

# SAC-3P-M12MS/1,5-PUR/M 8FS - Sensor/actuator cable



1668810

<https://www.phoenixcontact.com/us/products/1668810>

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Sensor/actuator cable, 3-position, PUR halogen-free, black-gray RAL 7021, Plug straight M12, coding: A, on Socket straight M8, coding: A, cable length: 1.5 m

## Your advantages

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

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1668810       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | BF03          |
| Product key                          | AF1CBA        |
| GTIN                                 | 4017918128623 |
| Weight per piece (including packing) | 38 g          |
| Weight per piece (excluding packing) | 40.78 g       |
| Customs tariff number                | 85444290      |
| Country of origin                    | DE            |

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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             | 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 $U_N$ | 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) |
|                   | 0.2 Nm (M8 connectors) |

### Connector

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## Connection 1

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

## Connection 2

|                     |                    |
|---------------------|--------------------|
| Type                | Socket straight M8 |
| Number of positions | 3                  |
| Coding type         | A                  |

## Cable/line

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

## PUR halogen-free black [PUR]

|                                 |   |
|---------------------------------|---|
| Dimensional drawing             |  |
| Cable weight                    | 18 kg/km  |
| UL AWM Style                    | 20549 / 10493 (80°C/300 V)  |
| Number of positions             | 3   |
| Shielded                        | no  |
| Cable type                      | PUR halogen-free black [PUR]  |
| Conductor structure signal line | 32x 0.10 mm   |
| AWG signal line                 | 24  |
| Conductor cross-section         | 3x 0.25 mm <sup>2</sup> (Signal line)   |
| Wire diameter incl. insulation  | 1.17 mm ±0.02 mm  |
| External cable diameter         | 3.60 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)   |
| Thickness, outer sheath         | approx. 0.50 mm   |
| Overall twist                   | 3 wires, twisted  |
| Length of twist, overall twist  | 40 mm   |
| Max. conductor resistance       | ≤ 78 Ω/km (at 20 °C)  |
| Insulation resistance           | ≥ 100 GΩ*km (at 20 °C)  |
| Nominal voltage, cable          | ≤ 300 V   |

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|   |   |
|---|---|
| Test voltage                                  | ≥ 3000 V  |
| Smallest bending radius, fixed installation   | 18 mm   |
| Smallest bending radius, movable installation | 36 mm   |
| Dynamic load capacity (bending)               | Max. bending cycles: 10000000, Bending radius: 44 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  |
| 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                              | hydrolysis and microbe resistant<br>Highly resistant to acids, alkaline solutions and solvents<br>Resistant to salt water<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

|                          |                 |
|--------------------------|-----------------|
| Standard designation     | M12 connector   |
| Standards/specifications | IEC 61076-2-101 |
| Standard designation     | M8 connector    |
| Standards/specifications | IEC 61076-2-104 |

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## Drawings

Dimensional drawing



Plug, M12 x 1, straight, shielded

Dimensional drawing



Socket M8 x 1, straight

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Schematic diagram



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

Schematic diagram



Pin assignment M8 socket, 3-pos., view female side

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Circuit diagram



Contact assignment of M12 plugs / M8 sockets

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## Approvals

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|  <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  |                       |                       |                   |                             |
|  | 60 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   |                       |                       |                   |                             |
|   | 60 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% |
|-------------------------------------|----------------------------|

### EF3.1 Climate Change

|         |               |
|---------|---------------|
| CO2e kg | 0.474 kg CO2e |
|---------|---------------|

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