

# M23 Connectors and cables

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# SAI M23

n

## A comprehensive product line of connectors, distributors and cables

M23 connectors are mainly used for connecting electrical drives and servo-motors into industrial automation applications. The M23 connectors are very easy to handle and operate. In addition to the injection-moulded variants and the SAI distributors with M23 connectors, Weidmüller is now offering customisable versions and built in plugs.





### The M23 built in connector

The M23 built in connector provides a custom fit solution for building directly into the device.



### M23 connectors for crimping

M23 connectors are easy to handle and operate. This is supported by the type of crimping that is used.



### Robust metal housing

The M23 connectors feature an extra robust design.



### Solutions for power and signals

The extensive product line includes the key housing shapes, such as angled connectors, coupling connectors and device connectors.



### M23 connector for signal transmission

Housings



### M23 connector for signal transmission

Built in connector



### M23 connector for power transmission

Housings



### M23 connector for power transmission

Built-in connector



### Moulded M23 cables



### SAI distributors

# Product Description: SAI M23 Connectors

## Technology and requirements

The M23 connectors are mainly used for integrating electrical drives and servo motors into industrial automation facilities. The M23 designation is based on the thread diameter of the connector, as shown in Figures 1 and 2.

With their wide variety of inserts and housings, these connector are equally suited for applications involving signal or power transmission. Applications set in harsh industrial environments place strict requirements on the connector. Much is demanded of the housing, the inner insert and the connector contact as well. Thermal loads, physical loads, and loads from the transmitted electrical power are commonplace. M23 connectors are capable of carrying a load of up to 250/630 V at 9/30 A.

The connectors must be resistant to the penetration of all particles and substances. They must also comply with the required class of IP protection. The material used for manufacture must be resistant to acid and alkaline solutions that may be used during cleaning or production processes. Also it must not be possible for residues to accumulate in the plug which could later contaminate the production flow. It must not be possible for the plug components to loosen due to vibration. In addition, the cable and connector must have EMC shielding for some applications. This keeps external interference from influencing the signals and it also prevents the transmitted signals in the cable from interfering with other cables or components. The standards and directives (such as the German or European standards) that are followed are basically only recommendations concerning the composition of the connector. A so-called "cold standard" exists for the M23 connectors.

## Variants and designs

The variants can be classified generally according to their outer design into either customisable types or plastic moulded connectors with pre connected cables. Both variants are available in male or female versions, and in straight or angled design. Different designs and inserts can be combined to fit the particular application so that an almost limitless variety of combinations is possible. The connector inserts are available in a variety of different pole counts and as either male or female versions. The pole counts also vary in that some contacts in the mating profile may have a larger cross-section than the others. Other types include the device connector variants which are used for contacting and connecting housings. These also come in a variety of designs. The metal alloy in use may differ depending on the particular type of application. For example, stainless steel is used for those variants that will be used in the food processing industry. Each connector is optionally available with EMC protection and a plastic surface.

## Customisable connectors

The customisable connectors are almost all manufactured from metal alloys. Variants with plastic housings or fitting nuts are rare and then used mostly for customer-specific solutions. Customisable connectors are made up of a housing, a plastic contact carrier, and the contacts themselves. The various housing types can be equipped with the corresponding contact carriers. The carriers differ in their number of poles and the arrangement of the poles. Different types of contacts may also be used within the contact carriers. The shape of the contacts is either male or female. There are also difference in the width, material, and connection system (such as soldered, crimped or screwed).

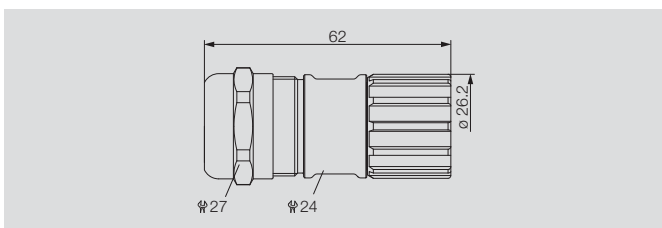


Figure 1: M23 cable connector

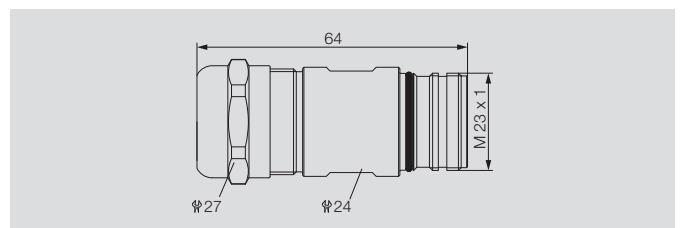


Figure 2: M23 coupling connector

This modular construction allows for a wide variety of combinations to fit any application type. Figure 3 shows the design and assembly of a M23 signal connector. Since the connector is usually put together in the field, the key requirement is that the connector is easy and reliable for the electrician to handle on-site. A good example of convenient handling is the integrated

EMC shielding. An improved shield connection results because the shielding can be connected in less steps and with fewer tools. The complete assembly process must be clear and concise, and should only take a few steps.

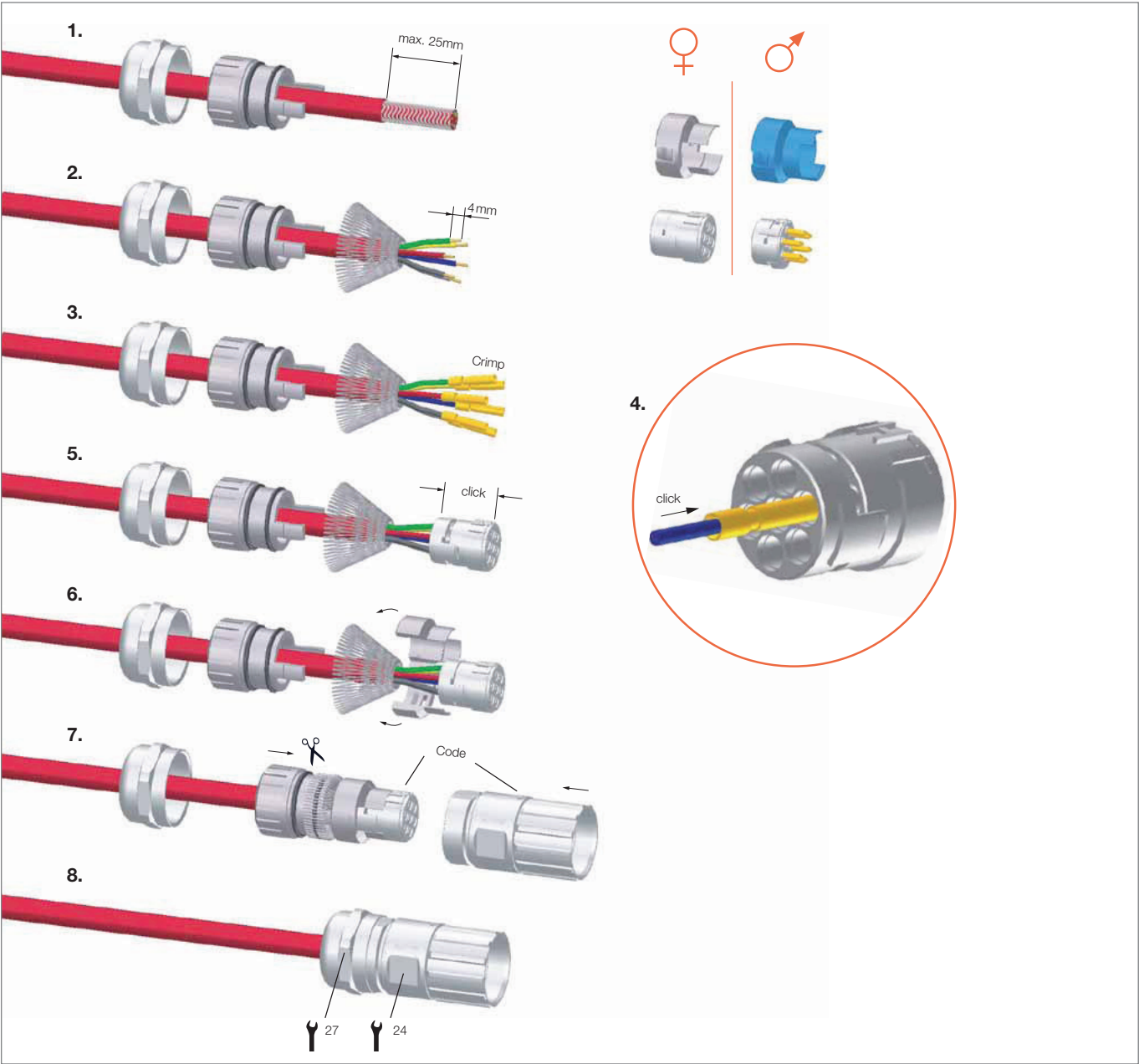


Figure 3: Design and assembly of an M23 connector

## Product Description: SAI M23 Connectors

### Plastic injection moulded connector with connected cable

The plastic injection moulded cables are cables that have already been fitted with connectors. First the cables are connected with the contacts and then these are mounted into the contact carrier. Next, plastic injection moulding is used to cover the cable and contact carrier with a plastic moulding. This ensures a highly stable and well sealed connector housing. The connector must be destroyed for it to be disconnected from its cable. The connector's outer form and material is arranged by a plastic processing tool.

The advantage of a moulded cable is that the connection between the cable and the connector has already been tested at

bending radius are used for such applications (for example, the bending radius may be 10d, i.e., ten times the cable diameter). When constructing a facility, a variety of connection scenarios are possible based on the particular conditions or adaptations on existing facilities. The length or configuration of the cable must be adapted to fit these conditions. If space is constricted, for instance, it may be necessary to replace a straight connector with an angled one.

Cables can be equipped with both a moulded (extruded) connector and a customizable connector. This ensures proper functionality while providing the flexibility to adapt to changing conditions on location. Safe connections can thus be established with any possible connector combination or at any protective class



*Plastic injection-moulded M23 connector*

the production factory. The electrician need only adjust the length. Depending on the application, he may choose to use another connector on the open end or connect the individual cable wires directly (for example, to a terminal block). These advantages of this variant type includes the inexpensive assembly of large batches, the high degree of automation and minimal amount of material used. High reliability and an excellent seal are two additional advantages.

### Connector usage and application

M23 connectors are mainly used for integrating within machine and facility construction applications. These applications require connections with a long life span and high reliability. The failure of a single connector could lead to the failure of the entire production line. It's important to avoid facility outages caused by a connector malfunction, so the machine and facility construction industry relies on connectors with the advantages listed above. Both signals and power must be transferred in such applications. The connector and the cable must be able to withstand harsh industrial conditions. Cables may be under stress from constant motion, in particular for applications involving robotics or dragline chains. Special cables with a specific maximum

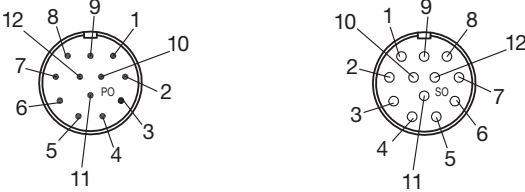
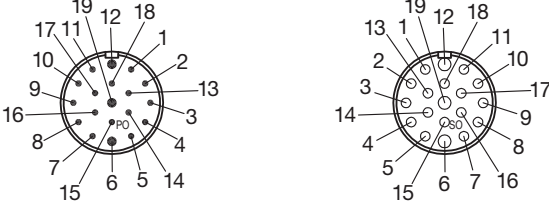


*SAI distributor with M23 connector*

required. This gives the facility planner the safety he needs. And the electrician on-site can set up the facility properly because he has sufficient flexibility to adapt to uncertain conditions. For sensor systems, connectors with high pole counts are often used on SAI distributors. Individual sensors are connected to the distributors where the signals are then centralized. They are then transferred to the controller using a cable with an M23 connector. The most common use for transmitting power involves the connection of servo-motors in machines. M23 connectors are used for this purpose because of their sturdy and compact design and their high power-carrying capacities. Because of the size of the M23 connector, it can also be used in a hybrid version for transmitting both signals and power. The signal-carrying contacts are then shielded within the connector to ensure that the transmitted voltages do not interfere with the signals.

# Contact assignment SAI M23

## M23 12- and 19-pole, for SAI distributors and cables

| 12-pole                                                                            | Pole | Colour code       | Plug-in station | Contact M12 |
|------------------------------------------------------------------------------------|------|-------------------|-----------------|-------------|
|   | 1    | white             | 1               | 4           |
|                                                                                    | 2    | green             | 2               | 4           |
|                                                                                    | 3    | yellow            | 3               | 4           |
|                                                                                    | 4    | grey              | 4               | 4           |
|                                                                                    | 5    | pink              | 5               | 4           |
|                                                                                    | 6    | red               | 6               | 4           |
|                                                                                    | 7    | black             | 7               | 4           |
|                                                                                    | 8    | violet            | 8               | 4           |
|                                                                                    | 9    | blue (-)          | 1-8             | 3           |
|                                                                                    | 10   | blue (-)          | 1-8             | 3           |
|                                                                                    | 11   | brown (+)         | 1-8             | 1           |
|                                                                                    | 12   | green-yellow (PE) | 1-8             | 5           |
| 19-pole                                                                            | Pole | Colour code       | Plug-in station | Contact M12 |
|  | 1    | violet            | 8               | 4           |
|                                                                                    | 2    | red               | 6               | 4           |
|                                                                                    | 3    | grey              | 4               | 4           |
|                                                                                    | 4    | red/blue          | 2               | 2           |
|                                                                                    | 5    | green             | 2               | 4           |
|                                                                                    | 7    | grey/pink         | 1               | 2           |
|                                                                                    | 8    | white/green       | 3               | 2           |
|                                                                                    | 9    | white/yellow      | 5               | 2           |
|                                                                                    | 10   | white/grey        | 7               | 2           |
|                                                                                    | 11   | black             | 7               | 4           |
|                                                                                    | 13   | yellow/brown      | 6               | 2           |
|                                                                                    | 14   | brown/green       | 4               | 2           |
|                                                                                    | 15   | white             | 1               | 4           |
|                                                                                    | 16   | yellow            | 3               | 4           |
|                                                                                    | 17   | pink              | 5               | 4           |
|                                                                                    | 18   | grey/brown        | 8               | 2           |
|                                                                                    | 6    | blue (-)          | 1-8             | 3           |
|                                                                                    | 12   | green-yellow (PE) | 1-8             | 5           |
|                                                                                    | 19   | brown (+)         | 1-8             | 1           |

## Description code

| Housing            |                                                            |
|--------------------|------------------------------------------------------------|
| G                  | Inner thread                                               |
| K                  | Outer thread                                               |
| W                  | angled                                                     |
| S                  | Signal connectors                                          |
| L                  | Power connectors                                           |
| 7/12               | Cable passage                                              |
| Inserts            |                                                            |
| BE                 | Female insert                                              |
| SE                 | Male insert                                                |
| 4/4                | Number of contacts, here for 4 sensor and 4 power contacts |
| Contacts           |                                                            |
| KBC                | Female contact                                             |
| Wire cross-section |                                                            |
| 0.08/0.56          | 0.08 mm <sup>2</sup> – 0.56 mm <sup>2</sup>                |
| 0.25/1.0           | 0.25 mm <sup>2</sup> – 1.0 mm <sup>2</sup>                 |
| 0.75/2.5           | 0.75 mm <sup>2</sup> – 2.5 mm <sup>2</sup>                 |
| Moulded M23 cables |                                                            |
| SAIS               | Cable with male plug                                       |
| SAIB               | Cable with female plug                                     |
| 12p                | 12-pole                                                    |
| 19p                | 19-pole                                                    |
| AN                 | angled                                                     |
| ST                 | straight                                                   |
| ...M               | Length in metres                                           |

## Contact partitioning

| Signal connectors |              |                |              |
|-------------------|--------------|----------------|--------------|
| Type              | 1 mm contact | 1.5 mm contact | 2 mm contact |
| 6-pole            |              |                | 6            |
| 7-pole            |              |                | 7            |
| 9-pole            | 8            |                | 1            |
| 12-pole           | 12           |                |              |
| 16-pole           | 16           |                |              |
| 17-pole           | 17           |                |              |
| 19-pole           | 16           | 3              |              |
| Power connectors  |              |                |              |
| Type              | 1 mm contact | 1.5 mm contact | 2 mm contact |
| 6-pole            |              |                | 6            |
| 4+4-pole          | 4            |                | 4            |

Contacts for signal plugs cannot be used in inserts for power plugs and vice versa.

Technical data

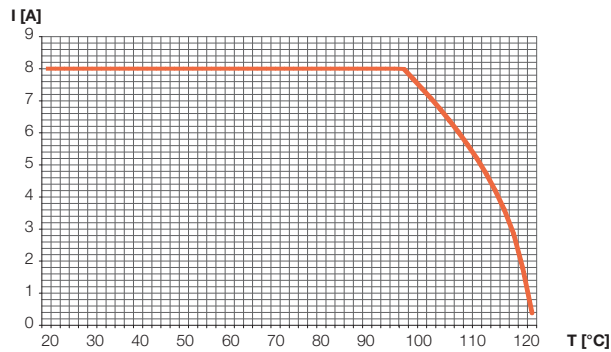
# Signal connectors

## Technical data

| Mechanical data                       |                                                                                |                    |                    |                    |    |                    |                   |                   |                   |     |
|---------------------------------------|--------------------------------------------------------------------------------|--------------------|--------------------|--------------------|----|--------------------|-------------------|-------------------|-------------------|-----|
| Housing                               | Copper-Zinc alloy<br>Die Casting                                               |                    |                    |                    |    |                    |                   |                   |                   |     |
| Housing surface                       | Nickel plated brass<br>other surface upon request                              |                    |                    |                    |    |                    |                   |                   |                   |     |
| Inserts (for contacts)                | Thermoplastic Polyamid PA 6 (Nylon 6/6), PBT / Fire protection class V-0       |                    |                    |                    |    |                    |                   |                   |                   |     |
| Contacts                              | Brass Alloy                                                                    |                    |                    |                    |    |                    |                   |                   |                   |     |
| Contact surface at point of contact   | Nickel and gold plated (0.25 µm Au)                                            |                    |                    |                    |    |                    |                   |                   |                   |     |
| Minimum mating cycles                 | > 1000                                                                         |                    |                    |                    |    |                    |                   |                   |                   |     |
| Seals / O-Rings                       | Buna-N standard<br>optional Viton® (Viton is a registered trademark of DuPont) |                    |                    |                    |    |                    |                   |                   |                   |     |
| Temperature range                     | -40 °C – 125 °C                                                                |                    |                    |                    |    |                    |                   |                   |                   |     |
| Type of contacts                      | Crimp, solder, dip-solder (PCB)                                                |                    |                    |                    |    |                    |                   |                   |                   |     |
| Protection                            | IP 67 / IP 69 K per EN 60 529 (connected)                                      |                    |                    |                    |    |                    |                   |                   |                   |     |
| Cable diameter range                  | 3 – 17 mm                                                                      |                    |                    |                    |    |                    |                   |                   |                   |     |
| Electrical Data                       |                                                                                |                    |                    |                    |    |                    |                   |                   |                   |     |
| Number of positions                   |                                                                                | 6                  | 7                  | 9                  |    | 12                 | 16                | 17                | 19                |     |
| Number of contacts                    |                                                                                | 6                  | 7                  | 8                  | 1  | 12                 | 16                | 17                | 16                | 3   |
| Contact-Ø                             | mm                                                                             | 2                  | 2                  | 1                  | 2  | 1                  | 1                 | 1                 | 1                 | 1.5 |
| Nominal current                       | A                                                                              | 20                 | 20                 | 8                  | 20 | 8                  | 8                 | 8                 | 8                 | 10  |
| Nominal voltage at pollution degree 2 | V~                                                                             | 630                | 630                | 500                |    | 500                | 400               | 400               | 320               |     |
| Nominal voltage at pollution degree 3 | V~                                                                             | 300                | 300                | 200                |    | 200                | 160               | 160               | 100               |     |
| Test voltage                          | V~                                                                             | 2500               | 2500               | 2500               |    | 2500               | 1500              | 1500              | 1500              |     |
| Insulation resistance                 | MΩ                                                                             | > 10 <sup>10</sup> | > 10 <sup>10</sup> | > 10 <sup>10</sup> |    | > 10 <sup>10</sup> | > 10 <sup>6</sup> | > 10 <sup>6</sup> | > 10 <sup>6</sup> |     |
| Max. contact resistance               | mΩ                                                                             | 3                  | 3                  | 3                  |    | 3                  | 3                 | 3                 | 3                 |     |

## Derating curve

Straight Connectors male + female M 23, 12-pole,  
wires 12 x AWG17



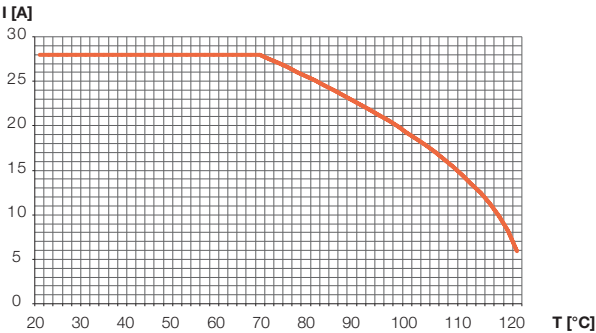
# Power connectors

## Technical data

| Mechanical data                       |    |                                                                                |                    |
|---------------------------------------|----|--------------------------------------------------------------------------------|--------------------|
| Housing                               |    | Copper-Zinc alloy<br>Die Casting                                               |                    |
| Housing surface                       |    | Nickel plated brass<br>other surface upon request                              |                    |
| Inserts (for contacts)                |    | Thermoplastic Polyamid PA 6 (Nylon 6/6), PBT / Fire protection class V-0       |                    |
| Contacts                              |    | Brass Alloy                                                                    |                    |
| Contact surface at point of contact   |    | Nickel and gold plated (0.25 µm Au)                                            |                    |
| Minimum mating cycles                 |    | > 1000                                                                         |                    |
| Seals / O-Rings                       |    | Buna-N standard<br>optional Viton® (Viton is a registered trademark of DuPont) |                    |
| Temperature range                     |    | -40 °C – 125 °C                                                                |                    |
| Type of contacts                      |    | Crimp                                                                          |                    |
| Protection                            |    | IP 67 / IP 69 K per EN 60 529 (connected)                                      |                    |
| Cable diameter range                  |    | 7 – 17 mm                                                                      |                    |
| Electrical Data                       |    |                                                                                |                    |
| Number of positions                   |    | 5 + PE                                                                         | 4/4                |
| Number of contacts                    |    | 6                                                                              | 4      4           |
| Contact-Ø                             | mm | 2                                                                              | 1      2           |
| Nominal current                       | A  | 28                                                                             | 8      28          |
| Nominal voltage at pollution degree 2 | V~ | 800                                                                            | 300      800       |
| Nominal voltage at pollution degree 3 | V~ | 600                                                                            | 300      600       |
| Test voltage                          | V~ | 4000                                                                           | 2500      4000     |
| Insulation resistance                 | MΩ | > 10 <sup>13</sup>                                                             | > 10 <sup>13</sup> |
| Max. Max. contact resistance          | mΩ | 3                                                                              | 3                  |

## Derating curve

Straight connectors male + female M 23, 5 + PE,  
wires 5 x AWG12



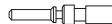
## Overview

# M23 connector for signal transmission

All customizable connectors can also be assembled together with shielded cables.

| Housing                              | Contact inserts*           | Contacts                                                    |
|--------------------------------------|----------------------------|-------------------------------------------------------------|
| Cable connector                      | 6-pole                     | Crimp pin<br>1 mm rotated<br>0.08 – 0.56 mm <sup>2</sup>    |
| Coupling connector                   | 7-pole                     | Crimp pin<br>1 mm rotated<br>0.14 – 1.00 mm <sup>2</sup>    |
| Angled connector                     | 9-pole                     | Crimp pin<br>1 mm rotated<br>1.00 – 1.50 mm <sup>2</sup>    |
| Angled connector (coupling)          | 12-pole                    | Crimp socket<br>1 mm rotated<br>0.08 – 0.56 mm <sup>2</sup> |
| Device connector (front panel)       | 16-pole                    | Crimp socket<br>1 mm rotated<br>0.14 – 1.00 mm <sup>2</sup> |
| Device connector with knurled nut    | 17-pole                    | Crimp socket<br>1 mm rotated<br>1.00 – 1.50 mm <sup>2</sup> |
| Device connector (single-hole mount) | 19-pole                    | Crimp pin<br>2 mm rotated<br>0.14 – 0.56 mm <sup>2</sup>    |
| Device connector (angled)            |                            | Crimp socket<br>2 mm rotated<br>0.56 – 1.00 mm <sup>2</sup> |
| Device connector (back panel)        |                            | Crimp pin<br>2 mm rotated<br>0.75 – 2.50 mm <sup>2</sup>    |
|                                      |                            | Crimp socket<br>2 mm rotated<br>0.75 – 2.50 mm <sup>2</sup> |
|                                      | * Solder and crimp inserts |                                                             |

# M23 connector for power transmission

| Housing                              |                                                                                     | Contact inserts*                   |                                                                                   | Contacts                                                   |                                                                                      |
|--------------------------------------|-------------------------------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Cable connector                      |    | 6 x Male 2 mm                      |  | Crimp pin<br>1 mm turned<br>0.25 – 1.00 mm <sup>2</sup>    |   |
| Coupling connector                   |    | 6 x Socket 2 mm                    |  | Crimp socket<br>1 mm turned<br>0.25 – 1.00 mm <sup>2</sup> |   |
| Angled connector                     |    | 4 x Male 1 mm<br>4 x Male 2 mm     |  | Crimp pin<br>2 mm turned<br>0.75 – 2.50 mm <sup>2</sup>    |   |
| Angled connector<br>(coupling)       |    | 4 x Socket 1 mm<br>4 x Socket 2 mm |  | Crimp pin<br>2 mm turned<br>2.50 – 4.00 mm <sup>2</sup>    |   |
| Device connector<br>(front panel)    |    |                                    |                                                                                   | Crimp socket<br>2 mm turned<br>0.75 – 2.50 mm <sup>2</sup> |   |
| Device connector<br>with knurled nut |   |                                    |                                                                                   | Crimp socket<br>2 mm turned<br>2.50 – 4.00 mm <sup>2</sup> |  |
| Device connector<br>(back panel)     |  |                                    |                                                                                   |                                                            |                                                                                      |
| Device connector<br>(back panel)     |  |                                    |                                                                                   |                                                            |                                                                                      |
| Device connector<br>(angled)         |  |                                    |                                                                                   |                                                            |                                                                                      |
|                                      |                                                                                     | * Crimp inserts                    |                                                                                   |                                                            |                                                                                      |

## Moulded M23 cables

| Housing                     |
|-----------------------------|
| Cable connector             |
| Coupling connector          |
| Angled connector            |
| Angled connector (coupling) |

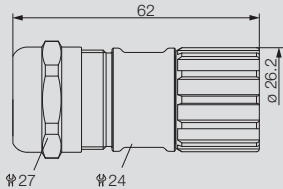


M23 connector for signal transmission

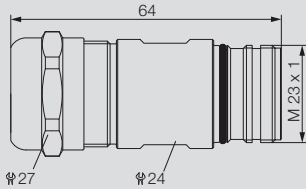
Housing

For cables with outer diameter of: 7–12 mm

Cable connector



Coupling connector



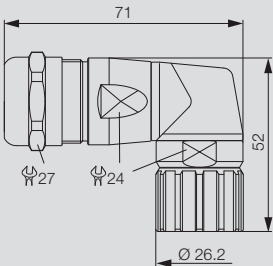
Ordering data

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| SAI-M23-GS-7/12 | 1    | 1995840000 |

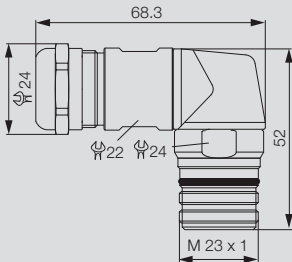
Ordering data

| Type            | Qty. | Order No.  |
|-----------------|------|------------|
| SAI-M23-KS-7/12 | 1    | 1169900000 |

Angled connector



Angled connector (coupling)



Ordering data

| Type               | Qty. | Order No.  |
|--------------------|------|------------|
| SAIL-M23-GS-S-7/12 | 1    | 1169920000 |

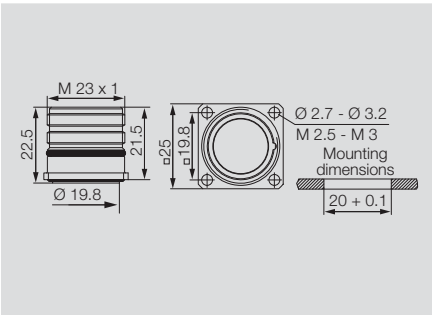
Ordering data

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| SAIL-M23-KSW-7/12 | 1    | 1169930000 |

Built-in connector

With 3.2-mm mounting holes

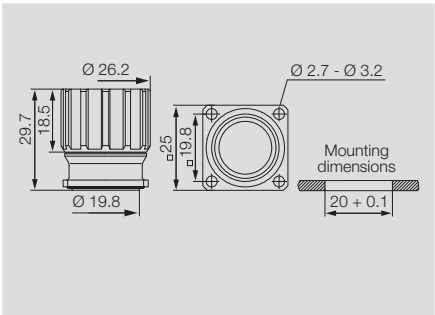
Device connector (front panel)



Ordering data

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| SAIE-M23-S-VW | 1    | 1169940000 |

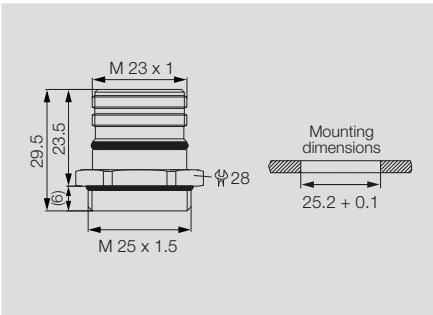
Device connector with knurled nut



Ordering data

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| SAIE-M23-S-RM | 1    | 1169950000 |

Device connector (single-hole mount)

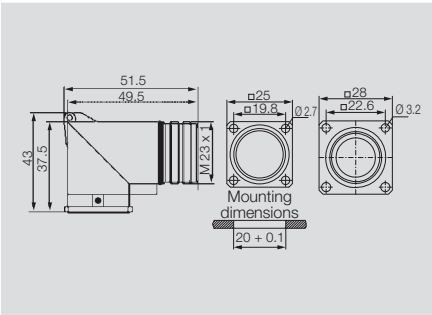


Ordering data

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| SAIE-M23-S-EM | 1    | 1169970000 |

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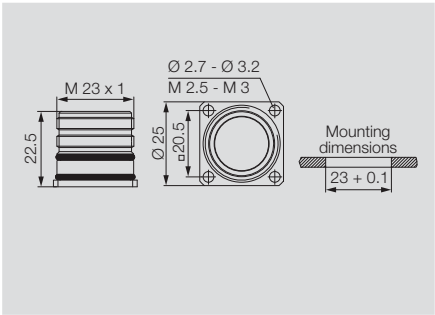
Device connector (angled)



Ordering data

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| SAIE-M23-S-W | 1    | 1169980000 |

Device connector (back panel)



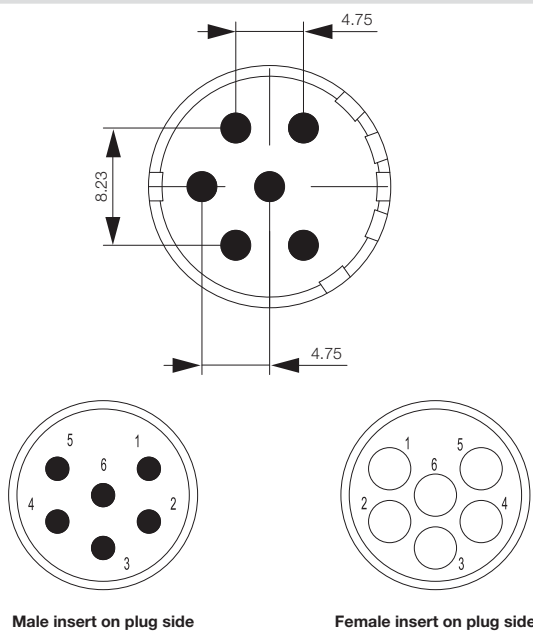
Ordering data

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| SAIE-M23-S-HW | 1    | 1169990000 |

# M23 connector for signal transmission

## Inserts

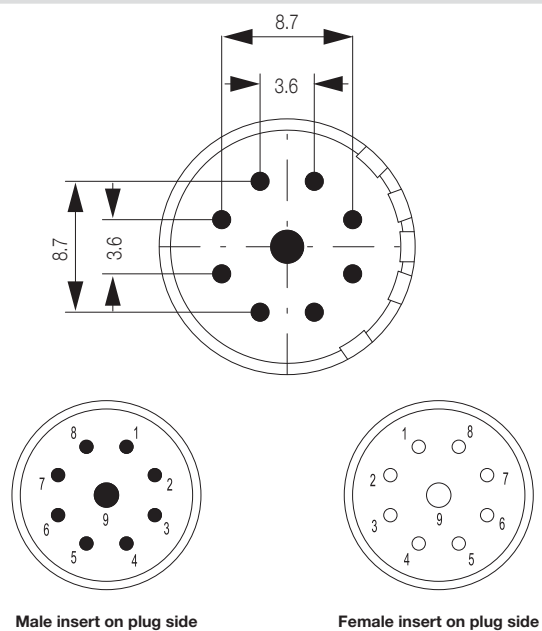
### 6-pole



#### Ordering data

|                      | Type         | Qty. | Order No.  |
|----------------------|--------------|------|------------|
| Insert 6-pole male   | SAI-M23-SE-6 | 1    | 1170000000 |
| Insert 6-pole socket | SAI-M23-BE-6 | 1    | 1170020000 |

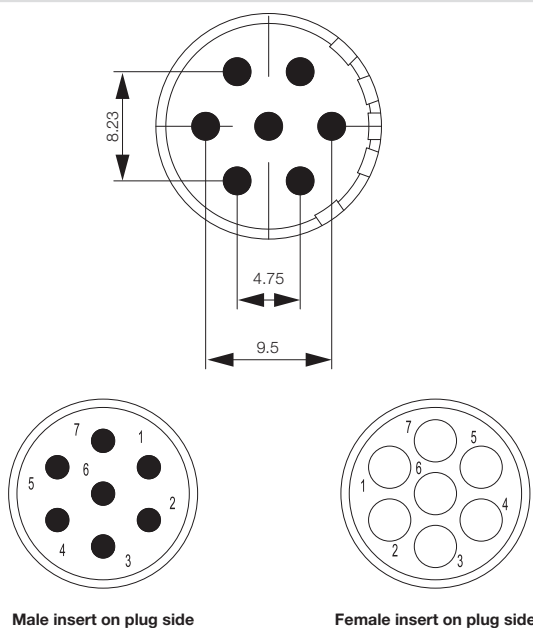
### 9-pole



#### Ordering data

|                      | Type         | Qty. | Order No.  |
|----------------------|--------------|------|------------|
| Insert 9-pole male   | SAI-M23-SE-9 | 1    | 1170050000 |
| Insert 9-pole socket | SAI-M23-BE-9 | 1    | 1170060000 |

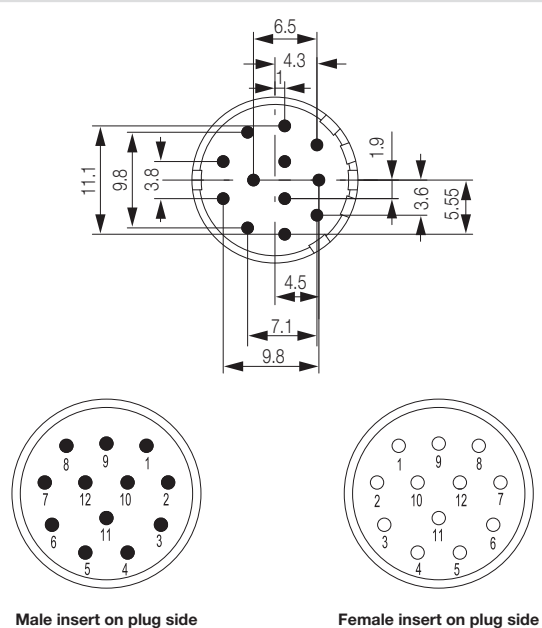
### 7-pole



#### Ordering data

|                      | Type         | Qty. | Order No.  |
|----------------------|--------------|------|------------|
| Insert 7-pole male   | SAI-M23-SE-7 | 1    | 1170030000 |
| Insert 7-pole socket | SAI-M23-BE-7 | 1    | 1170040000 |

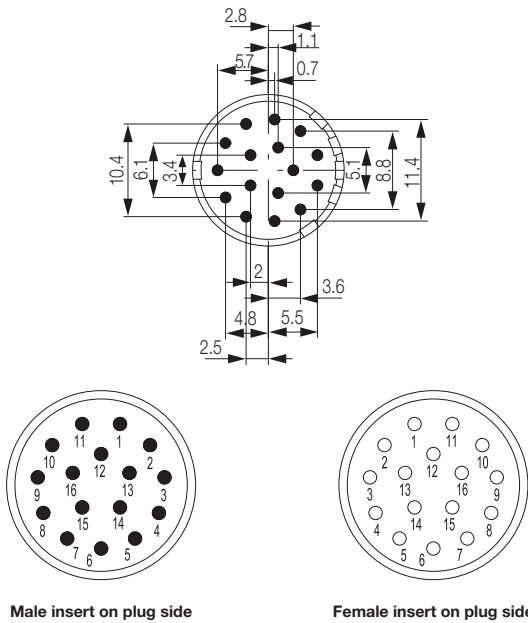
### 12-pole



#### Ordering data

|                       | Type          | Qty. | Order No.  |
|-----------------------|---------------|------|------------|
| Insert 12-pole male   | SAI-M23-SE-12 | 1    | 1170070000 |
| Insert 12-pole socket | SAI-M23-BE-12 | 1    | 1995850000 |

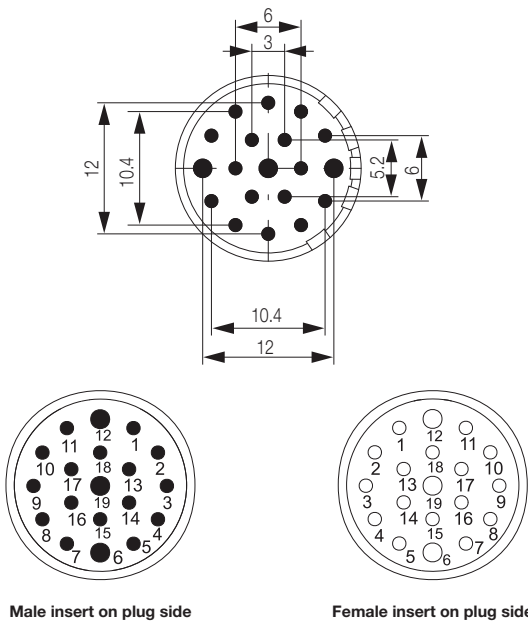
16-pole



Ordering data

|                       | Type          | Qty. | Order No.  |
|-----------------------|---------------|------|------------|
| Insert 16-pole male   | SAI-M23-SE-16 | 1    | 1170080000 |
| Insert 16-pole socket | SAI-M23-BE-16 | 1    | 1170090000 |

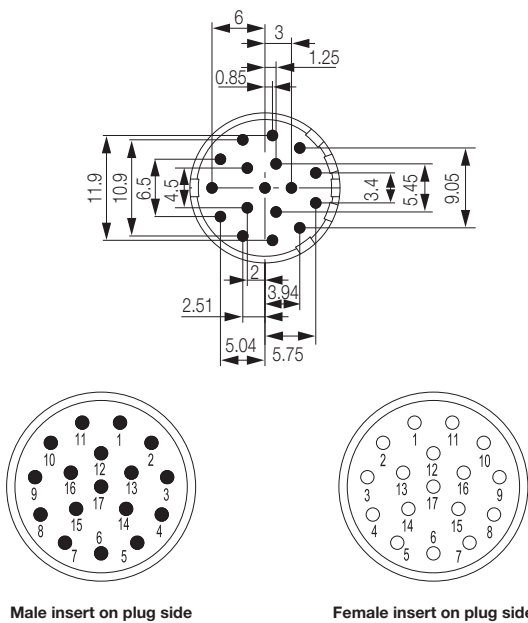
19-pole



Ordering data

|                       | Type          | Qty. | Order No.  |
|-----------------------|---------------|------|------------|
| Insert 19-pole male   | SAI-M23-SE-19 | 1    | 1170120000 |
| Insert 19-pole socket | SAI-M23-BE-19 | 1    | 1170130000 |

17-pole



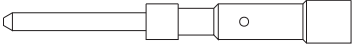
Ordering data

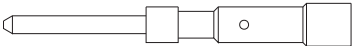
|                       | Type          | Qty. | Order No.  |
|-----------------------|---------------|------|------------|
| Insert 17-pole male   | SAI-M23-SE-17 | 1    | 1170100000 |
| Insert 17-pole socket | SAI-M23-BE-17 | 1    | 1170110000 |

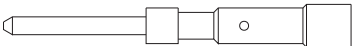
M23 connector for signal transmission

Contacts

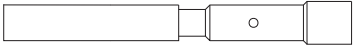
Male, 1 mm

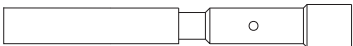
| 0.08-0.56                                                                         |
|-----------------------------------------------------------------------------------|
|  |

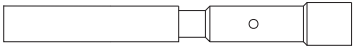
| 0.14-1.00                                                                         |
|-----------------------------------------------------------------------------------|
|  |

| 1.00-1.50                                                                         |
|-----------------------------------------------------------------------------------|
|  |

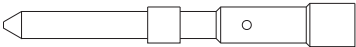
Female, 1 mm

| 0.08-0.56                                                                         |
|-----------------------------------------------------------------------------------|
|  |

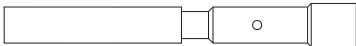
| 0.34-1.00                                                                           |
|-------------------------------------------------------------------------------------|
|  |

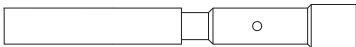
| 1.00-1.50                                                                           |
|-------------------------------------------------------------------------------------|
|  |

Male, 1.5 mm

| 0.14-1.00                                                                           |
|-------------------------------------------------------------------------------------|
|  |

Female, 1.5 mm

| 0.14-0.56                                                                           |
|-------------------------------------------------------------------------------------|
|  |

| 0.56-1.00                                                                           |
|-------------------------------------------------------------------------------------|
|  |

Ordering data

|                         | Type                  | Qty. | Order No.  |
|-------------------------|-----------------------|------|------------|
| 1.0 mm Male (0.08-0.56) | SAI-M23-KSC-0.08/0.56 | 50   | 1170140000 |
| 1.0 mm Male (0.14-1.00) | SAI-M23-KSC-0.14/1.00 | 50   | 1170150000 |
| 1.0 mm Male (1.00-1.50) | SAI-M23-KSC-1.00-1.5  | 50   | 1170170000 |

Ordering data

|                           | Type                  | Qty. | Order No.  |
|---------------------------|-----------------------|------|------------|
| 1.0 mm Socket (0.08-0.56) | SAI-M23-KBC-0.08/0.56 | 50   | 1995860000 |
| 1.0 mm Socket (0.34-1.00) | SAI-M23-KBC-0.34/1.00 | 50   | 1170180000 |
| 1.0 mm Male (1.00-1.50)   | SAI-M23-KBC-1.00-1.5  | 50   | 1170210000 |

Ordering data

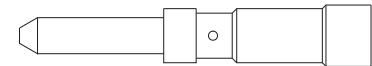
|                         | Type                   | Qty. | Order No.  |
|-------------------------|------------------------|------|------------|
| 1.5 mm Male (0.14-1.00) | SAI-M23-KSC-1.5-0.14-1 | 50   | 1170220000 |

Ordering data

|                           | Type                    | Qty. | Order No.  |
|---------------------------|-------------------------|------|------------|
| 1.5 mm Socket (0.14-0.56) | SAI-M23-KBC-1.5-.14-.56 | 50   | 1170230000 |
| 1.5 mm Socket (0.56-1.00) | SAI-M23-KBC-1.5-.56-1.0 | 50   | 1170240000 |

Male, 2 mm

0.75-2.00

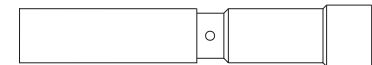


Ordering data

|                         | Type                    | Qty. | Order No.  |
|-------------------------|-------------------------|------|------------|
| 2.0 mm Male (0.75-2.00) | SAI-M23-KSC-2-0.75-2.00 | 50   | 1170250000 |

Female, 2 mm

0.75-2.00



Ordering data

|                           | Type                    | Qty. | Order No.  |
|---------------------------|-------------------------|------|------------|
| 2.0 mm Socket (0.75-2.00) | SAI-M23-KBC-2-0.75-2.00 | 50   | 1170260000 |

Technical data

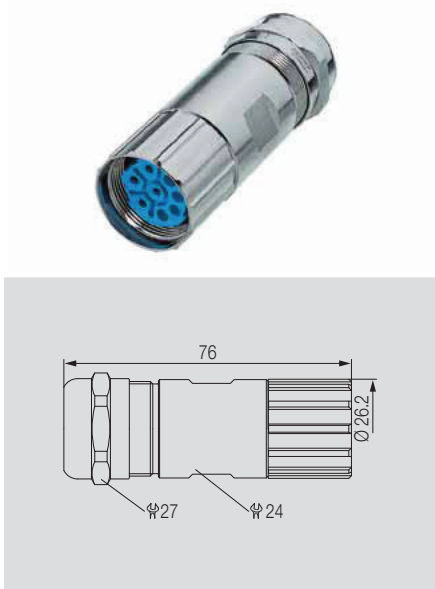
|                     |    |   |   |   |    |    |    |    |   |     |
|---------------------|----|---|---|---|----|----|----|----|---|-----|
|                     |    |   |   |   |    |    |    |    |   |     |
| Number of positions | 6  | 7 | 9 |   | 12 | 16 | 17 | 19 |   |     |
| Number of contacts  | 6  | 7 | 8 | 1 | 12 | 16 | 17 | 16 | 3 |     |
| Contact-Ø           | mm | 2 | 2 | 1 | 2  | 1  | 1  | 1  | 1 | 1.5 |
|                     |    |   |   |   |    |    |    |    |   |     |

M23 connector for power transmission

Housing

For cables with outer diameter of: 7–12 mm

Cable connector



Ordering data

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| SAI-M23-GS-L-7/12 | 1    | 1995800000 |

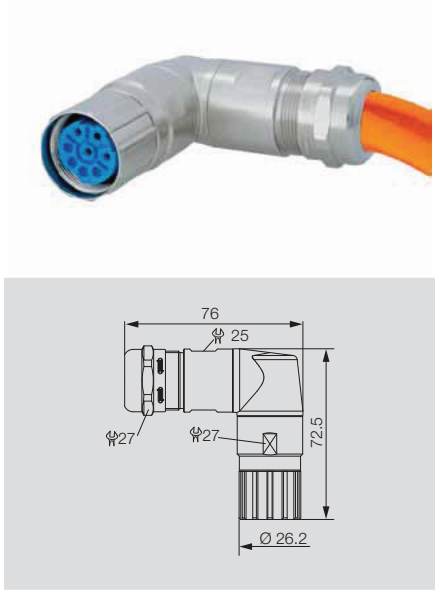
Coupling connector



Ordering data

| Type              | Qty. | Order No.  |
|-------------------|------|------------|
| SAI-M23-KS-L-7/12 | 1    | 1170270000 |

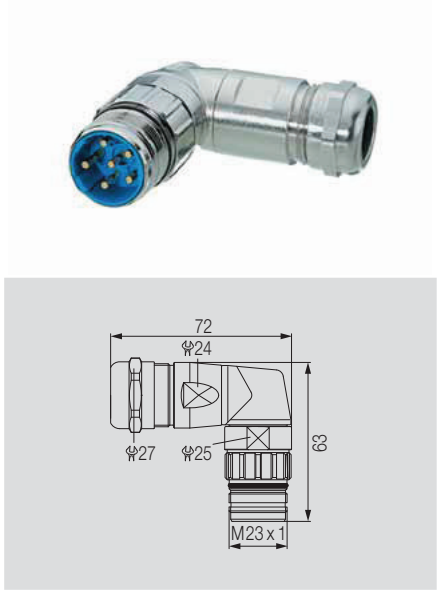
Angled connector



Ordering data

| Type                | Qty. | Order No.  |
|---------------------|------|------------|
| SAIL-M23-GSW-L-7/12 | 1    | 1170280000 |

Angled connector (coupling)

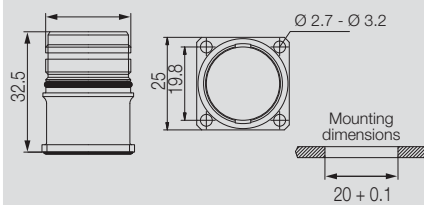


Ordering data

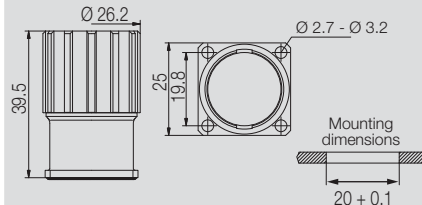
| Type                | Qty. | Order No.  |
|---------------------|------|------------|
| SAIL-M23-KSW-L-7/12 | 1    | 1170290000 |

**Built-in connector**

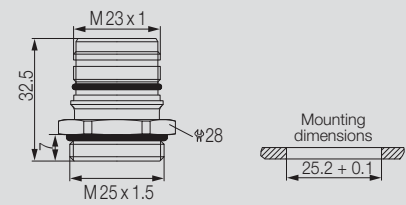
With 3.2-mm mounting holes

**Device connector (front panel)****Ordering data**

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| SAIE-M23-L-VW | 1    | 1170300000 |

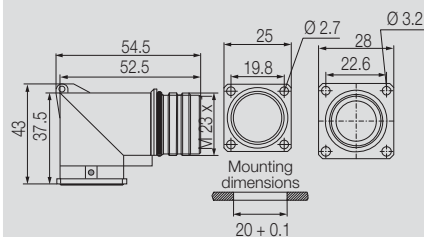
**Device connector with knurled nut****Ordering data**

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| SAIE-M23-L-RM | 1    | 1170310000 |

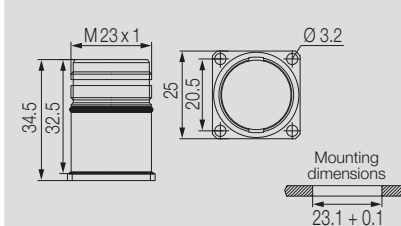
**Device connector (single-hole mount)****Ordering data**

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| SAIE-M23-L-EM | 1    | 1170320000 |

H

**Device connector (angled)****Ordering data**

| Type         | Qty. | Order No.  |
|--------------|------|------------|
| SAIE-M23-L-W | 1    | 1170330000 |

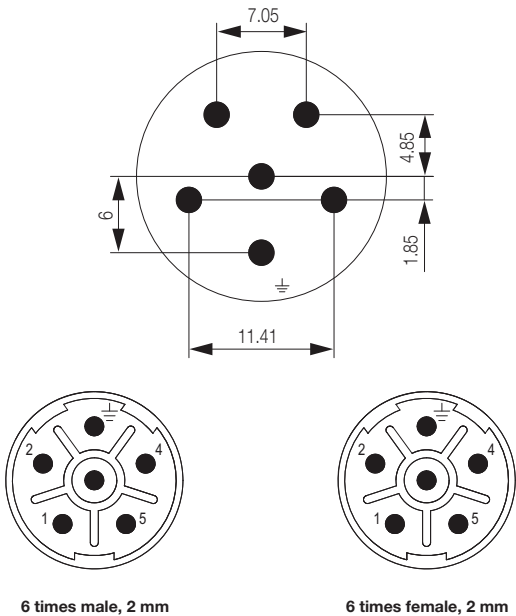
**Device connector (back panel)****Ordering data**

| Type          | Qty. | Order No.  |
|---------------|------|------------|
| SAIE-M23-L-HW | 1    | 1170340000 |

M23 connector for power transmission

Inserts

5 + PE



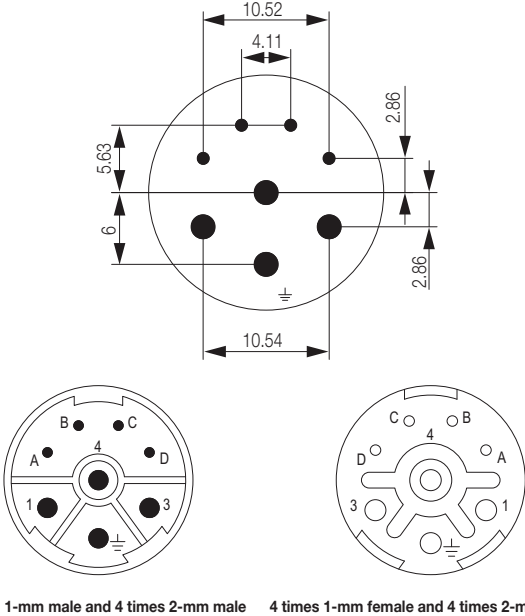
6 times male, 2 mm

6 times female, 2 mm

Ordering data

|                      | Type           | Qty. | Order No.  |
|----------------------|----------------|------|------------|
| 6 times male, 2 mm   | SAI-M23-SE-L-6 | 1    | 1170350000 |
| 6 times female, 2 mm | SAI-M23-BE-L-6 | 1    | 1170370000 |

4/4



4 times 1-mm male and 4 times 2-mm male    4 times 1-mm female and 4 times 2-mm female

Ordering data

|                                             | Type             | Qty. | Order No.  |
|---------------------------------------------|------------------|------|------------|
| 4 times 1-mm male and 4 times 2-mm male     | SAI-M23-SE-L-4/4 | 1    | 1170380000 |
| 4 times 1-mm female and 4 times 2-mm female | SAI-M23-BE-L-4/4 | 1    | 1995810000 |

Contacts

Male, 1 mm

|                                                                                   |
|-----------------------------------------------------------------------------------|
| 0.25 - 1.00                                                                       |
|  |
|                                                                                   |

Ordering data

|                       | Type                 | Qty. | Order No.  |
|-----------------------|----------------------|------|------------|
| 1 mm Male (0.25-1.00) | SAI-M23-KSC-0,25-1.0 | 50   | 1170390000 |
|                       |                      |      |            |

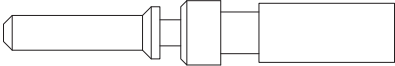
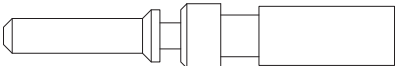
Female, 1 mm

|                                                                                   |
|-----------------------------------------------------------------------------------|
| 0.25 - 1.00                                                                       |
|  |
|                                                                                   |

Ordering data

|                         | Type                 | Qty. | Order No.  |
|-------------------------|----------------------|------|------------|
| 1 mm Socket (0.25-1.00) | SAI-M23-KBC-0.25-1.0 | 50   | 1995830000 |
|                         |                      |      |            |

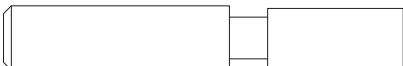
Male, 2 mm

|                                                                                     |
|-------------------------------------------------------------------------------------|
| 0.75 - 2.5                                                                          |
|    |
| 2.5 - 4.00                                                                          |
|  |
|                                                                                     |

Ordering data

|                      | Type                   | Qty. | Order No.  |
|----------------------|------------------------|------|------------|
| 2 mm Male (0.75-2.5) | SAI-M23-KSC-L-0.75-2.5 | 50   | 1170400000 |
| 2 mm Male (2.5-4.00) | SAI-M23-KSC-L-2.5-4.0  | 50   | 1170410000 |
|                      |                        |      |            |

Female, 2 mm

|                                                                                     |
|-------------------------------------------------------------------------------------|
| 0.75 - 2.5                                                                          |
|  |
| 2.5 - 4.00                                                                          |
|  |
|                                                                                     |

Ordering data

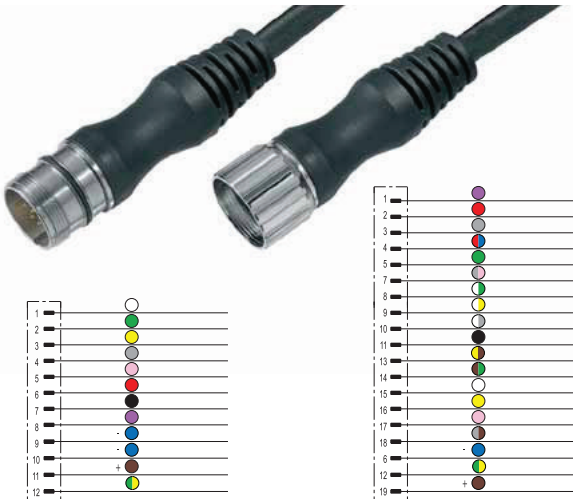
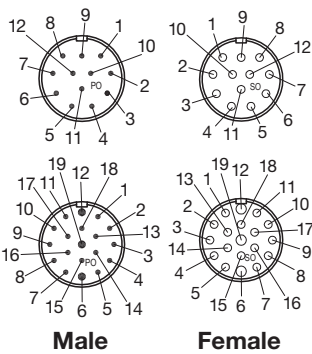
|                        | Type                   | Qty. | Order No.  |
|------------------------|------------------------|------|------------|
| 2 mm Socket (0.75-2.5) | SAI-M23-KBC-L-0.75-2.5 | 50   | 1995820000 |
| 2 mm Socket (2.5-4.00) | SAI-M23-KBC-L-2.5-4.0  | 50   | 1170420000 |
|                        |                        |      |            |

Technical data

| Number of positions | 5 + PE | 4/4 |   |
|---------------------|--------|-----|---|
| Number of contacts  | 6      | 4   | 4 |
| Contact-Ø           | mm 2   | 1   | 2 |
|                     |        |     |   |

Moulded M23 cables

M23 cables



Ordering data

|                  |     |
|------------------|-----|
| Male, straight   | 1 m |
| Male, angled     | 1 m |
| Female, straight | 1 m |
| Female, angled   | 1 m |
| Note             |     |

12-pole

| Type                            | Order No.  |
|---------------------------------|------------|
| SAIS-M23-12P-AN-1,0M            | 1906290100 |
| SAIS-M23-12P-ST-1,0M            | 1906280100 |
| SAIB-M23-12P-AN-1,0M            | 1877440100 |
| SAIB-M23-12P-ST-1,0M            | 1886440100 |
| ST = straight<br>AN = 90° elbow |            |

19-pole

| Type                      | Order No.  |
|---------------------------|------------|
| SAIS-M23-19P-AN-1,0M      | 1818090100 |
| SAIS-M23-19P-ST-1,0M      | 1818160100 |
| SAIB-M23-19P-AN-1,0M      | 1818140100 |
| SAIB-M23-19P-ST-1,0M      | 1818180100 |
| Other versions on request |            |

|  |  |
|--|--|
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Standard cable lengths

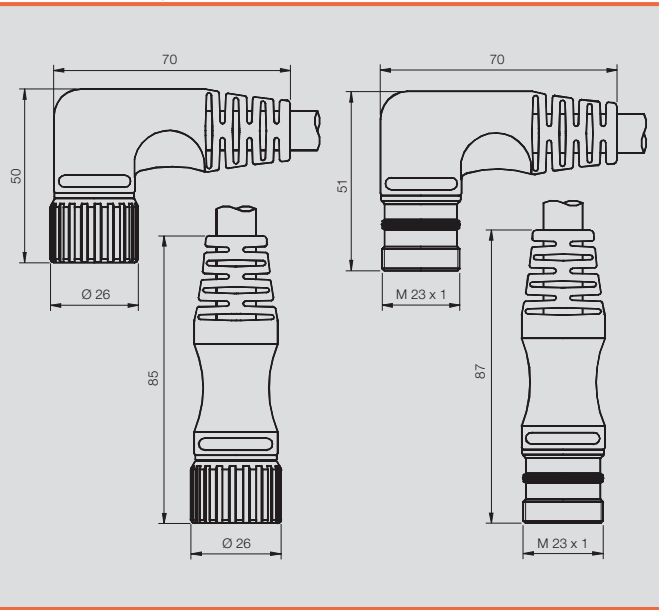
|                                                                                                                                                                  |        |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|
| All cables listed under the ordering data have a length of 1.5 metres. The last four ordering digits must be changed when ordering other standard cable lengths. | 1.5 m  | xxxxxx0150 |
|                                                                                                                                                                  | 3.0 m  | xxxxxx0300 |
|                                                                                                                                                                  | 5.0 m  | xxxxxx0500 |
|                                                                                                                                                                  | 10.0 m | xxxxxx1000 |

Technical data

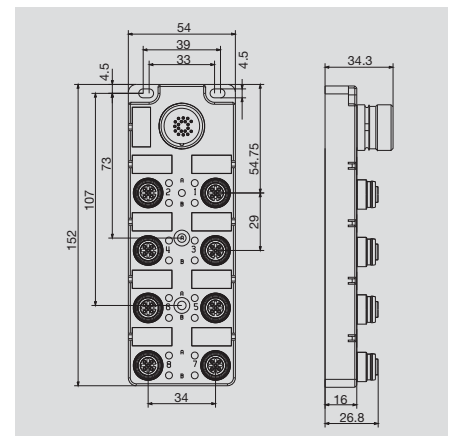
|                                         |              |
|-----------------------------------------|--------------|
| Rated current                           | 8 A          |
| Protection class                        | IP 67        |
| Core cross-section                      | 0.75 mm²     |
| Contact surface                         | gold-plated  |
| Temperature range of housing            | -25...+85 °C |
| Rated voltage                           | 150 V        |
| (acc. to VDE standard 0110 ISO group C) |              |

Chapter W includes additional technical specifications for the cable

Dimensioned drawing



with M23 outlet



## Ordering data

| Complete modules |           |
|------------------|-----------|
|                  | 4 channel |
|                  | 8 channel |
| Note             |           |

## SAI-4/8-S

## 4-pole

| Type                      | Qty. | Order No.  |
|---------------------------|------|------------|
| SAI-4-S 4P FC             | 1    | 1847960000 |
| SAI-8-S 4P FC             | 1    | 1847920000 |
| Other versions on request |      |            |

## SAI-4/8-S

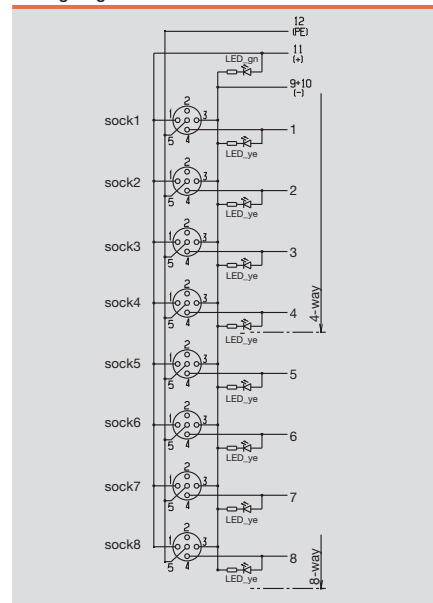
## 5-pole

| Type                      | Qty. | Order No.  |
|---------------------------|------|------------|
| SAI-4-S 5P FC             | 1    | 1847970000 |
| SAI-8-S 5P FC             | 1    | 1848040000 |
| Other versions on request |      |            |

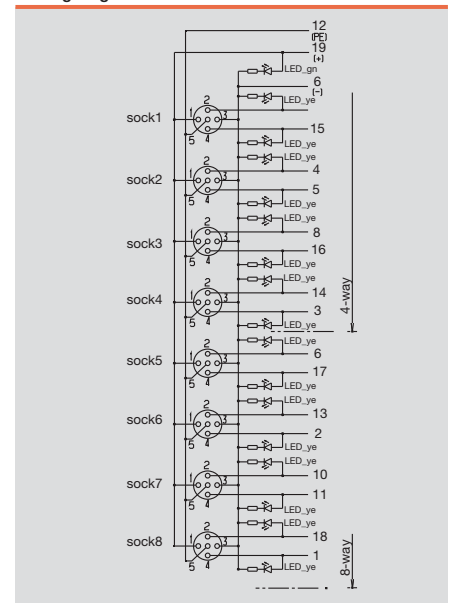
## Technical data

|                                                      |                                 |
|------------------------------------------------------|---------------------------------|
| Operating voltage                                    | 10...30 V                       |
| Current of continuous busbars                        | 2 A                             |
| max. current-carrying capacity per slot              | 4 A                             |
| Total current                                        | 9 A                             |
| Pollution severity                                   | 3                               |
| Protection class                                     | IP 67                           |
| Ambient temperature range                            | -25...+80 °C                    |
| Housing main material                                | PA 6 GF                         |
| Contact carrier material                             | PBT UL 94 V0                    |
| Base material of contacts                            | CuZn, pre-nickeled, gold-plated |
| screw socket                                         | CuZn, nickel-plated             |
| Housing colour                                       | grey, RAL 7032                  |
| Flammability class UL 94                             | V-0                             |
| Clamping range of hood-version                       |                                 |
| Suitable for dragline cable (fixed cable connection) |                                 |

## Wiring diagram

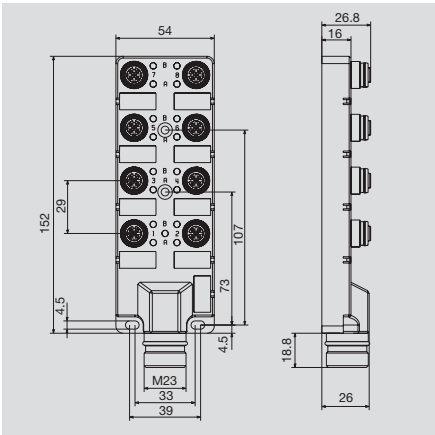


## Wiring diagram



SAI distributor M12 with M23

with M23 outlet on front



Ordering data

| Complete modules |           |
|------------------|-----------|
|                  | 4 channel |
|                  | 8 channel |
| Note             |           |

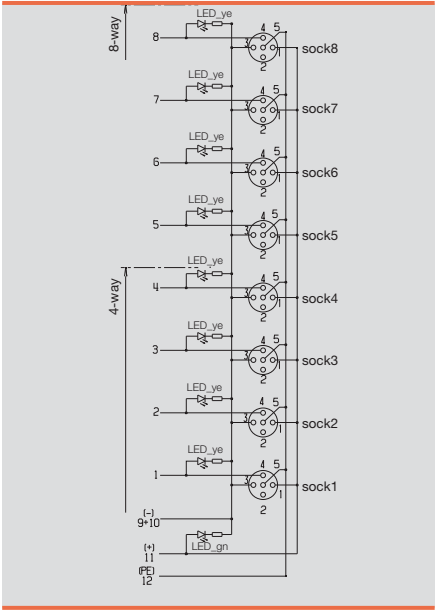
| SAI-4/8-SH     |      | 4-pole     |
|----------------|------|------------|
| Type           | Qty. | Order No.  |
| SAI-4-SH 4P FC | 1    | 1859110000 |
| SAI-8-SH 4P FC | 1    | 1859120000 |

| SAI-4/8-SH     |      | 5-pole     |
|----------------|------|------------|
| Type           | Qty. | Order No.  |
| SAI-4-SH 5P FC | 1    | 1859130000 |
| SAI-8-SH 5P FC | 1    | 1859140000 |

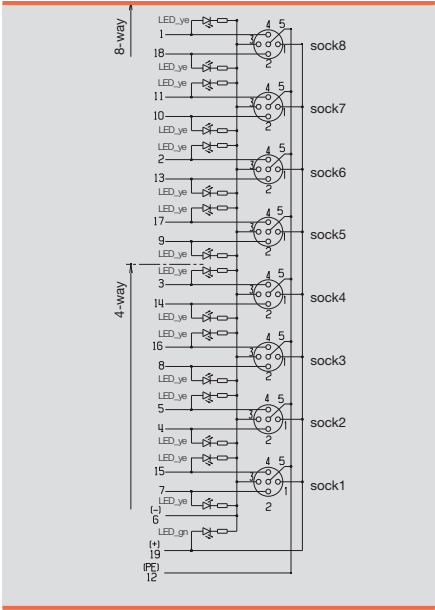
Technical data

|                                                      |                                 |
|------------------------------------------------------|---------------------------------|
| Operating voltage                                    | 10...30 V                       |
| Current of continuous busbars                        | 2 A                             |
| max. current-carrying capacity per slot              | 4 A                             |
| Total current                                        | 9 A                             |
| Pollution severity                                   | 3                               |
| Protection class                                     | IP 67                           |
| Ambient temperature range                            | -25...+80 °C                    |
| Housing main material                                | PA 6 GF                         |
| Contact carrier material                             | PBT UL 94 V0                    |
| Base material of contacts                            | CuZn, pre-nickeled, gold-plated |
| screw socket                                         | CuZn, nickel-plated             |
| Housing colour                                       | grey, RAL 7032                  |
| Flammability class UL 94                             | V-0                             |
| Clamping range of hood-version                       |                                 |
| Suitable for dragline cable (fixed cable connection) |                                 |

Wiring diagram

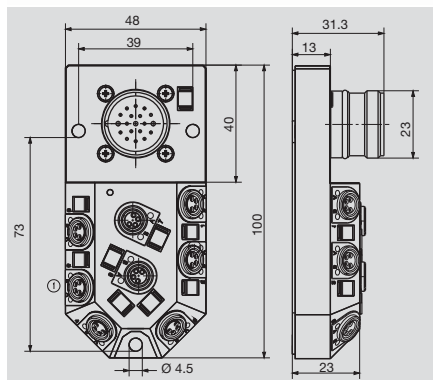


Wiring diagram



## With M23/ M16 outlet

## SAI-4/8-M23



## Ordering data

|        |           |
|--------|-----------|
| 3-pole | 8 channel |
| 4-pole | 4 channel |
|        | 8 channel |
| Note   |           |

## SAI-4/8-M23

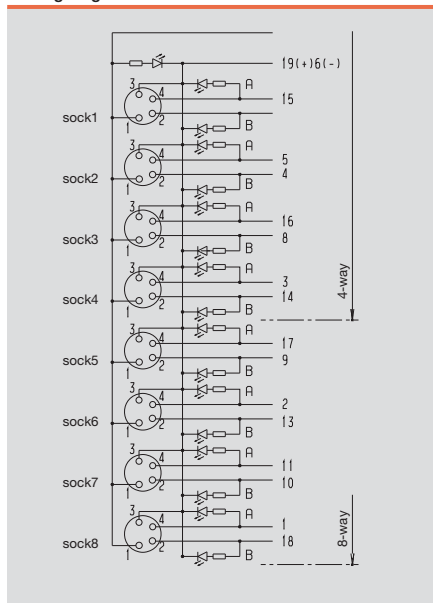
## M23

| Type                      | Qty. | Order No.  |
|---------------------------|------|------------|
| SAI-4-M23 4P M8           | 1    | 1784660000 |
| SAI-8-M23 4P M8           | 1    | 1784650000 |
| Other versions on request |      |            |

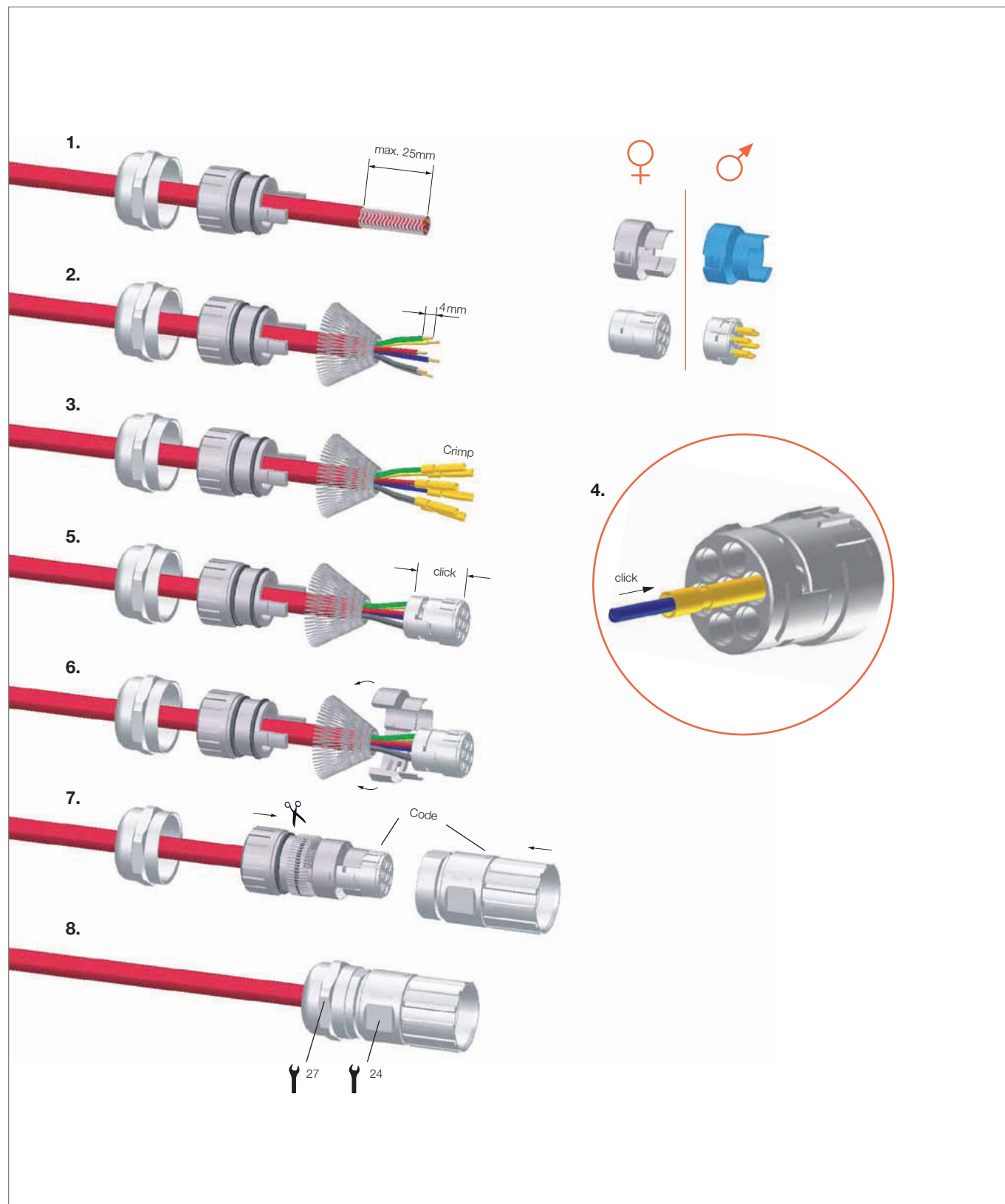
## Technical data

|                                                      |                                 |
|------------------------------------------------------|---------------------------------|
| Operating voltage                                    | 10...30 V                       |
| Current of continuous busbars                        | 2 A                             |
| max. current-carrying capacity per slot              | 2 A                             |
| Total current                                        | 8 A                             |
| Pollution severity                                   | 3                               |
| Protection class                                     | IP 68                           |
| Ambient temperature range                            | -20...+90 °C                    |
| Housing main material                                | Pocan                           |
| Contact carrier material                             | PBT UL 94 V0                    |
| Base material of contacts                            | CuZn, pre-nickeled, gold-plated |
| screw socket                                         | CuZn, nickel-plated             |
| Housing colour                                       | grey, RAL 7032                  |
| Flammability class UL 94                             | V-0                             |
| Clamping range of hood-version                       |                                 |
| Suitable for dragline cable (fixed cable connection) |                                 |

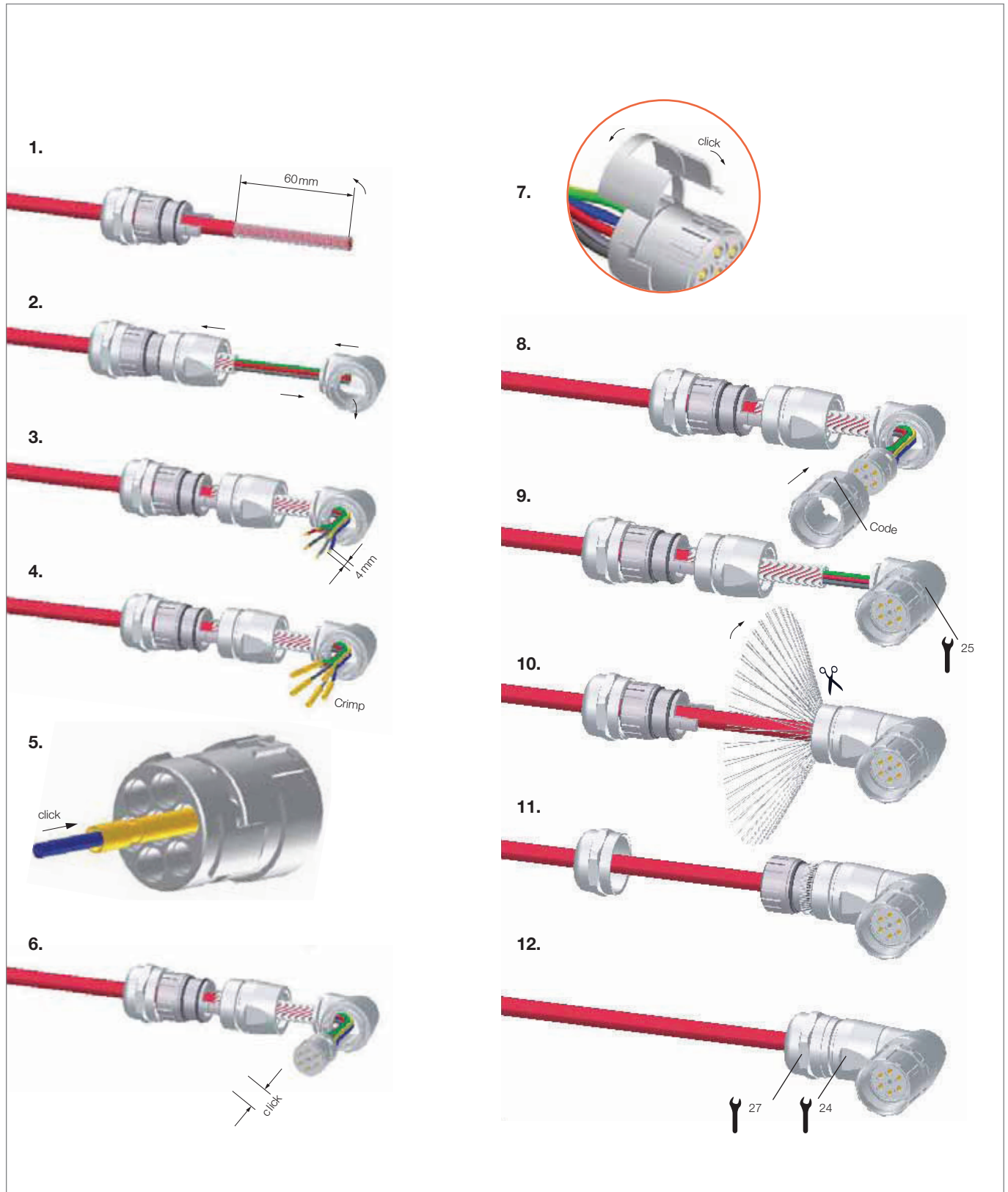
## Wiring diagram



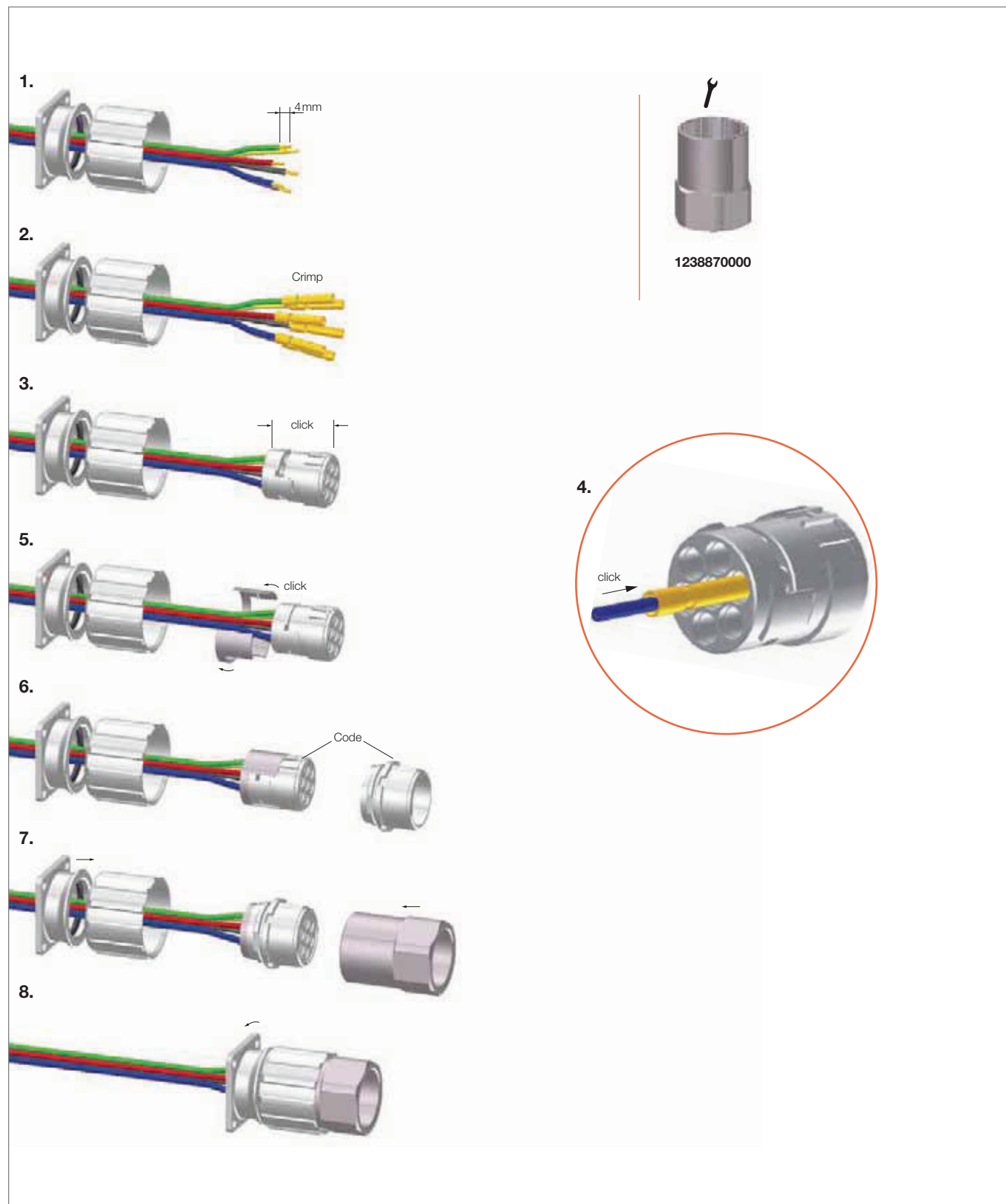
# Cable connector



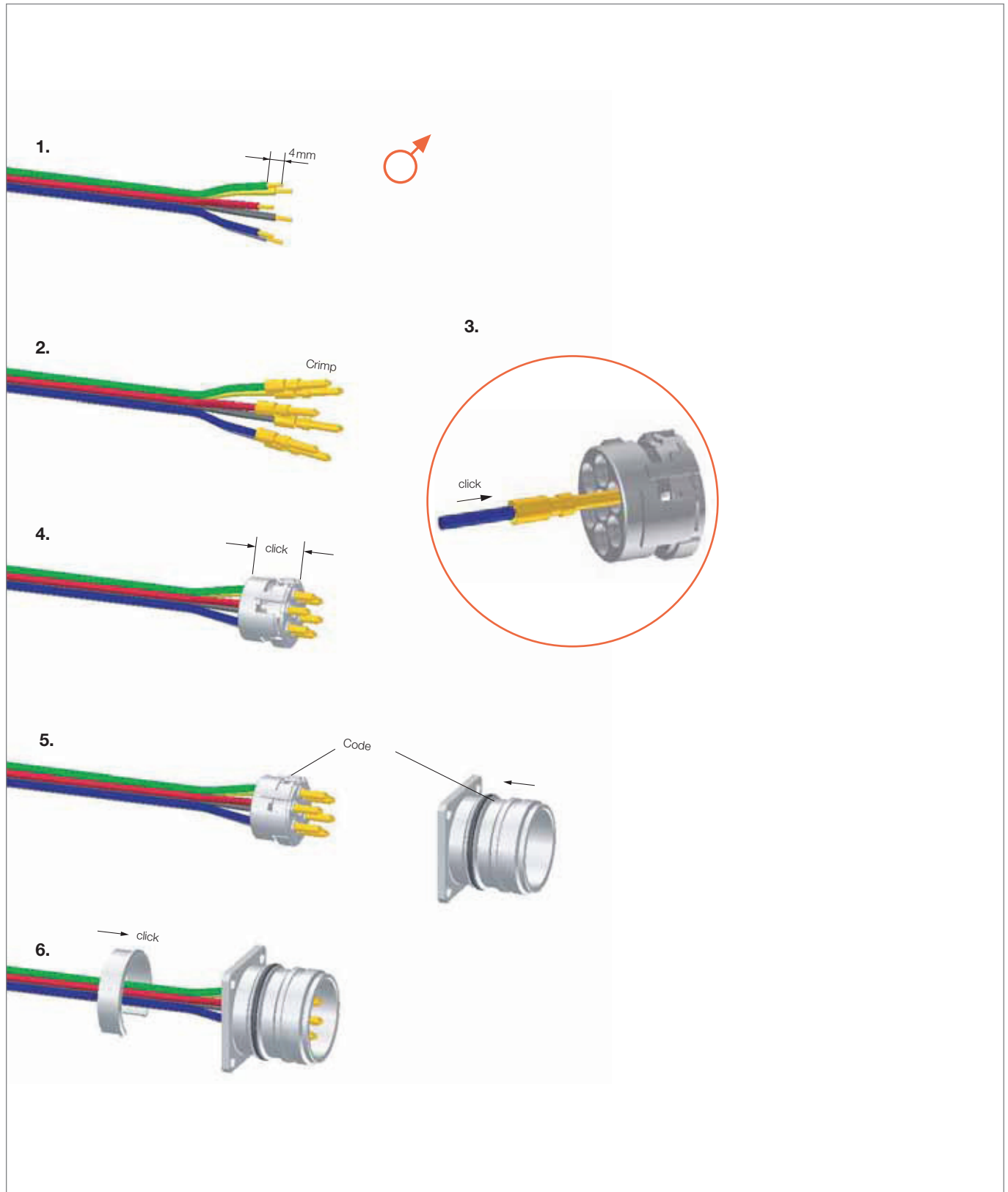
# Angled connector



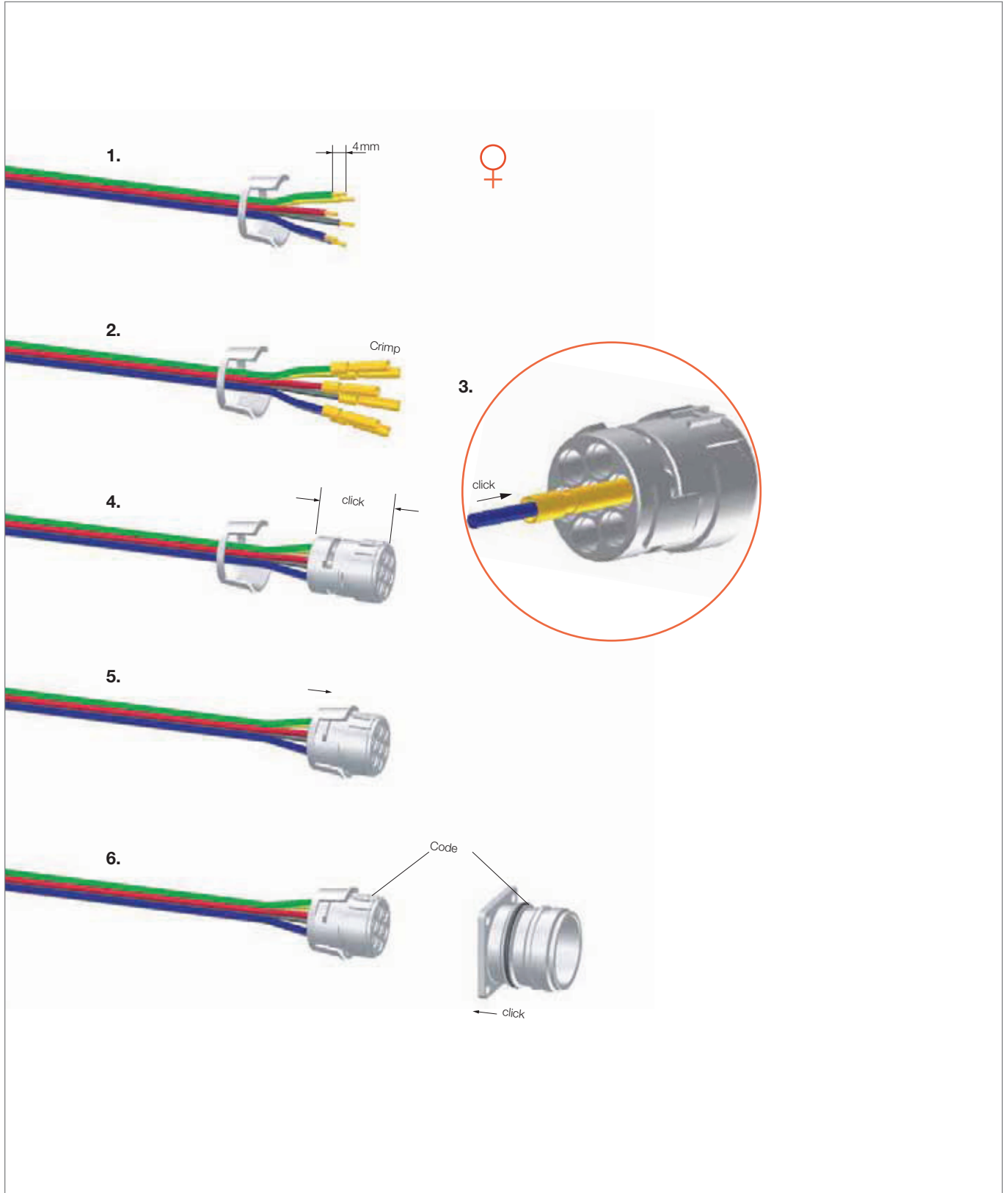
# Device connector with knurled nut



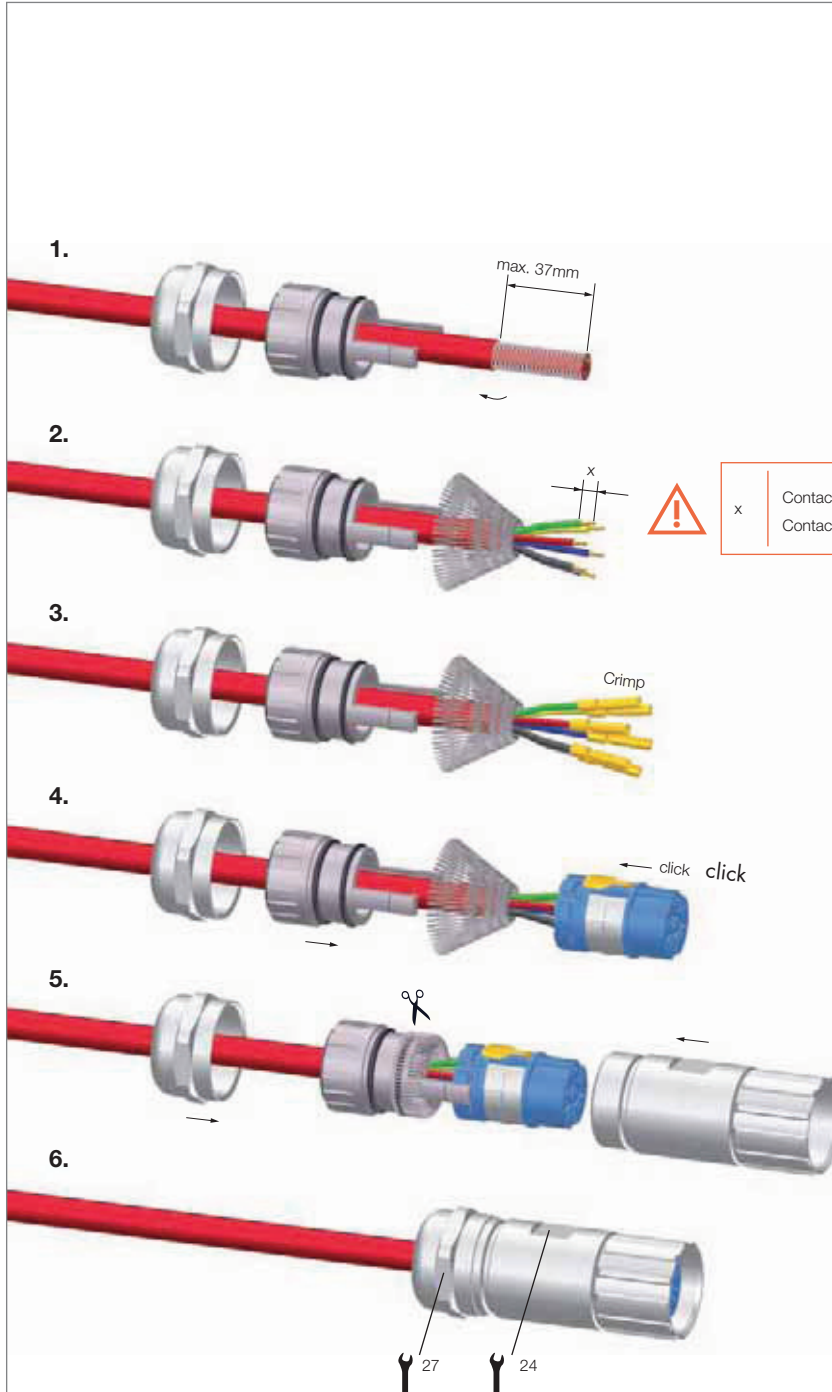
# Device connector, male



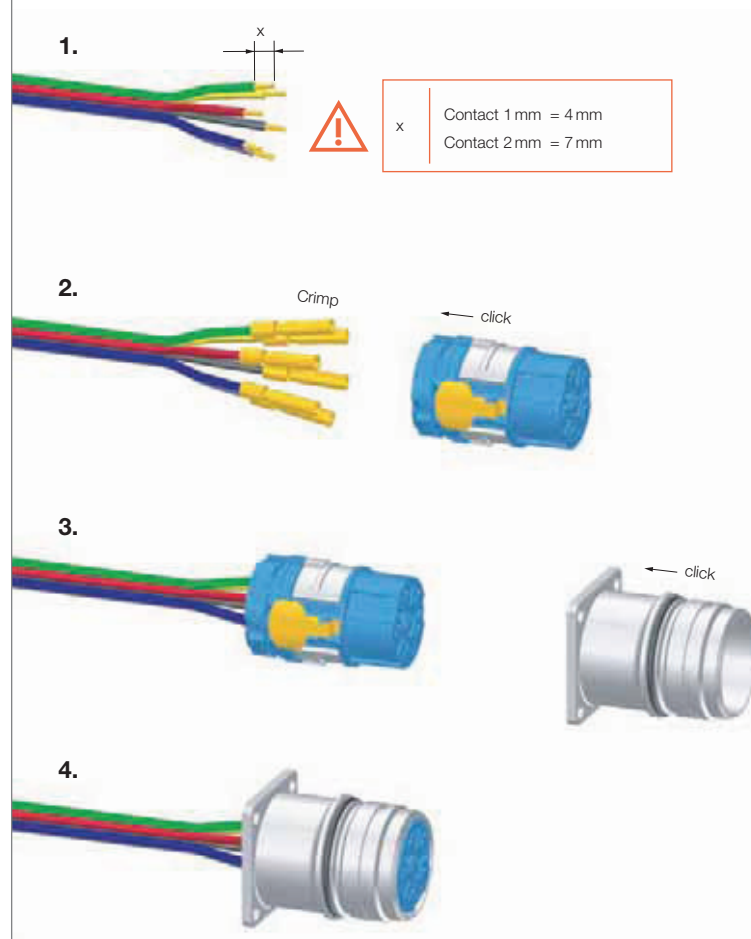
# Device connector, female



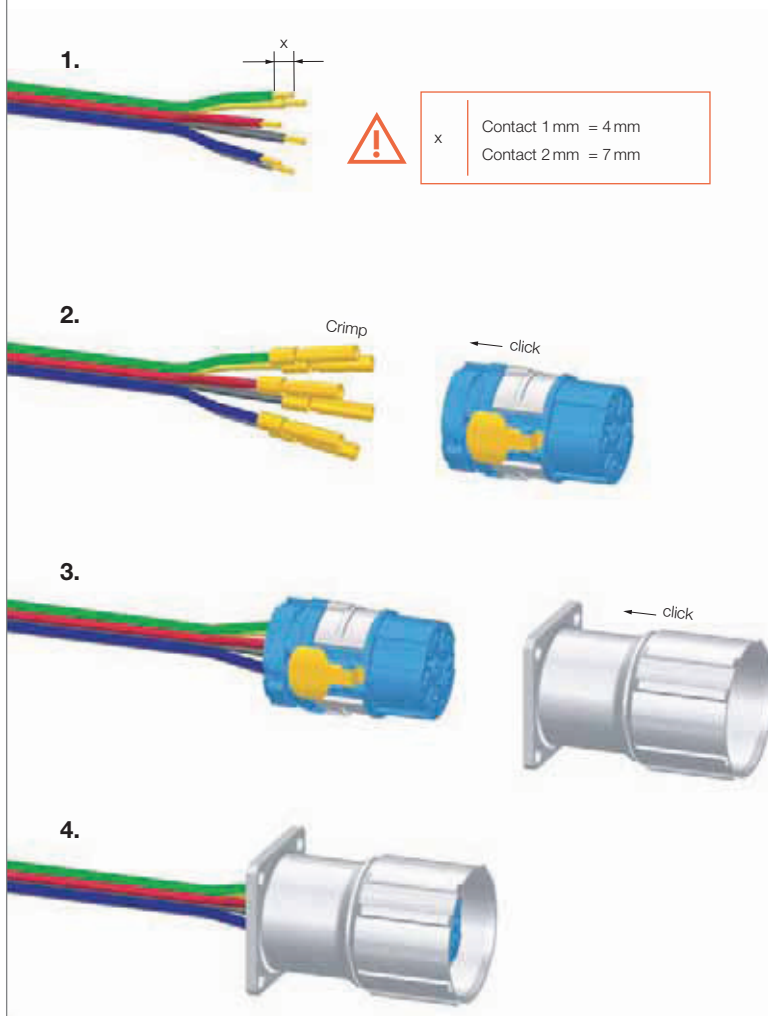
# Cable connector



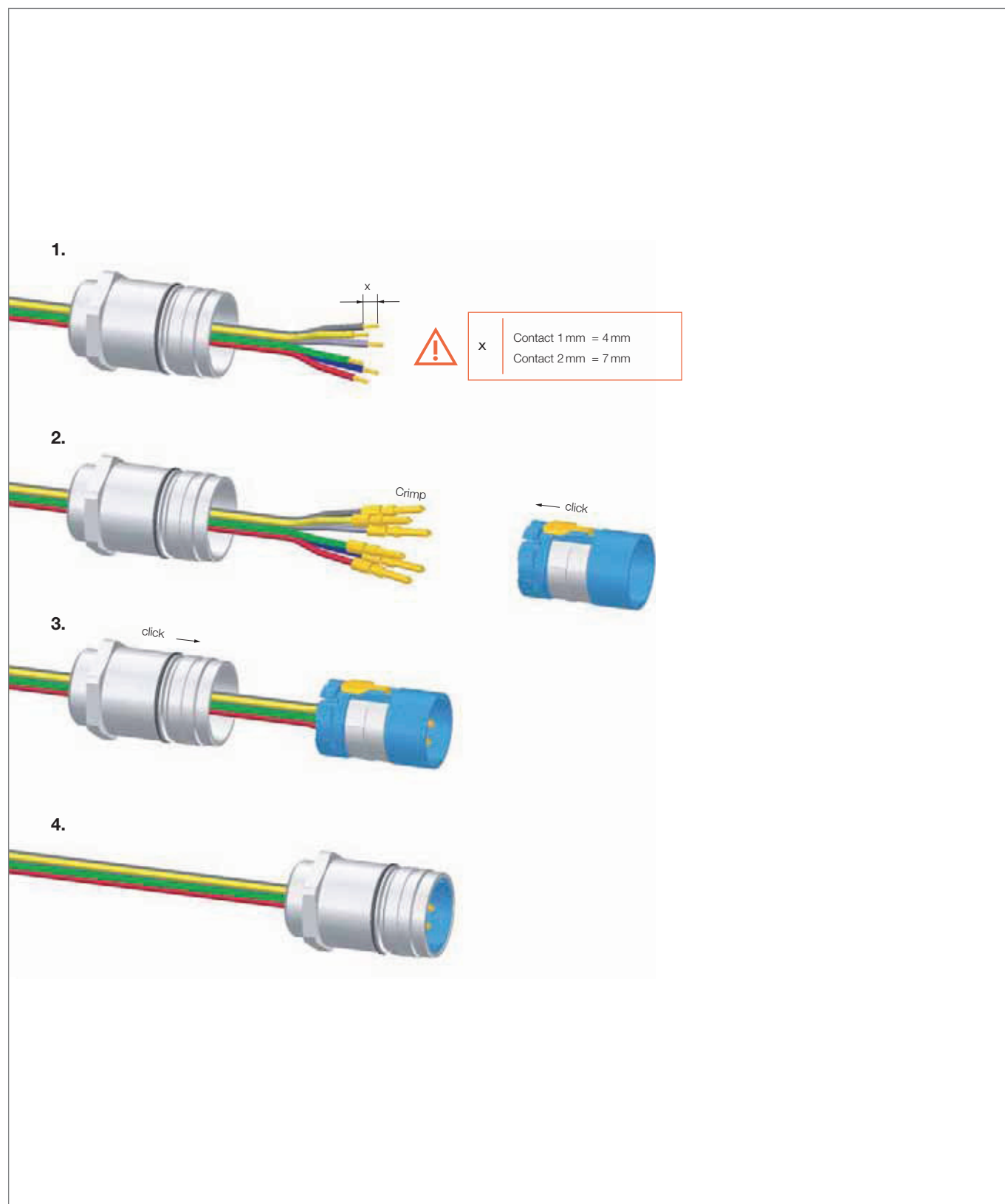
# Device connector



# Device connector



# Device connector, single-hole mount



# M23 connector

## Easy to assemble

- An integrated approach for all plug sizes
- A patented assembly module consisting of terminal insert and insulating body
- Assembly and shield connection combined into one step
- Simple, quick and safe assembly in the housing



## Flexibility



Total modularity means flexibility. Male or female inserts can even be used with any of the housing types for the M23 power connectors.



The concise layout of this connector range and the reduced number of individual parts has clear benefits for the user – speedier assembly and easier installation.



The spacer sleeves are colour-coded for the male and female inserts.



Assembly and shield connection are combined into one step.



The snap-on terminal insert protects the cable outlet from getting twisted.



The variable shield connection ensures secure EMC protection for both light and heavy shielding braid.

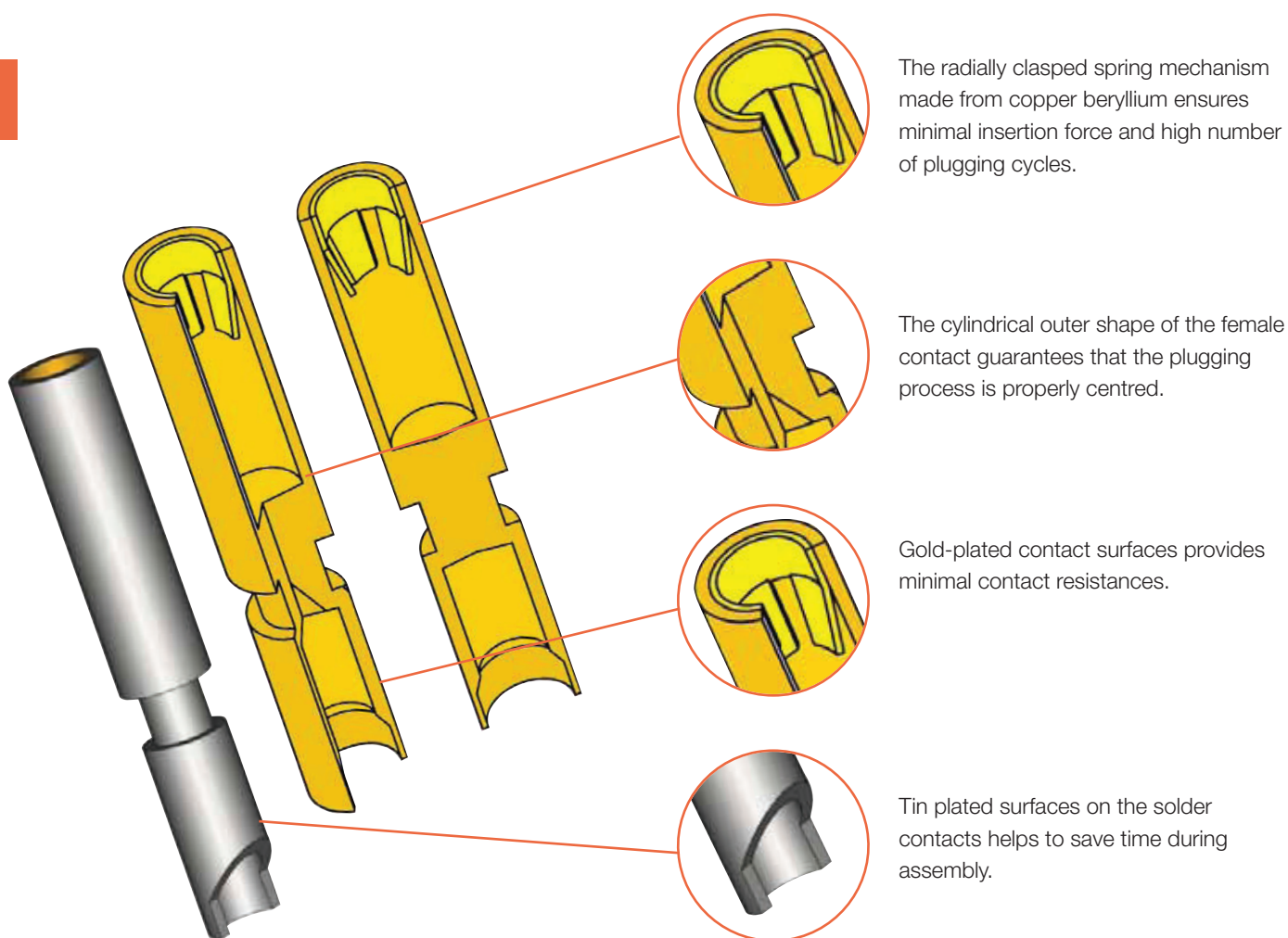
## M23 connector

## Secure contact with SLS® technology

The new, premium-grade contact – the spring-loaded socket (SLS®) system

- Integrated spring takes the pin contact and clasps it radially
- Outstanding electrical characteristics with the most secure contact
- Quick assembly: solder contacts already tin-plated

## H



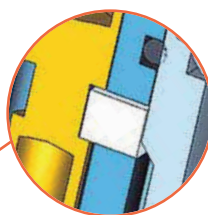
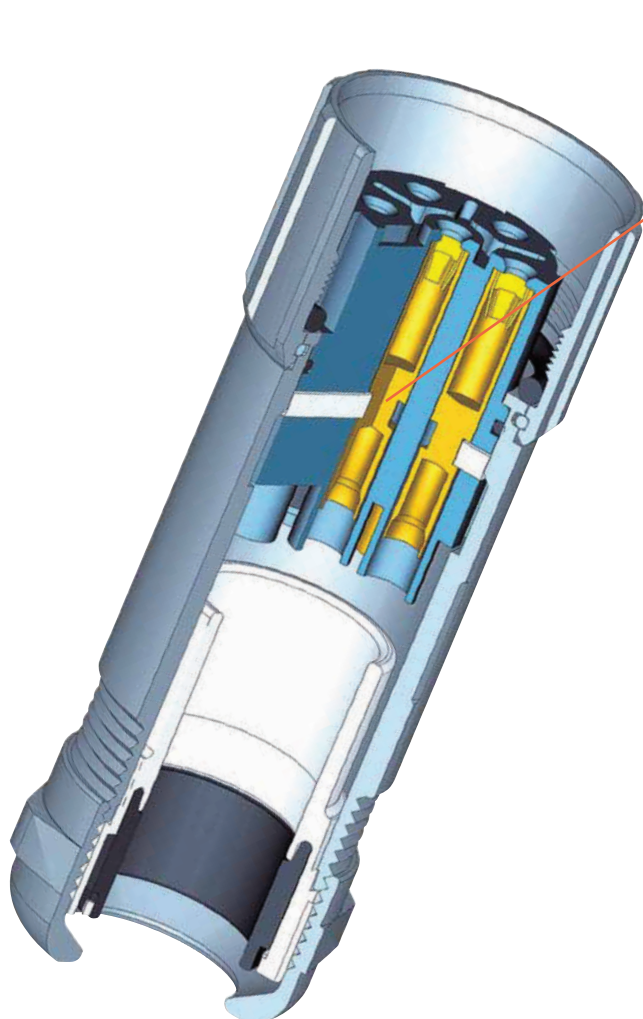
### Euro-Lock system® for a secure mount

Euro-Lock system® – the patented interlock system

- The integrated support clip locks the contacts into the insulating body
- Contacts are easy to install and remove
- No special tool is required

### High-quality cable gland

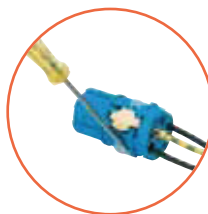
- Replaceable male or female inserts in each type of housing
- Integrated strain relief mechanism with patented HSK cable gland
- Internationally certified, with proven and established quality



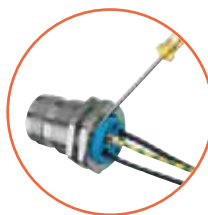
Secure contact interlock



Quick assembly



Simple removal of contacts



Complete installation and removal without any special tools

