

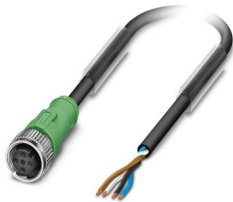
# SAC-4P-M12FS/.../... - Sensor/actuator cable



1696963

<https://www.phoenixcontact.com/us/products/1696963>

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

## Your advantages

- Easy and safe: 100 % electrically tested plug-in components

## Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 1696963                        |
| Packing unit                         | 1 pc                           |
| Minimum order quantity               | 1 pc                           |
| Note                                 | Made to order (non-returnable) |
| Sales key                            | BF17                           |
| Product key                          | AF1CCA                         |
| Weight per piece (including packing) | 0.812 g                        |
| Weight per piece (excluding packing) | 0.812 g                        |
| Customs tariff number                | 85444290                       |
| Country of origin                    | PL                             |

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## Technical data

### Product properties

|                      |                        |
|----------------------|------------------------|
| Product type         | Sensor/actuator cable  |
| Application          | Standard               |
|                      | Robots and drag chains |
| Number of positions  | 4                      |
| 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 flammable, 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                        |

### Mechanical properties

#### Mechanical data

|                             |            |
|-----------------------------|------------|
| Insertion/withdrawal cycles | $\geq 100$ |
|-----------------------------|------------|

### Signaling

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

### Connection data

#### Conductor connection

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

### Connector

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## Connection 1

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

## Connection 2

|                     |                     |
|---------------------|---------------------|
| Type                | Socket straight M12 |
| Number of positions | 4                   |
| Coding type         | A                   |

## Cable/line

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

### PUR halogen-free black [PUR]

|   |  |
|---|--|
| Cable weight                                  | 30 kg/km   |
| UL AWM Style                                  | 20549 / 10493 (80°C/300 V)   |
| Number of positions                           | 4  |
| Shielded                                      | no   |
| Cable type                                    | PUR halogen-free black [PUR]<br>PUR halogen-free black PUR   |
| Conductor structure signal line               | 42x 0.10 mm  |
| AWG signal line                               | 22   |
| Conductor cross-section                       | 4x 0.34 mm <sup>2</sup> (Signal line)  |
| Wire diameter incl. insulation                | 1.27 mm ±0.02 mm   |
| External cable diameter                       | 4.20 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, white, blue, black  |
| Thickness, insulation                         | ≥ 0.21 mm  |
| Thickness, outer sheath                       | approx. 0.50 mm  |
| Overall twist                                 | 4 wires, twisted   |
| Max. conductor resistance                     | ≤ 58 Ω/km  |
| Insulation resistance                         | ≥ 1 GΩ*km  |
| Nominal voltage, cable                        | ≤ 300 V  |
| Test voltage                                  | ≥ 3000 V   |
| Minimum bending radius, fixed installation    | 5 x D  |
| Minimum bending radius, flexible installation | 10 x D   |
| Smallest bending radius, fixed installation   | 21 mm  |
| Smallest bending radius, movable installation | 42 mm  |
| Dynamic load capacity (bending)               | Max. bending cycles: 10000000, Bending radius: 42 mm, Bending radius: 10 x D, Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s <sup>2</sup> |
| 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   |

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|                                 |   |
|---------------------------------|---|
|                                 | in accordance with DIN EN 50267-2-1                                 |
| 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)        |
|                                 | Low adhesion  |
|                                 | abrasion-resistant  |
| Special properties              | Flexible cable conduit capable                                      |
|                                 | Silicone-free   |
|                                 | Free of substances which would hinder coating with paint or varnish |
|                                 | flexible  |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation)                        |
|                                 | -25 °C ... 80 °C (Cable, flexible installation)                     |

## PUR/PVC yellow [140]

|   |                                       |
|---|---------------------------------------|
| Cable weight                                  | 39 kg/km                              |
| UL AWM Style                                  | 20549                                 |
| Number of positions                           | 4                                     |
| 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                       | 4x 0.34 mm <sup>2</sup> (Signal line) |
| Wire diameter incl. insulation                | 1.5 mm ±0.05 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, white, blue, black             |
| Thickness, insulation                         | approx. 0.30 mm (Core insulation)     |
|   | ≥ 0.38 mm (Outer cable sheath)        |
|   | approx. 0.35 mm (Inner sheath)        |
| Overall twist                                 | 4 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                              |
| Smallest bending radius, fixed installation   | 52 mm                                 |
| Smallest bending radius, movable installation | 52 mm                                 |

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|                                 |   |
|---------------------------------|---|
| Dynamic load capacity (bending) | Max. bending cycles: 2000000, Bending radius: 52 mm, Traversing path: 5 m, Traversing rate: 3 m/s |
| Flame resistance                | in accordance with DIN UL-Style 20549   |
| Ambient temperature (operation) | -25 °C ... 80 °C (cable, fixed installation)<br>-5 °C ... 80 °C (Cable, flexible installation)    |

## PUR irradiated halogen-free orange [150]

|   |  |
|---|--|
| Number of positions                           | 4  |
| Shielded                                      | no   |
| Cable type                                    | PUR irradiated halogen-free orange [150]<br>PUR irradiated halogen-free orange 150                 |
| Conductor structure signal line               | 19x 0.15 mm  |
| AWG signal line                               | 22   |
| Conductor cross-section                       | 4x 0.34 mm <sup>2</sup> (Signal line)  |
| Wire diameter incl. insulation                | 1.05 mm ±0.05 mm (Signal line)   |
| External cable diameter                       | 5.20 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, white, blue, black  |
| Overall twist                                 | 4 wires, twisted   |
| Length of twist, overall twist                | 27 mm  |
| Max. conductor resistance                     | max. 57 Ω/km   |
| Nominal voltage, cable                        | 320 V (AC)   |
| Test voltage                                  | 2500 V (50 Hz, 5 minutes)  |
| Smallest bending radius, fixed installation   | min. 15 mm   |
| Smallest bending radius, movable installation | min. 30 mm   |
| Dynamic load capacity (bending)               | Max. bending cycles: 5000000, Bending radius: 52 mm, Traversing path: 10 m, Traversing rate: 3 m/s |
| Dynamic load capacity (torsion)               | Torsion: ±360 °/m  |
| Halogen-free                                  | The cable is halogen-free  |
| Other resistance                              | hydrolysis and microbe resistant<br>Resistant to welding splashes                                  |
| Special properties                            | Silicone-free<br>Irradiated  |
| Ambient temperature (operation)               | -50 °C ... 105 °C (cable, fixed installation)<br>-40 °C ... 105 °C (Cable, flexible installation)  |

## PUR irradiated halogen-free yellow [160]

|                                 |  |
|---------------------------------|--|
| Number of positions             | 4  |
| Shielded                        | no   |
| Cable type                      | PUR irradiated halogen-free yellow [160]<br>PUR irradiated halogen-free yellow 160 |
| Conductor structure signal line | 19x 0.15 mm  |

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|   |  |
|---|--|
| AWG signal line                               | 22   |
| Conductor cross-section                       | 4x 0.34 mm <sup>2</sup> (Signal line)  |
| Wire diameter incl. insulation                | 1.05 mm ±0.05 mm (Signal line)   |
| 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                      | PE   |
| Single wire, color                            | brown, white, blue, black  |
| Overall twist                                 | 4 wires, twisted   |
| Length of twist, overall twist                | 27 mm  |
| Max. conductor resistance                     | ≤ 57 Ω/km  |
| Nominal voltage, cable                        | 320 V AC   |
| Test voltage                                  | 2500 V AC (50 Hz, 5 minutes)   |
| Smallest bending radius, fixed installation   | min. 15 mm   |
| Smallest bending radius, movable installation | min. 30 mm   |
| Dynamic load capacity (bending)               | Max. bending cycles: 5000000, Bending radius: 52 mm, Traversing path: 10 m, Traversing rate: 3 m/s |
| Dynamic load capacity (torsion)               | Torsion: 360 °/m   |
| Halogen-free                                  | The cable is halogen-free  |
| Flame resistance                              | DIN VDE 0472 part 804, test type B   |
| Other resistance                              | hydrolysis and microbe resistant   |
| Special properties                            | Silicone-free<br>Irradiated  |
| Ambient temperature (operation)               | -50 °C ... 105 °C (cable, fixed installation)<br>-40 °C ... 105 °C (Cable, flexible installation)  |

## PUR halogen-free orange [180]

|                                 |  |
|---------------------------------|--|
| Cable weight                    | 30 kg/km   |
| UL AWM Style                    | 20549  |
| Number of positions             | 4  |
| Shielded                        | no   |
| Cable type                      | PUR halogen-free orange [180]<br>PUR halogen-free orange 180 |
| Conductor structure signal line | 42x 0.10 mm  |
| AWG signal line                 | 22   |
| Conductor cross-section         | 4x 0.34 mm <sup>2</sup> (Signal line)                        |
| Wire diameter incl. insulation  | 1.27 mm ±0.02 mm (Signal line)                               |
| External cable diameter         | 4.70 mm ±0.15 mm   |
| Outer sheath, material          | PUR  |
| External sheath, color          | orange RAL 2003  |
| Conductor material              | Bare Cu litz wires   |
| Material wire insulation        | PP   |
| Single wire, color              | brown, white, blue, black                                    |

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|                                 |  |
|---------------------------------|--|
| Thickness, insulation           | ≥ 0.21 mm (Core insulation)  |
|                                 | approx. 0.80 mm (Outer cable sheath)   |
| Overall twist                   | 4 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   |
| Dynamic load capacity (bending) | Max. bending cycles: 10000000, Bending radius: 47 mm, Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s <sup>2</sup> |
| 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   |
|                                 | in accordance with DIN EN 50267-2-1  |
| Flame resistance                | in accordance with UL 758/1581 FT2   |
| Resistance to oil               | in accordance with DIN EN 60811-2-1  |
| Other resistance                | Resistant to salt water  |
|                                 | hydrolysis and microbe resistant   |
| Special properties              | 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 POWER 0.75 mm<sup>2</sup> black [186]

|                                 |  |
|---------------------------------|--|
| Cable weight                    | 57 kg/km                                   |
| UL AWM Style                    | 20549 / 1061 (80°C/300 V)                  |
| Number of positions             | 4  |
| Shielded                        | no   |
| Cable type                      | PUR POWER 0.75 mm <sup>2</sup> black [186] |
|                                 | PUR POWER 0.75 mm <sup>2</sup> black 186   |
| Conductor structure signal line | 42x 0.15 mm                                |
| AWG signal line                 | 18   |
| Conductor cross-section         | 4x 0.75 mm <sup>2</sup> (power line)       |
| Wire diameter incl. insulation  | 1.75 mm ±0.05 mm                           |
| External cable diameter         | 5.90 mm ±0.15 mm                           |
| Outer sheath, material          | PUR  |
| External sheath, color          | black-gray RAL 7021                        |
| Conductor material              | Bare Cu litz wires                         |
| Material wire insulation        | PVC  |
| Single wire, color              | brown, white, blue, black                  |
| Thickness, insulation           | ≥ 0.23 mm (Core insulation)                |
|                                 | ≥ 0.76 mm (Outer cable sheath)             |
| Overall twist                   | 4 wires, twisted                           |
| Max. conductor resistance       | max. 26 Ω/km (at 20 °C)                    |
| Insulation resistance           | ≥ 1 MΩ*km (at 20 °C)                       |

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|   |   |
|---|---|
| Nominal voltage, cable                        | ≤ 300 V   |
| Test voltage                                  | ≥ 3000 V  |
| Minimum bending radius, fixed installation    | 5 x D   |
| Minimum bending radius, flexible installation | 10 x D  |
| Smallest bending radius, fixed installation   | 30 mm   |
| Smallest bending radius, movable installation | 59 mm   |
| Dynamic load capacity (bending)               | Max. bending cycles: 2000000, Bending radius: 59 mm, Traversing path: 5 m, Traversing rate: 3 m/s, Acceleration: 5 m/s <sup>2</sup> |
| Flame resistance                              | according to UL 758/1581 (horizontal)   |
|   | in accordance with UL 758/1581 FT2  |
| Resistance to oil                             | According to DIN EN 60811-2-1, 168 h at 100°C   |
| Other resistance                              | hydrolysis and microbe resistant  |
|   | Low adhesion  |
|   | abrasion-resistant  |
|   | Resistant to salt water   |
| Ambient temperature (operation)               | -25 °C ... 80 °C (cable, fixed installation)  |
|   | -5 °C ... 80 °C (Cable, flexible installation)  |

## PUR halogen-free yellow [240]

|   |                                      |
|---|--------------------------------------|
| Cable weight                                  | 30 kg/km                             |
| Number of positions                           | 4                                    |
| Shielded                                      | no                                   |
| Cable type                                    | PUR halogen-free yellow [240]        |
|   | PUR halogen-free yellow 240          |
| Conductor structure signal line               | 42x 0.10 mm                          |
| AWG signal line                               | 22                                   |
| Conductor cross-section                       | 4x 0.34 mm <sup>2</sup>              |
| Wire diameter incl. insulation                | 1.27 mm ±0.02 mm                     |
| External cable diameter                       | 4.70 mm ±0.15 mm                     |
| Outer sheath, material                        | PUR                                  |
| External sheath, color                        | yellow                               |
| Conductor material                            | Bare Cu litz wires                   |
| Material wire insulation                      | PP                                   |
| Single wire, color                            | brown, white, blue, black            |
| Thickness, insulation                         | ≥ 0.21 mm (Core insulation)          |
|   | approx. 0.80 mm (Outer cable sheath) |
| Overall twist                                 | 4 wires, twisted                     |
| Length of twist, overall twist                | 49.5 mm                              |
| 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                             |
| Smallest bending radius, fixed installation   | 23.5 mm                              |
| Smallest bending radius, movable installation | 47 mm                                |

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|                                 |  |
|---------------------------------|--|
| Dynamic load capacity (bending) | Max. bending cycles: 10000000, Bending radius: 47 mm, Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s <sup>2</sup> |
| Dynamic load capacity (torsion) | Torsion: $\pm 180$ °/m, Torsion cycles: $\geq 5000000$ , Torsional frequency: 35 cycles/min.   |
| Halogen-free                    | in accordance with DIN VDE 0472 part 815   |
|                                 | in accordance with DIN EN 50267-2-1  |
| Flame resistance                | in accordance with DIN UL-Style 20549  |
|                                 | in accordance with FT1 as per UL 758   |
| 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   |
| 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 halogen-free gray [280]

|   |                                       |
|---|---------------------------------------|
| Cable weight                                  | 30 kg/km                              |
| UL AWM Style                                  | 20549 / 10493 (80°C/300 V)            |
| Number of positions                           | 4                                     |
| 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                       | 4x 0.34 mm <sup>2</sup> (Signal line) |
| Wire diameter incl. insulation                | 1.27 mm $\pm$ 0.02 mm                 |
| External cable diameter                       | 4.20 mm $\pm$ 0.15 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, white, blue, black             |
| Thickness, insulation                         | $\geq$ 0.21 mm                        |
| Thickness, outer sheath                       | approx. 0.50 mm                       |
| Overall twist                                 | 4 wires, twisted                      |
| Max. conductor resistance                     | $\leq$ 58 $\Omega$ /km                |
| Insulation resistance                         | $\geq$ 1 G $\Omega$ *km               |
| Nominal voltage, cable                        | $\leq$ 300 V                          |
| Test voltage                                  | $\geq$ 3000 V                         |
| Minimum bending radius, fixed installation    | 5 x D                                 |
| Minimum bending radius, flexible installation | 10 x D                                |

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|   |   |
|---|---|
| Smallest bending radius, fixed installation   | 21 mm   |
| Smallest bending radius, movable installation | 42 mm   |
| Dynamic load capacity (bending)               | Max. bending cycles: 10000000, Bending radius: 10 x D, Traversing path: 10 m, Traversing rate: 3 m/s, Acceleration: 10 m/s <sup>2</sup> |
| Halogen-free                                  | in accordance with DIN VDE 0472 part 815  |
|   | in accordance with DIN EN 50267-2-1   |
| 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)  |
|   | Low adhesion  |
| Special properties                            | abrasion-resistant  |
|   | Flexible cable conduit capable  |
|   | Silicone-free   |
|   | Free of substances which would hinder coating with paint or varnish   |
| Ambient temperature (operation)               | flexible  |
|   | -40 °C ... 80 °C (cable, fixed installation)  |
|   | -25 °C ... 80 °C (Cable, flexible installation)   |

## PVC black [PVC]

|                                 |                                       |
|---------------------------------|---------------------------------------|
| Cable weight                    | 40 kg/km                              |
| UL AWM Style                    | 2464 / 1729 (80°C/300 V)              |
| Number of positions             | 4                                     |
| 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         | 4x 0.34 mm <sup>2</sup> (Signal line) |
| Wire diameter incl. insulation  | 1.26 mm ±0.05 mm                      |
| External cable diameter         | 4.70 mm ±0.15 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, white, blue, black             |
| Thickness, insulation           | ≥ 0.23 mm (Core insulation)           |
| Thickness, outer sheath         | ≥ 0.76 mm                             |
| Overall twist                   | 4 wires, twisted                      |
| Max. conductor resistance       | ≤ 57 Ω/km (at 20 °C)                  |
| Insulation resistance           | ≥ 200 MΩ*km (at 20 °C)                |

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|   |   |
|---|---|
| Nominal voltage, cable                        | ≤ 300 V   |
| Test voltage                                  | ≥ 3000 V  |
| Minimum bending radius, fixed installation    | 5 x D   |
| Minimum bending radius, flexible installation | 10 x D  |
| Smallest bending radius, fixed installation   | 24 mm   |
| Smallest bending radius, movable installation | 47 mm   |
| Flame resistance                              | As per UL-Style 2464  |
| Resistance to oil                             | according to DIN EN 60811-2-1, 168 h at 60 °C   |
| Ambient temperature (operation)               | -25 °C ... 80 °C (cable, fixed installation)<br>-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                           | 4   |
| Shielded                                      | no  |
| Cable type                                    | PVC gray [500]<br>PVC gray 500  |
| Conductor structure signal line               | 19x 0.15 mm   |
| AWG signal line                               | 22  |
| Conductor cross-section                       | 4x 0.34 mm <sup>2</sup> (Signal line)   |
| Wire diameter incl. insulation                | 1.26 mm ±0.05 mm  |
| External cable diameter                       | 4.70 mm ±0.15 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, white, blue, black   |
| Thickness, insulation                         | ≥ 0.23 mm (Core insulation)   |
| Thickness, outer sheath                       | ≥ 0.76 mm   |
| Overall twist                                 | 4 wires, twisted  |
| Max. conductor resistance                     | max. 57 Ω/km (at 20 °C)   |
| Insulation resistance                         | ≥ 200 MΩ*km (at 20 °C)  |
| Nominal voltage, cable                        | ≤ 300 V   |
| Test voltage                                  | ≥ 3000 V  |
| Minimum bending radius, fixed installation    | 5 x D   |
| Minimum bending radius, flexible installation | 10 x D  |
| Smallest bending radius, fixed installation   | 24 mm   |
| Smallest bending radius, movable installation | 47 mm   |
| Ambient temperature (operation)               | -40 °C ... 80 °C (cable, fixed installation)<br>-25 °C ... 80 °C (Cable, flexible installation) |

## PVC yellow [540]

|                     |          |
|---------------------|----------|
| Cable weight        | 40 kg/km |
| Number of positions | 4        |

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|                                 |   |
|---------------------------------|---|
| 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 <sup>2</sup> (Signal line)              |
| Wire diameter incl. insulation  | 1.45 mm ±0.05 mm                                |
| External cable diameter         | 5.20 mm ±0.15 mm                                |
| Outer sheath, material          | PVC   |
| External sheath, color          | yellow  |
| Conductor material              | Bare Cu litz wires                              |
| Material wire insulation        | PVC   |
| Single wire, color              | brown, white, blue, black                       |
| Thickness, insulation           | ≥ 0.23 mm (Core insulation)                     |
|                                 | ≥ 0.76 mm (Outer cable sheath)                  |
| Overall twist                   | 4 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 (AC)                                    |
| Test voltage                    | ≥ 3000 V  |
| Flame resistance                | As per UL-Style 2464                            |
|                                 | according to UL 758/1581 FT1                    |
| Resistance to oil               | in accordance with DIN EN 60811-2-1             |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation)    |
|                                 | -25 °C ... 80 °C (Cable, flexible installation) |

## PVC yellow 105 °C [542]

|                                 |                                    |
|---------------------------------|------------------------------------|
| Cable weight                    | 43 kg/km                           |
| Number of positions             | 4                                  |
| 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 <sup>2</sup> (Signal line) |
| Wire diameter incl. insulation  | 1.55 mm ±0.05 mm                   |
| External cable diameter         | 5.50 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, white, blue, black          |
| Thickness, insulation           | ≥ 0.38 mm (Core insulation)        |
|                                 | ≥ 0.76 mm (Outer cable sheath)     |

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|                                 |   |
|---------------------------------|---|
| Overall twist                   | 4 wires, twisted                              |
| Max. conductor resistance       | ≤ 58 Ω/km (at 20 °C)                          |
| Insulation resistance           | ≥ 100 MΩ*km (at 20 °C)                        |
| Nominal voltage, cable          | ≤ 300 V                                       |
| Test voltage                    | ≥ 3000 V                                      |
| Flame resistance                | in accordance with UL-Style 2517              |
|                                 | in acc. to UL VW1                             |
| Ambient temperature (operation) | -25 °C ... 105 °C (cable, fixed 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                                  | 33.5 kg/km   |
| UL AWM Style                                  | 20549  |
| Number of positions                           | 4  |
| 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                       | 4x 0.34 mm <sup>2</sup> (Signal line)  |
| Wire diameter incl. insulation                | 1.3 mm ±0.05 mm (Signal line)  |
| External cable diameter                       | 4.80 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, white, blue, black  |
| Overall twist                                 | 4 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   | 20 mm  |
| Smallest bending radius, movable installation | 36 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 <sup>2</sup> |
|   | Max. bending cycles: 15000000, Bending radius: 50 mm, Traversing path: 0.9 m, Traversing rate: 5 m/s, Acceleration: 30 m/s <sup>2</sup>  |
| 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   |

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|                                 |   |
|---------------------------------|---|
| 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<br>Silicone-free   |
| Special properties              | Cable jacket is welding spark-resistant, recyclable, matt, low-adhesion, abrasion-resistant, flame-retardant, and self-extinguishing<br>Free from silicone and cadmium<br>Free of substances which would hinder coating with paint or varnish |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation)<br>-25 °C ... 80 °C (Cable, flexible installation)   |

## Environmental and real-life conditions

### Ambient conditions

|   |                                  |
|---|----------------------------------|
| Degree of protection  | IP65<br>IP67<br>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 |

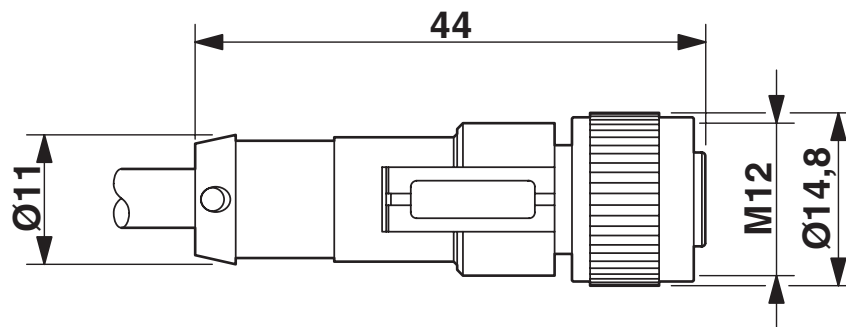
# SAC-4P-M12FS/.../... - Sensor/actuator cable

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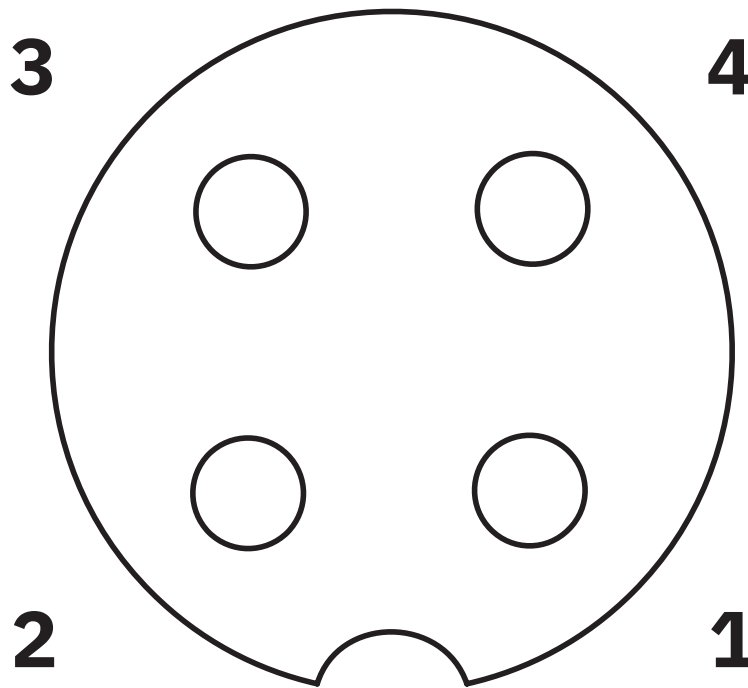
## Drawings

Dimensional drawing



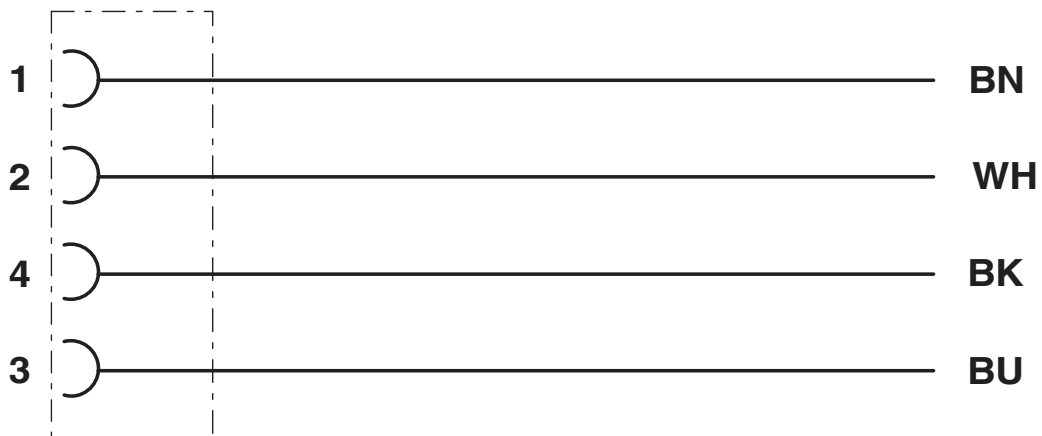
M12 x 1 socket, straight

Schematic diagram



Pin assignment M12 socket, 4-pos., A-coded, view female side

Circuit diagram



Contact assignment of the M12 plug and the M12 socket

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1696963>

|  <b>UL Listed</b><br>Approval ID: FILE E 221474 |                       |                       |                   |                             |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine  |                       |                       |                   |                             |
|  | 300 V                 | 4 A                   | -                 | -                           |

|  <b>cUL Listed</b><br>Approval ID: FILE E 221474 |                       |                       |                   |                             |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
|   | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| keine   |                       |                       |                   |                             |
|   | 300 V                 | 4 A                   | -                 | -                           |

|  <b>EAC-RoHS</b><br>Approval ID: RU D-DE.HB35.B.00387 |  |
|--|--|
|--|--|

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## Classifications

### ECLASS

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

### ETIM

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

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

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