

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



1682650

<https://www.phoenixcontact.com/us/products/1682650>

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Sensor/actuator cable, 3-position, PUR halogen-free, black-gray RAL 7021, shielded (Advanced Shielding Technology), Plug straight M12, coding: A, on free cable end, cable length: 1.5 m

## Your advantages

- Easy and safe: 100 % electrically tested plug-in components
- Reliable signal transmission – 360° shielding in environments with electromagnetic interference

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1682650       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | BF03          |
| Product key                          | AF1CIA        |
| GTIN                                 | 4017918168933 |
| Weight per piece (including packing) | 65.9 g        |
| Weight per piece (excluding packing) | 62.4 g        |
| Customs tariff number                | 85444290      |
| Country of origin                    | PL            |

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## Technical data

### Product properties

|                      |                       |
|----------------------|-----------------------|
| Product type         | Sensor/actuator cable |
| Application          | Standard              |
| Number of positions  | 3                     |
| No. of cable outlets | 1                     |
| Shielded             | yes                   |
| 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 $U_N$ | 48 V AC                    |
|                       | 60 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

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|                     |                   |
|---------------------|-------------------|
| Type                | Plug straight M12 |
| Number of positions | 3                 |
| Coding type         | A                 |

## Connection 2

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

## Cable/line

|              |       |
|--------------|-------|
| Cable length | 1.5 m |
|--------------|-------|

## PUR halogen-free black [PUR]

|  |  |
|--|--|
| Cable weight   | 31 kg/km   |
| UL AWM Style   | 20549  |
| Number of positions  | 3  |
| Shielded   | yes  |
| 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                                    | 4.65 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   |
| Optical shield covering                                    | 80 %   |
| 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                | 23 mm  |
| Smallest bending radius, movable installation              | 47 mm  |
| 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: ≥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  |
| Highly resistant to acids, alkaline solutions and solvents |  |

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|                                 |   |
|---------------------------------|---|
| Other resistance                | hydrolysis and microbe resistant                                    |
|                                 | partly UV-resistant (in accordance with DIN EN ISO 4892-2-A)        |
| Special properties              | Flexible cable conduit capable                                      |
|                                 | Silicone-free   |
|                                 | Free of substances which would hinder coating with paint or varnish |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation)                        |
|                                 | -25 °C ... 80 °C (Cable, flexible installation)                     |

## Environmental and real-life conditions

### Ambient conditions

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

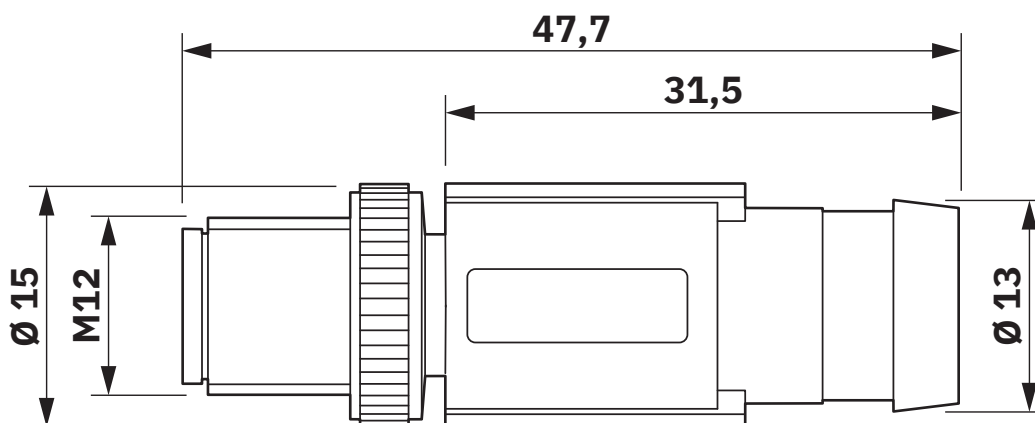
## Standards and regulations

### M12

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

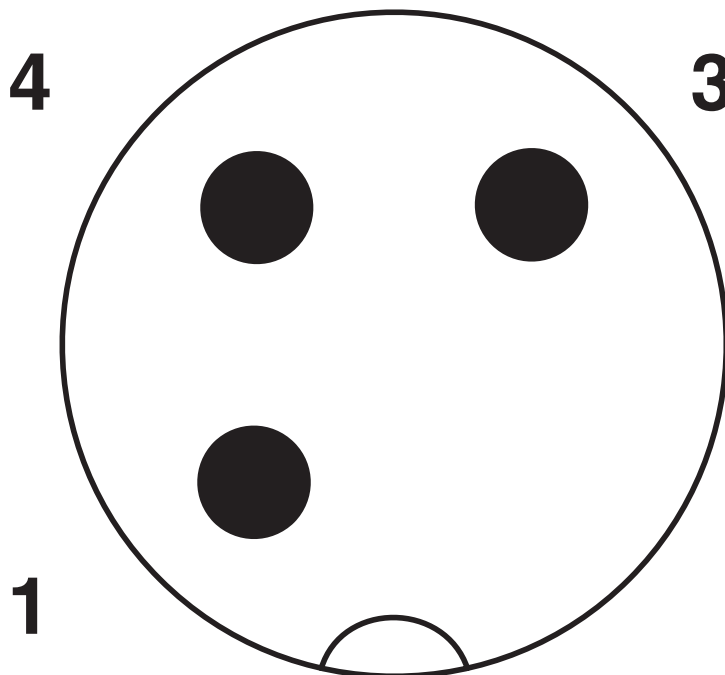
## Drawings

Dimensional drawing



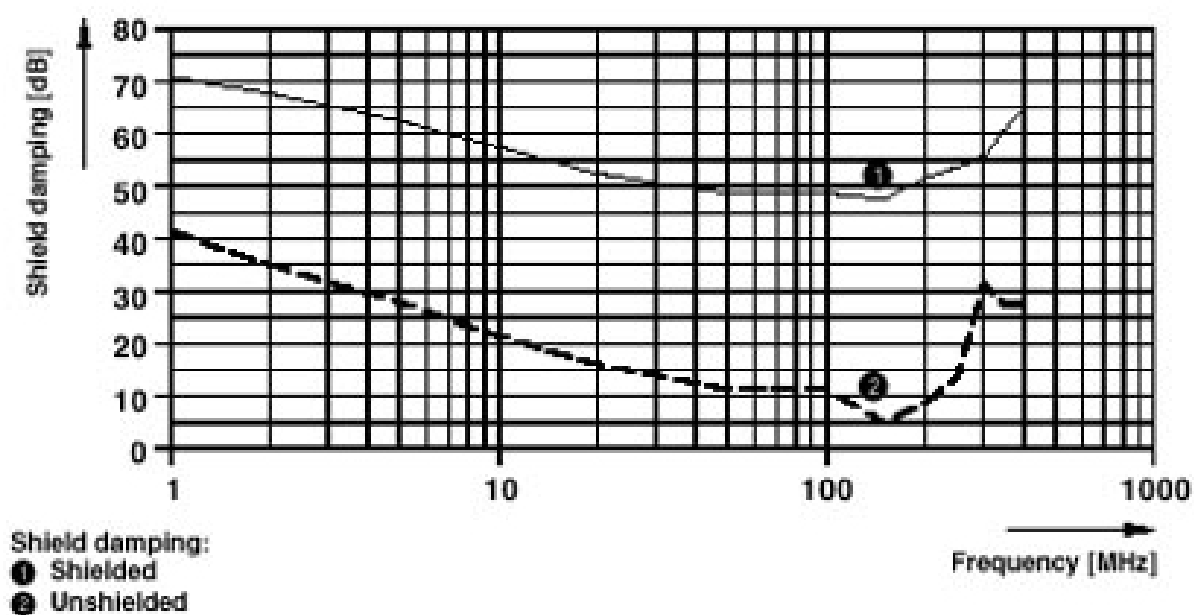
Plug, M12 x 1, straight, shielded

Schematic diagram



Pin assignment M12 plug, 3-pos., A-coded, view male side

Diagram



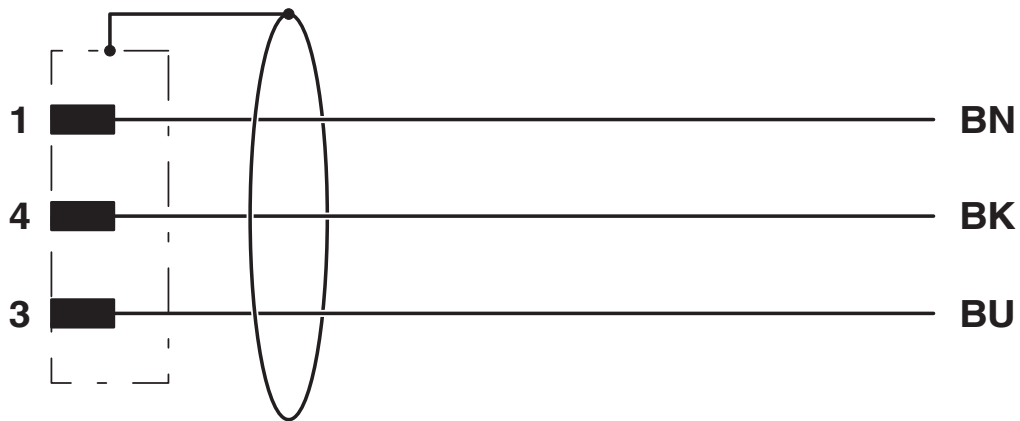
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Circuit diagram



Contact assignment of the M12 plug

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## Approvals

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### UL Listed

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                   | -                 | -                           |



### cUL Listed

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                   | -                 | -                           |



### EAC-RoHS

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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