

# SAC-4P-M12MS/5,0-PUR/M12FR-3L - Sensor/actuator cable



1681211

<https://www.phoenixcontact.com/us/products/1681211>

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Sensor/actuator cable, 4-position, PUR halogen-free, black-gray RAL 7021, Plug straight M12, coding: A, with 3 LEDs, on Socket angled M12, coding: A, with 3 LEDs, cable length: 5 m

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1681211       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | BF03          |
| Product key                          | AF1CCA        |
| GTIN                                 | 4017918331368 |
| Weight per piece (including packing) | 147.6 g       |
| Weight per piece (excluding packing) | 150.8 g       |
| Customs tariff number                | 85444290      |
| Country of origin                    | PL            |

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## Technical data

### Product properties

|                      |                       |
|----------------------|-----------------------|
| Product type         | Sensor/actuator cable |
| Number of positions  | 4                     |
| No. of cable outlets | 1                     |
| 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 $U_N$ | 24 V                       |
| Nominal current $I_N$ | 4 A                        |

### Mechanical properties

#### Mechanical data

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

### Signaling

|                        |        |
|------------------------|--------|
| Status display         | 3 LEDs |
| Status display present | yes    |

### Connector

#### Connection 1

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

#### Connection 2

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

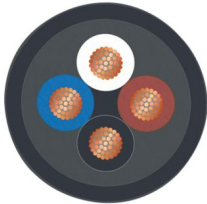
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## Cable/line

|                                               |                                                                                                                                                                |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cable length                                  | 5 m                                                                                                                                                            |
| PUR halogen-free black [PUR]                  |                                                                                                                                                                |
| Dimensional drawing                           |                                                                              |
| 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]                                                                                                                                   |
| 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: ≥2000000, 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)                     |

## 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)               |
| Ambient temperature (operation) (Cable, fixed installation)       | -40 °C ... 80 °C (cable, fixed installation)   |
| Ambient temperature (operation) (Cable, flexible installation)    | -5 °C ... 80 °C (Cable, flexible installation) |

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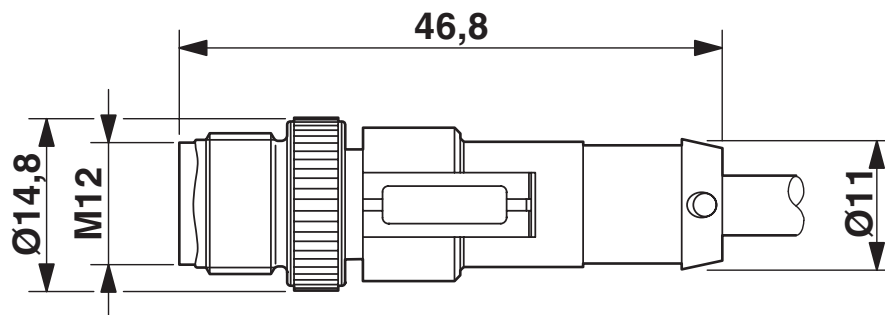


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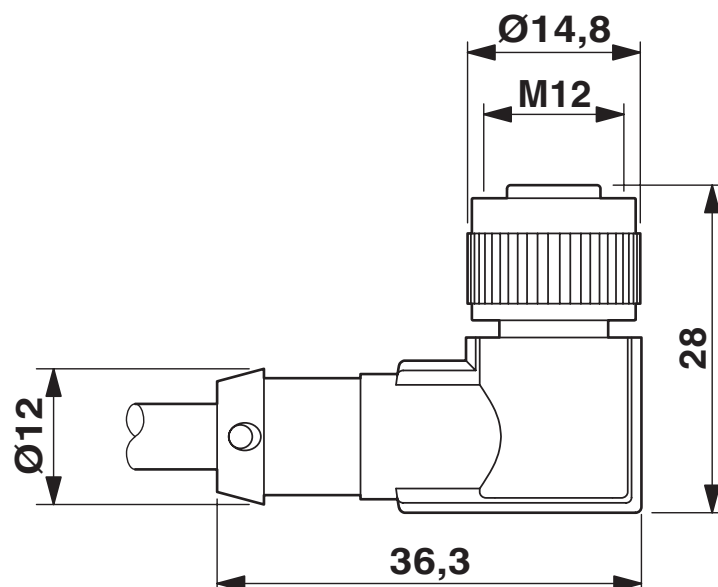
## Drawings

Dimensional drawing



Plug, M12 x 1, straight, shielded

Dimensional drawing



Socket M12 x 1, angled, with LED

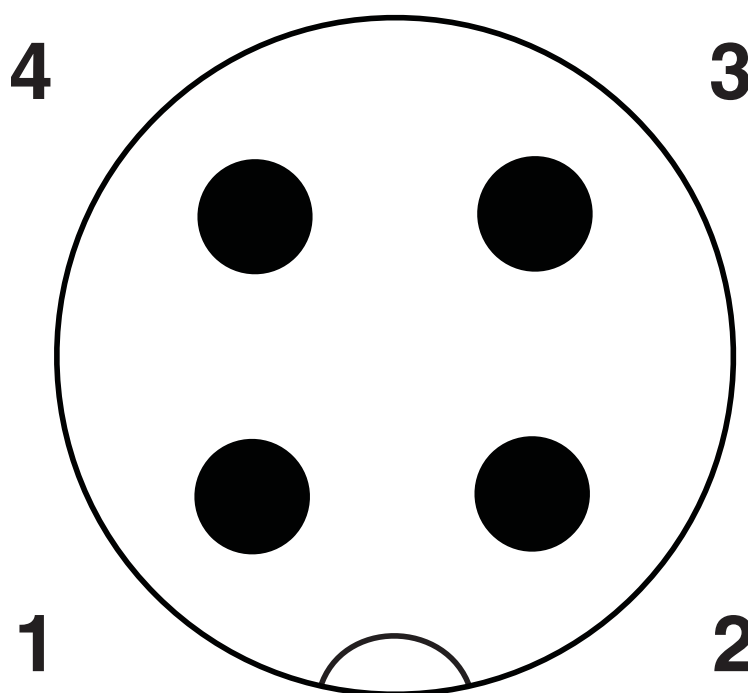
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Schematic diagram



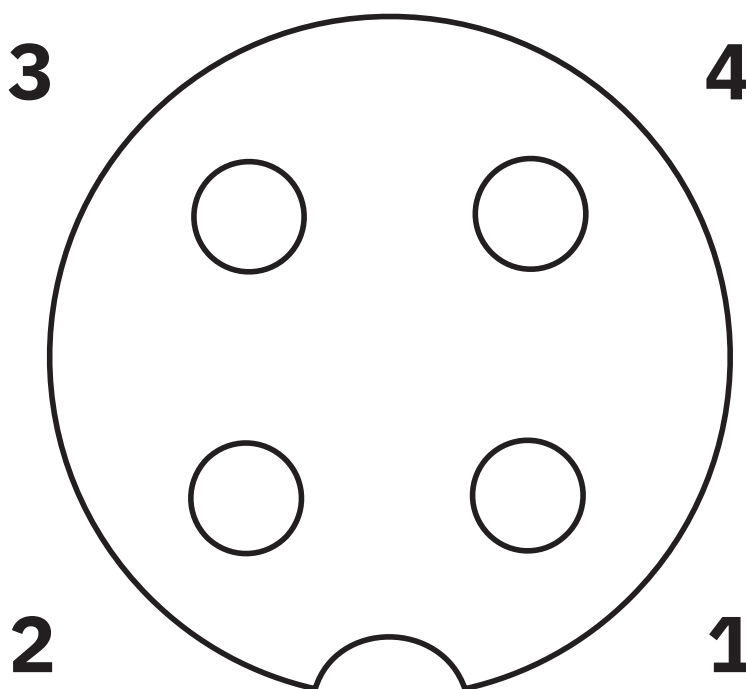
Pin assignment M12 plug, 4-pos., A-coded, view plug side

# SAC-4P-M12MS/5,0-PUR/M12FR-3L - Sensor/actuator cable

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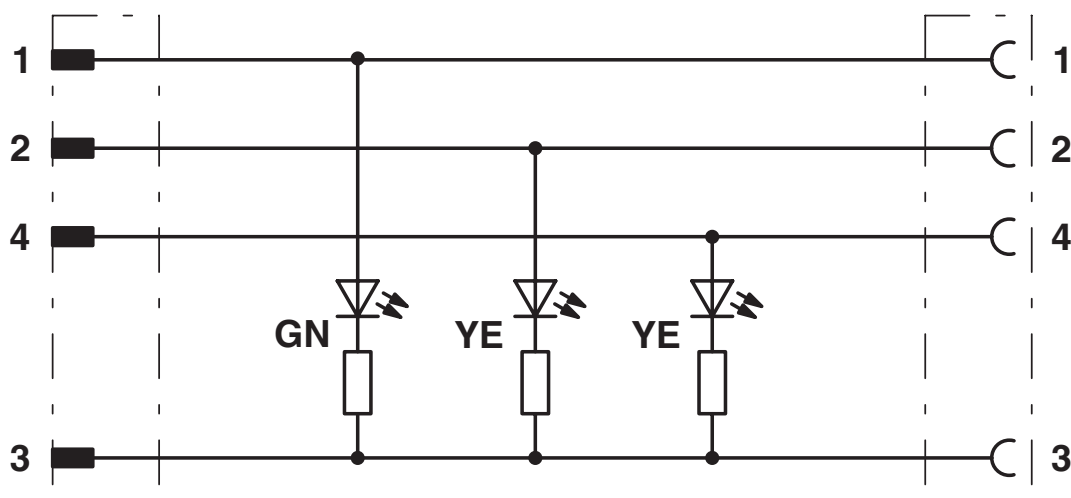
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Schematic diagram



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

Circuit diagram



# SAC-4P-M12MS/5,0-PUR/M12FR-3L - Sensor/actuator cable



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1681211>

|                                                                                                                                  |                                |                                |                   |                               |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|-------------------|-------------------------------|
|  <b>UL Listed</b><br>Approval ID: FILE E 221474 |                                |                                |                   |                               |
|                                                                                                                                  | Nominal voltage U <sub>N</sub> | Nominal current I <sub>N</sub> | Cross section AWG | Cross section mm <sup>2</sup> |
| keine                                                                                                                            |                                |                                |                   |                               |
|                                                                                                                                  | 24 V                           | 4 A                            | -                 | -                             |

|                                                                                                                                   |                                |                                |                   |                               |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|-------------------|-------------------------------|
|  <b>cUL Listed</b><br>Approval ID: FILE E 221474 |                                |                                |                   |                               |
|                                                                                                                                   | Nominal voltage U <sub>N</sub> | Nominal current I <sub>N</sub> | Cross section AWG | Cross section mm <sup>2</sup> |
| keine                                                                                                                             |                                |                                |                   |                               |
|                                                                                                                                   | 24 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 9.0 | 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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