

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

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Sensor/actuator cable, 5-position, Variable cable type, free cable end, on Socket angled M12 SPEEDCON, A-coded, with 3 LEDs, cable length: Free input (0.2 ... 40.0 m)

### Why buy this product

- ✓ Easy and safe: 100% electrically tested plug-in components
- ✓ Save time, thanks to installation with SPEEDCON fast locking system
- ✓ Flexible solutions - configurable materials with variable cable types and cable lengths
- ✓ Convenient: increased machine availability thanks to quick and easy diagnostics



### Key Commercial Data

|                        |        |
|------------------------|--------|
| Packing unit           | 1 STK  |
| Minimum order quantity | 25 STK |

### Technical data

#### Dimensions

|  |                             |
|--|-----------------------------|
| Length of cable                            | Free input (0.2 ... 40.0 m) |
| Stripping length of the free conductor end | 50 mm                       |

#### Ambient conditions

|                                 |                                  |
|---------------------------------|----------------------------------|
| Ambient temperature (operation) | -25 °C ... 90 °C (Plug / socket) |
| Degree of protection            | IP65                             |
|                                 | IP67                             |
|                                 | IP68                             |

#### General

|                       |             |
|-----------------------|-------------|
| Rated current at 40°C | 4 A         |
| Rated voltage         | 24 V        |
|                       | 24 V DC     |
| Number of positions   | 5           |
| Color handle area     | transparent |
| Insulation resistance | ≥ 100 MΩ    |

# Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

## Technical data

### General

|                              |                               |
|------------------------------|-------------------------------|
| Coding                       | A - standard                  |
| Standards/regulations        | M12 connector IEC 61076-2-101 |
| Status display               | 3 LEDs                        |
| Protective circuit/component | Unwired                       |
| Overvoltage category         | II                            |
| Degree of pollution          | 3                             |
| Insertion/withdrawal cycles  | ≥ 100                         |
| Torque                       | 0.4 Nm (M12 connector)        |

### Material

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

### Line characteristics

|      |   |
|------|---|
| Note | This item is a sensor/actuator cable with a freely selectable cable type. The technical data for all possible cable types is listed in the table below. |
|------|---|

### Standards and Regulations

|  |                 |
|--|-----------------|
| Standard designation                   | M12 connector   |
| Standards/regulations                  | IEC 61076-2-101 |
| Flammability rating according to UL 94 | HB              |

### PUR/PVC gray [100]

|   |   |
|---|---|
| Cable type                                  | PUR/PVC gray                            |
| Cable type (abbreviation)                   | 100                                     |
| Cable abbreviation                          | LiYY-11Y                                |
| Conductor cross section                     | 0.34 mm <sup>2</sup>                    |
| AWG signal line                             | 22                                      |
| Conductor structure signal line             | 42x 0.10 mm                             |
| Core diameter including insulation          | 1.5 mm ±0.05 mm                         |
| Thickness, insulation                       | ≥ 0.3 mm (Core insulation)              |
|   | ≥ 0.38 mm (Outer cable sheath)          |
|   | approx. 0.35 mm (Inner sheath)          |
| Wire colors                                 | brown, white, blue, black, green-yellow |
| Overall twist                               | 5 wires around filler to the core       |
| External sheath, color                      | gray RAL 7001                           |
| External cable diameter D                   | 5.9 mm ±0.2 mm                          |
| Smallest bending radius, fixed installation | 29.5 mm                                 |

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

#### PUR/PVC gray [100]

|   |  |
|---|--|
| Smallest bending radius, movable installation | 59 mm  |
| Number of bending cycles                      | 2000000  |
| Bending radius                                | 59 mm  |
| Traversing path                               | 5 m  |
| Traversing rate                               | 3 m/s  |
| Cable weight                                  | 50 kg/km                                       |
| Outer sheath, material                        | PUR  |
| Material, inner sheath                        | PVC  |
| Material, filler                              | PVC  |
| Material conductor insulation                 | PVC  |
| Conductor material                            | Bare Cu litz wires                             |
| Insulation resistance                         | ≥ 100 MΩ*km (at 20 °C)                         |
| Conductor resistance                          | max. 58 Ω/km (at 20 °C)                        |
| Nominal voltage, cable                        | ≤ 300 V  |
| Test voltage, cable                           | ≥ 3000 V                                       |
| Flame resistance                              | As per UL-Style 2464                           |
| Ambient temperature (operation)               | -25 °C ... 80 °C (cable, fixed installation)   |
|   | -5 °C ... 80 °C (cable, flexible installation) |

#### PUR, black, 5th conductor gray [115]

|   |                                 |
|---|---------------------------------|
| Cable type                                    | PUR, black, 5th conductor gray  |
| Cable type (abbreviation)                     | 115                             |
| Cable abbreviation                            | Li9Y11Y-HF                      |
| UL AWM style                                  | 20549 / 10493 (80°C/300 V)      |
| Conductor cross section                       | 5x 0.34 mm <sup>2</sup>         |
| AWG signal line                               | 22                              |
| Conductor structure signal line               | 42x 0.10 mm                     |
| Core diameter including insulation            | 1.27 mm ±0.02 mm                |
| Thickness, insulation                         | ≥ 0.21 mm                       |
| Wire colors                                   | Brown, white, blue, black, gray |
| Overall twist                                 | 5 cores, twisted                |
| External sheath, color                        | black-gray RAL 7021             |
| Outer sheath thickness                        | approx. 0.7 mm                  |
| External cable diameter D                     | 5 mm ±0.15 mm                   |
| Minimum bending radius, fixed installation    | 5 x D                           |
| Minimum bending radius, flexible installation | 10 x D                          |
| Number of bending cycles                      | 4000000                         |
| Bending radius                                | 50 mm                           |
| Traversing path                               | 10 m                            |
| Traversing rate                               | 3 m/s                           |
| Acceleration                                  | 10 m/s <sup>2</sup>             |

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

PUR, black, 5th conductor gray [115]

|                                 |   |
|---------------------------------|---|
| Cable weight                    | 35 kg/km  |
| Outer sheath, material          | PUR   |
| Material, filler                | PP  |
| Material conductor insulation   | PP  |
| Conductor material              | Bare Cu litz wires  |
| Conductor resistance            | ≤ 58 Ω/km   |
| Nominal voltage, cable          | ≤ 300 V   |
| Test voltage, cable             | ≥ 3000 V  |
| Special properties              | Flexible cable conduit capable                                      |
|                                 | Silicone-free   |
|                                 | Free of substances which would hinder coating with paint or varnish |
|                                 | flexible  |
| Flame resistance                | in accordance with DIN UL-Style 20549                               |
|                                 | in accordance with UL 758/1581 FT2                                  |
| Halogen-free                    | in accordance with DIN VDE 0472 part 815                            |
| Resistance to oil               | in accordance with DIN EN 60811-2-1                                 |
| Other resistance                | partly UV-resistant in accordance with DIN EN ISO 4892-2-A          |
|                                 | hydrolysis and microbe resistant                                    |
|                                 | Resistant to salt water   |
|                                 | Low adhesion  |
|                                 | abrasion-resistant  |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation)                        |
|                                 | -25 °C ... 80 °C (cable, flexible installation)                     |

PUR/PVC yellow [140]

|                                    |   |
|------------------------------------|---|
| Cable type                         | PUR/PVC yellow                          |
| Cable type (abbreviation)          | 140                                     |
| Cable abbreviation                 | LiY-11Y                                 |
| UL AWM style                       | 20549                                   |
| Conductor cross section            | 0.34 mm <sup>2</sup>                    |
| AWG signal line                    | 22                                      |
| Conductor structure signal line    | 42x 0.10 mm                             |
| Core diameter including insulation | 1.5 mm ±0.05 mm                         |
| Thickness, insulation              | approx. 0.3 mm (Core insulation)        |
|                                    | approx. 0.35 mm (Inner sheath)          |
|                                    | ≥ 0.38 mm (Outer cable sheath)          |
| Wire colors                        | brown, white, blue, black, green-yellow |
| Overall twist                      | 5 wires around filler to the core       |
| External sheath, color             | yellow                                  |
| External cable diameter D          | 5.9 mm ±0.2 mm                          |
| Number of bending cycles           | 2000000                                 |

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

#### PUR/PVC yellow [140]

|                               |   |
|-------------------------------|---|
| Bending radius                | 59 mm   |
| Traversing path               | 5 m   |
| Traversing rate               | 3 m/s   |
| Cable weight                  | 50 kg/km  |
| Outer sheath, material        | PUR   |
| Material, inner sheath        | PVC   |
| Material, filler              | PVC   |
| Material conductor insulation | PVC   |
| Conductor material            | Bare Cu litz wires                                |
| Insulation resistance         | $\geq 1 \text{ G}\Omega\cdot\text{km}$ (at 20 °C) |
| Conductor resistance          | max. 58 $\Omega/\text{km}$ (at 20 °C)             |
| Nominal voltage, cable        | $\leq 300 \text{ V}$                              |
| Test voltage, cable           | $\geq 3000 \text{ V}$                             |
| Flame resistance              | in accordance with DIN UL-Style 20549             |

#### PUR irradiated halogen-free orange [150]

|   |   |
|---|---|
| Cable type                                    | PUR irradiated halogen-free orange  |
| Cable type (abbreviation)                     | 150   |
| Cable abbreviation                            | D12YSL11X-JB  |
| Conductor cross section                       | 4x 0.34 mm <sup>2</sup> (Signal line)<br>1x 0.5 mm <sup>2</sup> (PE connection)   |
| AWG signal line                               | 22  |
| AWG power supply                              | 20  |
| Conductor structure signal line               | 42x 0.10 mm   |
| Conductor structure, voltage supply           | 24x 0.15 mm   |
| Wire colors                                   | Brown, blue, black, white, green/yellow   |
| Overall twist                                 | 5 cores, twisted  |
| External sheath, color                        | orange RAL 2003   |
| External cable diameter D                     | 5.2 mm $\pm 0.2$ mm   |
| Smallest bending radius, fixed installation   | min. 20 mm  |
| Smallest bending radius, movable installation | min. 30 mm  |
| Number of bending cycles                      | 5000000   |
| Bending radius                                | 52 mm   |
| Traversing path                               | 10 m  |
| Traversing rate                               | 3 m/s   |
| Outer sheath, material                        | PUR   |
| Material conductor insulation                 | PE  |
| Conductor material                            | Bare Cu litz wires  |
| Conductor resistance                          | $\leq 57.5 \text{ }\Omega/\text{km}$ (with 0.34 mm <sup>2</sup> conductor cross section)<br>$\leq 39 \text{ }\Omega/\text{km}$ (with 0.5 mm <sup>2</sup> conductor cross section) |
| Nominal voltage, cable                        | 250 V (AC)  |

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

#### PUR irradiated halogen-free orange [150]

|                                 |  |
|---------------------------------|--|
| Test voltage, cable             | 2000 V (50 Hz, 5 minutes)                        |
| Special properties              | Silicone-free                                    |
|                                 | Irradiated                                       |
| Flame resistance                | DIN VDE 0472 part 804, test type B               |
| Halogen-free                    | The cable is halogen-free                        |
| Other resistance                | hydrolysis and microbe resistant                 |
|                                 | UV resistant                                     |
|                                 | Resistant to welding splashes                    |
| Ambient temperature (operation) | -50 °C ... 105 °C (cable, fixed installation)    |
|                                 | -40 °C ... 105 °C (cable, flexible installation) |

#### PUR halogen-free orange [180]

|                                     |   |
|-------------------------------------|---|
| Cable type                          | PUR halogen-free orange                 |
| Cable type (abbreviation)           | 180                                     |
| Cable abbreviation                  | Li9YLi9Y-11Y                            |
| UL AWM style                        | 20549                                   |
| Conductor cross section             | 4x 0.34 mm <sup>2</sup> (Signal line)   |
|                                     | 1x 0.5 mm <sup>2</sup> (PE connection)  |
| AWG signal line                     | 22                                      |
| AWG power supply                    | 20                                      |
| Conductor structure signal line     | 42x 0.10 mm                             |
| Conductor structure, voltage supply | 28x 0.15 mm                             |
| Core diameter including insulation  | 1.27 mm ±0.02 mm (Signal line)          |
|                                     | 1.46 mm ±0.02 mm (PE connection)        |
| Thickness, insulation               | ≥ 0.21 mm (Signal line)                 |
|                                     | ≥ 0.21 mm (PE connection)               |
|                                     | approx. 0.65 mm (Outer cable sheath)    |
| Wire colors                         | brown, white, blue, black, green-yellow |
| Overall twist                       | 5 wires around filler to the core       |
| External sheath, color              | orange RAL 2003                         |
| External cable diameter D           | 5 mm ±0.15 mm                           |
| Cable weight                        | 36 kg/km                                |
| Outer sheath, material              | PUR                                     |
| Material conductor insulation       | PP                                      |
| Conductor material                  | Bare Cu litz wires                      |
| Insulation resistance               | ≥ 10 GΩ*km (at 20 °C)                   |
| Conductor resistance                | ≤ 58 Ω/km (Signal line)                 |
|                                     | ≤ 39 Ω/km (PE connection)               |
| Nominal voltage, cable              | ≤ 300 V                                 |
| Test voltage, cable                 | ≥ 3000 V                                |
| Flame resistance                    | in accordance with DIN UL-Style 20549   |

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

#### PUR halogen-free orange [180]

|                                 |  |
|---------------------------------|--|
| Halogen-free                    | in accordance with DIN VDE 0472 part 815 |
| Ambient temperature (operation) | -25 °C ... 80 °C (Cable)                 |

#### PUR halogen-free gray [280]

|                                     |  |
|-------------------------------------|--|
| Cable type                          | PUR halogen-free gray                          |
| Cable type (abbreviation)           | 280  |
| Conductor cross section             | 0.34 mm <sup>2</sup>                           |
| AWG signal line                     | 22   |
| AWG power supply                    | 20   |
| Conductor structure signal line     | 42x 0.10 mm                                    |
| Conductor structure, voltage supply | 28x 0.15 mm                                    |
| Core diameter including insulation  | 1.55 mm (Signal line)                          |
|                                     | 1.65 mm (Protective conductor)                 |
| Thickness, insulation               | 0.39 mm (Signal line)                          |
|                                     | 0.37 mm (Protective conductor)                 |
|                                     | 0.65 mm (Outer cable sheath)                   |
| Wire colors                         | brown, white, blue, black, green-yellow        |
| Overall twist                       | 5 wires around filler to the core              |
| External sheath, color              | gray RAL 7001                                  |
| External cable diameter             | 5.20 mm  |
| Outer sheath, material              | PUR  |
| Material, filler                    | Fiberglass                                     |
| Material conductor insulation       | TPE  |
| Conductor material                  | Bare Cu litz wires                             |
| Ambient temperature (operation)     | -40 °C ... 80 °C (cable, fixed installation)   |
|                                     | -5 °C ... 80 °C (cable, flexible installation) |

#### PVC gray [500]

|                                    |   |
|------------------------------------|---|
| Cable type                         | PVC gray                                |
| Cable type (abbreviation)          | 500                                     |
| Cable abbreviation                 | LiYY                                    |
| Conductor cross section            | 0.34 mm <sup>2</sup>                    |
| AWG signal line                    | 22                                      |
| Conductor structure signal line    | 42x 0.10 mm                             |
| Core diameter including insulation | 1.45 mm ±0.02 mm                        |
| Thickness, insulation              | ≥ 0.23 mm (Core insulation)             |
|                                    | ≥ 0.76 mm (Outer cable sheath)          |
| Wire colors                        | brown, white, blue, black, green-yellow |
| Overall twist                      | 5 wires around filler to the core       |
| External sheath, color             | gray RAL 7001                           |
| External cable diameter D          | 5.9 mm ±0.15 mm                         |
| Cable weight                       | 51 kg/km                                |

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

#### PVC gray [500]

|                                 |   |
|---------------------------------|---|
| Outer sheath, material          | PVC   |
| Material, filler                | PVC   |
| Material conductor insulation   | PVC   |
| Conductor material              | Bare Cu litz wires                                  |
| Insulation resistance           | $\geq 1 \text{ G}\Omega \cdot \text{km}$ (at 20 °C) |
| Conductor resistance            | max. 58 $\Omega/\text{km}$ (at 20 °C)               |
| Nominal voltage, cable          | $\leq 300 \text{ V}$ (AC)                           |
| Test voltage, cable             | $\geq 3000 \text{ V}$ (AC)                          |
| Flame resistance                | As per UL-Style 2464                                |
|                                 | according to UL 758/1581 FT1                        |
| Resistance to oil               | in accordance with DIN EN 60811-2-1                 |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation)        |
|                                 | -25 °C ... 80 °C (cable, flexible installation)     |

#### PVC black [515]

|   |   |
|---|---|
| Cable type                                    | PVC black 5th conductor gray                          |
| Cable type (abbreviation)                     | 515   |
| Cable abbreviation                            | LiYY  |
| UL AWM style                                  | 2464 / 1729 (80°C/300 V)                              |
| Conductor cross section                       | 5x 0.34 mm <sup>2</sup> (Signal line)                 |
| AWG signal line                               | 22  |
| Conductor structure signal line               | 42x 0.10 mm   |
| Core diameter including insulation            | 1.45 mm $\pm$ 0.02 mm                                 |
| Thickness, insulation                         | $\geq 0.23 \text{ mm}$ (Core insulation)              |
|   | $\geq 0.76 \text{ mm}$ (Outer cable sheath)           |
| Wire colors                                   | Brown, white, blue, black, gray                       |
| Overall twist                                 | 5 wires around filler to the core                     |
| Length of twist, overall twist                | 60 mm   |
| External sheath, color                        | black RAL 9005  |
| External cable diameter D                     | 5.9 mm $\pm$ 0.15 mm                                  |
| Minimum bending radius, fixed installation    | 5 x D   |
| Minimum bending radius, flexible installation | 10 x D  |
| Cable weight                                  | 52 kg/km  |
| Outer sheath, material                        | PVC   |
| Material, filler                              | PP yarn   |
| Material conductor insulation                 | PVC   |
| Conductor material                            | Bare Cu litz wires                                    |
| Insulation resistance                         | $\geq 100 \text{ M}\Omega \cdot \text{km}$ (at 20 °C) |
| Conductor resistance                          | $\leq 58 \text{ }\Omega/\text{km}$ (at 20 °C)         |
| Nominal voltage, cable                        | $\leq 300 \text{ V}$ AC                               |
| Test voltage, cable                           | $\geq 3000 \text{ V}$ AC                              |



## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

#### PVC black [515]

|                                 |   |
|---------------------------------|---|
| Flame resistance                | According to UL 758/1581 (Cable Flame)          |
|                                 | according to UL 758/1581 FT1                    |
|                                 | According to DIN EN 60332-1-2 (60 s)            |
| Resistance to oil               | according to DIN EN 60811-2-1, 168 h at 60 °C   |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation)    |
|                                 | -25 °C ... 80 °C (cable, flexible installation) |

#### PVC gray [520]

|                                    |  |
|------------------------------------|--|
| Cable type                         | PVC gray                                       |
| Cable type (abbreviation)          | 520  |
| Cable abbreviation                 | LiYY   |
| Conductor cross section            | 0.34 mm <sup>2</sup>                           |
| AWG signal line                    | 22   |
| Conductor structure signal line    | 42x 0.10 mm                                    |
| Core diameter including insulation | 1.45 mm ±0.02 mm                               |
| Thickness, insulation              | ≥ 0.23 mm (Core insulation)                    |
|                                    | ≥ 0.76 mm (Outer cable sheath)                 |
| Wire colors                        | Brown, white, blue, black, gray                |
| Overall twist                      | 5 wires around filler to the core              |
| Length of twist, overall twist     | 55 mm  |
| External sheath, color             | gray RAL 7001                                  |
| External cable diameter D          | 5.9 mm ±0.15 mm                                |
| Cable weight                       | 54 kg/km                                       |
| Outer sheath, material             | PVC  |
| Material, filler                   | PVC  |
| Material conductor insulation      | PVC  |
| Conductor material                 | Bare Cu litz wires                             |
| Insulation resistance              | ≥ 1 GΩ*km (at 20 °C)                           |
| Conductor resistance               | max. 58 Ω/km (at 20 °C)                        |
| Nominal voltage, cable             | ≤ 300 V  |
| Test voltage, cable                | ≥ 3000 V                                       |
| Flame resistance                   | As per UL-Style 2464                           |
| Ambient temperature (operation)    | -25 °C ... 80 °C (cable, fixed installation)   |
|                                    | -5 °C ... 80 °C (cable, flexible installation) |

#### PVC yellow [540]

|                                 |                      |
|---------------------------------|----------------------|
| Cable type                      | PVC yellow           |
| Cable type (abbreviation)       | 540                  |
| Cable abbreviation              | LiFY                 |
| Conductor cross section         | 0.34 mm <sup>2</sup> |
| AWG signal line                 | 22                   |
| Conductor structure signal line | 43x 0.10 mm          |

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

#### PVC yellow [540]

|   |   |
|---|---|
| Core diameter including insulation            | 1.45 mm ±0.02 mm                                |
| Thickness, insulation                         | approx. 0.23 mm (Core insulation)               |
|   | approx. 0.76 mm (Outer cable sheath)            |
| Wire colors                                   | brown, white, blue, black, green-yellow         |
| Overall twist                                 | 5 wires around filler to the core               |
| Length of twist, overall twist                | 70 mm   |
| External sheath, color                        | yellow  |
| External cable diameter D                     | 5.9 mm ±0.15 mm                                 |
| Smallest bending radius, fixed installation   | 29.5 mm   |
| Smallest bending radius, movable installation | 59 mm   |
| Outer sheath, material                        | PVC   |
| Material, filler                              | PVC   |
| Material conductor insulation                 | PVC   |
| Conductor material                            | Bare Cu litz wires                              |
| Insulation resistance                         | ≥ 1 MΩ*km (at 20 °C)                            |
| Conductor resistance                          | max. 58 Ω/km (at 20 °C)                         |
| Nominal voltage, cable                        | ≤ 300 V (AC)                                    |
| Test voltage, cable                           | 3000 V  |
| Flame resistance                              | As per UL-Style 2464                            |
|   | according to UL 758/1581 FT1                    |
| Resistance to oil                             | in accordance with DIN EN 60811-2-1             |
| Ambient temperature (operation)               | -40 °C ... 80 °C (cable, fixed installation)    |
|   | -25 °C ... 80 °C (cable, flexible installation) |

#### PVC yellow 105 °C [542]

|                                    |                                   |
|------------------------------------|-----------------------------------|
| Cable type                         | PVC yellow 105 °C                 |
| Cable type (abbreviation)          | 542                               |
| Conductor cross section            | 0.34 mm <sup>2</sup>              |
| AWG signal line                    | 22                                |
| Conductor structure signal line    | 42x 0.10 mm                       |
| Core diameter including insulation | 1.55 mm ±0.05 mm                  |
| Thickness, insulation              | ≥ 0.38 mm (Core insulation)       |
|                                    | ≥ 0.76 mm (Outer cable sheath)    |
| Wire colors                        | Brown, white, blue, black, gray   |
| Overall twist                      | 5 wires around filler to the core |
| External sheath, color             | yellow                            |
| External cable diameter D          | 5.9 mm ±0.2 mm                    |
| Cable weight                       | 50 kg/km                          |
| Outer sheath, material             | PVC                               |
| Material conductor insulation      | PVC                               |
| Conductor material                 | Bare Cu litz wires                |

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

PVC yellow 105 °C [542]

|                        |                                  |
|------------------------|----------------------------------|
| Insulation resistance  | ≥ 100 MΩ*km (at 20 °C)           |
| Conductor resistance   | max. 58 Ω/km (at 20 °C)          |
| Nominal voltage, cable | ≤ 300 V                          |
| Test voltage, cable    | ≥ 3000 V                         |
| Flame resistance       | in accordance with UL-Style 2517 |

Gray, highly flexible PUR [800]

|   |  |
|---|--|
| Note  | Due to the extremely robust outer sheath, this cable should only be stripped in 5 cm increments. |
| Cable type                                      | Gray, highly flexible PUR  |
| Cable type (abbreviation)                       | 800  |
| Cable abbreviation                              | Li12YYTPE-HF   |
| UL AWM style                                    | 20233  |
| Conductor cross section                         | 5x 0.34 mm <sup>2</sup> (Signal line)  |
| AWG signal line                                 | 22   |
| Conductor structure signal line                 | 42x 0.10 mm  |
| Core diameter including insulation              | 1.3 mm ±0.05 mm (Signal line)  |
| Wire colors                                     | Black, brown, blue, white, gray  |
| Overall twist                                   | 5 wires around filler to the core  |
| External sheath, color                          | gray RAL 7001  |
| External cable diameter D                       | 5.1 mm ±0.2 mm   |
| Minimum bending radius, fixed installation      | 4 x D  |
| Minimum bending radius, flexible installation   | 7.5 x D  |
| Number of bending cycles                        | 10000000   |
| Minimum bending radius, drag chain applications | 7,5 x D  |
| Traversing path                                 | 5 m  |
| Traversing rate                                 | 3.3 m/s  |
| Acceleration                                    | 5 m/s <sup>2</sup>   |
| Number of bending cycles                        | 15000000   |
| Bending radius                                  | 50 mm  |
| Traversing path                                 | 0.9 m  |
| Traversing rate                                 | 5 m/s  |
| Acceleration                                    | 30 m/s <sup>2</sup>  |
| Torsion force                                   | ± 360 °/m (1 000 000 torsion cycles)   |
| Cable weight                                    | 38 kg/km   |
| Outer sheath, material                          | PUR  |
| Material, filler                                | PE   |
| Material conductor insulation                   | PES  |
| Conductor material                              | Bare Cu litz wires   |
| Insulation resistance                           | ≥ 20 MΩ*km   |
| Conductor resistance                            | approx. 53 Ω/km  |

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

Gray, highly flexible PUR [800]

|                                 |  |
|---------------------------------|--|
| Nominal voltage, cable          | 300 V  |
| Test voltage, cable             | 2000 V   |
| Special properties              | Cable jacket is welding spark-resistant, recyclable, matt, low-adhesion, abrasion-resistant, flame-retardant, and self-extinguishing |
|                                 | Free from silicone and cadmium   |
|                                 | Free of substances which would hinder coating with paint or varnish  |
| Flame resistance                | according to IEC 60332-1-2   |
|                                 | according to UL 758/1581 VW-1  |
|                                 | according to UL 758/1581 FT1   |
| Halogen-free                    | in accordance with DIN VDE 0472 part 815   |
| Resistance to oil               | According to HD 22.10  |
|                                 | in accordance with DIN EN 60811-404 (external sheath)  |
| Other resistance                | Highly resistant to acids, alkaline solutions and solvents   |
|                                 | Silicone-free  |
| Ambient temperature (operation) | -40 °C ... 90 °C (cable, fixed installation)   |
|                                 | -30 °C ... 90 °C (cable, flexible installation)  |
|                                 | to 120 °C (for 3000 h)   |

PUR halogen-free black [PUR]

|   |   |
|---|---|
| Cable type                                    | PUR halogen-free black                  |
| Cable type (abbreviation)                     | PUR                                     |
| UL AWM style                                  | 20549                                   |
| Conductor cross section                       | 5x 0.34 mm <sup>2</sup> (Signal line)   |
| AWG signal line                               | 22                                      |
| Conductor structure signal line               | 42x 0.10 mm                             |
| Core diameter including insulation            | 1.27 mm ±0.02 mm (Signal line)          |
| Thickness, insulation                         | approx. 0.5 mm                          |
| Wire colors                                   | brown, white, blue, black, green-yellow |
| External sheath, color                        | black-gray RAL 7021                     |
| External cable diameter D                     | 4.55 mm ±0.15 mm                        |
| Smallest bending radius, fixed installation   | 23 mm                                   |
| Smallest bending radius, movable installation | 46 mm                                   |
| Number of bending cycles                      | 10000000                                |
| Bending radius                                | 50 mm                                   |
| Traversing path                               | 10 m                                    |
| Traversing rate                               | 3 m/s                                   |
| Acceleration                                  | 10 m/s <sup>2</sup>                     |
| Cable weight                                  | 33 kg/km                                |
| Outer sheath, material                        | PUR                                     |
| Material conductor insulation                 | PP                                      |
| Conductor material                            | Bare Cu litz wires                      |

## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

### Technical data

#### PUR halogen-free black [PUR]

|                                 |   |
|---------------------------------|---|
| Insulation resistance           | ≥ 16 GΩ*km (at 20 °C)   |
| Conductor resistance            | max. 58 Ω/km (at 20 °C)   |
| Nominal voltage, cable          | 300 V   |
| Test voltage, cable             | 3000 V  |
| Special properties              | Flexible cable conduit capable                                      |
|                                 | Silicone-free   |
|                                 | Free of substances which would hinder coating with paint or varnish |
|                                 | flexible  |
| Flame resistance                | in accordance with UL 758/1581 FT2                                  |
|                                 | DIN EN 60332-2-2 (20 s)   |
| Halogen-free                    | in accordance with DIN VDE 0472 part 815                            |
| Resistance to oil               | in accordance with DIN EN 60811-2-1                                 |
| Other resistance                | Highly resistant to acids, alkaline solutions and solvents          |
|                                 | hydrolysis and microbe resistant                                    |
|                                 | Resistant to salt water   |
|                                 | partly UV-resistant in accordance with DIN EN ISO 4892-2-A          |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation)                        |
|                                 | -25 °C ... 80 °C (cable, flexible installation)                     |

#### PVC black [PVC]

|   |   |
|---|---|
| Cable type                                    | PVC black                               |
| Cable type (abbreviation)                     | PVC                                     |
| Cable abbreviation                            | LiYY                                    |
| UL AWM style                                  | 2464 / 1729 (80°C/300 V)                |
| Conductor cross section                       | 5x 0.34 mm <sup>2</sup> (Signal line)   |
| AWG signal line                               | 22                                      |
| Conductor structure signal line               | 42x 0.10 mm                             |
| Core diameter including insulation            | 1.45 mm ±0.02 mm                        |
| Thickness, insulation                         | ≥ 0.23 mm (Core insulation)             |
| Wire colors                                   | brown, white, blue, black, green-yellow |
| Overall twist                                 | 5 wires around filler to the core       |
| External sheath, color                        | black RAL 9005                          |
| Outer sheath thickness                        | ≥ 0.76 mm                               |
| External cable diameter D                     | 5.9 mm ±0.15 mm                         |
| Minimum bending radius, fixed installation    | 5 x D                                   |
| Minimum bending radius, flexible installation | 10 x D                                  |
| Cable weight                                  | 51 kg/km                                |
| Outer sheath, material                        | PVC                                     |
| Material conductor insulation                 | PVC                                     |
| Conductor material                            | Bare Cu litz wires                      |
| Insulation resistance                         | ≥ 200 MΩ*km (at 20 °C)                  |

# Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

## Technical data

PVC black [PVC]

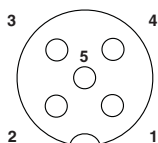
|                                 |   |
|---------------------------------|---|
| Conductor resistance            | max. 58 Ω/km (at 20 °C)                         |
| Nominal voltage, cable          | ≤ 300 V   |
| Test voltage, cable             | ≥ 3000 V  |
| Flame resistance                | As per UL-Style 2464                            |
|                                 | according to UL 758/1581 FT1                    |
| Resistance to oil               | According to DIN EN 60811-2-1, 168 h at 90°C    |
| Ambient temperature (operation) | -40 °C ... 80 °C (cable, fixed installation)    |
|                                 | -25 °C ... 80 °C (cable, flexible installation) |

## Environmental Product Compliance

|            |   |
|------------|---|
| China RoHS | Environmentally Friendly Use Period = 50  |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

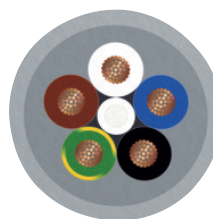
## Drawings

Schematic diagram



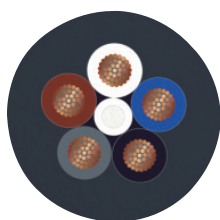
Pin assignment M12 male connector, 5-pos., A-coded, male side

Cable cross section



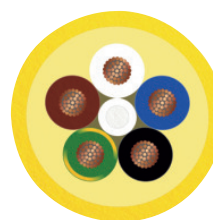
PUR/PVC gray [100]

Cable cross section



PUR, black, 5th conductor gray [115]

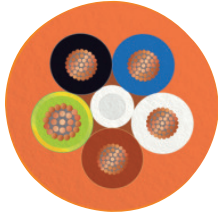
Cable cross section



PUR/PVC yellow [140]

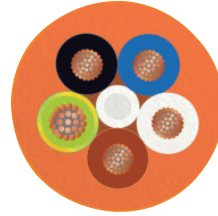
## Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

Cable cross section



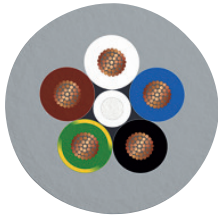
PUR irradiated halogen-free orange [150]

Cable cross section



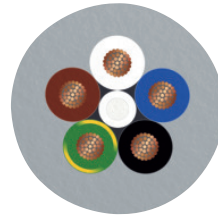
PUR halogen-free orange [180]

Cable cross section



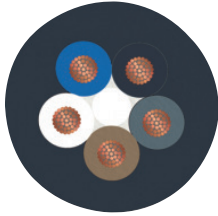
PUR halogen-free gray [280]

Cable cross section



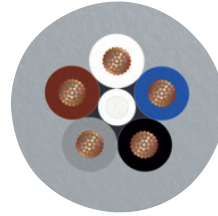
PVC gray [500]

Cable cross section



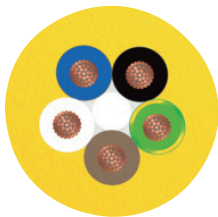
PVC black [515]

Cable cross section



PVC gray [520]

Cable cross section



PVC yellow [540]

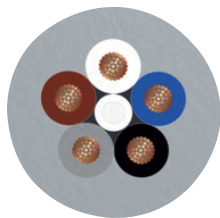
Cable cross section



PVC yellow 105 °C [542]

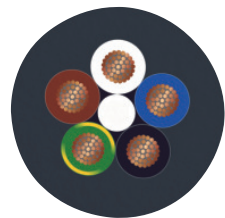
# Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

Cable cross section



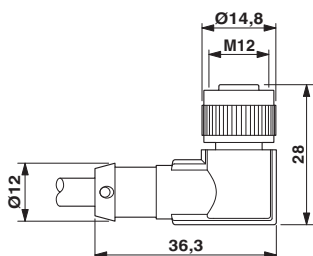
Gray, highly flexible PUR [800]

Cable cross section



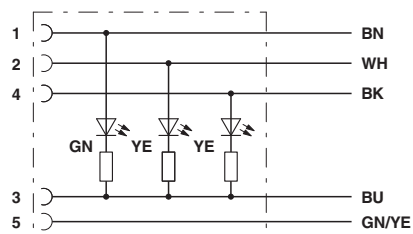
PVC black [PVC]

Dimensional drawing



M12 x 1 socket, angled

Circuit diagram



Contact assignment of the M12 plug and the M12 socket

## Approvals

### Approvals

Approvals

UL Listed / cUL Listed / EAC / cULus Listed

Ex Approvals

### Approval details

|                    |      |   |               |
|--------------------|------|---|---------------|
| UL Listed          |      | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 221474 |
| Nominal voltage UN | 24 V |   |               |
| Nominal current IN | 4 A  |   |               |



# Sensor/actuator cable - SAC-5P-FR-3L SCO/.../... - 1542428

## Approvals

|                    |  |   |               |
|--------------------|--|---|---------------|
| cUL Listed         |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 221474 |
| Nominal voltage UN |  | 24 V  |               |
| Nominal current IN |  | 4 A   |               |

|     |  |               |
|-----|--|---------------|
| EAC |  | EAC-Zulassung |
|-----|--|---------------|

|              |  |
|--------------|--|
| cULus Listed |  |
|--------------|--|

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