

Sensor/actuator cable - SAC-3P-M 8MS-M12FR/.../... - 1697700

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Sensor/actuator cable, 3-position, Variable cable type, Plug straight M8, on Socket angled M12, A-coded, cable length: Free input (0.2 ... 40.0 m)

Your advantages

- ✓ Easy and safe: 100% electrically tested plug-in components
- ✓ Flexible solutions - configurable materials with variable cable types and cable lengths

Key Commercial Data

| | |
|------------------------|-------|
| Packing unit | 1 pc |
| Minimum order quantity | 25 pc |

Technical data

Dimensions

| | |
|-----------------|-----------------------------|
| Length of cable | Free input (0.2 ... 40.0 m) |
|-----------------|-----------------------------|

Ambient conditions

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

General

| | |
|-----------------------|-------------------------------|
| Rated current at 40°C | 4 A |
| Rated voltage | 48 V AC |
| | 60 V DC |
| Number of positions | 3 |
| Insulation resistance | ≥ 100 MΩ |
| Coding | A - standard |
| Standards/regulations | M12 connector IEC 61076-2-101 |
| | M8 connector IEC 61076-2-104 |
| Status display | No |

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Technical data

General

| | |
|------------------------------|------------------------|
| Protective circuit/component | Unwired |
| Overvoltage category | II |
| Degree of pollution | 3 |
| Insertion/withdrawal cycles | ≥ 100 |
| Torque | 0.4 Nm (M12 connector) |
| | 0.2 Nm (M8 connectors) |

Material

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

Line characteristics

| | |
|------|---|
| Note | This item is a sensor/actuator cable with a freely selectable cable type. The technical data for all possible cable types is listed in the table below. |
|------|---|

Standards and Regulations

| | |
|--|-----------------|
| Standard designation | M12 connector |
| Standards/regulations | IEC 61076-2-101 |
| Standard designation | M8 connector |
| Standards/regulations | IEC 61076-2-104 |
| Flammability rating according to UL 94 | HB |

PUR/PVC gray [100]

| | |
|---|---------------------------------------|
| Cable type | PUR/PVC gray |
| Cable type (abbreviation) | 100 |
| Cable abbreviation | LiYY-11Y |
| Conductor cross section | 0.25 mm ² |
| AWG signal line | 24 |
| Conductor structure signal line | 32x 0.10 mm |
| Core diameter including insulation | 1.32 mm ±0.02 mm |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) |
| | ≥ 0.38 mm (Outer cable sheath) |
| | approx. 3.5 mm ±0.1 mm (Inner sheath) |
| Wire colors | brown, blue, black |
| Overall twist | 3 wires, twisted |
| External sheath, color | gray RAL 7001 |
| External cable diameter D | 4.4 mm ±0.2 mm |
| Smallest bending radius, fixed installation | 22 mm |

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Technical data

PUR/PVC gray [100]

| | |
|---|--|
| Smallest bending radius, movable installation | 44 mm |
| Number of bending cycles | 2000000 |
| Bending radius | 44 mm |
| Traversing path | 5 m |
| Traversing rate | 3 m/s |
| Cable weight | 27 kg/km |
| Outer sheath, material | PUR |
| Material, inner sheath | PVC |
| Material conductor insulation | PVC |
| Conductor material | Bare Cu litz wires |
| Insulation resistance | ≥ 100 MΩ*km (at 20 °C) |
| Conductor resistance | max. 78 Ω/km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage, cable | ≥ 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) |

PUR/PVC yellow [140]

| | |
|---|--------------------------------|
| Cable type | PUR/PVC yellow |
| Cable type (abbreviation) | 140 |
| Cable abbreviation | LiYY-11Y |
| UL AWM style | 20549 |
| Conductor cross section | 0.25 mm ² |
| AWG signal line | 24 |
| Conductor structure signal line | 32x 0.10 mm |
| Core diameter including insulation | 1.32 mm ±0.02 mm |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) |
| | ≥ 0.38 mm (Outer cable sheath) |
| | approx. 0.35 mm (Inner sheath) |
| Wire colors | brown, blue, black |
| Overall twist | 3 wires, twisted |
| External sheath, color | yellow |
| External cable diameter D | 4.4 mm ±0.2 mm |
| Smallest bending radius, fixed installation | 44 mm |
| Smallest bending radius, movable installation | 44 mm |
| Number of bending cycles | 2000000 |
| Bending radius | 44 mm |
| Traversing path | 5 m |
| Traversing rate | 3 m/s |
| Cable weight | 27 kg/km |

Sensor/actuator cable - SAC-3P-M 8MS-M12FR/.../... - 1697700

Technical data

PUR/PVC yellow [140]

| | |
|---------------------------------|--|
| Outer sheath, material | PUR |
| Material, inner sheath | PVC |
| Material conductor insulation | PVC |
| Conductor material | Bare Cu litz wires |
| Insulation resistance | ≥ 100 MΩ*km (at 20 °C) |
| Conductor resistance | max. 78 Ω/km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage, cable | ≥ 3000 V |
| Flame resistance | in accordance with DIN UL-Style 20549 |
| Ambient temperature (operation) | -25 °C ... 80 °C (cable, fixed installation) |
| | -5 °C ... 80 °C (cable, flexible installation) |

PUR halogen-free orange [180]

| | |
|---|---------------------------------------|
| Cable type | PUR halogen-free orange |
| Cable type (abbreviation) | 180 |
| Cable abbreviation | Li9Y-11Y |
| UL AWM style | 20549 |
| Conductor cross section | 3x 0.25 mm ² (Signal line) |
| AWG signal line | 24 |
| Conductor structure signal line | 32x 0.10 mm |
| Core diameter including insulation | 1.17 mm ±0.02 mm (Signal line) |
| Thickness, insulation | ≥ 0.21 mm (Core insulation) |
| | approx. 0.9 mm (Outer cable sheath) |
| Wire colors | brown, blue, black |
| Overall twist | 3 wires, twisted |
| External sheath, color | orange RAL 2003 |
| External cable diameter D | 4.4 mm ±0.15 mm |
| Smallest bending radius, fixed installation | 22 mm |
| Smallest bending radius, movable installation | 44 mm |
| Number of bending cycles | 4000000 |
| Bending radius | 44 mm |
| Traversing path | 10 m |
| Traversing rate | 3 m/s |
| Acceleration | 10 m/s ² |
| Cable weight | 24 kg/km |
| Outer sheath, material | PUR |
| Material conductor insulation | PP |
| Conductor material | Bare Cu litz wires |
| Insulation resistance | ≥ 10 GΩ*km (at 20 °C) |
| Conductor resistance | max. 78 Ω/km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |

Sensor/actuator cable - SAC-3P-M 8MS-M12FR/.../... - 1697700

Technical data

PUR halogen-free orange [180]

| | |
|---------------------------------|---|
| Test voltage, cable | ≥ 3000 V |
| Flame resistance | in accordance with DIN UL-Style 20549 |
| | in accordance with UL 758/1581 FT2 |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Other resistance | hydrolysis and microbe resistant |
| | Resistant to salt water |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) |
| | -25 °C ... 80 °C (cable, flexible installation) |

PUR halogen-free gray [280]

| | |
|---|--|
| Cable type | PUR halogen-free gray |
| Cable type (abbreviation) | 280 |
| Cable abbreviation | Li9Y11Y |
| UL AWM style | 20549 |
| Conductor cross section | 0.25 mm ² |
| AWG signal line | 24 |
| Conductor structure signal line | 32x 0.10 mm |
| Core diameter including insulation | 1.17 mm ±0.02 mm |
| Thickness, insulation | ≥ 0.21 mm (Core insulation) |
| | approx. 0.9 mm (Outer cable sheath) |
| Wire colors | brown, blue, black |
| Overall twist | 3 wires, twisted |
| External sheath, color | silver-gray RAL 7001 |
| External cable diameter D | 4.4 mm ±0.15 mm |
| Smallest bending radius, fixed installation | 44 mm |
| Smallest bending radius, movable installation | 44 mm |
| Number of bending cycles | 4000000 |
| Bending radius | 44 mm |
| Traversing path | 10 m |
| Traversing rate | 3 m/s |
| Cable weight | 24 kg/km |
| Outer sheath, material | PUR |
| Material conductor insulation | PP |
| Conductor material | Bare Cu litz wires |
| Insulation resistance | ≥ 100 GΩ*km (at 20 °C) |
| Conductor resistance | max. 78 Ω/km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage, cable | ≥ 3000 V |
| Flame resistance | in accordance with DIN UL-Style 20549 |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |

Sensor/actuator cable - SAC-3P-M 8MS-M12FR/.../... - 1697700

Technical data

PVC gray [500]

| | |
|------------------------------------|--|
| Cable type | PVC gray |
| Cable type (abbreviation) | 500 |
| Cable abbreviation | LiYY |
| Conductor cross section | 0.25 mm ² |
| AWG signal line | 24 |
| Conductor structure signal line | 32x 0.10 mm |
| Core diameter including insulation | 1.25 mm ±0.02 mm |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) |
| | ≥ 0.76 mm (Outer cable sheath) |
| Wire colors | brown, blue, black |
| Overall twist | 3 wires, twisted |
| External sheath, color | gray RAL 7001 |
| External cable diameter D | 4.4 mm ±0.15 mm |
| Cable weight | 29 kg/km |
| Outer sheath, material | PVC |
| Material conductor insulation | PVC |
| Conductor material | Bare Cu litz wires |
| Insulation resistance | ≥ 1 GΩ*km (at 20 °C) |
| Conductor resistance | max. 78 Ω/km (at 20 °C) |
| Nominal voltage, cable | ≥ 300 V |
| Test voltage, cable | ≤ 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) |

Gray, highly flexible PUR [800]

| | |
|--|--|
| Note | Due to the extremely robust outer sheath, this cable should only be stripped in 5 cm increments. |
| Cable type | Gray, highly flexible PUR |
| Cable type (abbreviation) | 800 |
| Cable abbreviation | Li12YYTPE-HF |
| UL AWM style | 20233 |
| Conductor cross section | 3x 0.25 mm ² (Signal line) |
| AWG signal line | 24 |
| Conductor structure signal line | 32x 0.10 mm |
| Core diameter including insulation | 1.2 mm ±0.05 mm (Signal line) |
| Wire colors | brown, blue, black |
| Overall twist | 3 wires, twisted |
| External sheath, color | gray RAL 7001 |
| External cable diameter D | 4.3 mm ±0.2 mm |
| Minimum bending radius, fixed installation | 4 x D |

Sensor/actuator cable - SAC-3P-M 8MS-M12FR/.../... - 1697700

Technical data

Gray, highly flexible PUR [800]

| | |
|---|--|
| Minimum bending radius, flexible installation | 7.5 x D |
| Number of bending cycles | 10000000 |
| Minimum bending radius, drag chain applications | 7,5 x D |
| Traversing path | 5 m |
| Traversing rate | 3.3 m/s |
| Acceleration | 5 m/s ² |
| Number of bending cycles | 15000000 |
| Bending radius | 50 mm |
| Traversing path | 0.9 m |
| Traversing rate | 5 m/s |
| Acceleration | 30 m/s ² |
| Torsion force | ± 360 °/m (1 000 000 torsion cycles) |
| Cable weight | 24 kg/km |
| Outer sheath, material | PUR |
| Material conductor insulation | PES |
| Conductor material | Bare Cu litz wires |
| Insulation resistance | ≥ 20 MΩ*km |
| Conductor resistance | approx. 76 Ω/km |
| Nominal voltage, cable | 300 V |
| Test voltage, cable | 2000 V |
| 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 |
| Flame resistance | according to IEC 60332-1-2 |
| | according to UL 758/1581 VW-1 |
| | according to UL 758/1581 FT1 |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |
| Resistance to oil | According to HD 22.10 |
| | in accordance with DIN EN 60811-404 (external sheath) |
| Other resistance | Highly resistant to acids, alkaline solutions and solvents |
| | Silicone-free |
| Ambient temperature (operation) | -40 °C ... 90 °C (cable, fixed installation) |
| | -30 °C ... 90 °C (cable, flexible installation) |
| | to 120 °C (for 3000 h) |

PUR halogen-free black [PUR]

| | |
|---------------------------|------------------------|
| Cable type | PUR halogen-free black |
| Cable type (abbreviation) | PUR |
| Cable abbreviation | Li9Y11Y-HF |
| UL AWM style | 20549 |

Sensor/actuator cable - SAC-3P-M 8MS-M12FR/.../... - 1697700

Technical data

PUR halogen-free black [PUR]

| | |
|---|---|
| Conductor cross section | 3x 0.25 mm ² |
| AWG signal line | 24 |
| Conductor structure signal line | 32x 0.10 mm |
| Core diameter including insulation | 1.17 mm ±0.02 mm |
| Thickness, insulation | ≥ 0.21 mm (Core insulation) |
| Wire colors | brown, blue, black |
| Overall twist | 3 wires, twisted |
| Length of twist, overall twist | 40 mm |
| External sheath, color | black-gray RAL 7021 |
| Outer sheath thickness | approx. 0.5 mm |
| External cable diameter D | 3.6 mm ±0.15 mm |
| Smallest bending radius, fixed installation | 18 mm |
| Smallest bending radius, movable installation | 36 mm |
| Number of bending cycles | 10000000 |
| Bending radius | 44 mm |
| Traversing path | 10 m |
| Traversing rate | 3 m/s |
| Acceleration | 10 m/s ² |
| Cable weight | 18 kg/km |
| Outer sheath, material | PUR |
| Material conductor insulation | PP |
| Conductor material | Bare Cu litz wires |
| Insulation resistance | ≥ 100 GΩ*km (at 20 °C) |
| Conductor resistance | ≤ 78 Ω/km (at 20 °C) |
| Nominal voltage, cable | ≤ 300 V |
| Test voltage, cable | ≥ 3000 V |
| Special properties | Flexible cable conduit capable |
| | Silicone-free |
| | Free of substances which would hinder coating with paint or varnish |
| Flame resistance | in accordance with UL 758/1581 FT2 |
| | DIN EN 60332-2-2 (20 s) |
| Halogen-free | in accordance with DIN VDE 0472 part 815 |
| Resistance to oil | in accordance with DIN EN 60811-2-1 |
| Other resistance | hydrolysis and microbe resistant |
| | Highly resistant to acids, alkaline solutions and solvents |
| | Resistant to salt water |
| | partly UV-resistant in accordance with DIN EN ISO 4892-2-A |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation) |
| | -25 °C ... 80 °C (cable, flexible installation) |

PVC black [PVC]

Sensor/actuator cable - SAC-3P-M 8MS-M12FR/.../... - 1697700

Technical data

PVC black [PVC]

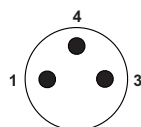
| | |
|------------------------------------|--|
| Cable type | PVC black |
| Cable type (abbreviation) | PVC |
| Cable abbreviation | LiYY |
| Conductor cross section | 3x 0.25 mm ² (Signal line) |
| AWG signal line | 24 |
| Conductor structure signal line | 32x 0.10 mm |
| Core diameter including insulation | 1.25 mm ±0.02 mm |
| Thickness, insulation | ≥ 0.23 mm (Core insulation) |
| Wire colors | brown, blue, black |
| Overall twist | 3 wires, twisted |
| External sheath, color | black RAL 9005 |
| Outer sheath thickness | ≥ 0.76 mm |
| External cable diameter D | 4.4 mm ±0.15 mm |
| Cable weight | 29 kg/km |
| Outer sheath, material | PVC |
| Material conductor insulation | PVC |
| Conductor material | Bare Cu litz wires |
| Insulation resistance | ≥ 100 MΩ*km (at 20 °C) |
| Conductor resistance | max. 78 Ω/km (at 20 °C) |
| Nominal voltage, cable | ≥ 300 V |
| Test voltage, cable | ≤ 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) |

Environmental Product Compliance

| | |
|------------|---|
| REACH SVHC | Lead 7439-92-1 |
| China RoHS | Environmentally Friendly Use Period = 50 |
| | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

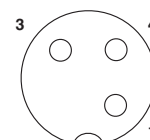
Drawings

Schematic diagram



Pin assignment M8 plug, 3-pos., view male side

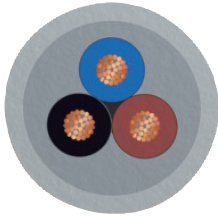
Schematic diagram



Pin assignment M12 socket, 3-pos., A-coded, view female side

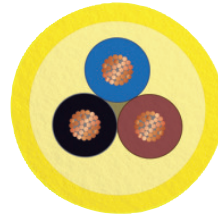
Sensor/actuator cable - SAC-3P-M 8MS-M12FR/.../... - 1697700

Cable cross section



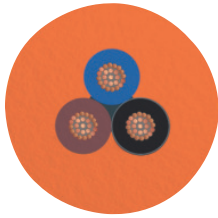
PUR/PVC gray [100]

Cable cross section



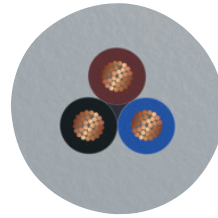
PUR/PVC yellow [140]

Cable cross section



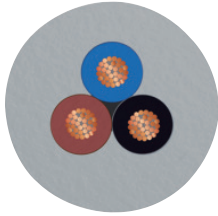
PUR halogen-free orange [180]

Cable cross section



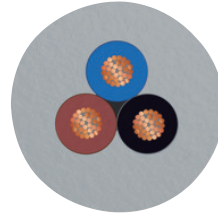
PUR halogen-free gray [280]

Cable cross section



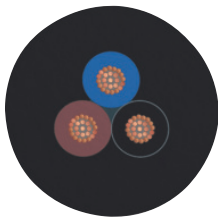
PVC gray [500]

Cable cross section



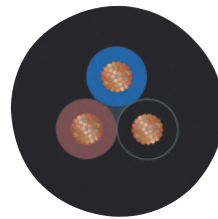
Gray, highly flexible PUR [800]

Cable cross section



PUR halogen-free black [PUR]

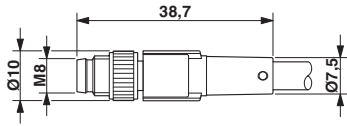
Cable cross section



PVC black [PVC]

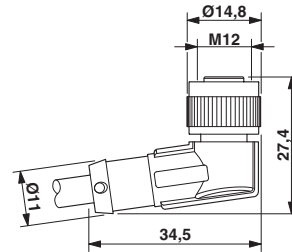
Sensor/actuator cable - SAC-3P-M 8MS-M12FR/.../... - 1697700

Dimensional drawing



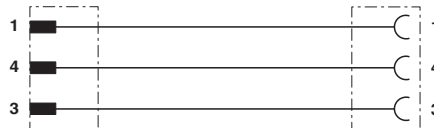
M8 x 1 male plug, straight version

Dimensional drawing



M12 x 1 socket, angled

Circuit diagram



Contact assignment of M8 plugs / M12 sockets

Approvals

Approvals

Approvals

UL Listed / cUL Listed / EAC / cULus Listed

Ex Approvals

Approval details

| | | | |
|--------------------|------|---|---------------|
| UL Listed | | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 221474 |
| Nominal voltage UN | 60 V | | |
| Nominal current IN | 4 A | | |

Sensor/actuator cable - SAC-3P-M 8MS-M12FR/.../... - 1697700

Approvals

| | | | |
|--------------------|--|---|---------------|
| cUL Listed | | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 221474 |
| Nominal voltage UN | | 60 V | |
| Nominal current IN | | 4 A | |

| | | |
|-----|--|---------------|
| EAC | | EAC-Zulassung |
|-----|--|---------------|

| | |
|--------------|--|
| cULus Listed | |
|--------------|--|

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PHOENIX CONTACT GmbH & Co. KG
Flachsmarktstr. 8
32825 Blomberg
Germany
Tel. +49 5235 300
Fax +49 5235 3 41200
<http://www.phoenixcontact.com>