

# SAC-3P-M12MS/2,0-PUR/M 8FS - Sensor/actuator cable



1698097

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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, cable length: 2 m

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1698097       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | BF03          |
| Product key                          | AF1CBA        |
| GTIN                                 | 4017918331672 |
| Weight per piece (including packing) | 47.9 g        |
| Weight per piece (excluding packing) | 38.64 g       |
| Customs tariff number                | 85444290      |
| Country of origin                    | DE            |

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## Technical data

### Product properties

|                      |                       |
|----------------------|-----------------------|
| Product type         | Sensor/actuator cable |
| 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) |
|-------------------|------------------------|

### Connector

#### Connection 1

|      |                   |
|------|-------------------|
| Type | Plug straight M12 |
|------|-------------------|

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|                     |   |
|---------------------|---|
| Number of positions | 3 |
| Coding type         | A |

## Connection 2

|                     |                    |
|---------------------|--------------------|
| Type                | Socket straight M8 |
| Number of positions | 3                  |

## Cable/line

|              |     |
|--------------|-----|
| Cable length | 2 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 mm² (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                                                                             |
| 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,                               |

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|                                 |                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------|
|                                 | 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: $\geq 20000000$ , Torsional frequency: 35 cycles/min. |
| Halogen-free                    | in accordance with DIN VDE 0472 part 815                                                      |
| 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                | hydrolysis and microbe resistant                                                              |
|                                 | Highly resistant to acids, alkaline solutions and solvents                                    |
|                                 | Resistant to salt water                                                                       |
|                                 | 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                             |
|                                                                   | 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 |
| Standard designation     | M8 connector    |
| Standards/specifications | IEC 61076-2-104 |

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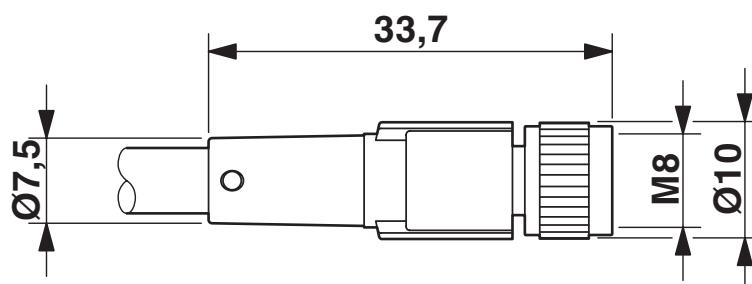
## Drawings

Dimensional drawing



Plug, M12 x 1, straight, shielded

Dimensional drawing



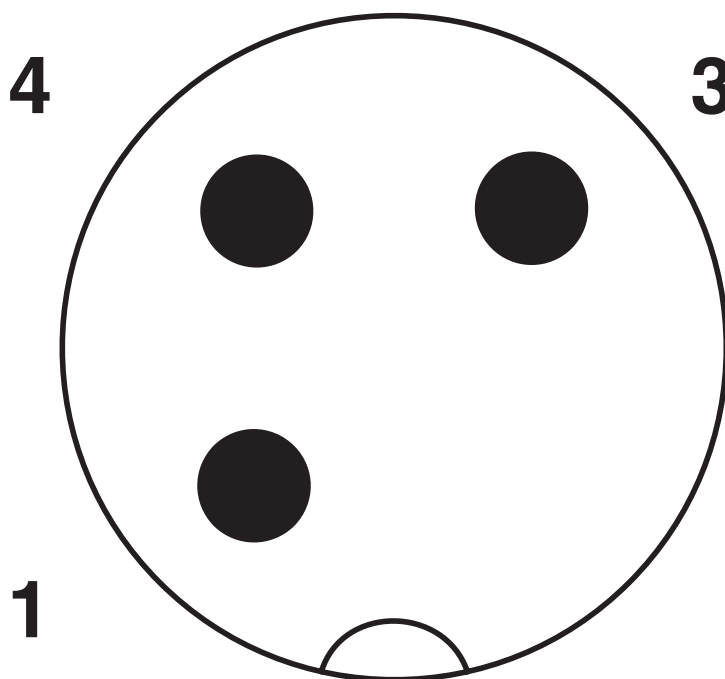
Socket M8 x 1, straight

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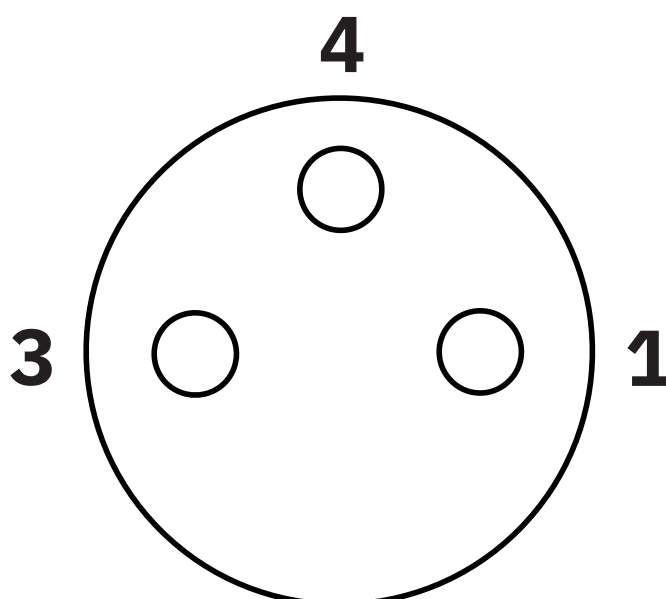
<https://www.phoenixcontact.com/us/products/1698097>

Schematic diagram



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

Schematic diagram



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

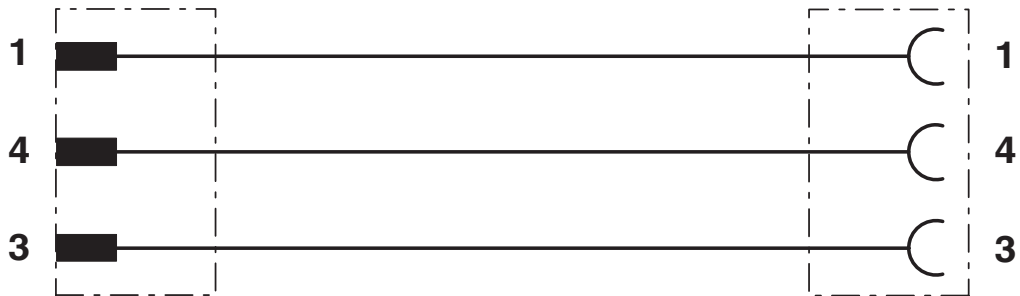
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Circuit diagram



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 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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