500] PVC gray 500 |
| Conductor structure signal line | 19x 0.15 mm |
| AWG signal line | 22 |
| Conductor cross-section | 3x 0.34 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.26 mm ±0.05 mm |

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

| | |
|---|---|
| External cable diameter | 4.30 mm ±0.2 mm |
| Outer sheath, material | PVC |
| External sheath, color | gray RAL 7001 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PVC |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) |
| Thickness, outer sheath | ≥ 0.76 mm |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 57 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 100 MΩ*km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage | ≥ 2500 V |
| Minimum bending radius, fixed installation | 5 x D |
| Minimum bending radius, flexible installation | 10 x D |
| Smallest bending radius, fixed installation | 22 mm |
| Smallest bending radius, movable installation | 43 mm |
| Flame resistance | As per UL-Style 2464 |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) -25 °C ... 80 °C (Cable, flexible installation) |

PVC yellow [540]

| | |
|---------------------------------|---|
| Cable weight | 40 kg/km |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PVC yellow [540] PVC yellow 540 |
| Conductor structure signal line | 42x 0.10 mm |
| AWG signal line | 22 |
| Conductor cross-section | 0.34 mm ² |
| Wire diameter incl. insulation | 1.45 mm ±0.05 mm |
| External cable diameter | 5.20 mm ±0.2 mm |
| Outer sheath, material | PVC |
| External sheath, color | yellow |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PVC |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) ≥ 0.76 mm (Outer cable sheath) |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 58 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 1 GΩ*km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage | ≥ 3000 V |

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

| | |
|---------------------------------|--|
| Flame resistance | As per UL-Style 2464 |
| Ambient temperature (operation) | -25 °C ... 80 °C (cable, fixed installation) |
| | -5 °C ... 80 °C (Cable, flexible installation) |

PVC yellow 105 °C [542]

| | |
|---------------------------------|---|
| Cable weight | 38 kg/km |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PVC yellow 105 °C [542] |
| | PVC yellow 105 °C 542 |
| Conductor structure signal line | 42x 0.10 mm |
| AWG signal line | 22 |
| Conductor cross-section | 0.34 mm ² |
| Wire diameter incl. insulation | 1.55 mm ±0.05 mm |
| External cable diameter | 5.20 mm ±0.2 mm |
| Outer sheath, material | PVC |
| External sheath, color | yellow |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PVC |
| Single wire, color | brown, blue, black |
| Thickness, insulation | ≥ 0.38 mm (Core insulation) |
| | ≥ 0.76 mm (Outer cable sheath) |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | max. 58 Ω/km (at 20 °C) |
| Insulation resistance | ≥ 100 MΩ*km (at 20 °C) |
| Nominal voltage, cable | 300 V |
| Test voltage | 4000 V |
| Flame resistance | according to DIN 50265-2-1 |
| Ambient temperature (operation) | -25 °C ... 105 °C (cable, fixed installation) |
| | -5 °C ... 105 °C (Cable, flexible installation) |

Gray, highly flexible PUR [800]

| | |
|---------------------------------|--|
| Note | Due to the extremely robust outer sheath, this cable should only be stripped in 5 cm increments. |
| Cable weight | 28.3 kg/km |
| UL AWM Style | 20549 |
| Number of positions | 3 |
| Shielded | no |
| Cable type | Gray, highly flexible PUR [800] |
| | Gray, highly flexible PUR 800 |
| Conductor structure signal line | 42x 0.10 mm |
| AWG signal line | 22 |
| Conductor cross-section | 3x 0.34 mm ² (Signal line) |
| Wire diameter incl. insulation | 1.3 mm ±0.05 mm (Signal line) |
| External cable diameter | 4.50 mm ±0.2 mm |

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

| | |
|---|---|
| Outer sheath, material | PUR |
| External sheath, color | gray RAL 7001 |
| Conductor material | Bare Cu litz wires |
| Material wire insulation | PP |
| Single wire, color | brown, blue, black |
| Overall twist | 3 wires, twisted |
| Max. conductor resistance | approx. 53 Ω/km |
| Insulation resistance | ≥ 20 MΩ*km |
| Nominal voltage, cable | 300 V |
| Test voltage | 2000 V |
| Minimum bending radius, fixed installation | 4 x D |
| Minimum bending radius, flexible installation | 7.5 x D |
| Smallest bending radius, fixed installation | 18 mm |
| Smallest bending radius, movable installation | 34 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 10000000, Bending radius: 7,5 x D, Traversing path: 5 m, Traversing rate: 3.3 m/s, Acceleration: 5 m/s ² Max. bending cycles: 15000000, Bending radius: 50 mm, Traversing path: 0.9 m, Traversing rate: 5 m/s, Acceleration: 30 m/s ² |
| Dynamic load capacity (torsion) | Torsion: ±360 °/m, Torsion cycles: 1000000, Torsional frequency: 35 cycles/min. |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |
| Flame resistance | in accordance with UL 758/1581 FT2 |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Other resistance | Highly resistant to acids, alkaline solutions and solvents Silicone-free |
| Special properties | Cable jacket is welding spark-resistant, recyclable, matt, low-adhesion, abrasion-resistant, flame-retardant, and self-extinguishing Free from silicone and cadmium Free of substances which would hinder coating with paint or varnish |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) -25 °C ... 80 °C (Cable, flexible installation) |

Environmental and real-life conditions

Ambient conditions

| | |
|---|----------------------------------|
| Degree of protection | IP65 |
| | IP67 |
| | IP68 |
| Ambient temperature (operation) (male connector/female connector) | -25 °C ... 90 °C (Plug / socket) |

Standards and regulations

| | |
|----------------------|---------------|
| Standard designation | M12 connector |
|----------------------|---------------|

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

Standards/specifications

IEC 61076-2-101

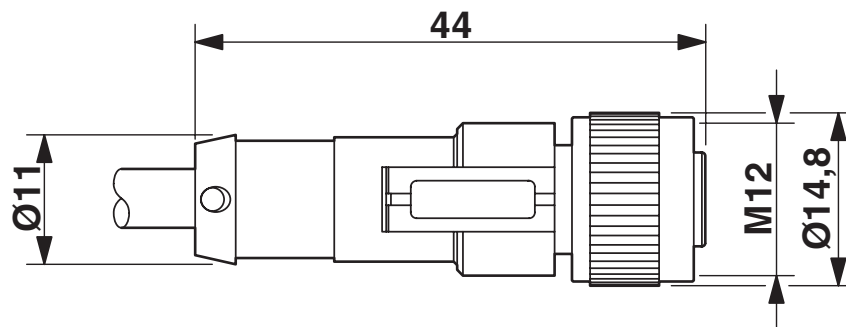
SAC-3P-M12FS B/.../... - Sensor/actuator cable

1696691

<https://www.phoenixcontact.com/us/products/1696691>

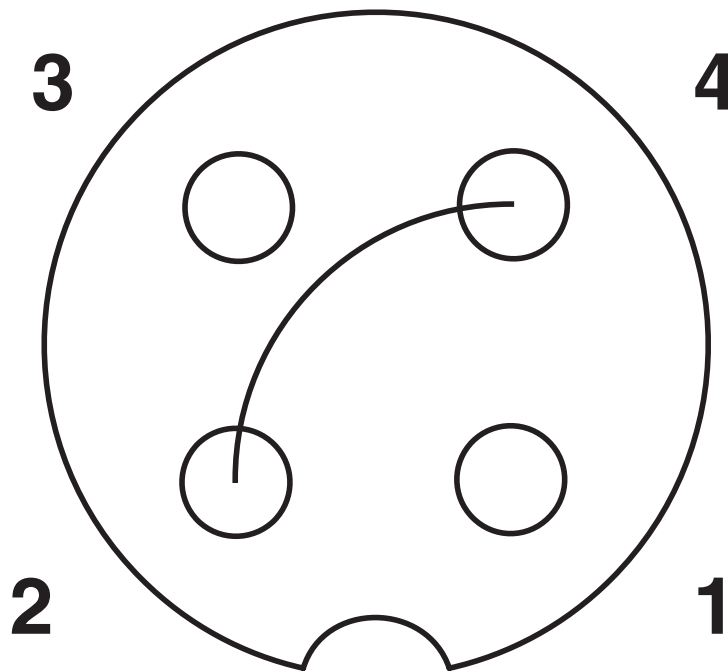
Drawings

Dimensional drawing



M12 x 1 socket, straight

Schematic diagram



Pin assignment M12 socket, 3-pos., PIN 2+4 bridged, A-coded, view female side

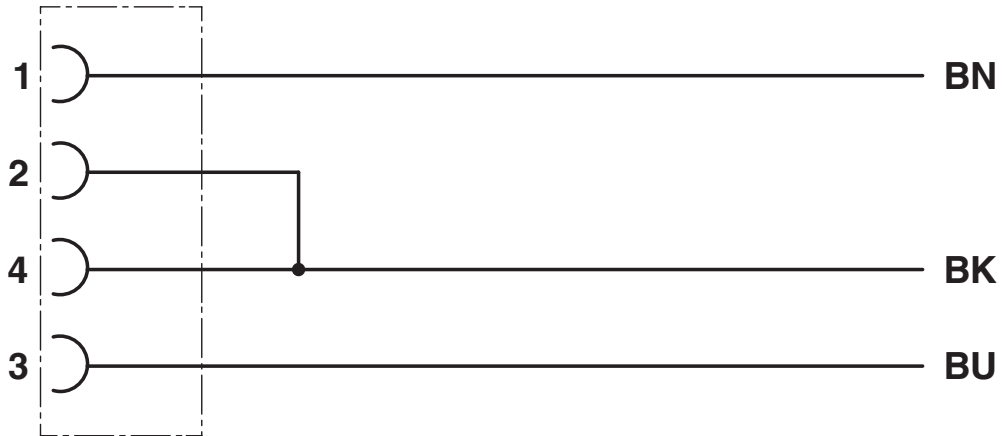
SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

Circuit diagram



Contact assignment of M12 sockets bridged

SAC-3P-M12FS B/.../... - Sensor/actuator cable




1696691

<https://www.phoenixcontact.com/us/products/1696691>

Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1696691>

|  UL Listed Approval ID: FILE E 221474 | | | | |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
| | Nominal voltage U_N | Nominal current I_N | Cross section AWG | Cross section mm^2 |
| keine | | | | |
| | 300 V | 4 A | - | - |

|  cUL Listed Approval ID: FILE E 221474 | | | | |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
| | Nominal voltage U_N | Nominal current I_N | Cross section AWG | Cross section mm^2 |
| keine | | | | |
| | 300 V | 4 A | - | - |

|  EAC-RoHS Approval ID: RU D-DE.HB35.B.00387 | | | | |
|--|--|--|--|--|
|--|--|--|--|--|

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

Classifications

ECLASS

| | |
|-------------|----------|
| ECLASS-13.0 | 27060311 |
| ECLASS-15.0 | 27060311 |

ETIM

| | |
|-----------|----------|
| ETIM 10.0 | EC001855 |
|-----------|----------|

UNSPSC

| | |
|-------------|----------|
| UNSPSC 21.0 | 26121600 |
|-------------|----------|

SAC-3P-M12FS B/.../... - Sensor/actuator cable



1696691

<https://www.phoenixcontact.com/us/products/1696691>

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.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

Phoenix Contact 2026 © - all rights reserved
<https://www.phoenixcontact.com>

Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com