

# SAC-3P-M 8MS/1,5-PUR/M 8FR-2L - Sensor/actuator cable



1682003

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Sensor/actuator cable, 3-position, PUR halogen-free, black-gray RAL 7021, Plug straight M8, coding: A, with 2 LEDs, on Socket angled M8, coding: A, with 2 LEDs, cable length: 1.5 m

## Your advantages

- Easy and safe: 100 % electrically tested plug-in components
- Convenient: increased machine availability thanks to quick and easy diagnostics

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1682003       |
| Packing unit                         | 1 pc          |
| Minimum order quantity               | 1 pc          |
| Sales key                            | BF01          |
| Product key                          | AF1BBA        |
| GTIN                                 | 4017918158668 |
| Weight per piece (including packing) | 37.5 g        |
| Weight per piece (excluding packing) | 36 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             | 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         | 2 LEDs |
| Status display present | yes    |

### Connection data

#### Conductor connection

|                   |                        |
|-------------------|------------------------|
| Tightening torque | 0.2 Nm (M8 connectors) |
|-------------------|------------------------|

### Connector

#### Connection 1

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

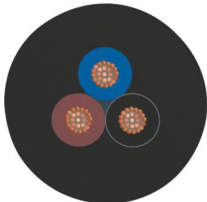
## Connection 2

|                     |                  |
|---------------------|------------------|
| Type                | Socket angled 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 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                                                                               |

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|                                               |                                                                                                                                                                                           |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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: $\pm 180^\circ/\text{m}$ , Torsion cycles: $\geq 5000000$ , 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

### M8

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

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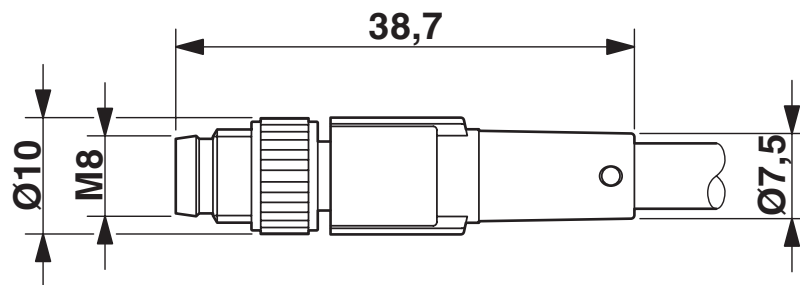


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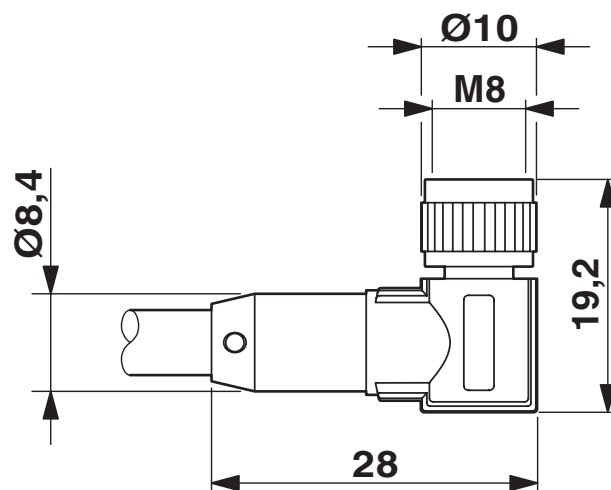
## Drawings

Dimensional drawing



M8 x 1 male plug, straight version

Dimensional drawing



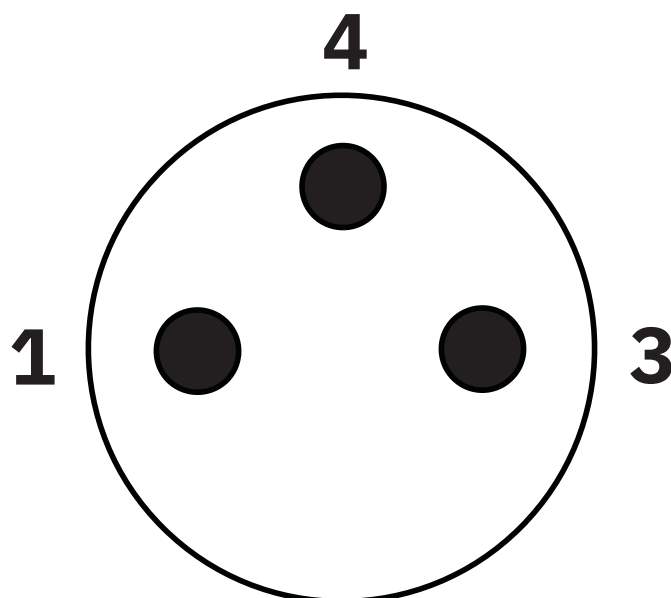
Socket M8 x 1, angled

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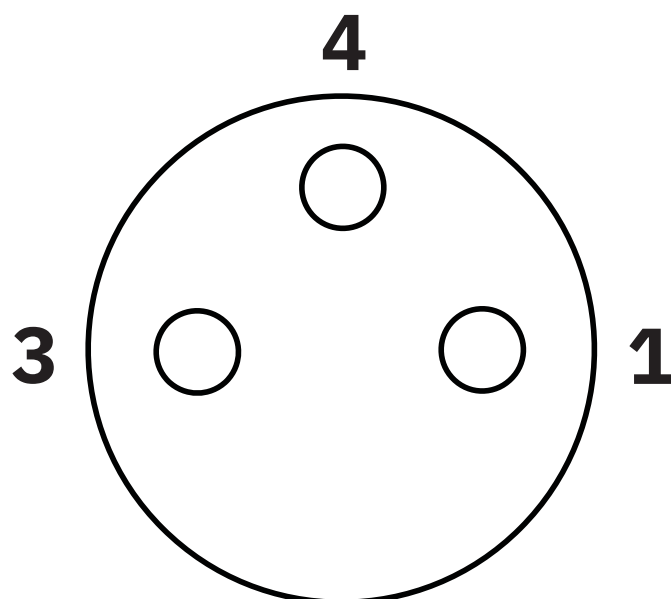
<https://www.phoenixcontact.com/us/products/1682003>

Schematic diagram



Pin assignment M8 plug, 3-pos., view male side

Schematic diagram



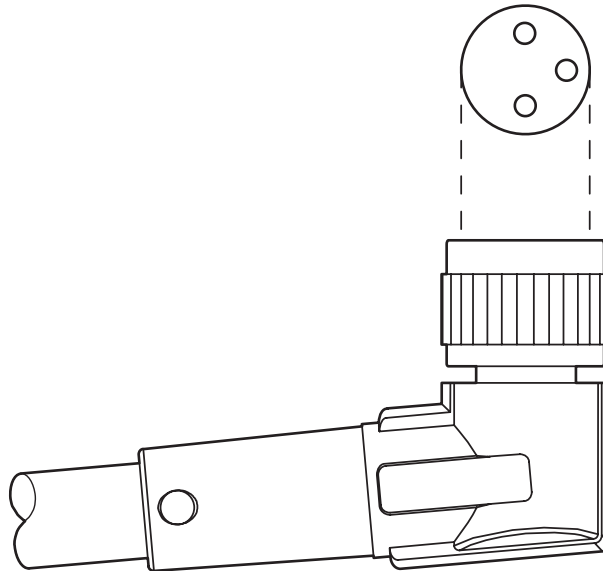
Pin assignment M8 socket, 3-pos., view female side

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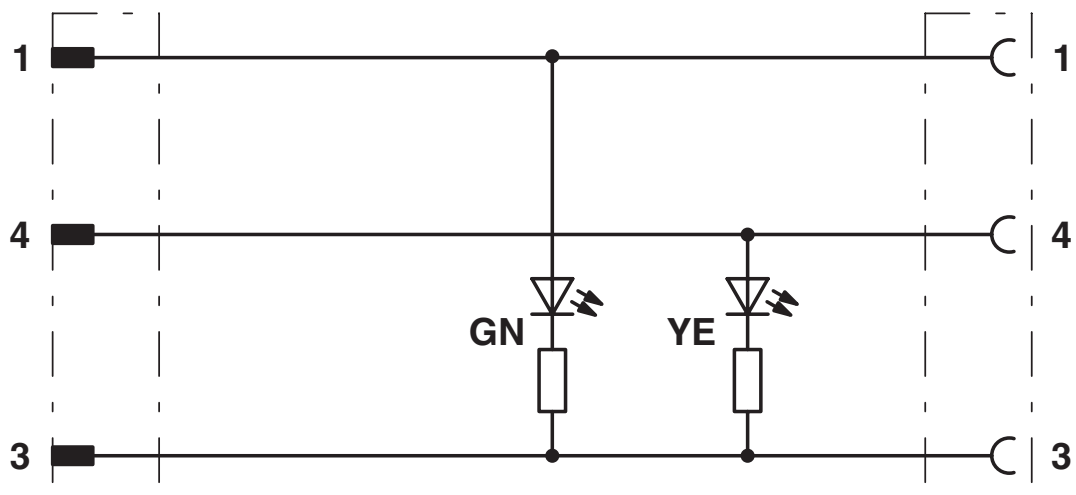
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Schematic diagram



Layout of connector pin assignments

Circuit diagram



Contact assignment of M8 plugs/sockets

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1682003>

|  <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 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 | 0.451 kg CO2e |
|---------|---------------|

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