# SAC-3P-M12Y-2X/.../... - Sensor/actuator cable

1697357

https://www.phoenixcontact.com/us/products/1697357

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Sensor/actuator cable, 3-position, Variable cable type, Plug straight M12, coding: A, on free cable end and free cable end, cable length: Free input (0.2 m ... 100.0 m)

## Commercial data

| | |
|---|---|
| Item number | 1697357 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Note | Made to order (non-returnable) |
| Sales key | BF17 |
| Product key | AF1COA |
| Customs tariff number | 85444290 |
| Country of origin | PL |

# Technical data

## Product properties

| | |
|---|---|
| Product type | Distributor with cable |
| Application | Standard |
| | Robots and drag chains |
| Number of positions | 3 |
| No. of cable outlets | 2 |
| Shielded | no |
| Coding | A |

### Insulation characteristics

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

## Connection data

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

## Material specifications

| | |
|---|---|
| Flammability rating according to UL 94 | HB |
| 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 | ≥ 100 MΩ |
| Nominal voltage $U_N$ | 250 V AC |
| | 250 V DC |
| Nominal current $I_N$ | 4 A |

## Signaling

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

## Connector

### Connection 1

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

### Connection 2

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

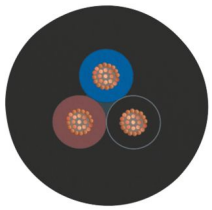
### Connection 3

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

## Cable/line

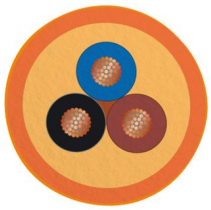
| | |
|---|---|
| Cable length | Free input (0.2 m ... 100.0 m) |

PUR halogen-free black [PUR]

| | |
|---|---|
| Dimensional drawing |  |
| 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 mm² (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/s² |
| 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 |

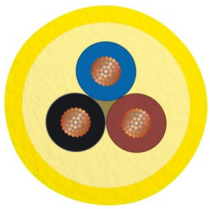
| | |
|---|---|
| Flame resistance | in accordance with UL 758/1581 FT2 |
| | DIN EN 60332-2-2 (20 s) |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Other resistance | Highly resistant to acids, alkaline solutions and solvents |
| | hydrolysis and microbe resistant |
| | partly UV-resistant (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]

| | |
|---|---|
| Dimensional drawing |  |
| 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 mm² |
| 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 |

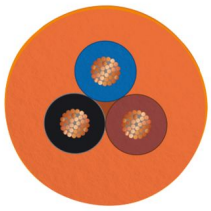
| | |
|---|---|
| Nominal voltage, cable | 300 V |
| Test voltage | 2500 V |
| Smallest bending radius, fixed installation | 52 mm |
| Smallest bending radius, movable installation | 52 mm |
| Dynamic load capacity (bending) | Max. bending cycles: 2000000, Bending radius: 52 mm, Traversing path: 5 m, 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]

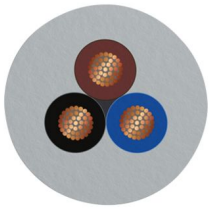
| | |
|---|---|
| Dimensional drawing |  |
| Cable weight | 37 kg/km |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PUR/PVC yellow [140] |
| | PUR/PVC yellow 140 |
| Conductor structure signal line | 42x 0.10 mm |
| AWG signal line | 22 |
| Conductor cross-section | 0.34 mm² |
| Wire 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) |

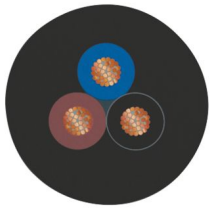
PUR irradiated halogen-free orange [150]

| | |
|---|---|
| Dimensional drawing |  |
| 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 mm² (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 |
| 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/s² |
| 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) |

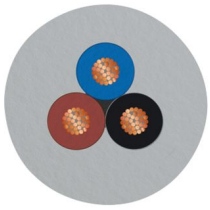
PUR halogen-free gray [280]

| | |
|---|---|
| Dimensional drawing |  |
| 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 mm² |
| 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 |
| Ambient temperature (operation) | -25 °C ... 80 °C (cable, fixed installation) |

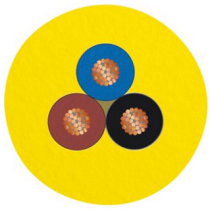
PVC black [PVC]

| | |
|---|---|
| Dimensional drawing |  |
| 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 mm² (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) |

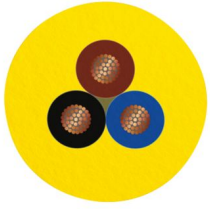
PVC gray [500]

| | |
|---|---|
| Dimensional drawing |  |
| 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 mm² (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 | 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]

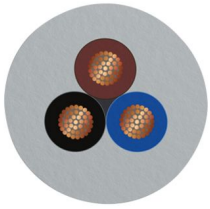
| | |
|---|---|
| Dimensional drawing |  |
| Cable weight | 40 kg/km |
| Number of positions | 3 |
| Shielded | no |
| Cable type | PVC yellow [540] |
| | PVC yellow 540 |
| Conductor structure signal line | 42x 0.10 mm |
| AWG signal line | 22 |
| Conductor cross-section | 0.34 mm² |
| Wire diameter 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 |
| 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]

| | |
|---|---|
| Dimensional drawing |  |
| 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 mm² |
| 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]

| | |
|---|---|
| Dimensional drawing |  |
| 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 mm² (Signal line) |
| Wire diameter incl. insulation | 1.3 mm ±0.05 mm (Signal line) |
| External cable diameter | 4.50 mm ±0.2 mm |
| 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/s² |
| | Max. bending cycles: 15000000, Bending radius: 50 mm, Traversing path: 0.9 m, Traversing rate: 5 m/s, Acceleration: 30 m/s² |
| 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

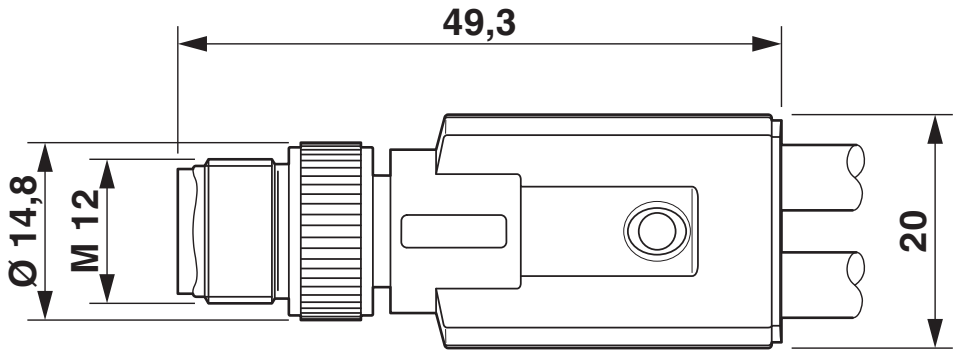
| | |
|---|---|
| Degree of protection | IP65 |
| | IP67 |
| | IP68 |
| Ambient temperature (operation) (male connector/female connector) | -25 °C ... 90 °C (Plug / socket) |

## Standards and regulations

| | |
|---|---|
| Standard designation | M12 connector |
| Standards/specifications | IEC 61076-2-101 |

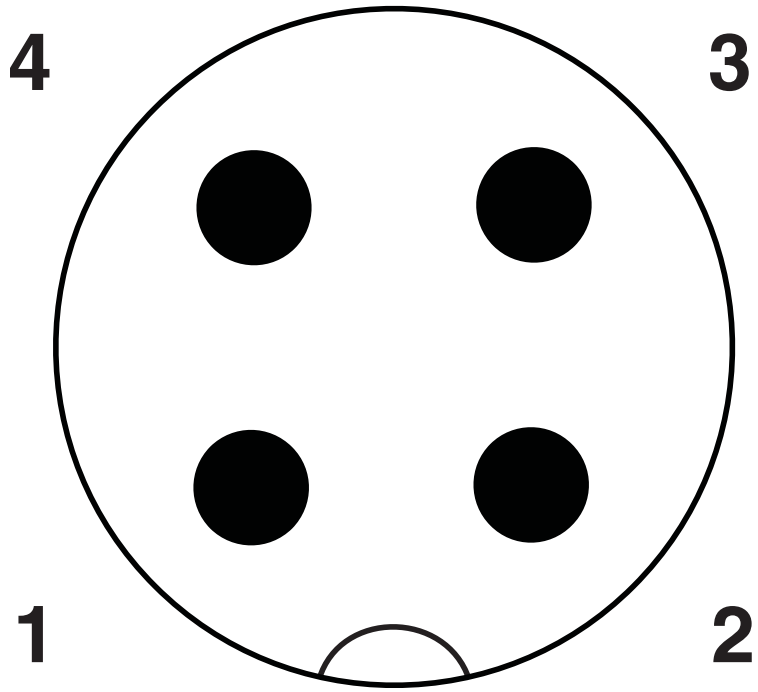
## Drawings

Dimensional drawing



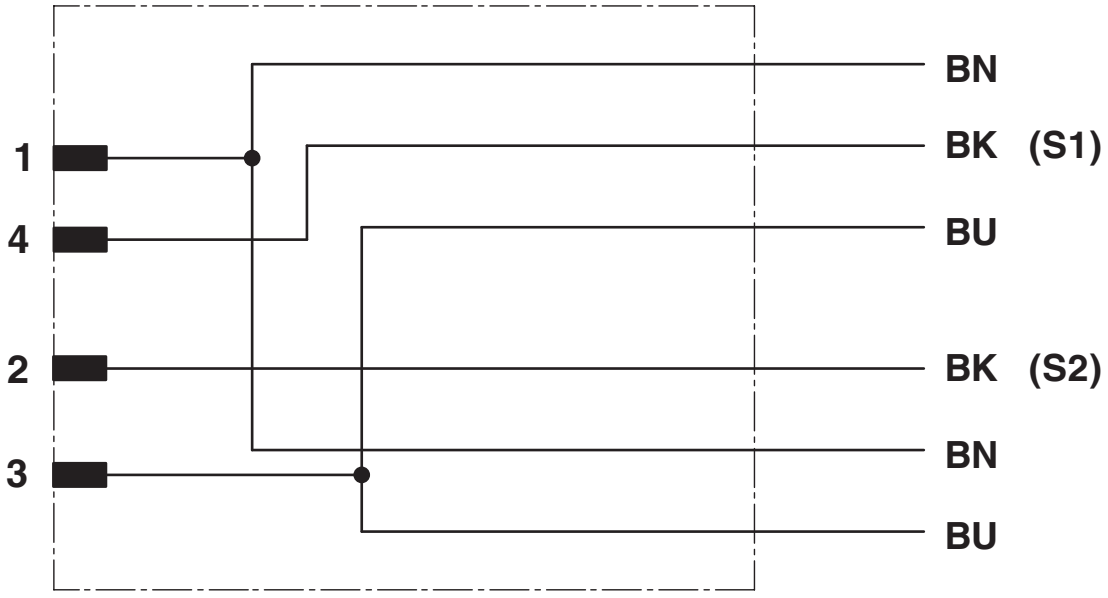

Plug M12 x 1, Y distributor

Schematic diagram




Pin assignment M12 Y plug, 4-pos., A-coded, view plug side

Circuit diagram




Contact assignment of the M12 Y connector

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/1697357

**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

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 27060313 |
| ECLASS-15.0 | 27060313 |

### ETIM

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

### UNSPSC

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

## 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% |

EF3.1 Climate Change

| | |
|---|---|
| CO2e kg | 9.86 kg CO2e |


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