

# SAC-3P-M12MS/ 1,5-PUR/M12FR B - Sensor/actuator cable



1668412

<https://www.phoenixcontact.com/us/products/1668412>

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



Sensor/actuator cable, 3-position, PUR halogen-free, black-gray RAL 7021, Plug straight M12, coding: A, on Socket angled M12, coding: A, PIN 2+4 bridged, cable length: 1.5 m

## Your advantages

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

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1668412       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | BF03          |
| Product key                          | AF1CBA        |
| GTIN                                 | 4017918135775 |
| Weight per piece (including packing) | 53.04 g       |
| Weight per piece (excluding packing) | 51.4 g        |
| Customs tariff number                | 85444290      |
| Country of origin                    | PL            |

# SAC-3P-M12MS/ 1,5-PUR/M12FR B - Sensor/actuator cable



1668412

<https://www.phoenixcontact.com/us/products/1668412>

## Technical data

### Product properties

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

### Insulation characteristics

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

### Material specifications

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

### Electrical properties

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

### 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

#### Connection 1

# SAC-3P-M12MS/ 1,5-PUR/M12FR B - Sensor/actuator cable



1668412

<https://www.phoenixcontact.com/us/products/1668412>

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

## Connection 2

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

## Cable/line

|              |       |
|--------------|-------|
| Cable length | 1.5 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]                                                                                               |
| Conductor structure signal line               | 42x 0.10 mm                                                                                                                |
| AWG signal line                               | 22                                                                                                                         |
| Conductor cross section                       | 3x 0.34 mm <sup>2</sup> (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)<br>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,<br>Bending radius: 10 x D, Traversing path: 10 m, Traversing rate: 3 |

# SAC-3P-M12MS/ 1,5-PUR/M12FR B - Sensor/actuator cable



1668412

<https://www.phoenixcontact.com/us/products/1668412>

|                                 |                                                                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | m/s, Acceleration: 10 m/s <sup>2</sup>                                                                                                                         |
| Dynamic load capacity (torsion) | Torsion: $\pm 180^\circ/\text{m}$ , Torsion cycles: $\geq 2000000$ , Torsional frequency: 35 cycles/min.                                                       |
| Halogen-free                    | in accordance with DIN VDE 0472 part 815                                                                                                                       |
| Flame resistance                | in accordance with UL 758/1581 FT2<br>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<br>hydrolysis and microbe resistant<br>partly UV-resistant (in accordance with DIN EN ISO 4892-2-A) |
| Special properties              | Flexible cable conduit capable<br>Silicone-free<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)               |
| 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) |

## Standards and regulations

### M12

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

# SAC-3P-M12MS/ 1,5-PUR/M12FR B - Sensor/actuator cable

1668412

<https://www.phoenixcontact.com/us/products/1668412>

## Drawings

Dimensional drawing



Plug, M12 x 1, straight, shielded

Dimensional drawing



M12 x 1 socket, angled

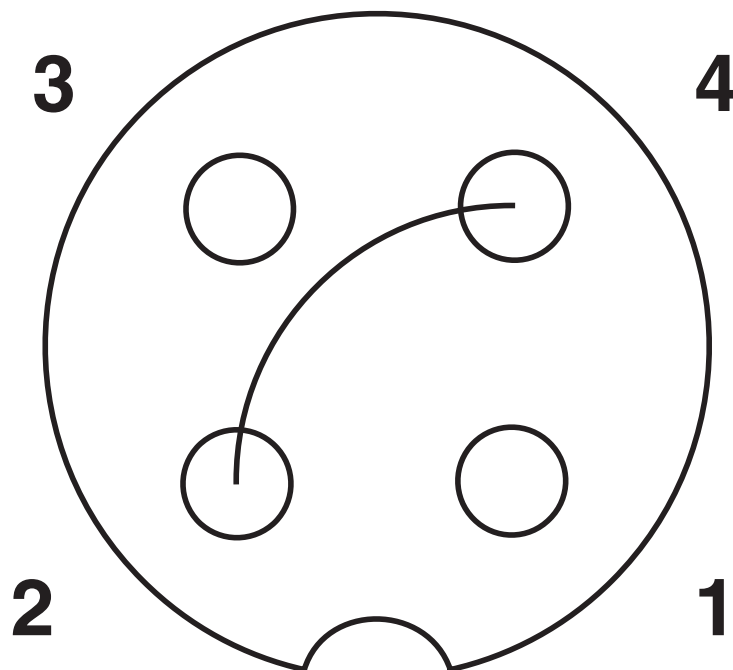
# SAC-3P-M12MS/ 1,5-PUR/M12FR B - Sensor/actuator cable



1668412

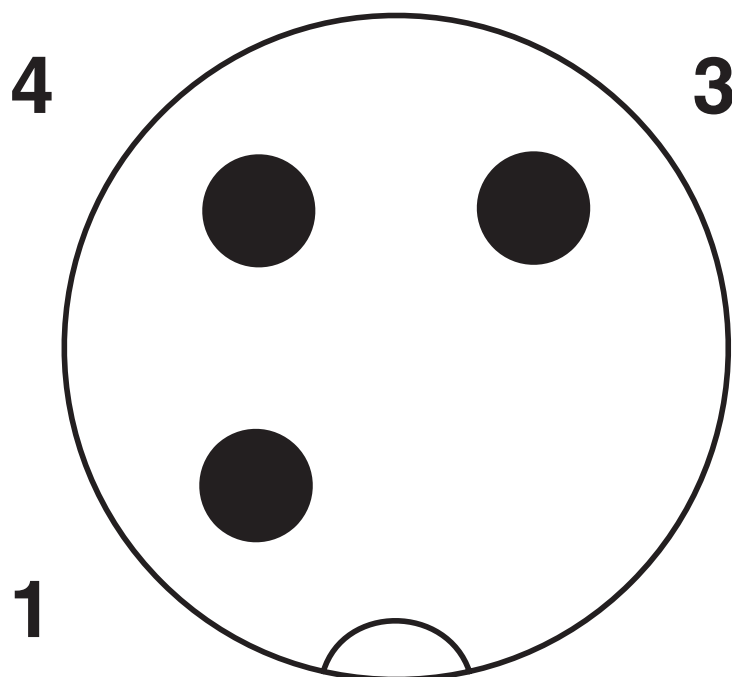
<https://www.phoenixcontact.com/us/products/1668412>

Schematic diagram



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

Schematic diagram



Pin assignment M12, 3-pos.

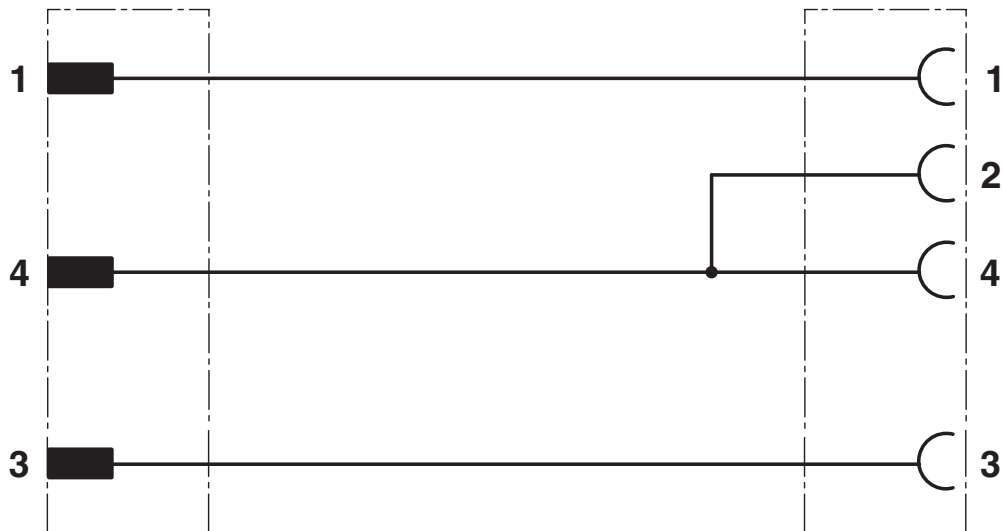
# SAC-3P-M12MS/ 1,5-PUR/M12FR B - Sensor/actuator cable



1668412

<https://www.phoenixcontact.com/us/products/1668412>

Circuit diagram



Contact assignment of M12 plugs / sockets bridged

1668412  
<https://www.phoenixcontact.com/us/products/1668412>

Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1668412>

|                                                                                                                                              |                                |                                |                   |                               |
|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|-------------------|-------------------------------|
| <div> <b>UL Listed</b><br/>Approval ID: FILE E 221474</div> |                                |                                |                   |                               |
|                                                                                                                                              | Nominal voltage U <sub>N</sub> | Nominal current I <sub>N</sub> | Cross section AWG | Cross section mm <sup>2</sup> |
| keine                                                                                                                                        |                                |                                |                   |                               |
|                                                                                                                                              | 300 V                          | 4 A                            | -                 | -                             |

|                                                                                                                                               |                                |                                |                   |                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|-------------------|-------------------------------|
| <div> <b>cUL Listed</b><br/>Approval ID: FILE E 221474</div> |                                |                                |                   |                               |
|                                                                                                                                               | Nominal voltage U <sub>N</sub> | Nominal current I <sub>N</sub> | Cross section AWG | Cross section mm <sup>2</sup> |
| keine                                                                                                                                         |                                |                                |                   |                               |
|                                                                                                                                               | 300 V                          | 4 A                            | -                 | -                             |

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

# SAC-3P-M12MS/ 1,5-PUR/M12FR B - Sensor/actuator cable



1668412

<https://www.phoenixcontact.com/us/products/1668412>

## Classifications

### ECLASS

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

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001855 |
|----------|----------|

### UNSPSC

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

1668412  
<https://www.phoenixcontact.com/us/products/1668412>

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%               |
| EF3.0 Climate Change                    |                                          |
| CO2e kg                                 | 0.598 kg CO2e                            |

Phoenix Contact 2025 © - all rights reserved  
<https://www.phoenixcontact.com>

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