

# M23 Industrial

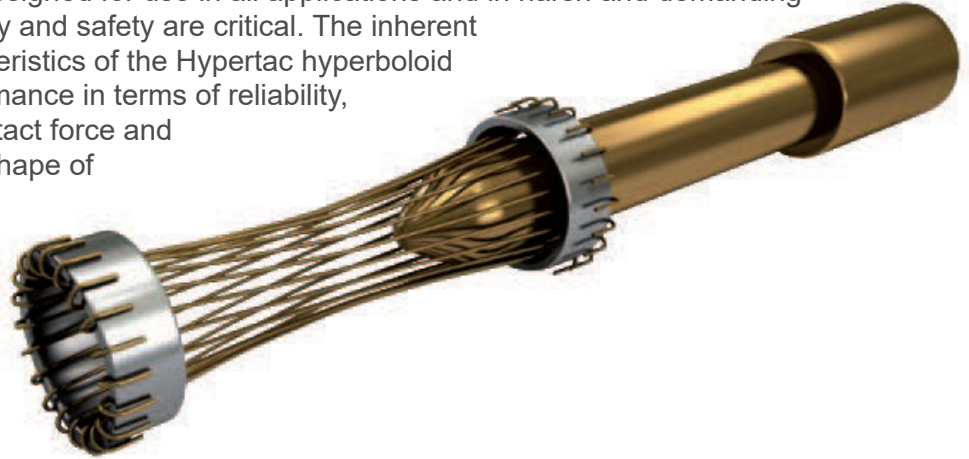
## Series L & Series S

Robust Circular Power & Signal Connectors - Size 1



# Hypertac® Hyperboloid Technology

Smiths Interconnect offers an extensive range of superior contact technologies suitable for standard and custom solutions. Hypertac® (HYPERboloid conTACT) is the original superior performing hyperboloid contact technology designed for use in all applications and in harsh and demanding environments where high reliability and safety are critical. The inherent electrical and mechanical characteristics of the Hypertac hyperboloid contact ensures unrivalled performance in terms of reliability, number of mating cycles, low contact force and minimal contact resistance. The shape of the contact sleeve is formed by hyperbolically arranged contact wires, which align themselves elastically as contact lines around the pin, providing a number of linear contact paths.



| Features  | Benefits  |
|---|---|
| <p><b>Low insertion/extraction forces</b></p> <p>The angle of the socket wires allows tight control of the pin insertion and extraction forces. The spring wires are smoothly deflected to make line contact with the pin.</p>  | <p><b>High density interconnect systems</b></p> <p>Significant reductions in size and weight of sub-system designs. No additional hardware is required to overcome mating and un-mating forces.</p>   |
| <p><b>Long contact life</b></p> <p>The smooth and light wiping action minimizes wear on the contact surfaces. Contacts perform up to 100,000 insertion/extraction cycles with minimal degradation in performance.</p>   | <p><b>Low cost of ownership</b></p> <p>The Hypertac contact technology will surpass most product requirements, thus eliminating the burden and cost of having to replace the connector or the entire subsystem.</p>   |
| <p><b>Lower contact resistance</b></p> <p>The design provides a far greater contact area and the wiping action of the wires insures a clean and polished contact surface. Our contact technology has about half the resistance of conventional contact designs.</p>   | <p><b>Low power consumption</b></p> <p>The lower contact resistance of our technology results in a lower voltage drop across the connector reducing the power consumption and heat generation within the system.</p>  |
| <p><b>Higher current ratings</b></p> <p>The design parameters of the contact (e.g., the number, diameter and angle of the wires) may be modified for any requirement. The number of wires can be increased so the contact area is distributed over a larger surface. Thus, the high current carried by each wire because of its intimate line contact, can be multiplied many times.</p>                        | <p><b>Maximum contact performance</b></p> <p>The lower contact resistance of the Hypertac contact reduces heat build-up; therefore Hypertac contacts are able to handle far greater current in smaller contact assemblies without the detrimental effects of high temperature.</p>  |
| <p><b>Immunity to shock &amp; vibration</b></p> <p>The low mass and resultant low inertia of the wires enable them to follow the most abrupt or extreme excursions of the pin without loss of contact. The contact area extends 360° around the pin and is uniform over its entire length. The 3 dimensional symmetry of the Hypertac contact design guarantees electrical continuity in all circumstances.</p> | <p><b>Reliability under harsh environments</b></p> <p>Harsh environmental conditions require connectors that will sustain their electrical integrity even under the most demanding conditions such as shock and vibration. The Hypertac contact provides unmatched stability in demanding environments when failure is not an option.</p> |

# Contents

|   |                |
|---|----------------|
| <b>M23 POWER CONNECTORS SERIES L .....</b>  | <b>3</b>       |
| Type overview.....                          | 3              |
| Technical characteristics.....              | 4 - 5          |
| How to order .....                          | 6 - 7          |
| Configuration available connectors: .....   | 8              |
| Power Receptacles.....                      | 8 - 10         |
| Power Extensions.....                       | 11 - 12        |
| Power Panel Feed Through.....               | 13             |
| Power Plugs .....                           | 14 - 16        |
| Cable Clamps & Accessoires .....            | 17             |
| Contacts .....                              | 18 - 22        |
| <br>  |                |
| <b>M23 SIGNAL CONNECTORS SERIES S .....</b> | <b>24</b>      |
| Type overview.....                          | 24             |
| Technical characteristics.....              | 25             |
| Contact arrangement.....                    | 26 - 27        |
| How to order .....                          | 28 - 30        |
| Configuration available connectors: .....   | 31             |
| Signal Receptacles.....                     | 31 - 37        |
| Signal Extensions.....                      | 38 - 45        |
| Signal Plugs & Panel Feed Through .....     | 46 - 55        |
| 21 way Signal Connectors.....               | 56 - 58        |
| Cable Clamps & Accessoires .....            | 59             |
| Contacts .....                              | 60 - 63        |
| <br>  |                |
| <b>TOOLS .....</b>                          | <b>64 - 66</b> |

# M23 Industrial

## Robust Circular Power & Signal Connectors



M23 Signal and Power Connectors in favour of motor drive applications. For the installation, crimp contacts are used which guarantee high quality of the connection, reducing the installation costs at the same time.

Hand-operated and fully automatic crimping tools can be used to assemble the crimp contacts. There are two different Hypertac® hyperboloid contact types available: Machined and stamped. These two types of contacts have different characteristics in terms of how the termination is made.

**Machined contacts:** With this popular type of contact, the suitable contact size is matched to the wire gauge of the cable. **Stamped contacts:** The crimping sleeve allows a wider range of wire gauges to be crimped. Furthermore, the insertion and extraction force is usually lower by using stamped round pins and HCS™ sockets. Stamped contacts are supplied on reels for use with automatic feed crimping tools.

**Hypertac® hyperboloid contact:** Hypertac® is a superior performing hyperboloid contact technology designed for use in harsh and demanding environments where high reliability and safety are critical. The inherent electrical and mechanical characteristics of the Hypertac hyperboloid contact ensures unrivalled performance in terms of reliability, number of mating cycles, low contact force and minimal contact resistance. These performance characteristics provide a real commercial benefit in terms of the total installed cost of ownership.

In addition our M23 connectors offer outstanding electro-magnetic compatibility protection through a 360° screen connection.

Robust  
technology  
for use in harsh  
environments

## Features & Benefits

### Superior performance

- Hypertac® contact technology ensures immunity to shock and vibration and minimal contact resistance
- Outstanding protection against electromagnetic interference through a full 360° screen shielding
- O-rings for protection against vibration

### Variety of contacts

- Crimp contacts for all current cable cross sections available
- Signal connectors with crimp and solder contacts

### Stamped hyperboloid contacts on reels

- Favourable price and reduced processing costs
- Fully automatic workable and reduced assembly time
- High reliability wire B-crimp and additional insulation O-crimp

### Wide cable clamp range

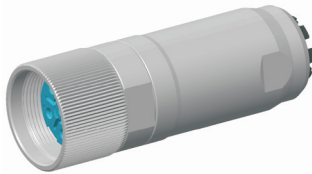
- Can accept cable diameter from 5 to 18.5 mm

### UL certified

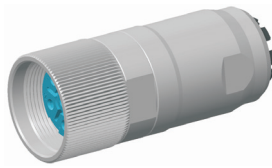
- UL/CSA approval file No. 178462

# Type Overview

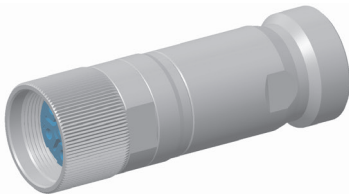
## M23 Power Connectors Series L



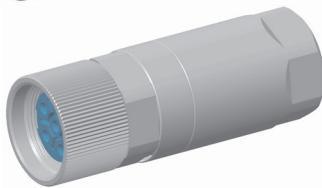
Cable plug with coupling ring



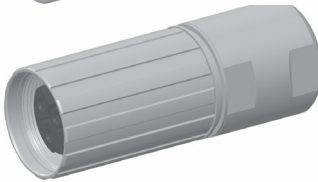
Cable plug with coupling ring



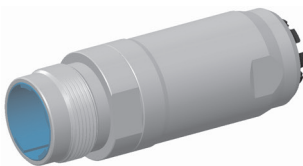
Cable plug with coupling ring



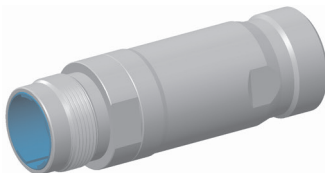
Cable plug with coupling ring



Cable plug with coupling ring



Cable extension with external thread



Cable extension with external thread



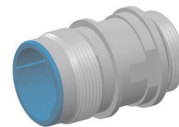
Cable extension with external thread



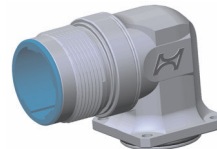
Straight receptacle with external thread



Straight receptacle with external thread



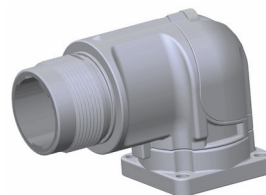
Straight receptacle with external thread



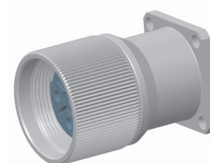
Fixed angled Straight receptacle with external thread



Rotatable angled Straight receptacle with external thread



Rotatable / fixed angled receptacle with external thread



Panel feed through with coupling ring

# Technical Characteristics

## M23 Power Connector Series L

### Mechanical

|                         |                       | Standards |
|-------------------------|-----------------------|-----------|
| Contact diameter 6poles | 6 x Ø 2mm             | –         |
| Contact diameter 8poles | 4 x Ø 2mm + 4 x Ø 1mm | –         |
| Contact diameter 9poles | 4 x Ø 2mm + 5 x Ø 1mm | –         |

### Material

|                   |                             |   |
|-------------------|-----------------------------|---|
| Shell             | CuZn alloy, zinc die-cast   | – |
| Machined contacts | CuZn alloy                  | – |
| Stamped contacts  | Tin bronze, stainless steel | – |
| Inserts           | PA                          | – |
| Sealing           | FKM                         | – |

### Finishes

|                           |                                |   |
|---------------------------|--------------------------------|---|
| Shell plating             | Nickel-plated, chromium plated | – |
| Machined contacts plating | Gold plated                    | – |
| Stamped contacts plating  | Partly gold plated             | – |

### Physical and environmental

|                             |                                    |              |
|-----------------------------|------------------------------------|--------------|
| Operating temperature range | -40°C... +125°C                    | EN 61984     |
| Storage conditions          | -40°C... +70°C / min. humidity 40% | –            |
| Environmental level         | IP67 (mated)                       | DIN EN 60529 |
| Contamination level         | 2                                  | DIN 60664-1  |
| Installation altitude       | Up to 2000 m                       | EN 61984     |
| Fire & Smoke                | Recognition file No E 178462       | UL 1977      |
| RoHS                        | Compliant                          |              |

**Note:**




For detailed information please contact factory and ask for data sheet.

# Technical Characteristics

## M23 Power Connector Series L

### Electrical

### Standards

|                         |   |   |  |             |
|-------------------------|---|---|--|-------------|
| <b>Contact diameter</b> |  |  |  |             |
|                         | 6 x 2   | 4 x 2   | 4 x 1  | 4 x 2 5 x 1 |

|   |                                      |          |
|---|--------------------------------------|----------|
| <b>Contact resistance</b> (machined contacts) | ≤ 5.0 mΩ (∅ 1mm)<br>≤ 3.0 mΩ (∅ 2mm) | –<br>–   |
| <b>Contact resistance</b> (stamped contacts)  | ≤ 5.0 mΩ (∅ 1mm)<br>≤ 5.0 mΩ (∅ 2mm) | –<br>–   |
| <b>Overvoltage category</b>                   | III                                  | EN 61984 |

### INNOVATION Series L (UL Version Series A)

|                               |     |     |     |   |              |
|-------------------------------|-----|-----|-----|---|--------------|
| <b>Nominal voltage [Vrms]</b> | 630 | 630 | 250 | – | DIN EN 60512 |
|                               | 600 | 600 | 250 | – | USR          |
|                               | 600 | 600 | 250 | – | CNR          |

### SYSTEM 2000 Series L (UL Version Series A)

|                               |     |     |     |     |    |              |
|-------------------------------|-----|-----|-----|-----|----|--------------|
| <b>Nominal voltage [Vrms]</b> | 630 | 630 | 125 | 600 | 63 | DIN EN 60512 |
|                               | 600 | 600 | 63  | 600 | 63 | USR          |
|                               | 600 | 600 | 63  | 600 | 63 | CNR          |

### VERSION 1i Series L

|                               |     |     |     |   |              |
|-------------------------------|-----|-----|-----|---|--------------|
| <b>Nominal voltage [Vrms]</b> | 630 | 630 | 125 | – | DIN EN 60512 |
|                               | 600 | 600 | 125 | – | USR          |



# How to Order

## M23 Power Connector Series L



### 1 CONNECTOR FAMILY

**L** M23 CIRCULAR POWER CONNECTORS, SIZE 1  
SERIES L (UL VERSION = SERIES A)

### 2 CONNECTOR LAYOUT

#### INNOVATION

|          |          |          |  |
|----------|----------|----------|--|
| <b>E</b> | <b>E</b> | <b>A</b> | STRAIGHT RECEPTACLE, NICKEL-PLATED<br>LONG VERSION                               |
| <b>E</b> | <b>B</b> | <b>A</b> | STRAIGHT RECEPTACLE, NICKEL-PLATED<br>THREADED CONNECTION PG13.5                 |
| <b>E</b> | <b>D</b> | <b>A</b> | STRAIGHT RECEPTACLE, NICKEL-PLATED<br>THREADED CONNECTION M20x1.5                |
| <b>E</b> | <b>A</b> | <b>B</b> | FIXED ANGLED RECEPTACLE,<br>CHROMIUM-PLATED                                      |
| <b>R</b> | <b>N</b> | <b>A</b> | EXTENSION, NICKEL-PLATED,<br>CABLE CLAMP Ø 7.7-14.5 mm                           |
| <b>R</b> | <b>P</b> | <b>A</b> | EXTENSION, NICKEL-PLATED, THREADED<br>CONNECTION PG16, CABLE CLAMP Ø 7.7-14.5 mm |

#### SYSTEM 2000

|          |          |          |   |
|----------|----------|----------|---|
| <b>E</b> | <b>O</b> | <b>B</b> | ROTATABLE ANGLED RECEPTACLE,<br>CHROMIUM-PLATED     |
| <b>F</b> | <b>E</b> | <b>A</b> | STRAIGHT RECEPTACLE, NICKEL-PLATED<br>SHORT VERSION |

#### VERSION 1i

|          |          |          |   |
|----------|----------|----------|---|
| <b>G</b> | <b>D</b> | <b>G</b> | ROTATABLE ANGLED RECEPTACLE,<br>CHROMIUM-PLATED |
| <b>G</b> | <b>F</b> | <b>G</b> | FIXED ANGLED RECEPTACLE,<br>CHROMIUM-PLATED     |

|          |          |          |   |
|----------|----------|----------|---|
| <b>R</b> | <b>F</b> | <b>A</b> | EXTENSION, NICKEL-PLATED, THREADED<br>CONNECTION M25x1.5, CABLE CLAMP Ø 7.7-14.5 mm |
| <b>D</b> | <b>A</b> | <b>A</b> | PANEL FEED THROUGH, NICKEL-PLATED,<br>SQUARE FLANGE                                 |
| <b>P</b> | <b>N</b> | <b>A</b> | PLUG, NICKEL-PLATED,<br>CABLE CLAMP Ø 7.7-14.5 mm                                   |
| <b>P</b> | <b>R</b> | <b>A</b> | PLUG, NICKEL-PLATED, SHORT VERSION,<br>CABLE CLAMP Ø 7.7-14.5 mm                    |
| <b>P</b> | <b>P</b> | <b>A</b> | PLUG, NICKEL-PLATED, THREADED<br>CONNECTION PG16, CABLE CLAMP Ø 7.7-14.5 mm         |
| <b>P</b> | <b>F</b> | <b>A</b> | PLUG, NICKEL-PLATED, THREADED<br>CONNECTION M25x1.5, CABLE CLAMP Ø 7.7-14.5 mm      |

|          |          |          |  |
|----------|----------|----------|--|
| <b>R</b> | <b>L</b> | <b>A</b> | EXTENSION, NICKEL-PLATED,<br>CABLE CLAMP Ø 7.7-18.5 mm |
| <b>P</b> | <b>L</b> | <b>A</b> | PLUG, NICKEL-PLATED,<br>CABLE CLAMP Ø 7.7-18.5 mm      |

|          |          |          |   |
|----------|----------|----------|---|
| <b>V</b> | <b>L</b> | <b>A</b> | PLUG, NICKEL-PLATED, MACHINED SOCKETS,<br>CABLE CLAMP Ø 5-16 mm |
|----------|----------|----------|---|

### 3 INSERTS

#### INNOVATION

|          |          |          |   |
|----------|----------|----------|---|
| <b>0</b> | <b>6</b> | <b>A</b> | 6WAY, PINS 6 x Ø 2 mm,<br>MACHINED CONTACTS             |
| <b>0</b> | <b>6</b> | <b>B</b> | 6WAY, SOCKETS 6 x Ø 2 mm;<br>MACHINED CONTACTS          |
| <b>0</b> | <b>6</b> | <b>C</b> | 6WAY, PINS 6 x Ø 2 mm,<br>MACHINED CONTACTS             |
| <b>0</b> | <b>6</b> | <b>D</b> | 6WAY, SOCKETS 6 x Ø 2 mm,<br>MACHINED CONTACTS          |
| <b>0</b> | <b>8</b> | <b>K</b> | 8WAY, PINS 4 x Ø 1 mm, 4 x Ø 2 mm,<br>MACHINED CONTACTS |

#### VERSION 1i

|          |          |          |  |
|----------|----------|----------|--|
| <b>0</b> | <b>6</b> | <b>E</b> | 6WAY, PINS 6 x Ø 2 mm,<br>MACHINED CONTACTS    |
| <b>0</b> | <b>6</b> | <b>J</b> | 6WAY, PINS 6 x Ø 2 mm,<br>MACHINED CONTACTS    |
| <b>0</b> | <b>6</b> | <b>M</b> | 6WAY, SOCKETS 6 x Ø 2 mm,<br>MACHINED CONTACTS |

|          |          |          |  |
|----------|----------|----------|--|
| <b>0</b> | <b>8</b> | <b>A</b> | 8WAY, PINS 4 x Ø 1 mm, 4 x Ø 2 mm,<br>MACHINED CONTACTS    |
| <b>0</b> | <b>8</b> | <b>B</b> | 8WAY, SOCKETS 4 x Ø 1 mm, 4 x Ø 2 mm,<br>MACHINED CONTACTS |

|          |          |          |  |
|----------|----------|----------|--|
| <b>0</b> | <b>8</b> | <b>L</b> | 8WAY, SOCKETS 4 x Ø 1 mm, 4 x Ø 2 mm,<br>MACHINED CONTACTS |
| <b>0</b> | <b>9</b> | <b>A</b> | 9WAY, PINS 5 x Ø 1 mm, 4 x Ø 2 mm,<br>MACHINED CONTACTS    |
| <b>0</b> | <b>9</b> | <b>B</b> | 9WAY, SOCKETS 5 x Ø 1 mm, 4 x Ø 2 mm,<br>MACHINED CONTACTS |

|          |          |          |  |
|----------|----------|----------|--|
| <b>0</b> | <b>8</b> | <b>T</b> | 8WAY, PINS 4 x Ø 1 mm, 4 x Ø 2 mm,<br>MACHINED CONTACTS    |
| <b>0</b> | <b>8</b> | <b>X</b> | 8WAY, PINS 4 x Ø 1 mm, 4 x Ø 2 mm,<br>MACHINED CONTACTS    |
| <b>0</b> | <b>8</b> | <b>Z</b> | 8WAY, SOCKETS 4 x Ø 1 mm, 4 x Ø 2 mm,<br>MACHINED CONTACTS |

# How to Order

## M23 Power Connectors Series L

### 4 TERMINATION STYLE - CRIMP CONTACTS

|   |   |   |   |
|---|---|---|---|
| N | N | N | N |
|---|---|---|---|

WITHOUT CONTACTS, CONTACTS TO BE ORDERED SEPARATELY, **ALL** CONNECTOR DESIGNS

#### INNOVATION

|   |   |   |   |
|---|---|---|---|
| M | R | C | N |
|---|---|---|---|

PINS - Ø 2 mm AWG 20-16, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | K | N |
|---|---|---|---|

PINS - Ø 2 mm AWG 18-14, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | E | C |
|---|---|---|---|

PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 20-16, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | E | K |
|---|---|---|---|

PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-14, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | P | N |
|---|---|---|---|

PINS - Ø 2 mm AWG 16-14, EXTENSION

|   |   |   |   |
|---|---|---|---|
| M | R | E | P |
|---|---|---|---|

PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 16-14, EXTENSION

#### SYSTEM 2000

|   |   |   |   |
|---|---|---|---|
| M | R | S | N |
|---|---|---|---|

PINS - Ø 2 mm AWG 18-14, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | W | N |
|---|---|---|---|

PINS - Ø 2 mm AWG 12, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | R | S |
|---|---|---|---|

PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-14, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | R | W |
|---|---|---|---|

PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 12, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | T | U |
|---|---|---|---|

PINS - Ø 1 mm, AWG 22-18/16, Ø 2 mm AWG 18-14/12, EXTENSION

#### VERSION 1i

|   |   |   |   |
|---|---|---|---|
| M | R | L | N |
|---|---|---|---|

PINS - Ø 2 mm AWG 24-16, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | Z | N |
|---|---|---|---|

PINS - Ø 2 mm AWG 16-14, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | W | N |
|---|---|---|---|

PINS - Ø 2 mm AWG 12, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | R | L |
|---|---|---|---|

PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 24-16, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | R | Z |
|---|---|---|---|

PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 16-14, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | R | W |
|---|---|---|---|

PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 12, RECEPTACLE

|   |   |   |   |
|---|---|---|---|
| M | R | J | N |
|---|---|---|---|

PINS - Ø 2 mm AWG 22-16, EXTENSION

|   |   |   |   |
|---|---|---|---|
| F | R | B | N |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 2 mm AWG 20-16, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | D | N |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 2 mm AWG 18-14, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | H | N |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 2 mm AWG 18-14, PLUG (terminals with insulation sleeves)

|   |   |   |   |
|---|---|---|---|
| F | R | K | B |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 20-16, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | K | D |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-14, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | O | N |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 2 mm AWG 18-14, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | R | N |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 2 mm AWG 18-12, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | F | O |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-14, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | F | R |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-12, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | P | O |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 1 mm, AWG 26-16, Ø 2 mm AWG 18-14, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | P | R |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 1 mm, AWG 26-16, Ø 2 mm AWG 18-12, PLUG

|   |   |   |   |
|---|---|---|---|
| M | R | I | N |
|---|---|---|---|

PINS - Ø 2 mm AWG 16-12, EXTENSION

|   |   |   |   |
|---|---|---|---|
| M | R | Y | J |
|---|---|---|---|

PINS - Ø 1 mm, AWG 24-16, Ø 2 mm AWG 22-16, EXTENSION

|   |   |   |   |
|---|---|---|---|
| M | R | Y | I |
|---|---|---|---|

PINS - Ø 1 mm, AWG 24-16, Ø 2 mm AWG 16-12, EXTENSION

|   |   |   |   |
|---|---|---|---|
| F | R | H | N |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 2 mm AWG 18-14, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | U | N |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 2 mm AWG 14-12, HYPERTAC PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | F | H |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-14, PLUG

|   |   |   |   |
|---|---|---|---|
| F | R | F | U |
|---|---|---|---|

HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 14-12, PLUG

### 5 CABLE CLAMPING

|   |   |   |
|---|---|---|
| 0 | 0 | 0 |
|---|---|---|

WITHOUT CABLE CLAMP, ALL RECEPTACLES & PANEL FEED THROUGH

|   |   |   |
|---|---|---|
| 1 | 7 | 0 |
|---|---|---|

VARIABLE CABLE CLAMP, EXTENSION & PLUG **INNOVATION**, CLAMP RANGE 7.7 – 14.5 mm

|   |   |   |
|---|---|---|
| 2 | 1 | 3 |
|---|---|---|

VARIABLE CABLE CLAMP, EXTENSION & PLUG **SYSTEM 2000**, CLAMP RANGE 7.7 – 18.5 mm

|   |   |   |
|---|---|---|
| 2 | 6 | 0 |
|---|---|---|

VARIABLE CABLE CLAMP, EXTENSION & PLUG **VERSION 1i**, CLAMP RANGE 5 – 9 mm

|   |   |   |
|---|---|---|
| 2 | 6 | 1 |
|---|---|---|

VARIABLE CABLE CLAMP, EXTENSION & PLUG **VERSION 1i**, CLAMP RANGE 9 – 15 mm

|   |   |   |
|---|---|---|
| 2 | 6 | 2 |
|---|---|---|

CABLE CLAMP, EXTENSION & PLUG **VERSION 1i**, CABLE DIAMETER 16 mm

### 6 VERSION NUMBER


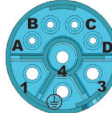
|   |   |
|---|---|
| 0 | 1 |
|---|---|

DEPENDING ON TYPE AND SPECIAL DESIGN, SEE DETAILED DESCRIPTION OF THE CONNECTOR DESIGN

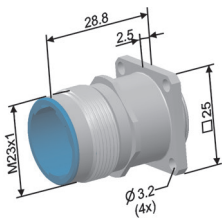
# Available Connectors

## M23 Power Connector Series L

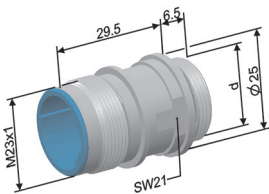
### Power Receptacles - Innovation

| CONTACT ARRANGEMENTS<br>VIEW MATING FACE       |                                   |               |  |  |                        |                        |                  |       |      |
|--|-----------------------------------|---------------|---|--|------------------------|------------------------|------------------|-------|------|
|  |                                   |               | TERMINATION CROSS SECTION   |  |                        |                        |                  |       |      |
|  | SHELL                             | INSERT        | AWG 20-16   | AWG 18-14  | AWG 24-18<br>AWG 20-16 | AWG 24-18<br>AWG 18-14 | without contacts |       |      |
|  |                                   |               | CABLE CLAMP   |  |                        |                        |                  |       |      |
| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR | Straight receptacle, long version | LEEA<br>AEEA* | 06A   | MRCN   |                        |                        |                  | 00002 |      |
|  |                                   |               | 06A   |  | MRKN                   |                        |                  |       | NNNN |
|  |                                   |               | 08A   |  |                        | MREC                   |                  |       |      |
|  |                                   |               | 08A   |  |                        |                        | MREK             |       |      |
| Straight receptacle, threaded connection       | LEBA<br>AEBA*<br><br>LEDA         | 06A           | MRCN  |  |                        |                        | 000              |       |      |
|  |                                   | 06A           |   | MRKN   |                        |                        |                  | NNNN  |      |
|  |                                   | 08A           |   |  | MREC                   |                        |                  |       |      |
|  |                                   | 08A           |   |  |                        | MREK                   |                  |       | NNNN |
| Fixed angled receptacle                        | LEAB<br>AEAB*                     | 06A           | MRCN  |  |                        |                        | 00002            |       |      |
|  |                                   | 06A           |   | MRKN   |                        |                        |                  | NNNN  |      |
|  |                                   | 08A           |   |  | MREC                   |                        |                  |       |      |
|  |                                   | 08A           |   |  |                        | MREK                   |                  |       | NNNN |

Straight receptacle, long version

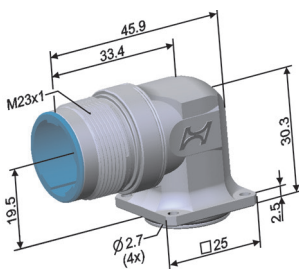


Straight receptacle, threaded connection



d =  
LEBA/AEBA PG13.5  
LEDA M20x1.5

Fixed angled receptacle



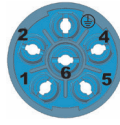
Dimensions are in mm

\* UL Version

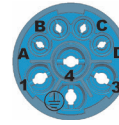
# Power Receptacles - System 2000

CONTACT ARRANGEMENTS  
VIEW MATING FACE

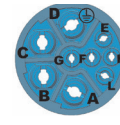
LAYOUT  
DESCRIPTION  
PART NUMBER CONFIGURATOR



06C



08K

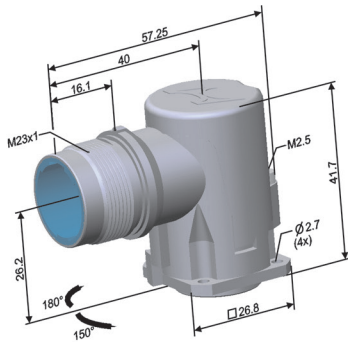


09A

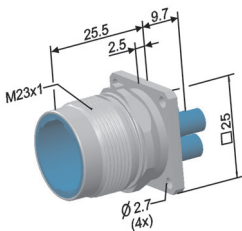
TERMINATION CROSS SECTION

| SHELL         | INSERT | TERMINATION CROSS SECTION |        |                        |                     |                        |                     |                  | CABLE CLAMP |
|---------------|--------|---------------------------|--------|------------------------|---------------------|------------------------|---------------------|------------------|-------------|
|               |        | AWG 18-14                 | AWG 12 | AEG 24-18<br>AWG 18-14 | AWG 24-18<br>AWG 12 | AWG 24-18<br>AWG 18-14 | AWG 24-18<br>AWG 12 | without contacts |             |
| LEOB<br>AEOB* | 06C    | MRSN                      |        |                        |                     |                        |                     |                  | 000         |
|               |        |                           | MRWN   |                        |                     |                        |                     | NNNN             |             |
|               |        |                           |        |                        |                     |                        |                     | NNNN             |             |
|               | 08K    |                           |        | MRRS                   |                     |                        |                     |                  |             |
|               |        |                           |        |                        | MRRW                |                        |                     | NNNN             |             |
|               |        |                           |        |                        |                     |                        |                     | NNNN             |             |
|               | 09A    |                           |        |                        |                     | MRRS                   |                     |                  |             |
|               |        |                           |        |                        |                     |                        | MRRW                | NNNN             |             |
|               |        |                           |        |                        |                     |                        |                     | NNNN             |             |
| LFEA<br>AFEA* | 06C    | MRSN                      |        |                        |                     |                        |                     | 000              |             |
|               |        |                           | MRWN   |                        |                     |                        |                     |                  | NNNN        |
|               |        |                           |        |                        |                     |                        |                     |                  | NNNN        |
|               | 08K    |                           |        | MRRS                   |                     |                        |                     |                  |             |
|               |        |                           |        |                        | MRRW                |                        |                     |                  | NNNN        |
|               |        |                           |        |                        |                     |                        |                     |                  | NNNN        |
|               | 09A    |                           |        |                        |                     | MRRS                   |                     |                  |             |
|               |        |                           |        |                        |                     |                        | MRRW                |                  | NNNN        |
|               |        |                           |        |                        |                     |                        |                     |                  | NNNN        |

Rotatable angled receptacle




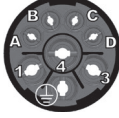
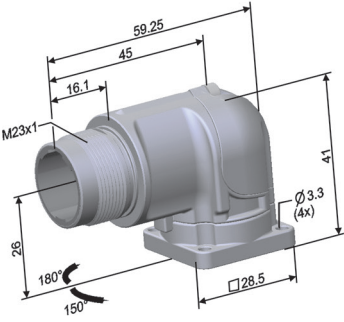
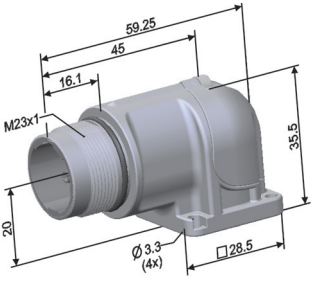
Straight receptacle, short version



Dimensions are in mm

\* UL Version

# Power Receptacles - System 2000

| CONTACT ARRANGEMENTS<br>VIEW MATING FACE   |       |        |   |           |        |                        | CABLE CLAMP            |                    |                  |     |      |
|--|-------|--------|--|-----------|--------|------------------------|------------------------|--------------------|------------------|-----|------|
|  |       |        | 06E  |           | 08T    |                        |                        |                    |                  |     |      |
|  |       |        | TERMINATION CROSS SECTION  |           |        |                        |                        |                    |                  |     |      |
| LAYOUT<br>DESCRIPTION<br>PART NUMBER CONFIGURATOR  | SHELL | INSERT | AWG 24-16  | AWG 16-14 | AWG 12 | AWG 24-18<br>AWG 24-16 | AWG 24-18<br>AWG 16-14 | AG 24-18<br>AWG 12 | without contacts |     |      |
| Rotatable angled receptacle<br> | LGDG* | 06E    | MRLN   |           |        |                        |                        |                    |                  | 000 |      |
|  |       |        |  | MRZN      |        |                        |                        |                    |                  |     |      |
|  |       |        |  |           | MRWN   |                        |                        |                    |                  |     | NNNN |
|  |       | 08T    |  |           |        |                        | MRRL                   |                    |                  |     |      |
|  |       |        |  |           |        |                        |                        | MRRZ               |                  |     |      |
|  |       |        |  |           |        |                        |                        |                    | MRRW             |     | NNNN |
| Fixed angled receptacle<br>    | LGFG* | 06E    | MRLN   |           |        |                        |                        |                    |                  | 000 |      |
|  |       |        |  | MRZN      |        |                        |                        |                    |                  |     | NNNN |
|  |       |        |  |           | MRWN   |                        |                        |                    |                  |     |      |
|  |       | 08T    |  |           |        |                        | MRRL                   |                    |                  |     |      |
|  |       |        |  |           |        |                        |                        | MRRZ               |                  |     |      |
|  |       |        |  |           |        |                        |                        |                    | MRRW             |     | NNNN |

Dimensions are in mm

\* UL Version

# Power Extensions - Innovation

| CONTACT ARRANGEMENTS<br>VIEW MATING FACE                             | 06A                       |                        | 08A              |      | CABLE CLAMP |       |
|--|---------------------------|------------------------|------------------|------|-------------|-------|
|  | TERMINATION CROSS SECTION |                        |                  |      |             |       |
|  | AWG 16-14                 | AWG 24-18<br>AWG 16-14 | without contacts |      |             |       |
| LAYOUT<br>DESCRIPTION<br>PART NUMBER CONFIGURATOR                    | SHELL                     | INSERT                 |                  |      |             |       |
| Extension with cable clamp<br>Ø 7.7-14.5 mm<br>                      | LRNA<br>ARNA*             | 06A                    | MRPN             |      | NNNN        | 170   |
|  |                           | 08A                    |                  | MREP |             |       |
| Extension with cable clamp<br>Ø 7.7-14.5 mm, square flange<br>       | LRNA<br>ARNA*             | 06A                    | MRPN             |      | NNNN        | 17002 |
|  |                           | 08A                    |                  | MREP |             |       |
| Extension with cable clamp<br>Ø 7.7-14.5 mm, threaded connection<br> | LRPA<br>ARPA*             | 06A                    | MRPN             |      | NNNN        | 000   |
|  |                           | LRFA<br>ARFA*          | 08A              |      | MREP        |       |

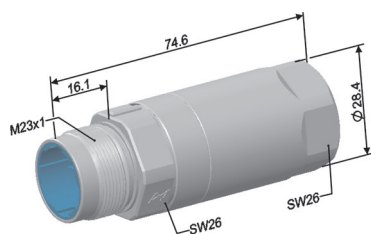
Dimensions are in mm

\* UL Version

d =  
LRPA/ARPA PG16  
LRFA/ARFA M25x1.5

# Power Extension - System 2000


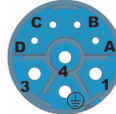
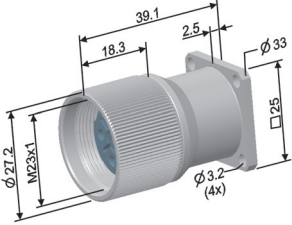
| CONTACT ARRANGEMENTS<br>VIEW MATING FACE       | SHELL         | INSERT | 09A                          |                  | CABLE CLAMP |
|--|---------------|--------|------------------------------|------------------|-------------|
|  |               |        | TERMINATION CROSS SECTION    |                  |             |
|  |               |        | AWG 22-18/16<br>AWG 18-14/12 | without contacts |             |
| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR |               |        |                              |                  |             |
| Extension with cable clamp<br>Ø 7.7-18.5 mm    | LRLA<br>ARLA* | 09A    | MRTU                         | NNNN             | 213         |



Dimensions are in mm

\* UL Version


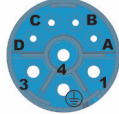
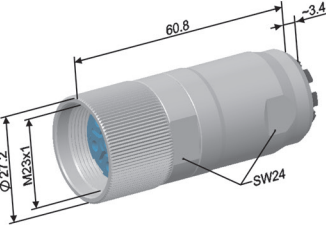
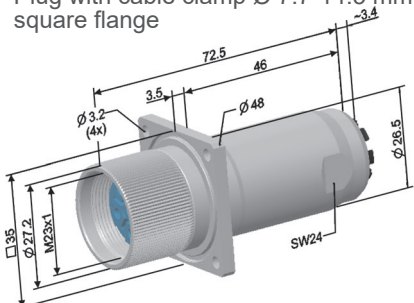
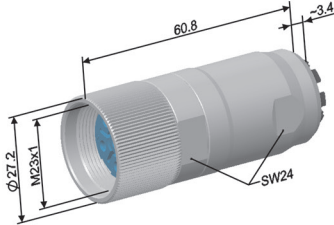
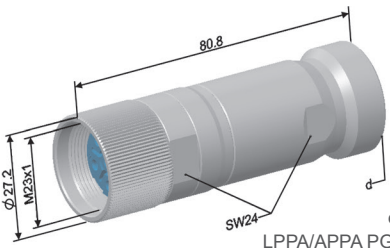
# Power Panel Feed Through - Innovation

| CONTACT ARRANGEMENTS<br>VIEW MATING FACE  |               |        |  |           |  |                        | CABLE CLAMP |                  |      |
|---|---------------|--------|---|-----------|--|------------------------|-------------|------------------|------|
|   |               |        | TERMINATION CROSS SECTION   |           |  |                        |             |                  |      |
|   | SHELL         | INSERT | AWG 20-16   | AWG 18-14 | AWG 24-18<br>AWG20-16  | AWG 24-18<br>AWG 18-14 |             | without contacts |      |
| <b>LAYOUT DESCRIPTION</b><br><b>PART NUMBER CONFIGURATOR</b><br><br>Panel feed through, square flange<br><br> | LDAA<br>ADAA* | 06B    | FRBN  |           |  |                        |             | 000              |      |
|   |               |        |   | FRDN      |  |                        |             |                  | NNNN |
|   |               | 08B    |   |           |  | FRKB                   |             |                  |      |
|   |               |        |   |           |  |                        | FRKD        |                  |      |
|   |               |        |   |           |  |                        |             |                  | NNNN |

Dimensions are in mm

\* UL Version

# Power Plugs - Innovation

| CONTACT ARRANGEMENTS<br>VIEW MATING FACE   |   |       | <br>06B |                           | <br>08B |                         | CABLE CLAMP |                        |                        |                  |
|--|---|-------|--|---------------------------|--|-------------------------|-------------|------------------------|------------------------|------------------|
|  | LAYOUT<br>DESCRIPTION<br>PART NUMBER CONFIGURATOR | SHELL | INSERT   | TERMINATION CROSS SECTION |  |                         |             |                        |                        |                  |
|  |   |       |  | AWG 20-16                 | AWG 18-14  | AWG 18-14 <sup>1)</sup> |             | AWG 24-18<br>AWG 20-16 | AWG 24-18<br>AWG 18-14 | without contacts |
|  |   |       |  | FRBN                      | FRDN   | FRHN                    |             | FRKB                   | FRKD                   |                  |
| Plug with cable clamp Ø 7.7-14.5 mm<br>                              | LPNA APNA*  | 06B   | FRBN   | FRDN                      | FRHN   |                         |             | NNNN                   | 170                    |                  |
|  |   | 08B   |  |                           |  | FRKB                    | FRKD        | NNNN                   |                        |                  |
| Plug with cable clamp Ø 7.7-14.5 mm,<br>square flange<br>          | LPNA APNA*  | 06B   | FRBN   | FRDN                      | FRHN   |                         |             | NNNN                   | 17003                  |                  |
|  |   | 08B   |  |                           |  | FRKB                    | FRKD        | NNNN                   |                        |                  |
| Plug with cable clamp Ø 7.7-14.5mm,<br>short version<br>           | LPRA APRA*  | 06B   | FRBN   | FRDN                      |  |                         |             | NNNN                   | 170                    |                  |
|  |   | 08B   |  |                           |  | FRKB                    | FRKD        | NNNN                   |                        |                  |
| Plug with cable clamp Ø 7.7-14.5 mm<br>and threaded connection<br> | LPPA APPA*  | 06B   | FRBN   | FRDN                      | FRHN   |                         |             | NNNN                   | 000                    |                  |
|  | LPFA APFA*  | 08B   |  |                           |  | FRKB                    | FRKD        | NNNN                   |                        |                  |

Dimensions are in mm

\* UL Version

**Note:**

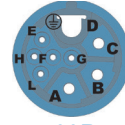
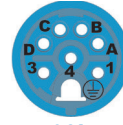
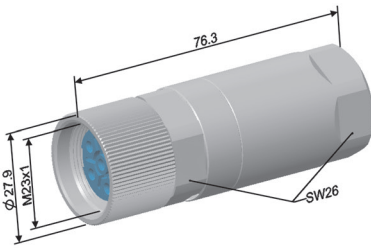
<sup>1)</sup> Terminals with insulation sleeve

# Power Plugs - System 2000

CONTACT ARRANGEMENTS  
VIEW MATING FACE

LAYOUT  
DESCRIPTION  
PART NUMBER CONFIGURATOR

Plug with cable clamp Ø 7.7-18.5 mm





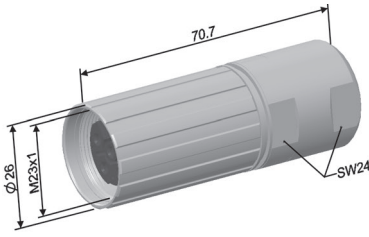
TERMINATION CROSS SECTION

| SHELL         | INSERT | TERMINATION CROSS SECTION |           |                        |                        |                        |                        |                        |                        | CABLE CLAMP |                  |
|---------------|--------|---------------------------|-----------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------|------------------|
|               |        | AWG 18-14                 | AWG 18-12 | AWG 24-18<br>AWG 18-14 | AWG 24-18<br>AWG 18-12 | AWG 26-16<br>AWG 18-14 | AWG 26-16<br>AWG 18-12 | AWG 24-18<br>AWG 18-14 | AWG 26-16<br>AWG 18-12 |             | without contacts |
| LPLA<br>APLA* | 06D    | FRON                      |           |                        |                        |                        |                        |                        |                        |             |                  |
|               |        |                           | FRRN      |                        |                        |                        |                        |                        |                        |             |                  |
|               |        |                           |           |                        |                        |                        |                        |                        |                        | NNNN        |                  |
|               | 08L    |                           |           | FRFO                   |                        |                        |                        |                        |                        |             |                  |
|               |        |                           |           |                        | FRFR                   |                        |                        |                        |                        |             |                  |
|               |        |                           |           |                        |                        | FRPO                   |                        |                        |                        |             |                  |
|               |        |                           |           |                        |                        |                        | FRPR                   |                        |                        |             | NNNN             |
|               |        |                           |           |                        |                        |                        |                        |                        |                        | NNNN        |                  |
|               | 09B    |                           |           |                        |                        |                        |                        | FRFO                   |                        |             |                  |
|               |        |                           |           |                        |                        |                        |                        | FRPR                   |                        |             |                  |
|               |        |                           |           |                        |                        |                        |                        |                        | NNNN                   |             |                  |

Dimensions are in mm

\* UL Version

# Power Plugs - Version 1i

| CONTACT ARRANGEMENTS<br>VIEW MATING FACE   |                           |        | <br><b>06M</b> |           | <br><b>08Z</b> |                        | CABLE CLAMP       |                  |      |
|--|---------------------------|--------|---|-----------|--|------------------------|-------------------|------------------|------|
|  | TERMINATION CROSS SECTION |        |   |           |  |                        |                   |                  |      |
|  | SHELL                     | INSERT | AWG 18-14   | AWG 14-12 | AWG 24-18<br>AWG 18-14   | AWG 24-18<br>AWG 14-12 |                   | without contacts |      |
| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR<br><br>Plug with cable clamp Ø 5-16 mm, machined sockets<br><br><br>Flange can be ordered separately <sup>1)</sup> | LVLA*                     | 06M    | FRHN  |           |  |                        | 260<br>261<br>262 |                  |      |
|  |                           |        |   | FRUN      |  |                        |                   | NNNN             |      |
|  |                           | 08Z    |   |           |  | FRFH                   |                   |                  |      |
|  |                           |        |   |           |  |                        |                   | FRFU             |      |
|  |                           |        |   |           |  |                        |                   |                  | NNNN |

Dimensions are in mm

\* UL Version


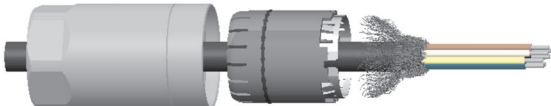




**Note:**

<sup>1)</sup> more information please contact factory

<sup>2)</sup> contacts are shown on page 22

# Cable Clamps & Accessories





## M23 Power Connector Series L

|   |  |  |
|---|--|--|
| Cable clamp no. 170 for LPNA/LRNA   | Clamp range  |  |
|    | <p>With reducing sleeve from Ø 7.7–12 mm<br/>Without reducing sleeve from Ø 11–14.5 mm<br/>Can be used for shielded and non-shielded cables</p>                      |  |
| Cable clamp no. 213 for LPLA/LRLA   | Clamp range  |  |
|     | <p>Onion ring seal for different cable diameters from Ø 7.5–18.5 mm<br/>Thickness of shielding up to Ø 1 mm<br/>Can be used for shielded and non-shielded cables</p> |  |
| Thread protection cap   | Part number  |  |
|  | 031.001053.1000  |  |
| Dust shield caps  | Part number  | Description  |
|  | C/BEL/1  | Dust shield cap for extension and receptacle                   |
|  | C/BEL/7  | Dust shield cap for extension and receptacle with chain 125 mm |
|  | C/BEL/5  | Dust shield cap for plug with chain 125 mm                     |


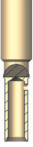


# Contacts

## M23 Power Connector Series L

### Machined Pins - Innovation

| Type                                     |                             | E   | C   | K   | P   |
|--|-----------------------------|---|---|---|---|
| Contact diameter [mm]                    |                             | 1   | 2   | 2   | 2   |
| PART NUMBER AND LAYOUT                   |                             |  |  |  |  |
|  |                             | 021.129.1020  | 021.101.2000  | 021.147.2000  | 021.279.1020  |
| Termination cross section <sup>1)</sup>  | [AWG]<br>[mm <sup>2</sup> ] | 24 – 18<br>0.24 – 1   | 20 – 16<br>0.5 – 1.5  | 18 – 14<br>0.75 – 2.5   | 16 – 14<br>1.5 – 2.5  |
| Nominal current @ 20°C [A] <sup>2)</sup> | VDE                         | 9   | 20  | 20  | 20  |
|  | USR                         | 8   | 20  | 20  | 20  |
|  | CNR                         | 7   | 14  | 14  | 14  |
| Crimping tool                            |                             | B150  | B151  | B151  | B151  |
| Positioner                               |                             | B055/A  | B157  | B157  | B165  |

### Hypertac<sup>®</sup> Sockets - Innovation


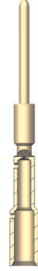



| Type                                    |                             | K   | B   | D   | H   |
|---|-----------------------------|---|---|---|---|
| Contact diameter [mm]                   |                             | 1   | 2   | 2   | 2   |
| PART NUMBER AND LAYOUT                  |                             |  |  |  |  |
|   |                             | 020.232.2000  | 020.090.1020  | 020.105.1020  | 020.123.1020  |
| Termination cross section <sup>1)</sup> | [AWG]<br>[mm <sup>2</sup> ] | 24 – 18<br>0.24 – 1   | 20 – 16<br>0.5 – 1.5  | 18 – 14<br>0.75 – 2.5   | 18 – 14<br>0.75 – 2.5   |
| Nominal current @ 20°C [A]              | VDE                         | 9   | 20  | 22  | 22  |
|   | USR                         | 8   | 20  | 20  | 20  |
|   | CNR                         | 7   | 14  | 14  | 12  |
| Crimping tool                           |                             | B150  | B151  | B151  | B151  |
| Positioner                              |                             | B055/A  | B157  | B157  | B154  |

**Note:**





<sup>1)</sup> Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm<sup>2</sup>] acc. to DIN VDE 0281/0282 pp and with non compressed standard cables and wires acc. to DIN VDE 0295. It is possible that due to another structure of wired further cross sections and currents can be processed.

<sup>2)</sup> data only valid when plugged with Hypertac sockets.

## Machined Pins - System 2000

| Type                                     |                             | R   | T  | S   | W   | U   |
|--|-----------------------------|---|--|---|---|---|
| Contact diameter [mm]                    |                             | 1   | 1  | 2   | 2   | 2   |
| PART NUMBER AND LAYOUT                   |                             | 021.382.1020<br> | 021.385.1020<br> | 021.380.1020<br> | 021.415.1020<br> | 021.384.1020<br> |
| Termination cross section <sup>1)</sup>  | [AWG]<br>[mm <sup>2</sup> ] | 24 – 18<br>0.24 – 1   | 22 – 18/16<br>0.34 – 1/1.5   | 18 – 14<br>0.75 – 2.5   | 12<br>4   | 18 – 14/12<br>0.75 – 2.5/4  |
| Nominal current @ 20°C [A] <sup>2)</sup> | VDE<br>USR<br>CNR           | 9<br>9<br>7.5   | 9<br>9<br>7.5  | 30<br>30<br>18  | 30<br>30<br>18  | 30<br>30<br>18  |
| Crimping tool                            |                             | B151  | B151   | B179  | B179  | B179  |
| Positioner                               |                             | B245  | B252   | B245  | B245  | B252  |

## Hypertac® Sockets - System 2000

| Type                                    |                             | F   | P   | O   | R   |
|---|-----------------------------|---|---|---|---|
| Contact diameter [mm]                   |                             | 1   | 1   | 2   | 2   |
| PART NUMBER AND LAYOUT                  |                             | 020.256.1020<br> | 020.332.1020<br> | 020.331.1020<br> | 020.281.1020<br> |
| Termination cross section <sup>1)</sup> | [AWG]<br>[mm <sup>2</sup> ] | 24 – 18<br>0.24 – 1   | 26 - 16<br>0.14 – 1.5   | 18 – 14<br>0.75 – 2.5   | 18 – 12<br>1 – 4  |
| Nominal current @ 20°C [A]              | VDE<br>USR<br>CNR           | 9<br>9<br>7.5   | 9<br>9<br>7.5   | 30<br>30<br>18  | 30<br>30<br>18  |
| Crimping tol                            |                             | B150  | B151  | B151  | B179  |
| Positioner                              |                             | B055/A  | B252  | B252  | B252  |





**Note:**

<sup>1)</sup> Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm<sup>2</sup>] acc. to DIN VDE 0281/0282 pp and with non compressed standard cables and wires acc. to DIN VDE 0295.




It is possible that due to another structure of wired further cross sections and currents can be processed.

<sup>2)</sup> data only valid when plugged with Hypertac sockets.

## Machined Pins - Version 1i


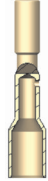

| Type                                     |                             | R   | W  | L  | Z  |
|--|-----------------------------|---|--|--|--|
| Contact diameter [mm]                    |                             | 1   | 2  | 2  | 2  |
| PART NUMBER AND LAYOUT                   |                             | 021.382.1020<br> | 021415.1020<br> | 021.001009.1020<br> | 021.001004.1020<br> |
| Termination cross section <sup>1)</sup>  | [AWG]<br>[mm <sup>2</sup> ] | 24 – 18<br>0.24 – 1.0   | 12<br>4  | 24 – 16<br>0.24 – 1.5  | 16 – 14<br>1.5 – 2.5   |
| Nominal current @ 20°C [A] <sup>2)</sup> | VDE<br>USR<br>CNR           | 9<br>9<br>7.5   | 30<br>30<br>18   | 30<br>30<br>-  | 30<br>30<br>-  |
| Crimping tool                            |                             | B151  | B179   | B151   | B179   |
| Positioner                               |                             | B245  | B245   | B297   | B297   |

## Machined Pins - Version 1i

| Type                                     |                             | Y  | J  | I  |
|--|-----------------------------|--|--|--|
| Contact diameter [mm]                    |                             | 1  | 2  | 2  |
| PART NUMBER AND LAYOUT                   |                             | 021.001017.1020<br> | 021.001025.1020<br> | 021.001018.1020<br> |
| Termination cross section <sup>1)</sup>  | [AWG]<br>[mm <sup>2</sup> ] | 24 - 16<br>0.24 - 1.5  | 22 - 16<br>0.34 - 1.5  | 16 - 12<br>1.5 - 4   |
| Nominal current @ 20°C [A] <sup>2)</sup> | VDE<br>USR<br>CNR           | 9<br>8<br>-  | 30<br>30<br>-  | 30<br>30<br>-  |
| Crimping tool                            |                             | B151   | B151   | B179   |
| Positioner                               |                             | B306   | B305   | B305   |

**Note:**  
<sup>1)</sup> Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm<sup>2</sup>] acc. to DIN VDE 0281/0282 pp and with non compressed standard cables and wires acc. to DIN VDE 0295. It is possible that due to another structure of wired further cross sections and currents can be processed.  
<sup>2)</sup> data only valid when plugged with Hypertac sockets.





## Hypertac® Sockets - Version 1i

| Type                                    |                             | F   | H   | U   |
|---|-----------------------------|---|---|---|
| Contact diameter [mm]                   |                             | 1   | 2   | 2   |
| PART NUMBER AND LAYOUT                  |                             | 020.256.1020  | 020.123.1020  | 020.001011.1020   |
|   |                             |  |  |  |
| Termination cross section <sup>1)</sup> | [AWG]<br>[mm <sup>2</sup> ] | 24 – 18<br>0.24 – 1   | 18 – 14<br>0.75 – 2.5   | 14 – 12<br>2.5 – 4.0  |
| Nominal current @ 20°C [A]              | VDE                         | 9   | 20  | 30  |
|   | USR                         | 9   | 12  | -   |
|   | CNR                         | 7.5   | -   | -   |
| Crimping tool                           |                             | B150  | B151  | B151  |
| Positioner                              |                             | B055/A  | B154  | B341  |




**Note:**

<sup>1)</sup> Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm<sup>2</sup>] acc. to DIN VDE 0281/0282 pp and with non compressed standard cables and wires acc. to DIN VDE 0295. It is possible that due to another structure of wired further cross sections and currents can be processed.

## HCS™ Stamped Sockets Ø 1mm - Version 1i

| Type  |                             | A   | B   | C   | D   |
|---|-----------------------------|---|---|---|---|
| Contact diameter [mm]                               |                             | 1   | 1   | 1   | 1   |
| PART NUMBER AND LAYOUT                              |                             | 020.000376.2000  | 020.000377.2000  | 020.000378.2000  | 020.000379.2000  |
| Termination cross section <sup>1)</sup>             | [AWG]<br>[mm <sup>2</sup> ] | 32 – 28<br>0.03 – 0.08  | 28 – 24<br>0.08 – 0.2   | 24 – 20<br>0.2 – 0.5  | -<br>0.75 - 1.0   |
| Nominal current @ 20°C [A]                          | VDE<br>USR<br>CNR           | 4<br>9<br>-   | 6<br>9<br>-   | 8<br>9<br>-   | 8<br>9<br>-   |
| Hand crimping tool with feeder line for small reels |                             | B287/32-28  | B287/28-24  | B287/24-20  | B287/0.75-1   |
| Applicator for Schäfer/AMP crimping machines        |                             | B288/32-28  | B288/28-24  | B288/24-20  | B288/0.75-1   |
| Applicator for Kirsten PP3 crimping machine         |                             | B286/32-28  | B286/28-24  | B286/24-20  | B286/0.75-1   |
| Number of contacts on reel                          | [Pieces]                    | 9000  | 9000  | 9000  | 9000  |
| Number of contacts on small reel                    | [Pieces]                    | 300   | 300   | 300   | 300   |

## HCS™ Stamped Sockets Ø 1mm - Version 1i

| Type  |                             | E   | F   | G   |
|---|-----------------------------|---|---|---|
| Contact diameter [mm]                               |                             | 2   | 2   | 2   |
| PART NUMBER AND LAYOUT                              |                             | 020.001001.2000  | 020.001002.2000  | 020.001003.2000  |
| Termination cross section <sup>1)</sup>             | [AWG]<br>[mm <sup>2</sup> ] | 20 - 18<br>0.5 - 1.0  | 18 - 14<br>1.0 - 2.0  | -<br>2.5 - 4.0  |
| Nominal current @ 20°C [A]                          | VDE<br>USR<br>CNR           | 12<br>12<br>-   | 18<br>18<br>-   | 30<br>30<br>-   |
| Hand crimping tool with feeder line for small reels |                             | B295/0.5-1  | B295/1.0-2.0  | B295/2.5-4.0  |
| Applicator for Schäfer/AMP crimping machines        |                             | on demand   | on demand   | on demand   |
| Applicator for Kirsten PP3 crimping machine         |                             | on demand   | on demand   | on demand   |
| Number of contacts on reel                          | [Pieces]                    | 4000  | 3500  | 2500  |
| Number of contacts on small reel                    | [Pieces]                    | 150   | 150   | 150   |

<sup>1)</sup> Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm<sup>2</sup>] acc. to DIN VDE 0281/0282 pp and with non compressed standard cables and wires acc. to DIN VDE 0295. It is possible that due to another structure of wired further cross sections and currents can be processed.

# Applications

## M23 Connectors



### Servos & Drives



- High current and voltage ratings
- Shock and vibration proof
- Low contact resistance
- Minimal insertion/extraction forces
- Earth connection for power connectors

### Controls



- Hyperboloid contacts
- IP67 sealing
- Low electrical resistance
- Long life
- Low rate of wear

### Encoders



- High signal integrity ensuring failure free performance
- 360° EMC shielding connection
- Stamped hyperboloid contacts on reels
- High performance in harsh environment

### Machinery



- Minimum service requirements
- Low wear of plating surfaces for long life
- High current rating
- Uniform electrical and mechanical characteristics over a high number of operations

### Conveyance



- Resistance against oxidation and corrosion
- Superior reliability for critical applications
- Protection against humidity and pollution
- Customized keying options to prevent mismatching

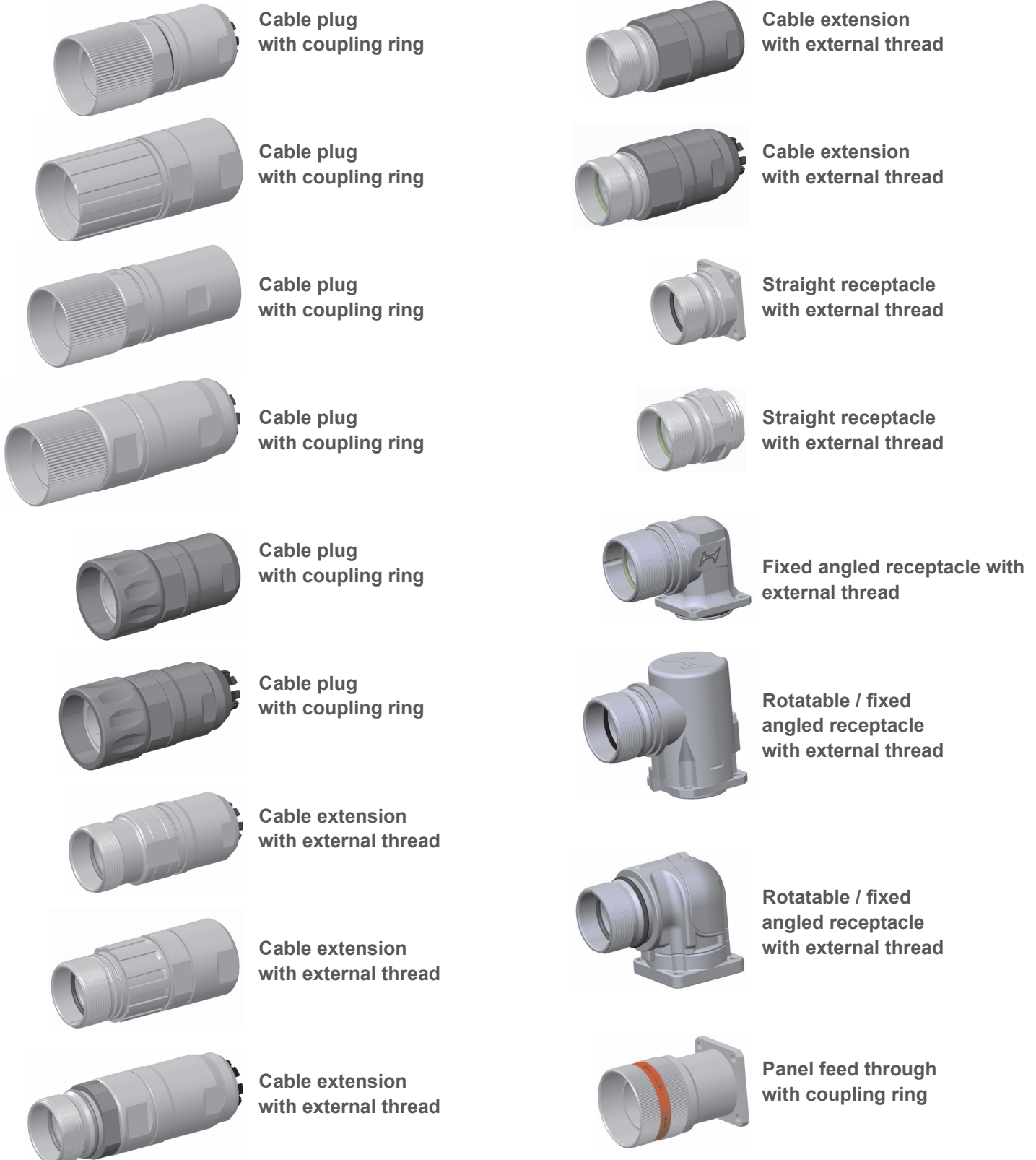
### Robotics



- Various types of cable clamps
- Broad variety of contacts
- Quick and easy exchange of the connector system
- ROHS compliant
- UL certified

# Type Overview

## M23 Signal Connectors Series S



# Technical Characteristics

## M23 Signal Connectors Series S

### Mechanical

#### Standards

|                                       |   |             |
|---------------------------------------|---|-------------|
| <b>Contact diameter 6/7poles</b>      | 6/7 x Ø 2mm   | –           |
| <b>Contact diameter 9poles</b>        | 8 x Ø 1mm + 1 x Ø 2mm<br>6 x Ø 1mm + 3 x Ø 2mm<br>9 x Ø 1mm | –<br>–<br>– |
| <b>Contact diameter 12/16/17poles</b> | 12/16/17 x Ø 1mm  | –           |
| <b>Contact diameter 21poles</b>       | 21 x Ø 0.6mm  | –           |

### Material

|                          |                                    |   |
|--------------------------|------------------------------------|---|
| <b>Shell</b>             | CuZn alloy, zinc die-cast, plastic | – |
| <b>Machined contacts</b> | CuZn alloy                         | – |
| <b>Stamped contacts</b>  | Tin bronze, stainless steel        | – |
| <b>Inserts</b>           | PA, PPS, PBT                       | – |
| <b>Sealing</b>           | FKM, NBR                           | – |

### Finishes

|                                  |                                |   |
|----------------------------------|--------------------------------|---|
| <b>Shell plating</b>             | Nickel-plated, chromium plated | – |
| <b>Machined contacts plating</b> | Gold plated                    | – |
| <b>Stamped contacts plating</b>  | partly gold plated             | – |

### Electrical

|                              |       |          |
|------------------------------|-------|----------|
| <b>Contact resistance</b>    | <5 mΩ |          |
| <b>Overvoltage categorie</b> | III   | EN 61984 |



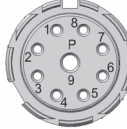



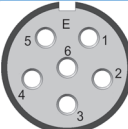
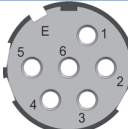
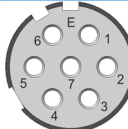
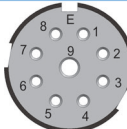
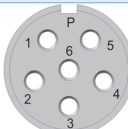
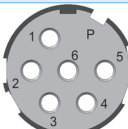
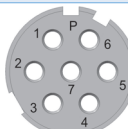
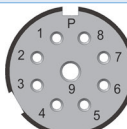
### Physical and Environmental


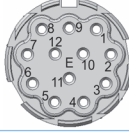



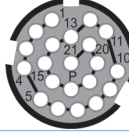

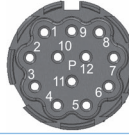


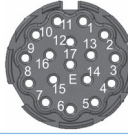
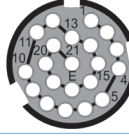
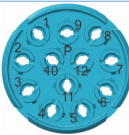


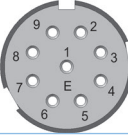
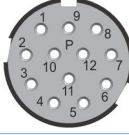
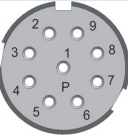
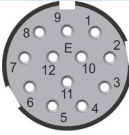
|                                    |                                    |              |
|------------------------------------|------------------------------------|--------------|
| <b>Operating temperature range</b> | -40°C ... 125°C                    | EN 61984     |
| <b>Storage conditions</b>          | -40°C ... 70°C / min. humidity 40% | -            |
| <b>Environmental level</b>         | IP67 (mated)                       | DIN EN 60529 |
| <b>Contamination level</b>         | 3                                  | DIN 60664-1  |
| <b>Installation altitude</b>       | up to 2000 m                       | EN 61984     |
| <b>Fire &amp; Smoke</b>            | Recognition file No E 178462       | UL 1977      |
| <b>RoHS</b>                        | Compliant                          |              |



# Contact Arrangements (w/electrical data - view mating face)

## M23 Signal Connectors Series S

| Contact Arrangements   | 6 x 2   | 6 x 2  | 7 x 2   | 8 x 1<br>1 x 2  |
|--|---|--|---|---|
| <b>INSERTS FOR PLUGS AND PANEL FEED THROUGH CRIMP CONTACTS</b> |   |    |    |    |
|  |   | <b>06H</b>   | <b>07D</b>  | <b>09F</b>  |
| <b>Part number</b>   |   | 030.704.2000   | 030.637.2000  | 030.627.2000  |
| <b>INSERTS FOR RECEPTACLES AND EXTENSIONS CRIMP CONTACTS</b>   |   |    |    |    |
|  |   | <b>06G</b>   | <b>07C</b>  | <b>09E</b>  |
| <b>Part number</b>   |   | 030.697.2000   | 030.635.2000  | 030.625.2000  |
| <b>Operating Voltage [V]</b>                                   | <b>VDE (DC)</b>   | 120  | 120   | 120   |
| IEC 60449  | <b>VDE (AC)</b>   | 50   | 50  | 50  |
| UL 1977  | <b>USR (AC)</b>   | 125  | 125   | 125   |
| <b>INSERTS FOR RECEPTACLES IP67 UNMATED CRIMP PINS</b>         |   |  |   |   |
| <b>Part number</b>   | SEAB/UEAB<br>SFOA/SFRA  |  |   |   |
| <b>Operating Voltage [V]</b>                                   | <b>VDE (DC)</b>   |  |   |   |
| IEC 60449  | <b>VDE (AC)</b>   |  |   |   |
| UL 1977  | <b>USR (AC)</b>   |  |   |   |
| <b>INSERTS FOR RECEPTACLES AND EXTENSIONS SOLDER CONTACTS</b>  |  |  |  |  |
|  |   | <b>06C</b>   | <b>06E</b>  | <b>07A</b>  |
| <b>Part number</b>   | <b>with pins</b>  | 060.031.2000   | 1.164   | 1.085   |
|  | <b>with Hypertac sockets</b>  | 060.032.2000   | 1.139   | 1.086   |
| <b>INSERTS FOR PLUGS SOLDER CONTACTS</b>                       |  |  |  |  |
|  |   | <b>06D</b>   | <b>06F</b>  | <b>07B</b>  |
| <b>Part number</b>   | <b>with pins</b>  | 060.029.2000   | 1.141   | 1.083   |
|  | <b>with Hypertac sockets</b>  | 060.030.2000   | 1.142   | 1.084   |
| <b>Operating Voltage [V]</b>                                   | <b>VDE (DC)</b>   | 120  | 63  | 120   |
| IEC 60449  | <b>VDE (AC)</b>   | 50   | 50  | 50  |
|  |   |  |   | 16  |

| 9 x 1   | 12 x 1  | 12 x 1<br>code 20°  | 16 x 1  | 17 x 1  | 21 x 0.6  |
|---|---|---|---|---|---|
|    |    |    |  |    |  |
| <b>09K</b>  | <b>12S</b>  | <b>12U</b>  | <b>16B</b>  | <b>17H</b>  | <b>21B</b>  |
| 030.677.2000  | 030.619.2000  | 030.623.2000  | 030.691.2000  | 030.679.2000  | 030.226.1000  |
|    |    |    |  |    |  |
| <b>09J</b>  | <b>12T</b>  | <b>12V</b>  | <b>16A</b>  | <b>17G</b>  | <b>21A</b>  |
| 030.676.2000  | 030.617.2000  | 030.621.2000  | 030.701.2000  | 030.678.2000  | 030.225.1000  |
| 120   | 120   | 120   | 120   | 120   | 32  |
| 50  | 50  | 50  | 50  | 50  | 32  |
| 125   | 125   | 125   | 125   | 125   | -   |
|   |  |  |   |  |   |
|   | <b>12A</b>  | <b>12C</b>  |   | <b>17A</b>  |   |
|   | 030.400.2000<br>030.505.2000  | 030.387.2000<br>030.506.2000  |   | 030.479.2000<br>030.504.2000  |   |
|   | 120   | 120   |   | 120   |   |
|   | 50  | 50  |   | 50  |   |
|   | 125   | 125   |   | 125   |   |
|  |  |   |   |   |   |
| <b>09A</b>  | <b>12E</b>  |   |   |   |   |
| 1.129   | 1.023   |   |   |   |   |
| 1.130   | 1.050   |   |   |   |   |
|  |  |   |   |   |   |
| <b>09B</b>  | <b>12F</b>  |   |   |   |   |
| 1.132   | 1.049   |   |   |   |   |
| 1.120   | 1.024   |   |   |   |   |
| 120   | 120   |   |   |   |   |
| 50  | 50  |   |   |   |   |

# How to Order

## M23 Signal Connectors Series S



### 1 CONNECTOR FAMILY

**S** M23 CIRCULAR SIGNAL CONNECTORS, SERIES S

### 2 CONNECTOR LAYOUT

#### RECEPTACLES IP67 UNMATED

|   |   |   |  |
|---|---|---|--|
| F | O | A | STRAIGHT RECEPTACLE, NICKEL-PLATED                             |
| F | R | A | STRAIGHT RECEPTACLE, NICKEL-PLATED, THREADED CONNECTION PG13.5 |
| E | A | B | FIXED ANGLED RECEPTACLE, CHROMIUM-PLATED                       |

#### RECEPTACLES CRIMP

|   |   |   |   |
|---|---|---|---|
| F | F | A | STRAIGHT RECEPTACLE, NICKEL-PLATED                              |
| F | Q | A | STRAIGHT RECEPTACLE, NICKEL-PLATED, THREADED CONNECTION M20x1.5 |
| F | L | A | STRAIGHT RECEPTACLE, NICKEL-PLATED, THREADED CONNECTION PG13.5  |
| F | T | A | STRAIGHT RECEPTACLE, NICKEL-PLATED, 21WAY ONLY                  |

#### EXTENSIONS SOLDER & CRIMP

|   |   |   |  |
|---|---|---|--|
| R | N | A | EXTENSION, NICKEL-PLATED, CABLE CLAMP Ø 5.5-12 mm                              |
| R | R | A | EXTENSION, NICKEL-PLATED, CABLE CLAMP Ø 5.5-12 mm, THREADED CONNECTION M20x1.5 |
| R | G | A | EXTENSION, NICKEL-PLATED, CABLE CLAMP Ø 5.5-12 mm, THREADED CONNECTION PG13.5  |

#### EXTENSIONS CRIMP

|   |   |   |   |
|---|---|---|---|
| R | F | A | EXTENSION, NICKEL-PLATED, CABLE CLAMP Ø 7.7-14.5 mm |
| V | R | A | EXTENSION, NICKEL-PLATED, CABLE CLAMP Ø 5-16 mm     |

#### PLUGS SOLDER & CRIMP

|   |   |   |   |
|---|---|---|---|
| P | N | A | PLUG, NICKEL-PLATED, CABLE CLAMP Ø 5.5-12 mm                              |
| P | R | A | PLUG, NICKEL-PLATED, CABLE CLAMP Ø 5.5-12 mm, THREADED CONNECTION M20x1.5 |
| P | G | A | PLUG, NICKEL-PLATED, CABLE CLAMP Ø 5.5-12 mm, THREADED CONNECTION PG13.5  |
| P | H | A | ANGLED PLUG, NICKEL-PLATED, CABLE CLAMP Ø 7.7-14.5 mm                     |

#### PLUGS CRIMP

|   |   |   |  |
|---|---|---|--|
| P | F | A | PLUG, NICKEL-PLATED, CABLE CLAMP Ø 7.7-14.5 mm |
| V | P | A | PLUG, NICKEL-PLATED, CABLE CLAMP Ø 5-16 mm     |

#### RECEPTACLES SOLDER

|   |   |   |  |
|---|---|---|--|
| F | N | A | STRAIGHT RECEPTACLE, NICKEL-PLATED                             |
| F | P | A | STRAIGHT RECEPTACLE, NICKEL-PLATED, THREADED CONNECTION PG13.5 |

#### RECEPTACLES CRIMP

|   |   |   |  |
|---|---|---|--|
| F | M | B | ROTATABLE ANGLED RECEPTACLE, CHROMIUM-PLATED |
| F | Y | B | FIXED ANGLED RECEPTACLE, CHROMIUM-PLATED     |
| G | D | G | ROTATABLE ANGLED RECEPTACLE, CHROMIUM-PLATED |
| G | F | G | FIXED ANGLED RECEPTACLE, CHROMIUM-PLATED     |

#### EXTENSIONS SOLDER & CRIMP

|   |   |   |  |
|---|---|---|--|
| R | O | C | EXTENSION, PLASTIC SHELL CABLE CLAMP Ø 5.5-12 mm                     |
| R | U | C | EXTENSION, PLASTIC SHELL, CABLE SPECIFIC CABLE CLAMPS                |
| R | W | C | EXTENSION, PLASTIC SHELL, CABLE SPECIFIC CABLE CLAMPS, SQUARE FLANGE |

#### PLUGS SOLDER & CRIMP

|   |   |   |   |
|---|---|---|---|
| P | O | C | PLUG, PLASTIC SHELL CABLE CLAMP Ø 5.5-12 mm                     |
| P | U | C | PLUG, PLASTIC SHELL, CABLE SPECIFIC CABLE CLAMPS                |
| P | Y | C | PLUG, PLASTIC SHELL, CABLE SPECIFIC CABLE CLAMPS, SQUARE FLANGE |

#### PANEL FEED THROUGH CRIMP

|   |   |   |   |
|---|---|---|---|
| D | B | A | PANEL FEED THROUGH, NICKEL-PLATED SQUARE FLANGE |
|---|---|---|---|

# How to Order

## M23 Signal Connectors Series S

### 3 INSERTS

#### FOR CRIMP PINS (RECEPTACLES IP67 UNMATED)

|   |   |   |
|---|---|---|
| 0 | 0 | 0 |
| 1 | 2 | A |

WITHOUT INSERT,  
INSERTS TO BE ORDERD SEPARATELY

12WAY, FOR PINS 12 x Ø 1 mm

|   |   |   |
|---|---|---|
| 1 | 2 | C |
| 1 | 7 | A |

12WAY, CODE 20°, FOR PINS Ø 12 x 1 mm

17WAY, FOR PINS 17 x Ø 1 mm

#### FOR SOLDER CONTACTS

|   |   |   |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 6 | C |
| 0 | 6 | D |
| 0 | 6 | E |
| 0 | 6 | F |
| 0 | 7 | A |
| 0 | 7 | B |

WITHOUT INSERT,  
INSERTS TO BE ORDERD SEPARATELY

6WAY, FOR CONTACTS 6 x Ø 2 mm  
E-PART

6WAY, FOR CONTACTS 6 x Ø 2 mm  
P-PART

6WAY, FOR CONTACTS 6 x Ø 2 mm  
E-PART

6WAY, FOR CONTACTS 6 x Ø 2 mm  
P-PART

7WAY, FOR CONTACTS 7 x Ø 2 mm  
E-PART

7WAY, FOR CONTACTS 7 x Ø 2 mm  
P-PART

#### FOR SOLDER CONTACTS

|   |   |   |
|---|---|---|
| 0 | 9 | C |
| 0 | 9 | D |
| 0 | 9 | A |
| 0 | 9 | B |
| 1 | 2 | E |
| 1 | 2 | F |

9WAY, FOR CONTACTS 8 x Ø 1 + 1 x Ø 2 mm  
E-PART

9WAY, FOR CONTACTS 8 x Ø 1 + 1 x Ø 2 mm  
P-PART

9WAY, FOR CONTACTS 9 x Ø 1 mm  
P-PART

9WAY, FOR CONTACTS 9 x Ø 1 mm  
E-PART

12WAY, FOR CONTACTS 12 x Ø 1 mm  
P-PART

12WAY, FOR CONTACTS 12 x Ø 1 mm  
E-PART

#### FOR CRIMP CONTACTS

|   |   |   |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 6 | G |
| 0 | 6 | H |
| 0 | 7 | C |
| 0 | 7 | D |
| 0 | 9 | E |
| 0 | 9 | F |
| 0 | 9 | J |
| 0 | 9 | K |

WITHOUT INSERT,  
INSERTS TO BE ORDERD SEPARATELY

6WAY, FOR CONTACTS 6 x Ø 2 mm  
E-PART

6WAY, FOR CONTACTS 6 x Ø 2 mm  
P-PART

7WAY, FOR CONTACTS 7 x Ø 2 mm  
E-PART

7WAY, FOR CONTACTS 7 x Ø 2 mm  
P-PART

9WAY, FOR CONTACTS 8 x Ø 1 + 1 x Ø 2 mm  
E-PART

9WAY, FOR CONTACTS 8 x Ø 1 + 1 x Ø 2 mm  
P-PART

9WAY, FOR CONTACTS 9 x Ø 1 mm  
E-PART

9WAY, FOR CONTACTS 9 x Ø 1 mm  
P-PART

#### FOR CRIMP CONTACTS

|   |   |   |
|---|---|---|
| 1 | 2 | S |
| 1 | 2 | T |
| 1 | 2 | U |
| 1 | 2 | V |
| 1 | 6 | A |
| 1 | 6 | B |
| 1 | 7 | G |
| 1 | 7 | H |
| 2 | 1 | A |
| 2 | 1 | B |

12WAY, FOR CONTACTS 12 x Ø 1 mm  
E-PART

12WAY, FOR CONTACTS 12 x Ø 1 mm  
P-PART

12WAY, CODE 20°, FOR CONTACTS 12 x Ø 1 mm  
E-PART

12WAY, CODE 20°, FOR CONTACTS 12 x Ø 1 mm  
P-PART

16WAY, FOR CONTACTS 16 x Ø 1 mm  
E-PART

16WAY, FOR CONTACTS 16 x Ø 1 mm  
P-PART

17WAY, FOR CONTACTS 17 x Ø 1 mm  
E-PART

17WAY, FOR CONTACTS 17 x Ø 1 mm  
P-PART

21WAY, FOR CONTACTS 21 x Ø 0.6 mm  
E-PART

21WAY, FOR CONTACTS 21 x Ø 0.6 mm  
P-PART

# How to Order

## M23 Signal Connectors Series S



### 4 TERMINATION STYLE

#### WITH CRIMP PINS (RECEPTACLES IP67 UNMATED)

|   |   |   |   |
|---|---|---|---|
| N | N | N | N |
| M | R | A | N |

WITHOUT PINS,  
PINS TO BE ORDERED SEPARATELY

PINS, Ø 1 mm,  
AWG 26 - 22

|   |   |   |   |
|---|---|---|---|
| M | R | E | N |
| M | R | M | N |

PINS, Ø 1 mm,  
AWG 24 - 18

PINS, Ø 1 mm, AWG 24 - 18  
(terminals with insulation sleeves)

#### WITH CRIMP CONTACTS

|   |   |   |   |
|---|---|---|---|
| N | N | N | N |
| M | R | R | N |
| M | R | V | N |
| M | R | S | R |
| M | R | S | V |
| M | R | W | R |
| M | R | W | V |
| M | R | S | N |
| M | R | W | N |
| M | R | G | N |

WITHOUT CONTACTS, MACHINED OR  
STAMPED CONTACTS TO BE ORDERED SEPARATELY

PINS - Ø 2 mm,  
AWG 18 - 14

PINS - Ø 2 mm,  
AWG 22 - 16

PINS - Ø 1 mm + Ø 2 mm,  
AWG 24 - 18, AWG 18 - 14

PINS - Ø 1 mm + Ø 2 mm,  
AWG 24 - 18, AWG 22 - 16

PINS - Ø 1 mm + Ø 2 mm,  
AWG 30 - 22, AWG 18 - 14

PINS - Ø 1 mm + Ø 2 mm,  
AWG 30 - 22, AWG 22 - 16

PINS - Ø 1 mm,  
AWG 24 - 18

PINS - Ø 1 mm,  
AWG 30 - 22

PINS - Ø 0.6 mm,  
AWG 26 - 22

|   |   |   |   |
|---|---|---|---|
| F | R | R | N |
| F | R | M | N |
| F | R | O | R |
| F | R | O | M |
| F | R | B | R |
| F | R | B | M |
| F | R | O | N |
| F | R | B | N |
| F | R | F | N |

HYPERTAC SOCKETS - Ø 2 mm,  
AWG 20 - 16

HYPERTAC SOCKETS - Ø 2 mm,  
AWG 18 - 14

HYPERTAC SOCKETS - Ø 1 mm + Ø 2 mm,  
AWG 24 - 18, AWG 20 - 16

HYPERTAC SOCKETS - Ø 1 mm + Ø 2 mm,  
AWG 24 - 18, AWG 18 - 14

HYPERTAC SOCKETS - Ø 1 mm + Ø 2 mm,  
AWG 30 - 22, AWG 20 - 16

HYPERTAC SOCKETS - Ø 1 mm + Ø 2 mm,  
AWG 30 - 22, AWG 18 - 14

HYPERTAC SOCKETS - Ø 1 mm,  
AWG 24 - 18

HYPERTAC SOCKETS - Ø 1 mm,  
AWG 30 - 22

HYPERTAC SOCKETS - Ø 0.6 mm,  
AWG 26 - 22

#### WITH SOLDER CONTACTS (built-in)

|   |   |   |   |
|---|---|---|---|
| M | S | B | N |
| M | S | A | B |
| M | S | A | N |

PINS - Ø 2 mm

PINS - Ø 1 mm + Ø 2 mm

PINS - Ø 2 mm

|   |   |   |   |
|---|---|---|---|
| F | S | B | N |
| F | S | A | B |
| F | S | A | N |

HYPERTAC SOCKETS - Ø 2 mm

HYPERTAC SOCKETS - Ø 1 mm + Ø 2 mm

HYPERTAC SOCKETS - Ø 2 mm

### 5 CABLE CLAMPING

|   |   |   |
|---|---|---|
| 0 | 0 | 0 |
| 1 | 6 | 9 |
| 1 | 7 | 0 |
| . | . | . |

WITHOUT CABLE CLAMP,  
ALL RECEPTACLES & PANEL FEED THROUGH

VARIABLE CABLE CLAMP, EXTENSION & PLUG  
CLAMP RANGE 5.5 - 12 mm

VARIABLE CABLE CLAMP, EXTENSION & PLUG  
CLAMP RANGE 7.7 - 14.5 mm

SPECIFIC CABLE CLAMP, CONNECTORS WITH  
PLASTIC SHELL, PLEASE CONTACT FACTORY

|   |   |   |
|---|---|---|
| 2 | 6 | 0 |
| 2 | 6 | 1 |
| 2 | 6 | 2 |

VARIABLE CABLE CLAMP, EXTENSION & PLUG  
CLAMP RANGE 5-9 mm

VARIABLE CABLE CLAMP, EXTENSION & PLUG  
CLAMP RANGE 9-15 mm

CABLE CLAMP, EXTENSION & PLUG  
CABLE DIAMETER 16 mm

### 6 VERSION NUMBER

|   |   |
|---|---|
| 0 | 1 |
|---|---|

DEPENDENT ON TYPE AND SPECIAL DESIGN, SEE  
DETAILED DESCRIPTION OF THE CONNECTOR DESIGN

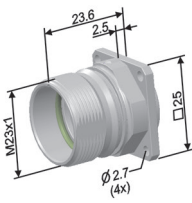
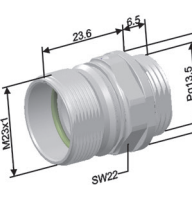
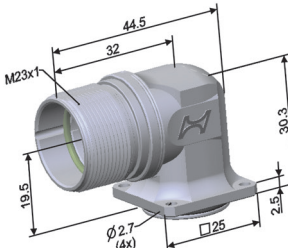
**Note:**

<sup>1)</sup> Contacts are shown on page 60 - 63

# Available Connectors

## M23 Signal Connectors Series S

### Signal receptacles - IP67 unmated

| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR  | SHELL         | CONTACT STYLE       | TERMINATION CROSS SECTION      | CONTACT ARRANGEMENTS VIEW MATING FACE |                          |               | CABLE CLAMP |      |      |      |
|---|---------------|---------------------|--------------------------------|---------------------------------------|--------------------------|---------------|-------------|------|------|------|
|   |               |                     |                                | 12A<br>12 x 1                         | 12C<br>12 x 1 (code 20°) | 17A<br>17 x 1 |             |      |      |      |
| Straight receptacle<br>                                 | SFOA          | MACHINED CRIMP PINS | AWG 26-22                      | 12A                                   | 12C                      | 17A           | 000         |      |      |      |
| AWG 24-18   |               |                     | MRAN                           |                                       |                          |               |             | MRAN | MRAN |      |
| AWG 24-18 <sup>1)</sup>   |               |                     | MREN                           |                                       |                          |               |             | MREN | MREN |      |
| without contacts <sup>2)</sup>  |               |                     | MRMN                           |                                       |                          |               |             | MRMN | MRMN |      |
| Straight receptacle,<br>threaded connection PG13.5<br> | SFRA          | MACHINED CRIMP PINS | AWG 26-22                      | 12A                                   | 12C                      | 17A           | 000         |      |      |      |
|   |               |                     | AWG 24-18                      |                                       |                          |               |             | MRAN | MRAN | MRAN |
|   |               |                     | AWG 24-18 <sup>1)</sup>        |                                       |                          |               |             | MREN | MREN | MREN |
|   |               |                     | without contacts <sup>2)</sup> |                                       |                          |               |             | MRMN | MRMN | MRMN |
| Fixed angled receptacle<br>                            | SEAB<br>UEAB* | MACHINED CRIMP PINS | AWG 26-22                      | 12A                                   | 12C                      | 17A           | 000         |      |      |      |
|   |               |                     | AWG 24-18                      |                                       |                          |               |             | MRAN | MRAN | MRAN |
|   |               |                     | AWG 24-18 <sup>1)</sup>        |                                       |                          |               |             | MREN | MREN | MREN |
|   |               |                     | without contacts <sup>2)</sup> |                                       |                          |               |             | MRMN | MRMN | MRMN |

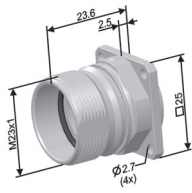
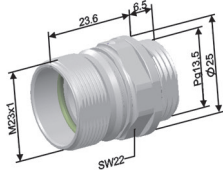
Dimensions are in mm

\* UL Version

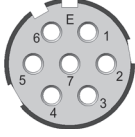
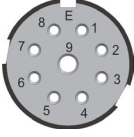
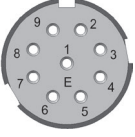
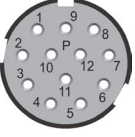
**Note:**

<sup>1)</sup> Terminals with insulation sleeves, <sup>2)</sup> Machined contacts are shown on page 60-61







## Signal receptacles with solder contacts 6 - 12way

| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR  | SHELL | NUMBER OF CONTACTS      | CONTACT ARRANGEMENTS<br>VIEW MATING FACE |                  |      |
|---|-------|-------------------------|--|------------------|------|
|   |       |                         | CONTACT STYLE                            | VIEW MATING FACE |      |
| Straight receptacle<br><br>                                    | SFNA  | PINS WITH SOLDER CUP    | 06C                                      | MSBN             | MSBN |
|   |       | SOCKETS WITH SOLDER CUP | 06E                                      | FSBN             | FSBN |
| Straight receptacle with threaded connection PG 13.5<br><br> | SFPA  | PINS WITH SOLDER CUP    | 06C                                      | MSBN             | MSBN |
|   |       | SOCKETS WITH SOLDER CUP | 06E                                      | FSBN             | FSBN |

Dimensions are in mm

|   |      |   |      |   |      |   |      |             |
|---|------|---|------|---|------|---|------|-------------|
|  |      |  |      |  |      |  |      | CABLE CLAMP |
| <p><b>07A</b><br/>7 x 2</p>   |      | <p><b>09C</b><br/>8 x 1 / 1 x 2</p>   |      | <p><b>09A</b><br/>9 x 1</p>   |      | <p><b>12E</b><br/>12 x 1</p>  |      |             |
| CONTACT ARRANGEMENTS VIEW MATING FACE   |      |   |      |   |      |   |      |             |
| 07A   | MSBN | 09C   | MSAB | 09A   | MSAN | 12E   | MSAN | 000         |
|   | FSBN |   | FSAB |   | FSAN |   | FSAN |             |
| 07A   | MSBN | 09C   | MSAB | 09A   | MSAN | 12E   | MSAN |             |
|   | FSBN |   | FSAB |   | FSAN |   | FSAN |             |



| <br><b>09E</b><br>8 x 1 / 1 x 2 |      | <br><b>09J</b><br>9 x 1 |  | <br><b>12T</b><br>12 x 1 |      | <br><b>12V</b><br>12 x 1 (code 20°) |      | <br><b>16A</b><br>16 x 1 |      | <br><b>17G</b><br>17 x 1 |      | CABLE CLAMP |      |
|---|------|--|--|---|------|--|------|---|------|---|------|-------------|------|
| CONTACT ARRANGEMENTS VIEW MATING FACE   |      |  |  |   |      |  |      |   |      |   |      |             |      |
| 09E   | -    |  |  | 09J   | -    | 12T  | -    | 12V   | -    | 16A   | -    | 17G         | -    |
|   | -    |  |  |   | -    |  | -    |   | -    |   | -    |             |      |
|   | MRSR |  |  |   | -    |  | -    |   | -    |   | -    |             |      |
|   | MRSV |  |  |   | -    |  | -    |   | -    |   | -    |             |      |
|   | MRWR |  |  |   | -    |  | -    |   | -    |   | -    |             |      |
|   | MRWV |  |  |   | -    |  | -    |   | -    |   | -    |             |      |
|   | -    |  |  |   | MRSN |  | MRSN |   | MRSN |   | MRSN |             |      |
|   | -    |  |  |   | MRWN |  | MRWN |   | MRWN |   | MRWN |             |      |
| 09E   | -    |  |  | 09J   | -    | 12T  | -    | 12V   | -    | 16A   | -    | 17G         | -    |
|   | -    |  |  |   | -    |  | -    |   | -    |   | -    |             |      |
|   | FROR |  |  |   | -    |  | -    |   | -    |   | -    |             |      |
|   | FROM |  |  |   | -    |  | -    |   | -    |   | -    |             |      |
|   | FRBR |  |  |   | -    |  | -    |   | -    |   | -    |             |      |
|   | FRBM |  |  |   | -    |  | -    |   | -    |   | -    |             |      |
|   | -    |  |  |   | FRON |  | FRON |   | FRON |   | FRON |             |      |
|   | -    |  |  |   | FRBN |  | FRBN |   | FRBN |   | FRBN |             |      |
| 09E   | NNNN |  |  | 09J   | NNNN | 12T  | NNNN | 12V   | NNNN | 16A   | NNNN | 17G         | NNNN |
|   | -    |  |  |   | NNNN |  | NNNN |   | NNNN |   | NNNN |             |      |
| 000   |      |  |  |   |      |  |      |   |      |   |      |             |      |
| 000   |      |  |  |   |      |  |      |   |      |   |      |             |      |

# Signal receptacles for crimp contacts 6 - 17way

| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR | SHELL |
|--|-------|
| <p>Rotatable angled receptacle</p>             | SFMB* |
| <p>Fixed angled receptacle</p>                 | SFYB* |
| <p>Rotatable angled receptacle</p>             | SGDG* |
| <p>Fixed angled receptacle</p>                 | SGFG* |







Dimensions are in mm

\* UL Version

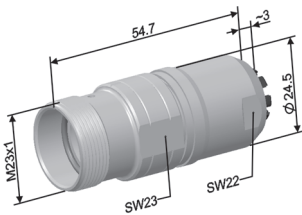
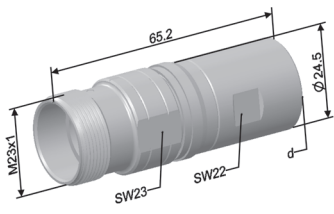
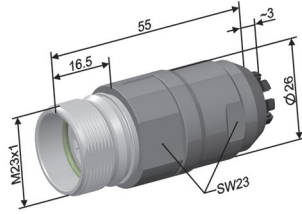
| CONTACT STYLE<br>GENDER REVERSIBLE | TERMINATION<br>CROSS SECTION                             | CONTACT ARRANGEMENTS<br>VIEW MATING FACE |      |              |      |
|------------------------------------|--|--|------|--------------|------|
|                                    |  | 06G<br>6 x 2                             |      | 07C<br>7 x 2 |      |
| MACHINED CRIMP PINS                | AWG 18-14  | 06G                                      | MRRN | 07C          | MRRN |
|                                    | AWG 22-16  |  | MRVN |              | MRVN |
|                                    | AWG 24-18, 18-14   |  | -    |              | -    |
|                                    | AWG 24-18, 22-16   |  | -    |              | -    |
|                                    | AWG 30-22, 18-14   |  | -    |              | -    |
|                                    | AWG 30-22, 22-16   |  | -    |              | -    |
|                                    | AWG 24-18  |  | -    |              | -    |
|                                    | AWG 30-22  |  | -    |              | -    |
| MACHINED CRIMP SOCKETS             | AWG 20-16  | 06G                                      | FRRN | 07C          | FRRN |
|                                    | AWG 18-14  |  | FRMN |              | FRMN |
|                                    | AWG 24-18, 20-16   |  | -    |              | -    |
|                                    | AWG 24-18, 18-14   |  | -    |              | -    |
|                                    | AWG 30-22, 20-16   |  | -    |              | -    |
|                                    | AWG 30-22, 18-14   |  | -    |              | -    |
|                                    | AWG 24-18  |  | -    |              | -    |
| AWG 30-22                          | -  | -  |      |              |      |
| MACHINED CONTACTS                  | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup>          | 06G                                      | NNNN | 07C          | NNNN |
|                                    | without contacts   |  |      |              |      |
| STAMPED HCS™ CONTACTS              | CONTACTS ON REELS TO BE ORDERED SEPARATELY <sup>2)</sup> | 06G                                      | -    | 07C          | -    |
|                                    | without contacts   |  |      |              |      |

Note:

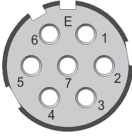
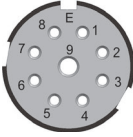
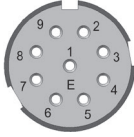
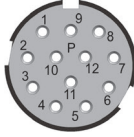
<sup>1)</sup> Machined contacts are shown on page 60-61, <sup>2)</sup> Stamped contacts are shown on page 62-63

| <br><b>09E</b><br>8 x 1 / 1 x 2 |      | <br><b>09J</b><br>9 x 1 |      | <br><b>12T</b><br>12 x 1 |      | <br><b>12V</b><br>12 x 1 (code 20°) |      | <br><b>16A</b><br>16 x 1 |      | <br><b>17G</b><br>17 x 1 |      | CABLE CLAMP |      |     |
|---|------|--|------|---|------|--|------|---|------|---|------|-------------|------|-----|
| CONTACT ARRANGEMENTS VIEW MATING FACE   |      |  |      |   |      |  |      |   |      |   |      |             |      |     |
| 09E   | -    |  |      | 09J   | -    | 12T  | -    | 12V   | -    | 16A   | -    | 17G         | -    | 000 |
|   | -    |  |      |   | -    |  | -    |   | -    |   | -    |             |      |     |
|   | MRSR |  |      |   | -    |  | -    |   | -    |   | -    |             |      |     |
|   | MRSV |  |      |   | -    |  | -    |   | -    |   | -    |             |      |     |
|   | MRWR |  |      |   | -    |  | -    |   | -    |   | -    |             |      |     |
|   | MRWV |  |      |   | -    |  | -    |   | -    |   | -    |             |      |     |
|   | -    |  |      |   | MRSN |  | MRSN |   | MRSN |   | MRSN |             | MRSN |     |
| -   | MRWN | MRWN   | MRWN | MRWN  | MRWN |  |      |   |      |   |      |             |      |     |
| 09E   | -    |  |      | 09J   | -    | 12T  | -    | 12V   | -    | 16A   | -    | 17G         | -    | 000 |
|   | -    |  |      |   | -    |  | -    |   | -    |   | -    |             |      |     |
|   | FROR |  |      |   | -    |  | -    |   | -    |   | -    |             |      |     |
|   | FROM |  |      |   | -    |  | -    |   | -    |   | -    |             |      |     |
|   | FRBR |  |      |   | -    |  | -    |   | -    |   | -    |             |      |     |
|   | FRBM |  |      |   | -    |  | -    |   | -    |   | -    |             |      |     |
|   | -    |  |      |   | FRON |  | FRON |   | FRON |   | FRON |             | FRON |     |
| -   | FRBN | FRBN   | FRBN | FRBN  | FRBN |  |      |   |      |   |      |             |      |     |
| 09E   | NNNN |  |      | 09J   | NNNN | 12T  | NNNN | 12V   | NNNN | 16A   | NNNN | 17G         | NNNN | 000 |
|   | -    |  |      |   | NNNN |  | NNNN |   | NNNN |   | NNNN |             | NNNN |     |

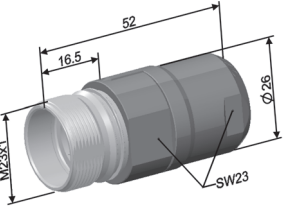
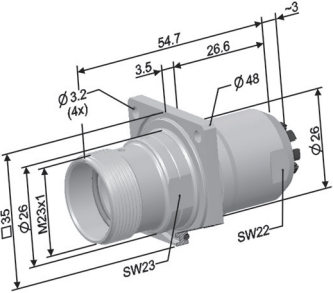
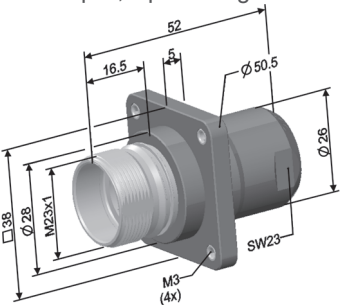
# Signal receptacles with solder contacts 6 - 12way

| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR   | SHELL        | NUMBER OF CONTACTS      | CONTACT ARRANGEMENTS<br>VIEW MATING FACE |  |              |  |
|--|--------------|-------------------------|--|--|--------------|--|
|  |              |                         | 06C<br>6 x 2                             |  | 06E<br>6 x 2 |  |
|  |              | CONTACT STYLE           |  | CONTACT ARRANGEMENTS<br>VIEW MATING FACE |              |  |
| Extension with cable clamp Ø 5.5-12 mm<br><br>                        | SRNA         | PINS WITH SOLDER CUP    | 06C                                      | MSBN                                     | MSBN         |  |
|  |              | SOCKETS WITH SOLDER CUP |  | FSBN                                     | FSBN         |  |
| Extension with cable clamp Ø 5.5-12 mm, threaded connection<br><br> | SRRA<br>SRGA | PINS WITH SOLDER CUP    | 06C                                      | MSBN                                     | MSBN         |  |
|  |              | SOCKETS WITH SOLDER CUP |  | FSBN                                     | FSBN         |  |
| Extension, plastic shell, with cable clamp Ø 5.5-12 mm<br><br>      | SROC         | PINS WITH SOLDER CUP    | 06C                                      | MSBN                                     | MSBN         |  |
|  |              | SOCKETS WITH SOLDER CUP |  | FSBN                                     | FSBN         |  |

Dimensions are in mm

| CONTACT ARRANGEMENTS VIEW MATING FACE   |      |   |      |   |      |  |      | CABLE CLAMP |
|---|------|---|------|---|------|--|------|-------------|
|   |      |   |      |   |      |  |      |             |
|  <p><b>07A</b><br/>7 x 2</p> |      |  <p><b>09C</b><br/>8 x 1 / 1 x 2</p> |      |  <p><b>09A</b><br/>9 x 1</p> |      |  <p><b>12E</b><br/>12 x 1</p> |      |             |
| 07A   | MSBN | 09C   | MSAB | 09A   | MSAN | 12E  | MSAN | 169         |
|   | FSBN |   | FSAB |   | FSAN |  | FSAN |             |
| 07A   | MSBN | 09C   | MSAB | 09A   | MSAN | 12E  | MSAN | 000         |
|   | FSBN |   | FSAB |   | FSAN |  | FSAN |             |
| 07A   | MSBN | 09C   | MSAB | 09A   | MSAN | 12E  | MSAN | 169         |
|   | FSBN |   | FSAB |   | FSAN |  | FSAN |             |

## Signal extensions with solder contacts 6 - 12way

| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR  | SHELL | NUMBER OF CONTACTS      | CONTACT ARRANGEMENTS<br>VIEW MATING FACE |                  |      |
|---|-------|-------------------------|--|------------------|------|
|   |       |                         | CONTACT STYLE                            | VIEW MATING FACE |      |
| Extension, plastic shell, with cable specific cable clamps <sup>1)</sup><br>                   | SRUC  | PINS WITH SOLDER CUP    | 06C                                      | MSBN             | MSBN |
|   |       | SOCKETS WITH SOLDER CUP | 06E                                      | FSBN             | FSBN |
| Extension with cable clamp Ø 5.5-12 mm, square flange<br>                                    | SRNA  | PINS WITH SOLDER CUP    | 06C                                      | MSBN             | MSBN |
|   |       | SOCKETS WITH SOLDER CUP | 06E                                      | FSBN             | FSBN |
| Extension, plastic shell, with cable specific cable clamps <sup>1)</sup> , square flange<br> | SRWC  | PINS WITH SOLDER CUP    | 06C                                      | MSBN             | MSBN |
|   |       | SOCKETS WITH SOLDER CUP | 06E                                      | FSBN             | FSBN |

Dimensions are in mm

**Note:**  
<sup>1)</sup> Cable specific cable clamp please contact factory

| CONTACT ARRANGEMENTS VIEW MATING FACE |      |     |      |     |      |     |      | CABLE CLAMP |       |
|---------------------------------------|------|-----|------|-----|------|-----|------|-------------|-------|
|                                       |      |     |      |     |      |     |      |             |       |
|                                       |      |     |      |     |      |     |      | CABLE CLAMP |       |
|                                       |      |     |      |     |      |     |      |             |       |
|                                       |      |     |      |     |      |     |      |             |       |
|                                       |      |     |      |     |      |     |      |             |       |
|                                       | MSBN |     | MSAB |     | MSAN |     | MSAN |             | ...   |
| 07A                                   |      | 09C |      | 09A |      | 12E |      |             | ...   |
|                                       | FSBN |     | FSAB |     | FSAN |     | FSAN |             | ...   |
|                                       | MSBN |     | MSAB |     | MSAN |     | MSAN |             | 16901 |
| 07A                                   |      | 09C |      | 09A |      | 12E |      |             | 16901 |
|                                       | FSBN |     | FSAB |     | FSAN |     | FSAN |             | 16901 |
|                                       | MSBN |     | MSAB |     | MSAN |     | MSAN |             | ...   |
| 07A                                   |      | 09C |      | 09A |      | 12E |      |             | ...   |
|                                       | FSBN |     | FSAB |     | FSAN |     | FSAN | ...         |       |

# Signal extensions for crimp contacts 6 - 17way

| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR   | SHELL          |
|--|----------------|
| Extension with cable clamp Ø 5.5-12 mm<br>   | SRNA*          |
| Extension with cable clamp Ø 5.5-12 mm, threaded connection<br><p>d =<br/>SRRA = M20x1.5<br/>SRGA = PG13.5</p> | SRRA*<br>SRGA* |
| Extension, plastic shell, with cable specific cable clamps <sup>3)</sup><br>                                   | SRUC*          |
| Extension with cable clamp Ø 7.7-14.5 mm<br>   | SRFA*          |







Dimensions are in mm

\* UL Version

| CONTACT STYLE<br>GENDER REVERSIBLE | TERMINATION<br>CROSS SECTION                                 | CONTACT ARRANGEMENTS<br>VIEW MATING FACE |      |              |      |
|------------------------------------|--|--|------|--------------|------|
|                                    |  | 06G<br>6 x 2                             |      | 07C<br>7 x 2 |      |
| MACHINED CRIMP PINS                | AWG 18-14  | 06G                                      | MRRN | 07C          | MRRN |
|                                    | AWG 22-16  |  | MRVN |              | MRVN |
|                                    | AWG 24-18, 18-14   |  | -    |              | -    |
|                                    | AWG 24-18, 22-16   |  | -    |              | -    |
|                                    | AWG 30-22, 18-14   |  | -    |              | -    |
|                                    | AWG 30-22, 22-16   |  | -    |              | -    |
|                                    | AWG 24-18  |  | -    |              | -    |
|                                    | AWG 30-22  |  | -    |              | -    |
| MACHINED CRIMP SOCKETS             | AWG 20-16  | 06G                                      | FRRN | 07C          | FRRN |
|                                    | AWG 18-14  |  | FRMN |              | FRMN |
|                                    | AWG 24-18, 20-16   |  | -    |              | -    |
|                                    | AWG 24-18, 18-14   |  | -    |              | -    |
|                                    | AWG 30-22, 20-16   |  | -    |              | -    |
|                                    | AWG 30-22, 18-14   |  | -    |              | -    |
|                                    | AWG 24-18  |  | -    |              | -    |
|                                    | AWG 30-22  |  | -    |              | -    |
| MACHINED CONTACTS                  | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup><br>          | 06G                                      | NNNN | 07C          | NNNN |
| STAMPED HCS™ CONTACTS              | CONTACTS ON REELS TO BE ORDERED SEPARATELY <sup>2)</sup><br> |  | -    |              | -    |

Note:

<sup>1)</sup> Machined contacts are shown on page 60-61, <sup>2)</sup> Stamped contacts are shown on page 62-63, <sup>3)</sup> Cable specific cable clamp please contact factory

| <br><b>09E</b><br>8 x 1 / 1 x 2 |      | <br><b>09J</b><br>9 x 1 |      | <br><b>12T</b><br>12 x 1 |      | <br><b>12V</b><br>12 x 1 (code 20°) |      | <br><b>16A</b><br>16 x 1 |      | <br><b>17G</b><br>17 x 1 |      | CABLE CLAMP |      |     |
|---|------|--|------|---|------|--|------|---|------|---|------|-------------|------|-----|
| CONTACT ARRANGEMENTS VIEW MATING FACE   |      |  |      |   |      |  |      |   |      |   |      |             |      |     |
| 09E   | -    |  |      | 09J   | -    | 12T  | -    | 12V   | -    | 16A   | -    | 17G         | -    | 169 |
|   | -    |  |      |   | -    |  | -    |   | -    |   | -    |             | -    |     |
|   | MRSR |  |      |   | -    |  | -    |   | -    |   | -    |             | -    |     |
|   | MRSV |  |      |   | -    |  | -    |   | -    |   | -    |             | -    |     |
|   | MRWR |  |      |   | -    |  | -    |   | -    |   | -    |             | -    |     |
|   | MRWV |  |      |   | -    |  | -    |   | -    |   | -    |             | -    |     |
|   | -    |  |      |   | MRSN |  | MRSN |   | MRSN |   | MRSN |             | MRSN |     |
| -   |      |  | MRWN | MRWN  | MRWN | MRWN   | MRWN |   |      |   |      |             |      |     |
| 09E   | -    |  |      | 09J   | -    | 12T  | -    | 12V   | -    | 16A   | -    | 17G         | -    | 000 |
|   | -    |  |      |   | -    |  | -    |   | -    |   | -    |             | -    |     |
|   | FROR |  |      |   | -    |  | -    |   | -    |   | -    |             | -    |     |
|   | FROM |  |      |   | -    |  | -    |   | -    |   | -    |             | -    |     |
|   | FRBR |  |      |   | -    |  | -    |   | -    |   | -    |             | -    |     |
|   | FRBM |  |      |   | -    |  | -    |   | -    |   | -    |             | -    |     |
|   | -    |  |      |   | FRON |  | FRON |   | FRON |   | FRON |             | FRON |     |
| -   |      |  | FRBN | FRBN  | FRBN | FRBN   | FRBN |   |      |   |      |             |      |     |
| 09E   | NNNN |  |      | 09J   | NNNN | 12T  | NNNN | 12V   | NNNN | 16A   | NNNN | 17G         | NNNN | 170 |
|   | -    |  |      |   | NNNN |  | NNNN |   | NNNN |   | NNNN |             | NNNN |     |

# Signal extensions for crimp contacts 6 - 17way

| LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR  | SHELL |
|--|-------|
| Extension with cable clamp Ø 5.5-12 mm<br>   | SROC* |
| Extension with cable clamp Ø 5.5-12 mm, square flange<br>                                    | SRNA* |
| Extension, plastic shell, with cable specific cable clamps <sup>3)</sup> , square flange<br> | SRWC* |
| Extension with cable clamp Ø 5-16 mm<br>   | SVRA* |

Flange can be ordered separately<sup>4)</sup>







Dimensions are in mm

\* UL Version

| CONTACT STYLE GENDER REVERSIBLE | TERMINATION CROSS SECTION                                | CONTACT ARRANGEMENTS VIEW MATING FACE |     |              |      |
|---------------------------------|--|---------------------------------------|-----|--------------|------|
|                                 |  | 06G<br>6 x 2                          |     | 07C<br>7 x 2 |      |
| MACHINED CRIMP PINS             | AWG 18-14  | 06G                                   | 07C | MRRN         | MRRN |
|                                 | AWG 22-16  |                                       |     | MRVN         | MRVN |
|                                 | AWG 24-18, 18-14   |                                       |     | -            | -    |
|                                 | AWG 24-18, 22-16   |                                       |     | -            | -    |
|                                 | AWG 30-22, 18-14   |                                       |     | -            | -    |
|                                 | AWG 30-22, 22-16   |                                       |     | -            | -    |
|                                 | AWG 24-18  |                                       |     | -            | -    |
|                                 | AWG 30-22  |                                       |     | -            | -    |
| MACHINED CRIMP SOCKETS          | AWG 20-16  | 06G                                   | 07C | FRRN         | FRRN |
|                                 | AWG 18-14  |                                       |     | FRMN         | FRMN |
|                                 | AWG 24-18, 20-16   |                                       |     | -            | -    |
|                                 | AWG 24-18, 18-14   |                                       |     | -            | -    |
|                                 | AWG 30-22, 20-16   |                                       |     | -            | -    |
|                                 | AWG 30-22, 18-14   |                                       |     | -            | -    |
|                                 | AWG 24-18  |                                       |     | -            | -    |
| AWG 30-22                       | -  | -                                     |     |              |      |
| MACHINED CONTACTS               | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup>          | 06G                                   | 07C | NNNN         | NNNN |
| without contacts                |  |                                       |     |              |      |
| STAMPED HCS™ CONTACTS           | CONTACTS ON REELS TO BE ORDERED SEPARATELY <sup>2)</sup> | 06G                                   | 07C | -            | -    |
| without contacts                |  |                                       |     |              |      |

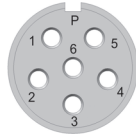
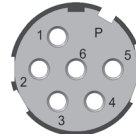
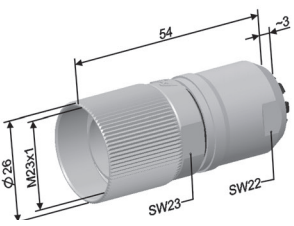
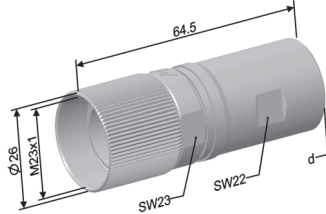
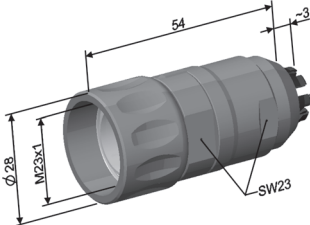
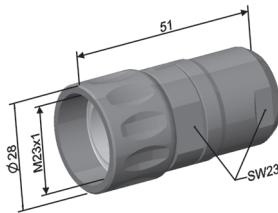
Note:

<sup>1)</sup> Machined contacts are shown on page 60-61, <sup>2)</sup> Stamped contacts are shown on page 62-63

|  |      |  |  |  |      |  |      |  |      |  |      | CABLE CLAMP |                   |      |
|--|------|---|--|---|------|---|------|---|------|---|------|-------------|-------------------|------|
| <b>09E</b><br>8 x 1 / 1 x 2  |      | <b>09J</b><br>9 x 1   |  | <b>12T</b><br>12 x 1  |      | <b>12V</b><br>12 x 1 (code 20°)   |      | <b>16A</b><br>16 x 1  |      | <b>17G</b><br>17 x 1  |      |             |                   |      |
| CONTACT ARRANGEMENTS VIEW MATING FACE  |      |   |  |   |      |   |      |   |      |   |      |             |                   |      |
| 09E  | -    |   |  |   | -    |   |      |   | -    |   |      | -           | 169               |      |
|  | -    |   |  |   | -    |   |      |   | -    |   |      | -           |                   |      |
|  | MRSR |   |  |   | -    |   |      |   | -    |   |      | -           |                   |      |
|  | MRSV |   |  | 09J   | -    | 12T   | -    | 12V   | -    | 16A   | -    | 17G         |                   | -    |
|  | MRWR |   |  |   | -    |   |      |   | -    |   |      | -           |                   |      |
|  | MRWV |   |  |   | -    |   |      |   | -    |   |      | -           |                   |      |
|  | -    |   |  |   | MRSN |   | MRSN |   | MRSN |   | MRSN |             |                   | MRSN |
|  | -    |   |  |   | MRWN |   | MRWN |   | MRWN |   | MRWN |             |                   | MRWN |
| 09E  | -    |   |  |   | -    |   |      |   | -    |   |      | -           | 16901             |      |
|  | -    |   |  |   | -    |   |      |   | -    |   |      | -           |                   |      |
|  | FROR |   |  |   | -    |   |      |   | -    |   |      | -           |                   |      |
|  | FROM |   |  | 09J   | -    | 12T   | -    | 12V   | -    | 16A   | -    | 17G         |                   | -    |
|  | FRBR |   |  |   | -    |   |      |   | -    |   |      | -           |                   |      |
|  | FRBM |   |  |   | -    |   |      |   | -    |   |      | -           |                   |      |
|  | -    |   |  |   | FRON |   | FRON |   | FRON |   | FRON |             |                   | FRON |
|  | -    |   |  |   | FRBN |   | FRBN |   | FRBN |   | FRBN |             |                   | FRBN |
| 09E  | NNNN |   |  |   | NNNN |   |      |   | NNNN |   |      | NNNN        | 260<br>261<br>262 |      |
|  | -    |   |  | 09J   | NNNN | 12T   | NNNN | 12V   | NNNN | 16A   | NNNN | 17G         |                   | NNNN |

Note:  
<sup>3)</sup> Cable specific cable clamp please contact factory. <sup>4)</sup> More information please contact factory.

# Signal plugs with solder contacts 6 - 12way

| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR  | SHELL        | NUMBER OF CONTACTS      | CONTACT ARRANGEMENTS<br>VIEW MATING FACE   |  |      |
|---|--------------|-------------------------|--|--|------|
|   |              |                         | CONTACT STYLE  |  |      |
|   |              |                         | <br><b>06D</b><br>6 x 2 | <br><b>06F</b><br>6 x 2 |      |
| Plug with cable clamp Ø 5.5–12 mm<br>  | SPNA         | PINS WITH SOLDER CUP    | 06D  | MSBN   | MSBN |
|   |              | SOCKETS WITH SOLDER CUP |  | FSBN   | FSBN |
|   |              |                         | 06D  | 06F  |      |
| Plug with cable clamp Ø 5.5–12 mm, threaded connection<br><br>d =<br>SPRA = M20x1.5<br>SPGA = PG13.5 | SPRA<br>SPGA | PINS WITH SOLDER CUP    | 06D  | MSBN   | MSBN |
|   |              | SOCKETS WITH SOLDER CUP |  | FSBN   | FSBN |
|   |              |                         | 06D  | 06F  |      |
| Plug, plastic shell, with cable clamp Ø 5.5–12 mm<br>  | SPOC         | PINS WITH SOLDER CUP    | 06D  | MSBN   | MSBN |
|   |              | SOCKETS WITH SOLDER CUP |  | FSBN   | FSBN |
|   |              |                         | 06D  | 06F  |      |
| Plug, plastic shell, with cable specific cable clamps <sup>1)</sup><br>                              | SPUC         | PINS WITH SOLDER CUP    | 06D  | MSBN   | MSBN |
|   |              | SOCKETS WITH SOLDER CUP |  | FSBN   | FSBN |
|   |              |                         | 06D  | 06F  |      |

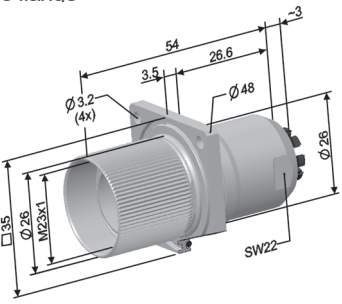
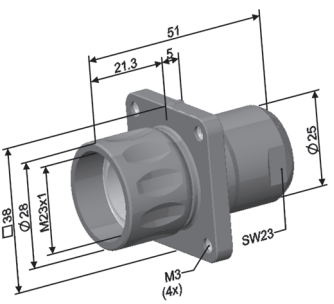
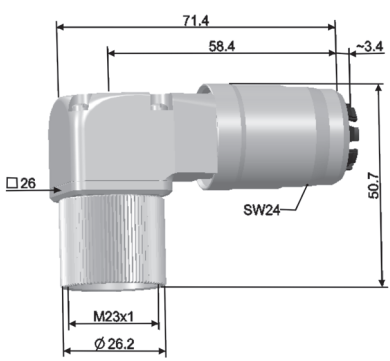
Dimensions are in mm

**Note:**

<sup>1)</sup> Cable specific cable clamp please contact factory

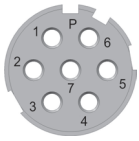
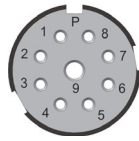
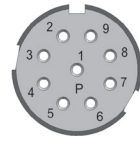
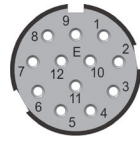


# Signal plugs with solder contacts 6 - 12way

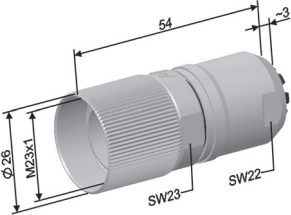
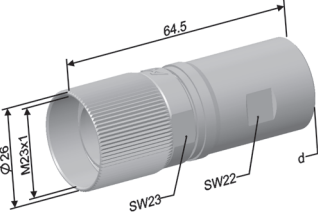
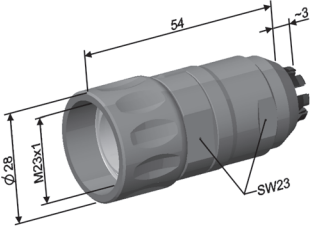
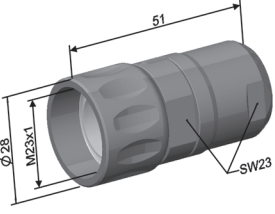
| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR   | SHELL | NUMBER OF CONTACTS      | CONTACT ARRANGEMENTS<br>VIEW MATING FACE |      |      |
|--|-------|-------------------------|--|------|------|
|  |       |                         | CONTACT STYLE                            |      |      |
| Plug with with cable clamp Ø 5.5–12 mm, square flange<br>                                 | SPNA  | PINS WITH SOLDER CUP    | 06D                                      | MSBN | MSBN |
|  |       | SOCKETS WITH SOLDER CUP | 06D                                      | FSBN | FSBN |
| Plug, plastic shell, with cable specific cable clamps <sup>1)</sup> , square flange<br> | SPYC  | PINS WITH SOLDER CUP    | 06D                                      | MSBN | MSBN |
|  |       | SOCKETS WITH SOLDER CUP | 06D                                      | FSBN | FSBN |
| Angled plug with cable clamp Ø 7.7-14.5 mm<br>   | SPHA  | PINS WITH SOLDER CUP    | 06D                                      | MSBN | MSBN |
|  |       | SOCKETS WITH SOLDER CUP | 06D                                      | FSBN | FSBN |

Dimensions are in mm

<sup>1)</sup> Cable specific cable clamp please contact factory

| CONTACT ARRANGEMENTS VIEW MATING FACE   |   |   |   |     |      |     |      | CABLE CLAMP |
|---|---|---|---|-----|------|-----|------|-------------|
|  |  |  |  |     |      |     |      |             |
| <b>07B</b><br>7 x 2   | <b>09D</b><br>8 x 1 / 1 x 2   | <b>09B</b><br>9 x 1   | <b>12F</b><br>12 x 1  |     |      |     |      |             |
| 07B   | MSBN  | 09D   | MSAB  | 09B | MSAN | 12F | MSAN | 16914       |
|   | FSBN  |   | FSAB  |     | FSAN |     | FSAN |             |
| 07B   | MSBN  | 09D   | MSAB  | 09B | MSAN | 12F | MSAN | ...         |
|   | FSBN  |   | FSAB  |     | FSAN |     | FSAN |             |
| 07B   | MSBN  | 09D   | MSAB  | 09B | MSAN | 12F | MSAN | 17003       |
|   | FSBN  |   | FSAB  |     | FSAN |     | FSAN |             |

# Signal plugs for crimp contacts 6 - 17way

| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR   | SHELL          |
|--|----------------|
| Plug with cable clamp Ø 5.5-12 mm<br>   | SPNA*          |
| Plug with cable clamp Ø 5.5-12 mm, threaded connection<br> <p>d =<br/>SRR = M20x1.5<br/>SRGA = PG13.5</p> | SPRA*<br>SPGA* |
| Plug, plastic shell, with cable clamp Ø 5.5-12 mm<br>   | SPOC*          |
| Plug, plastic shell, with cable specific cable clamps <sup>3)</sup><br>                                   | SPUC*          |


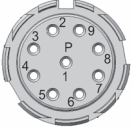
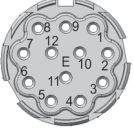
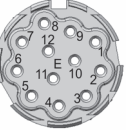
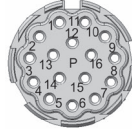

| CONTACT STYLE<br>GENDER REVERSIBLE | TERMINATION<br>CROSS SECTION   | CONTACT ARRANGEMENTS<br>VIEW MATING FACE |      |              |      |
|------------------------------------|--|--|------|--------------|------|
|                                    |  | 06H<br>6 x 2                             |      | 07D<br>7 x 2 |      |
| MACHINED CRIMP PINS                | AWG 18-14  | 06H                                      | MRRN | 07D          | MRRN |
|                                    | AWG 22-16  |  | MRVN |              | MRVN |
|                                    | AWG 24-18, 18-14   |  | -    |              | -    |
|                                    | AWG 24-18, 22-16   |  | -    |              | -    |
|                                    | AWG 30-22, 18-14   |  | -    |              | -    |
|                                    | AWG 30-22, 22-16   |  | -    |              | -    |
|                                    | AWG 24-18  |  | -    |              | -    |
|                                    | AWG 30-22  |  | -    |              | -    |
| MACHINED CRIMP SOCKETS             | AWG 20-16  | 06H                                      | FRRN | 07D          | FRRN |
|                                    | AWG 18-14  |  | FRMN |              | FRMN |
|                                    | AWG 24-18, 20-16   |  | -    |              | -    |
|                                    | AWG 24-18, 18-14   |  | -    |              | -    |
|                                    | AWG 30-22, 20-16   |  | -    |              | -    |
|                                    | AWG 30-22, 18-14   |  | -    |              | -    |
|                                    | AWG 24-18  |  | -    |              | -    |
|                                    | AWG 30-22  |  | -    |              | -    |
| MACHINED CONTACTS                  | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup><br><br>without contacts          | 06H                                      | NNNN | 07D          | NNNN |
| STAMPED HCS™ CONTACTS              | CONTACTS ON REELS TO BE ORDERED SEPARATELY <sup>2)</sup><br><br>without contacts |  | -    |              | -    |

Dimensions are in mm

\* UL Version

Note:

<sup>1)</sup> Machined contacts are shown on page 60-61, <sup>2)</sup> Stamped contacts are shown on page 62-63, <sup>3)</sup> Cable specific cable clamp please contact factory

| <br><b>09F</b><br>8 x 1 / 1 x 2 |      | <br><b>09K</b><br>9 x 1 |      | <br><b>12S</b><br>12 x 1 |      | <br><b>12U</b><br>12 x 1 (code 20°) |      | <br><b>16B</b><br>16 x 1 |      | <br><b>17H</b><br>17 x 1 |      | CABLE CLAMP |      |     |      |
|---|------|--|------|---|------|---|------|---|------|---|------|-------------|------|-----|------|
| CONTACT ARRANGEMENTS VIEW MATING FACE   |      |  |      |   |      |   |      |   |      |   |      |             |      |     |      |
| 09F   | -    |  |      | 09K   | -    | 12S   | -    | 12U   | -    | 16B   | -    | 17H         | -    | 169 |      |
|   | -    |  |      |   | -    |   | -    |   | -    |   | -    |             | -    |     | -    |
|   | MRSR |  |      |   | -    |   | -    |   | -    |   | -    |             | -    |     | -    |
|   | MRSV |  |      |   | -    |   | -    |   | -    |   | -    |             | -    |     | -    |
|   | MRWR |  |      |   | -    |   | -    |   | -    |   | -    |             | -    |     | -    |
|   | MRWV |  |      |   | -    |   | -    |   | -    |   | -    |             | -    |     | -    |
|   | -    |  |      |   | MRSN |   | MRSN |   | MRSN |   | MRSN |             | MRSN |     | MRSN |
| -   |      |  | MRWN | MRWN  | MRWN | MRWN  | MRWN | MRWN  |      |   |      |             |      |     |      |
| 09F   | -    |  |      | 09K   | -    | 12S   | -    | 12U   | -    | 16B   | -    | 17H         | -    | 000 |      |
|   | -    |  |      |   | -    |   | -    |   | -    |   | -    |             | -    |     |      |
|   | FROR |  |      |   | -    |   | -    |   | -    |   | -    |             | -    |     |      |
|   | FROM |  |      |   | -    |   | -    |   | -    |   | -    |             | -    |     |      |
|   | FRBR |  |      |   | -    |   | -    |   | -    |   | -    |             | -    |     |      |
|   | FRBM |  |      |   | -    |   | -    |   | -    |   | -    |             | -    |     |      |
|   | -    |  |      |   | FRON |   | FRON |   | FRON |   | FRON |             | FRON |     | FRON |
| -   |      |  | FRBN | FRBN  | FRBN | FRBN  | FRBN | FRBN  |      |   |      |             |      |     |      |
| 09F   | NNNN |  |      | 09K   | NNNN | 12S   | NNNN | 12U   | NNNN | 16B   | NNNN | 17H         | NNNN | 169 |      |
|   | -    |  |      |   | NNNN |   | NNNN |   | NNNN |   | NNNN |             | NNNN |     |      |

# Signal plugs for crimp contacts 6 - 17way

| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR  | SHELL |
|---|-------|
| Plug with cable clamp Ø 5.5-12 mm, square flange<br>                                    | SPNA* |
| Plug, plastic shell, with cable specific cable clamps <sup>1)</sup> , square flange<br> | SPYC* |
| Angled plug with cable clamp Ø 7.7-14.5 mm<br>  | SPHA* |

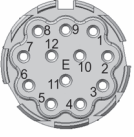
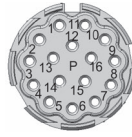
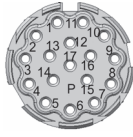
Dimensions are in mm

\* UL Version

| CONTACT STYLE<br>GENDER REVERSIBLE | TERMINATION<br>CROSS SECTION                                 | CONTACT ARRANGEMENTS<br>VIEW MATING FACE |      |              |      |
|------------------------------------|--|--|------|--------------|------|
|                                    |  | 06H<br>6 x 2                             |      | 07D<br>7 x 2 |      |
| MACHINED CRIMP PINS                | AWG 18-14  | 06H                                      | MRRN | 07D          | MRRN |
|                                    | AWG 22-16  |  | MRVN |              | MRVN |
|                                    | AWG 24-18, 18-14   |  | -    |              | -    |
|                                    | AWG 24-18, 22-16   |  | -    |              | -    |
|                                    | AWG 30-22, 18-14   |  | -    |              | -    |
|                                    | AWG 30-22, 22-16   |  | -    |              | -    |
|                                    | AWG 24-18  |  | -    |              | -    |
|                                    | AWG 30-22  |  | -    |              | -    |
| MACHINED CRIMP SOCKETS             | AWG 20-16  | 06H                                      | FRRN | 07D          | FRRN |
|                                    | AWG 18-14  |  | FRMN |              | FRMN |
|                                    | AWG 24-18, 20-16   |  | -    |              | -    |
|                                    | AWG 24-18, 18-14   |  | -    |              | -    |
|                                    | AWG 30-22, 20-16   |  | -    |              | -    |
|                                    | AWG 30-22, 18-14   |  | -    |              | -    |
|                                    | AWG 24-18  |  | -    |              | -    |
|                                    | AWG 30-22  |  | -    |              | -    |
| MACHINED CONTACTS                  | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup><br>          | 06H                                      | NNNN | 07D          | NNNN |
| STAMPED HCS™ CONTACTS              | CONTACTS ON REELS TO BE ORDERED SEPARATELY <sup>2)</sup><br> |  | -    |              | -    |

Note:

<sup>1)</sup> Machined contacts are shown on page 60-61, <sup>2)</sup> Stamped contacts are shown on page 62-63, <sup>3)</sup> Cable specific cable clamp please contact factory

|  |      |  |  |  |      |  |      |  |      |  |      | CABLE CLAMP |      |       |
|--|------|---|--|---|------|--|------|---|------|---|------|-------------|------|-------|
| <b>09F</b><br>8 x 1 / 1 x 2  |      | <b>09K</b><br>9 x 1   |  | <b>12S</b><br>12 x 1  |      | <b>12U</b><br>12 x 1 (code 20°)  |      | <b>16B</b><br>16 x 1  |      | <b>17H</b><br>17 x 1  |      |             |      |       |
| CONTACT ARRANGEMENTS VIEW MATING FACE  |      |   |  |   |      |  |      |   |      |   |      |             |      |       |
| 09F  | -    |   |  | 09K   | -    | 12S  | -    | 12U   | -    | 16B   | -    | 17H         | -    | 16914 |
|  | -    |   |  |   | -    |  | -    |   | -    |   | -    |             | -    |       |
|  | MRSR |   |  |   | -    |  | -    |   | -    |   | -    |             | -    |       |
|  | MRSV |   |  |   | -    |  | -    |   | -    |   | -    |             | -    |       |
|  | MRWR |   |  |   | -    |  | -    |   | -    |   | -    |             | -    |       |
|  | MRWV |   |  |   | -    |  | -    |   | -    |   | -    |             | -    |       |
|  | -    |   |  |   | MRSN |  | MRSN |   | MRSN |   | MRSN |             | MRSN |       |
|  | -    |   |  |   | MRWN |  | MRWN |   | MRWN |   | MRWN |             | MRWN |       |
| 09F  | -    |   |  | 09K   | -    | 12S  | -    | 12U   | -    | 16B   | -    | 17H         | -    | ...   |
|  | -    |   |  |   | -    |  | -    |   | -    |   | -    |             | -    |       |
|  | FROR |   |  |   | -    |  | -    |   | -    |   | -    |             | -    |       |
|  | FROM |   |  |   | -    |  | -    |   | -    |   | -    |             | -    |       |
|  | FRBR |   |  |   | -    |  | -    |   | -    |   | -    |             | -    |       |
|  | FRBM |   |  |   | -    |  | -    |   | -    |   | -    |             | -    |       |
|  | -    |   |  |   | FRON |  | FRON |   | FRON |   | FRON |             | FRON |       |
|  | -    |   |  |   | FRBN |  | FRBN |   | FRBN |   | FRBN |             | FRBN |       |
| 09F  | NNNN |   |  | 09K   | NNNN | 12S  | NNNN | 12U   | NNNN | 16B   | NNNN | 17H         | NNNN | 17003 |
|  | -    |   |  |   | NNNN |  | NNNN |   | NNNN |   | NNNN |             | NNNN |       |

# Signal plugs for crimp contacts 6 - 17way

| LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR   | SHELL |
|---|-------|
| Plug with cable clamp Ø 7.7-14.5 mm<br>   | SPFA* |
| Plug with cable clamp Ø 5-16 mm<br>   | SVPA* |
| Flange can be ordered separately <sup>3)</sup><br>Panel feed through, square flange<br> | SDBA* |



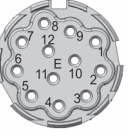
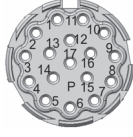
Dimensions are in mm

\* UL Version

| CONTACT STYLE<br>GENDER REVERSIBLE | TERMINATION<br>CROSS SECTION   | CONTACT ARRANGEMENTS<br>VIEW MATING FACE |      |              |      |
|------------------------------------|--|--|------|--------------|------|
|                                    |  | 06H<br>6 x 2                             |      | 07D<br>7 x 2 |      |
| MACHINED CRIMP PINS                | AWG 18-14  | 06H                                      | MRRN | 07D          | MRRN |
|                                    | AWG 22-16  |  | MRVN |              | MRVN |
|                                    | AWG 24-18, 18-14   |  | -    |              | -    |
|                                    | AWG 24-18, 22-16   |  | -    |              | -    |
|                                    | AWG 30-22, 18-14   |  | -    |              | -    |
|                                    | AWG 30-22, 22-16   |  | -    |              | -    |
|                                    | AWG 24-18  |  | -    |              | -    |
|                                    | AWG 30-22  |  | -    |              | -    |
| MACHINED CRIMP SOCKETS             | AWG 20-16  | 06H                                      | FRRN | 07D          | FRRN |
|                                    | AWG 18-14  |  | FRMN |              | FRMN |
|                                    | AWG 24-18, 20-16   |  | -    |              | -    |
|                                    | AWG 24-18, 18-14   |  | -    |              | -    |
|                                    | AWG 30-22, 20-16   |  | -    |              | -    |
|                                    | AWG 30-22, 18-14   |  | -    |              | -    |
|                                    | AWG 24-18  |  | -    |              | -    |
|                                    | AWG 30-22  |  | -    |              | -    |
| MACHINED CONTACTS                  | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup><br><br>without contacts          | 06H                                      | NNNN | 07D          | NNNN |
| STAMPED HCS™ CONTACTS              | CONTACTS ON REELS TO BE ORDERED SEPARATELY <sup>2)</sup><br><br>without contacts |  | -    |              | -    |

Note:

<sup>1)</sup> Machined contacts are shown on page 60-61, <sup>2)</sup> Stamped contacts are shown on page 62-63, <sup>3)</sup> More information please contact factory.

| <br><b>09F</b><br>8 x 1 / 1 x |      | <br><b>09K</b><br>9 x 1 |  | <br><b>12S</b><br>12 x 1 |      | <br><b>12U</b><br>12 x 1 (code 20°) |      | <br><b>16B</b><br>16 x 1 |      | <br><b>17H</b><br>17 x 1 |      | CABLE CLAMP |      |                   |
|---|------|--|--|---|------|---|------|---|------|---|------|-------------|------|-------------------|
| CONTACT ARRANGEMENTS VIEW MATING FACE   |      |  |  |   |      |   |      |   |      |   |      |             |      |                   |
| 09F   | -    |  |  | 09K   | -    | 12S   | -    | 12U   | -    | 16B   | -    | 17H         | -    | 170               |
|   | -    |  |  |   | -    |   | -    |   | -    |   | -    |             | -    |                   |
|   | MRSR |  |  |   | -    |   | -    |   | -    |   | -    |             | -    |                   |
|   | MRSV |  |  |   | -    |   | -    |   | -    |   | -    |             | -    |                   |
|   | MRWR |  |  |   | -    |   | -    |   | -    |   | -    |             | -    |                   |
|   | MRWV |  |  |   | -    |   | -    |   | -    |   | -    |             | -    |                   |
|   | -    |  |  |   | MRSN |   | MRSN |   | MRSN |   | MRSN |             | MRSN |                   |
|   | -    |  |  |   | MRWN |   | MRWN |   | MRWN |   | MRWN |             | MRWN |                   |
| 09F   | -    |  |  | 09K   | -    | 12S   | -    | 12U   | -    | 16B   | -    | 17H         | -    | 260<br>261<br>262 |
|   | -    |  |  |   | -    |   | -    |   | -    |   | -    |             | -    |                   |
|   | FROR |  |  |   | -    |   | -    |   | -    |   | -    |             | -    |                   |
|   | FROM |  |  |   | -    |   | -    |   | -    |   | -    |             | -    |                   |
|   | FRBR |  |  |   | -    |   | -    |   | -    |   | -    |             | -    |                   |
|   | FRBM |  |  |   | -    |   | -    |   | -    |   | -    |             | -    |                   |
|   | -    |  |  |   | FRON |   | FRON |   | FRON |   | FRON |             | FRON |                   |
|   | -    |  |  |   | FRBN |   | FRBN |   | FRBN |   | FRBN |             | FRBN |                   |
| 09F   | NNNN |  |  | 09K   | NNNN | 12S   | NNNN | 12U   | NNNN | 16B   | NNNN | 17H         | NNNN | 000               |
|   | -    |  |  |   | NNNN |   | NNNN |   | NNNN |   | NNNN |             | NNNN |                   |

# 21 Pin Connectors

## M23 Signal Connector Series S

### Receptacle for 21 pin inserts

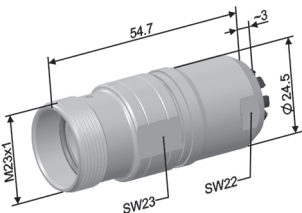
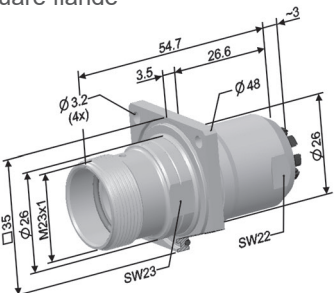
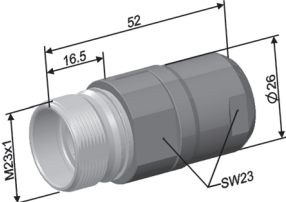
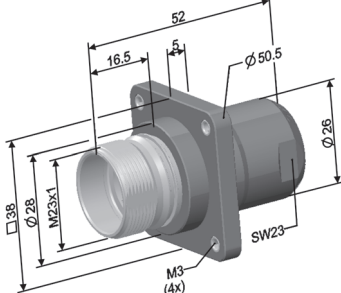
| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR | SHELL | CONTACT STYLE                                   | TERMINATION CROSS SECTION | VIEW MATING FACE |      | CABLE CLAMP |
|--|-------|---|---------------------------|------------------|------|-------------|
|  |       |   |                           | 21A<br>21 x 0.6  |      |             |
| Straight receptacle<br>                        | SFOA  | MACHINED CRIMP PINS                             | AWG 26-22                 | 21A              | MRGN | 000         |
|  |       | MACHINED CRIMP SOCKETS                          | AWG 26-22                 |                  | FRFN |             |
|  |       | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup> | without contacts          |                  | NNNN |             |

Dimensions are in mm

**Note:**

<sup>1)</sup> Machined contacts are shown on page 60-61

## Extensions for 21 pin inserts

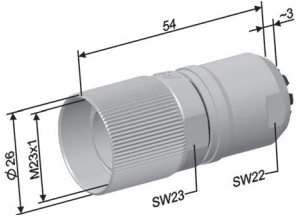
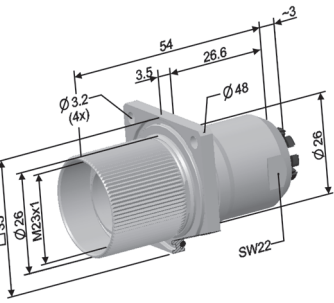
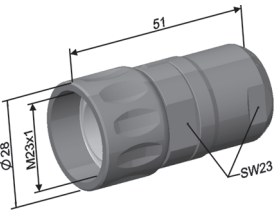
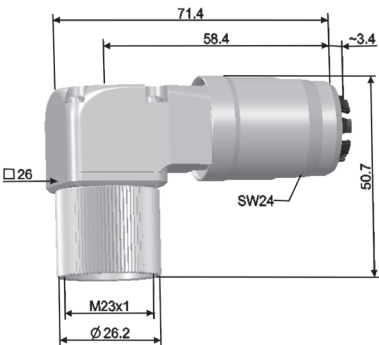
| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR  | SHELL | CONTACT STYLE                                   | TERMINATION CROSS SECTION | 21A<br>21 x 0.6  |      | CABLE CLAMP |
|---|-------|---|---------------------------|------------------|------|-------------|
|   |       |   |                           | VIEW MATING FACE |      |             |
| Extension with cable clamp Ø 5.5-12 mm,<br>  | SRNA  | MACHINED CRIMP PINS                             | AWG 26-22                 | 21A              | MRGN | 16913       |
|   |       | MACHINED CRIMP SOCKETS                          | AWG 26-22                 |                  | FRFN |             |
|   |       | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup> | without contacts          |                  | NNNN |             |
| Extension with cable clamp Ø 5.5-12 mm, square flange<br>                              | SRNA  | MACHINED CRIMP PINS                             | AWG 26-22                 | 21A              | MRGN | 16912       |
|   |       | MACHINED CRIMP SOCKETS                          | AWG 26-22                 |                  | FRFN |             |
|   |       | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup> | without contacts          |                  | NNNN |             |
| Extension plastic shell, with cable specific cable clamps <sup>2)</sup><br>            | SRUC  | MACHINED CRIMP PINS                             | AWG 26-22                 | 21A              | MRGN | ... 09      |
|   |       | MACHINED CRIMP SOCKETS                          | AWG 26-22                 |                  | FRFN |             |
|   |       | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup> | without contacts          |                  | NNNN |             |
| Plug, plastic shell, with cable specific cable clamps <sup>2)</sup> , square flange<br> | SRWC  | MACHINED CRIMP PINS                             | AWG 26-22                 | 21A              | MRGN | ... 04      |
|   |       | MACHINED CRIMP SOCKETS                          | AWG 26-22                 |                  | FRFN |             |
|   |       | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup> | without contacts          |                  | NNNN |             |

Dimensions are in mm

**Note:**

<sup>1)</sup> Machined contacts are shown on page 60-61, <sup>2)</sup> Cable specific cable clamp please contact factory

# Plugs for 21 pin inserts

| LAYOUT DESCRIPTION<br>PART NUMBER CONFIGURATOR   | SHELL | CONTACT STYLE                                   | TERMINATION CROSS SECTION | 21B<br>21 x 0.6  |      | CABLE CLAMP |
|--|-------|---|---------------------------|------------------|------|-------------|
|  |       |   |                           | VIEW MATING FACE |      |             |
| Plug with cable clamp Ø 5.5-12 mm<br>                                     | SPNA  | MACHINED CRIMP PINS                             | AWG 26-22                 | 21B              | MRGN | 16928       |
|  |       | MACHINED CRIMP SOCKETS                          | AWG 26-22                 |                  | FRFN |             |
|  |       | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup> | without contacts          |                  | NNNN |             |
| Plug with cable clamp Ø 5.5-12 mm, square flange<br>                    | SPNA  | MACHINED CRIMP PINS                             | AWG 26-22                 | 21B              | MRGN | 16946       |
|  |       | MACHINED CRIMP SOCKETS                          | AWG 26-22                 |                  | FRFN |             |
|  |       | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup> | without contacts          |                  | NNNN |             |
| Plug, plastic shell, with cable specific cable clamps <sup>2)</sup><br> | SPUC  | MACHINED CRIMP PINS                             | AWG 26-22                 | 21B              | MRGN | ... 12      |
|  |       | MACHINED CRIMP SOCKETS                          | AWG 26-22                 |                  | FRFN |             |
|  |       | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup> | without contacts          |                  | NNNN |             |
| Angled plug with cable clamp Ø 7.7-14.5 mm<br>                           | SPHA  | MACHINED CRIMP PINS                             | AWG 26-22                 | 21B              | MRGN | 17008       |
|  |       | MACHINED CRIMP SOCKETS                          | AWG 26-22                 |                  | FRFN |             |
|  |       | CONTACTS TO BE ORDERED SEPARATELY <sup>1)</sup> | without contacts          |                  | NNNN |             |

Dimensions are in mm








**Note:**

<sup>1)</sup> Machined contacts are shown on page 60-61

<sup>2)</sup> Customized cable clamp please contact factory

# Cable Clamps & Accessories






## M23 Signal Connector Series S

|   |   |   |
|---|---|---|
| <b>Cable clamp no. 169</b>  | <b>Clamp range</b>  |   |
|    | <p>With reducing sleeve from 5.5 – 8.5 mm<br/>Without reducing sleeve from 8 – 12 mm<br/>Can be used for shielded and non-shielded cables</p>           |   |
| <b>Cable clamp no. 170</b>  | <b>Clamp range</b>  |   |
|    | <p>With reducing sleeve from 7.7 – 12 mm<br/>Without reducing sleeve from 11 – 14.5 mm<br/>Can be used for shielded and non-shielded cables</p>         |   |
| <b>Cable clamp no. 260/261/262 for SVPA/SVRA</b>                                    | <b>Clamp range</b>  |   |
|  | <p>.260 cable diameter 5 – 9 mm<br/>.261 cable diameter 9 – 15 mm<br/>.262 cable diameter 16mm<br/>Can be used for shielded and non-shielded cables</p> |   |
| <b>Thread protection cap</b>  | <b>Part number</b>  |   |
|  | <p>031.001053.1000</p>  |   |
| <b>Dust shield caps</b>   | <b>Part number</b>  | <b>Description</b>  |
|  | <p>C/BEL/1</p>  | <p>Dust shield cap for extension and receptacle</p>                   |
|  | <p>C/BEL/7</p>  | <p>Dust shield cap for extension and receptacle with chain 125 mm</p> |
|  | <p>C/BEL/5</p>  | <p>Dust shield cap for plug with chain 125 mm</p>                     |






# Contacts

## M23 Signal Connector Series S

### Machined pins - Series S




| Type                                     |                             | R   | V   | S  | W   | G   |
|--|-----------------------------|---|---|--|---|---|
| Contact diameter [mm]                    |                             | 2   | 2   | 1  | 1   | 0.6   |
| PART NUMBER AND LAYOUT                   |                             | 021.310.1020<br> | 021.356.1020<br> | 021.311.1020<br> | 021.402.1020<br> | 021.072.1020<br> |
| Termination cross section <sup>1)</sup>  | [AWG]<br>[mm <sup>2</sup> ] | 18 – 14<br>0.75 – 2.5   | 22 – 16<br>0.34 – 1.5   | 24 – 18<br>0.24 – 1.0  | 30 – 22<br>0.05 – 0.34  | 26 – 22<br>0.14 – 0.34  |
| Nominal current @ 20°C [A] <sup>2)</sup> | VDE<br>USR<br>CNR           | 20<br>20<br>-   | 20<br>20<br>-   | 9<br>9<br>-  | 9<br>-<br>-   | 3<br>-<br>-   |
| Crimping tool                            |                             | B179  | B151  | B150   | B150  | B150  |
| Positioner                               |                             | B201  | B201  | B055/A   | B055/A  | B378  |

### Hypertac® sockets - Series S

| Type                                    |                             | R   | M   | O  | B   | F   |
|---|-----------------------------|---|---|--|---|---|
| Contact diameter [mm]                   |                             | 2   | 2   | 1  | 1   | 0.6   |
| PART NUMBER AND LAYOUT                  |                             | 020.315.1020<br> | 020.263.1020<br> | 020.256.1020<br> | 020.353.1020<br> | 020.060.1020<br> |
| Termination cross section <sup>1)</sup> | [AWG]<br>[mm <sup>2</sup> ] | 20 - 16<br>0.5 - 1.5  | 18 - 14<br>0.75 - 2.5   | 24 - 18<br>0.24 - 1.0  | 30 - 22<br>0.05 - 0.34  | 26 - 22<br>0.14 - 0.34  |
| Nominal current @ 20°C [A]              | VDE<br>USR<br>CNR           | 20<br>20<br>-   | 20<br>20<br>-   | 9<br>9<br>-  | 9<br>9<br>-   | 3<br>-<br>-   |
| Crimping tool                           |                             | B151  | B151  | B150   | B150  | B151  |
| Positioner                              |                             | B201  | B201  | B055/A   | B055/A  | B378  |

**Note:**  
<sup>1)</sup> Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm<sup>2</sup>] acc. to DIN VDE 0281/0282 pp and with non compressed standard cables and wires acc. to DIN VDE 0295. It is possible that due to another structure of wired further cross sections and currents can be processed. <sup>2)</sup> data only valid when plugged with Hypertac sockets.

## Machined pins - Series S (for receptacles IP67 unmated)

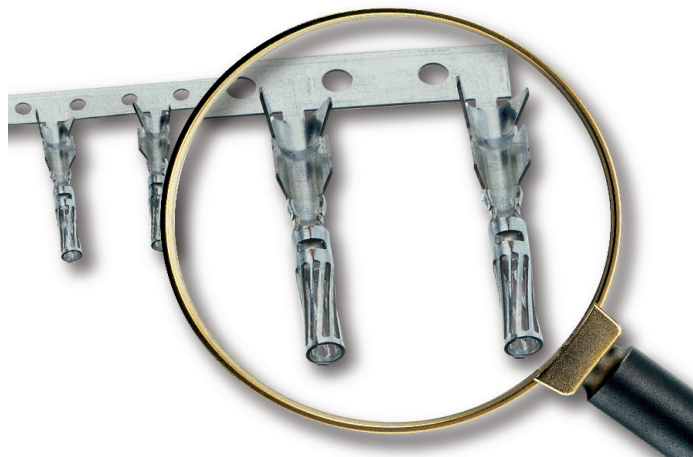
| Type                                     |                             | A   | E   | M   |
|--|-----------------------------|---|---|---|
| Contact diameter [mm]                    |                             | 1   | 1   | 1   |
| PART NUMBER AND LAYOUT                   |                             |  |  |  |
|  |                             | 021.029.1020  | 021.129.1020  | 021.165.1020  |
| Termination cross section <sup>1)</sup>  | [AWG]<br>[mm <sup>2</sup> ] | 26 - 22<br>0.14 - 0.34  | 24 - 18<br>0.24 - 1.0   | 24 - 18<br>0.24 - 1.0   |
| Nominal current @ 20°C [A] <sup>2)</sup> | VDE                         | 9   | 9   | 9   |
|  | USR                         | 8   | 8   | 8   |
|  | CNR                         | 7   | 7   | 7   |
| Crimping tool                            |                             | B150  | B150  | B150  |
| Positioner                               |                             | B055/A  | B055/A  | B055/A  |

**Note:**

<sup>1)</sup> Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm<sup>2</sup>] acc. to DIN VDE 0281/0282 pp and with non compressed standard cables and wires acc. to DIN VDE 0295. It is possible that due to another structure of wired further cross sections and currents can be processed. <sup>2)</sup> data only valid when plugged with Hypertac sockets.

# HCS™ Contacts

## Stamped Hyperboloid Contacts on Reels



The HCS™ contact (Hyperboloid Contact Stamped) is the advanced evolution of the machined HYPERTAC® Hyperboloid Contact Technology that is ideal for higher volume applications requiring a fully automated process.

The demand for lower cost hyperboloid contacts led Smiths Connectors to the development of the stamped/rolled HCS contact, that is supplied on a reel and features an open crimp barrel design.

For all variations, the wire cage has the same design characteristics. In the contact area all single contact flaps are made in a circle shape which guarantees "wire quality". The HCS contacts on reels for crimping machines with automatic feeder lines are fully compatible with our machined Hypertac® hyperboloid contacts.

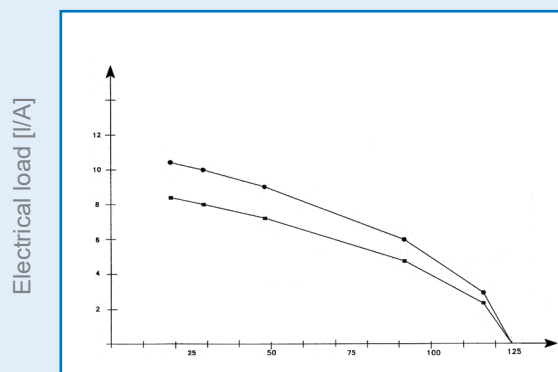
Vibration test acc. to DIN EN 60512/item4 35g X/Y/Z sinusoidal for 50h each without contact interrupts and without any change in contact resistance [ $<5\text{m}\Omega$ ].

Smiths Connectors offers a full service for crimping tools:

- Applicators for all typical crimp devices
- Hand crimping tools for field installation

### Electrical load HCS™ Ø 1 mm

Derating curve acc. DIN IEC 512/item3 (in air)



Environmental temperature [Te/°C]

## Stamped Hyperboloid Contacts

### Features & Benefits

- Favourable price
- Fully automatic processable
- Reduced assembly time
- High reliability wire B-crimp
- Additional insulation crimp
- Intermateable with machined round contacts

### Specifications

#### Materials

Body: Tin-bronze

Plating: partly gold plated

Sleeve: stainless steel (sockets)

#### Crimp Geometry

Wire crimp: B-Crimp

Insulation crimp: O-Crimp

#### Mechanical

Operating Temperature:  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$

Insertion/extraction force:  $<4\text{ N}$





#### Electrical

Contact resistance:  $<5\text{ m}\Omega$





**Note:**

HCS™ is a registered Trademark of Smiths Interconnect

## HCS™ stamped sockets - Series S

| Type  |                           | A   | B   | C   | D   |
|---|---------------------------|---|---|---|---|
| Contact diameter [mm]                               |                           | 1   | 1   | 1   | 1   |
| PART NUMBER AND LAYOUT                              |                           | 020.000376.2000  | 020.000377.2000  | 020.000378.2000  | 020.000379.2000  |
| Termination cross section <sup>1)</sup>             | AWG<br>[mm <sup>2</sup> ] | 32 – 28<br>0.03 – 0.08  | 28 – 24<br>0.08 – 0.2   | 24 – 20<br>0.2 – 0.5  | 0.75 – 1.0  |
| Max. nominal current @ 20°C [A]                     | VDE<br>USR<br>CNR         | 4<br>9<br>-   | 6<br>9<br>-   | 8<br>9<br>-   | 8<br>9<br>-   |
| Hand crimping tool with feeder line for small reels |                           | B287/32-28  | B287/28-24  | B287/24-20  | B287/0.75-1   |
| Applicator for Schäfer/AMP crimping machine         |                           | B288/32-28  | B288/28-24  | B288/24-20  | B288/0.75-1   |
| Applicator for Kirsten PP3 crimping machine         |                           | B286/32-28  | B286/28-24  | B286/24-20  | B286/0.75-1   |
| Number of contacts on reel                          | [Pieces]                  | 9000  | 9000  | 9000  | 9000  |
| Number of contacts on small reel                    | [Pieces]                  | 300   | 300   | 300   | 300   |

## HCS™ stamped pins - Series S

| Type  |                           | A   | B   | C   | D   |
|---|---------------------------|---|---|---|---|
| Contact diameter [mm]                               |                           | 1   | 1   | 1   | 1   |
| PART NUMBER AND LAYOUT                              |                           | 021.001005.1025  | 021.001006.1025  | 021.001007.1025  | 021.001008.1025  |
| Termination cross section <sup>1)</sup>             | AWG<br>[mm <sup>2</sup> ] | 32 – 28<br>0.03 – 0.08  | 28 – 24<br>0.08 – 0.2   | 24 – 20<br>0.2 – 0.5  | 0.75 – 1.0  |
| Max. nominal current @ 20°C [A]                     | VDE<br>USR<br>CNR         | 4<br>9<br>-   | 6<br>9<br>-   | 8<br>9<br>-   | 8<br>9<br>-   |
| Hand crimping tool with feeder line for small reels |                           | B287/32-28  | B287/28-24  | B287/24-20  | B287/0.75-1   |
| Applicator for Schäfer/AMP crimping machine         |                           | B288/32-28  | B288/28-24  | B288/24-20  | B288/0.75-1   |
| Applicator for Kirsten PP3 crimping machine         |                           | B286/32-28  | B286/28-24  | B286/24-20  | B286/0.75-1   |
| Number of contacts on reel                          | [Pieces]                  | 9000  | 9000  | 9000  | 9000  |
| Number of contacts on small reel                    | [Pieces]                  | 300   | 300   | 300   | 300   |

**Note:**


<sup>1)</sup> Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm<sup>2</sup>] acc. to DIN VDE 0281/0282 pp and with not compressed standard cables and wires acc. to DIN VDE 0295. It is possible that due to another structure of wired further cross sections and currents can be processed.

# Tools

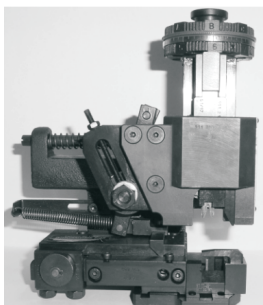
## Crimping tools for machined Contacts

| Hand crimping tools   | Part number   |
|---|---|
|  <p>A hand crimping tool with blue handles and a blue body. It features a circular dial with numbers 1 through 7 and a 'SEL.' label. Text on the tool includes 'PUSH POSITIONER AND RAISE TO ROTATE', 'DMC-USA CAGE 11851', and 'NO.'.</p> | B150  |
|  <p>A hand crimping tool with blue handles and a blue body. It features a circular dial with numbers 1 through 7 and a 'SEL.' label. Text on the tool includes 'DMC-USA CAGE 11851', 'RAISE TO ROTATE', and 'NO.'.</p>                   | B151  |
|  <p>A hand crimping tool with black handles and a red body. It features a circular dial with numbers 1 through 7 and a 'SEL.' label. Text on the tool includes 'DMC-USA CAGE 11851', 'RAISE TO ROTATE', and 'NO.'.</p>                  | B179  |
| Crimp accessories   | Part number   |
|  <p>A cylindrical metal gauge with a green handle and a red handle. Text on the gauge includes 'CAGE 11851'.</p>   | <b>MASTER GAUGE</b><br>B190 (for B150 and B151)<br>B230 (for B179)                          |
|  <p>A cylindrical metal positioner with a red band.</p>  | <b>POSITIONER</b><br>B154, B157, B165,<br>B201, B245, B252, B297,<br>B305, B306, B341, B378 |
|  <p>A metal positioner with a spring mechanism.</p>  | <b>POSITIONER</b><br>B055/A   |

## Crimping tools for stamped HCS™ contacts

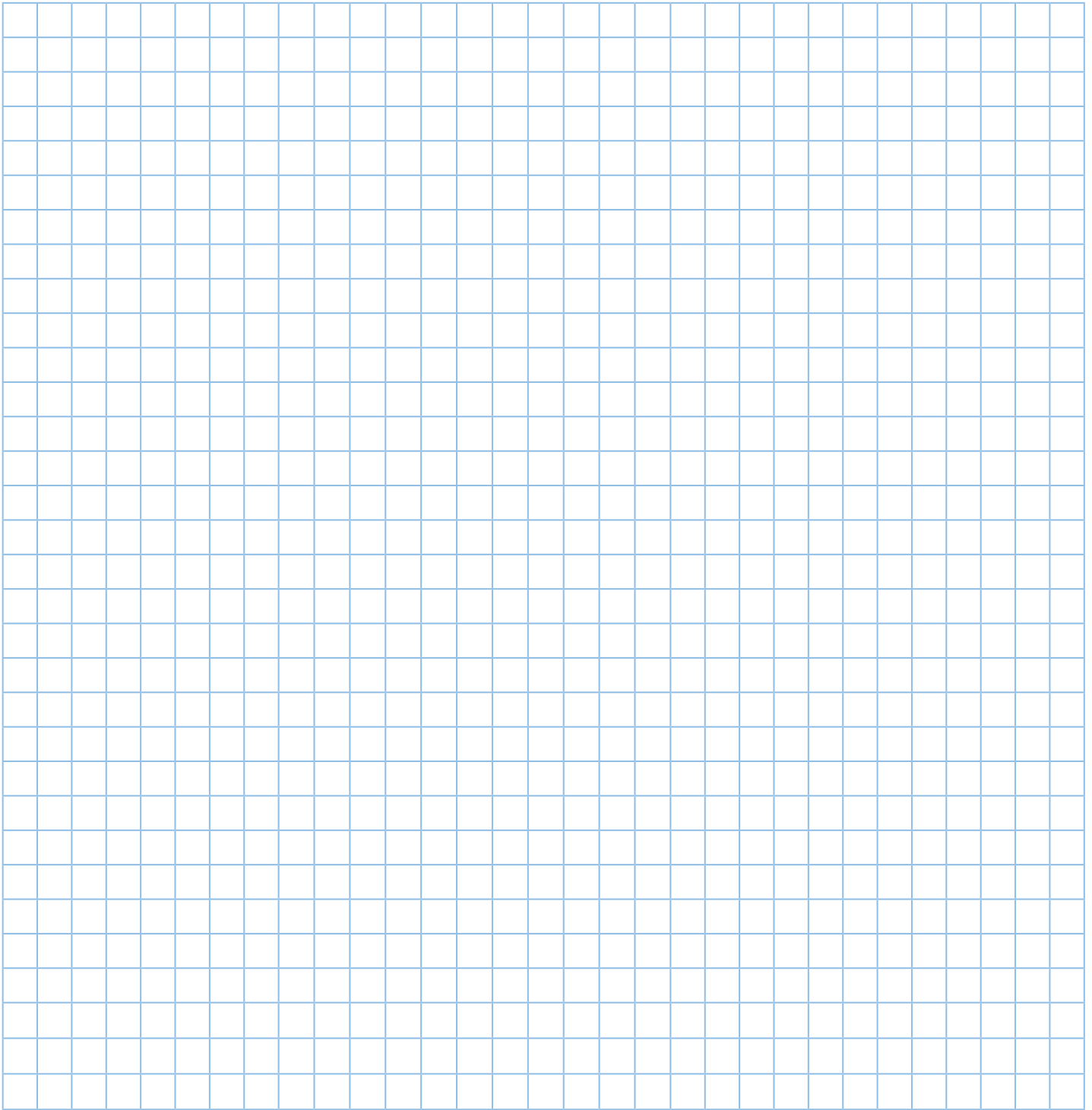
| Hand crimping tool with feeder line for small reels                               | Termination cross section   | Part number   |
|---|---|---|
|  | <b>Ø 1 mm CONTACTS</b><br>0.032–0.08 mm <sup>2</sup> , AWG 32-28<br>0.08–0.20 mm <sup>2</sup> , AWG 28-24<br>0.20–0.52 mm <sup>2</sup> , AWG 24-20<br>0.75–1.00 mm <sup>2</sup> | <b>Ø 1 mm CONTACTS</b><br>B287/32-28<br>B287/28-24<br>B287/24-20<br>B287/0.75-1 |
|   | <b>Ø 2 mm CONTACTS</b><br>0.50–1.00 mm <sup>2</sup> , AWG 20-18<br>1.00–2.00 mm <sup>2</sup> , AWG 18-14  | <b>Ø 2 mm CONTACTS</b><br>B295/0.5-1.0<br>B295/1.0-2.0                          |

| Hand crimping tool for discrete contacts   | Termination cross section                                   | Part number                          |
|--|---|--------------------------------------|
|  | <b>Ø 2 mm CONTACTS</b><br>2.50–4.00 mm <sup>2</sup> , AWG12 | <b>Ø 2 mm CONTACTS</b><br>B295/2.5-4 |

| Applicators for crimping machines with feeder line   | Termination cross section   | Part number   |
|--|---|---|
| Schäfer/AMP<br> | <b>Ø 1 mm CONTACTS</b><br>0.032–0.08 mm <sup>2</sup> , AWG 32-28<br>0.08–0.20 mm <sup>2</sup> , AWG 28-24<br>0.20–0.52 mm <sup>2</sup> , AWG 24-20<br>0.75–1.00 mm <sup>2</sup> | <b>Ø 1 mm CONTACTS</b><br>B288/32-28<br>B288/28-24<br>B288/24-20<br>B288/0.75-1 |
|  | <b>Ø 2 mm CONTACTS</b><br>0.50–1.00 mm <sup>2</sup> , AWG 20-18<br>1.00–2.00 mm <sup>2</sup> , AWG 18-14<br>2.50–4.00 mm <sup>2</sup> , AWG12                                   | <b>Ø 2 mm CONTACTS</b><br>on demand<br>on demand<br>on demand                   |

## Insertion and extraction tools

| Insertion tools for insulators  | Part number               | Connector layout  | Contact  |
|---|---------------------------|---|----------|
|    | B091                      | <b>Power</b><br>LEAB  | NA       |
|     | B116                      | <b>Signal</b><br>SDBA   | NA       |
| Insertion tools for contacts  | Part number               | Connector layout  | Contact  |
|     | B117                      | <b>Power Innovation:</b> Plugs, Extensions, Receptacles, Panel Feed Through<br><b>Power System 2000, Version 1i:</b> Receptacles                                    | Ø 2 mm   |
|     | B118                      | <b>Power Innovation:</b> Plugs, Extensions, Receptacles, Panel Feed Through<br><b>Power System 2000, Version 1i:</b> Receptacles<br><b>Signal:</b> Receptacles IP67 | Ø 1 mm   |
|    | S/MONT/1/0060             | <b>Signal:</b> Plugs, Receptacles, Extensions 21way   | Ø 0.6 mm |
| Extraction tools for insulators   | Part number               | Connector layout  | Contact  |
|   | B202                      | <b>Signal:</b> Receptacles with 2part insulators for crimp contacts   | NA       |
|   | B116                      | <b>Signal:</b> Panel Feed Through with 2part insulator for crimp contacts, Receptacles with solder contacts   | NA       |
|   | B186                      | <b>Signal:</b> Receptacles 21way  | NA       |
| Extraction tools for contacts   | Part number               | Connector layout  | Contact  |
|   | B132                      |   |          |
|  | B037A<br>(B132 + B037/10) | <b>Power Innovation:</b> Receptacles, Extensions, <b>Power System 2000, Version 1i:</b> Receptacles   | Ø 2 mm   |
|  | B038A<br>(B132 + B038/10) | <b>Power Innovation:</b> Receptacles, Extensions, <b>Power System 2000, Version 1i:</b> Receptacles<br><b>Signal:</b> Receptacles IP67                              | Ø 1 mm   |
|  | B056A<br>(B132 + B056/10) | <b>Power Innovation:</b> Plugs, Panel Feed Through  | Ø 1 mm   |
|  | S/DEM/6/0060              | <b>Signal:</b> Plugs, Receptacles, Extensions 21way   | Ø 0.6 mm |



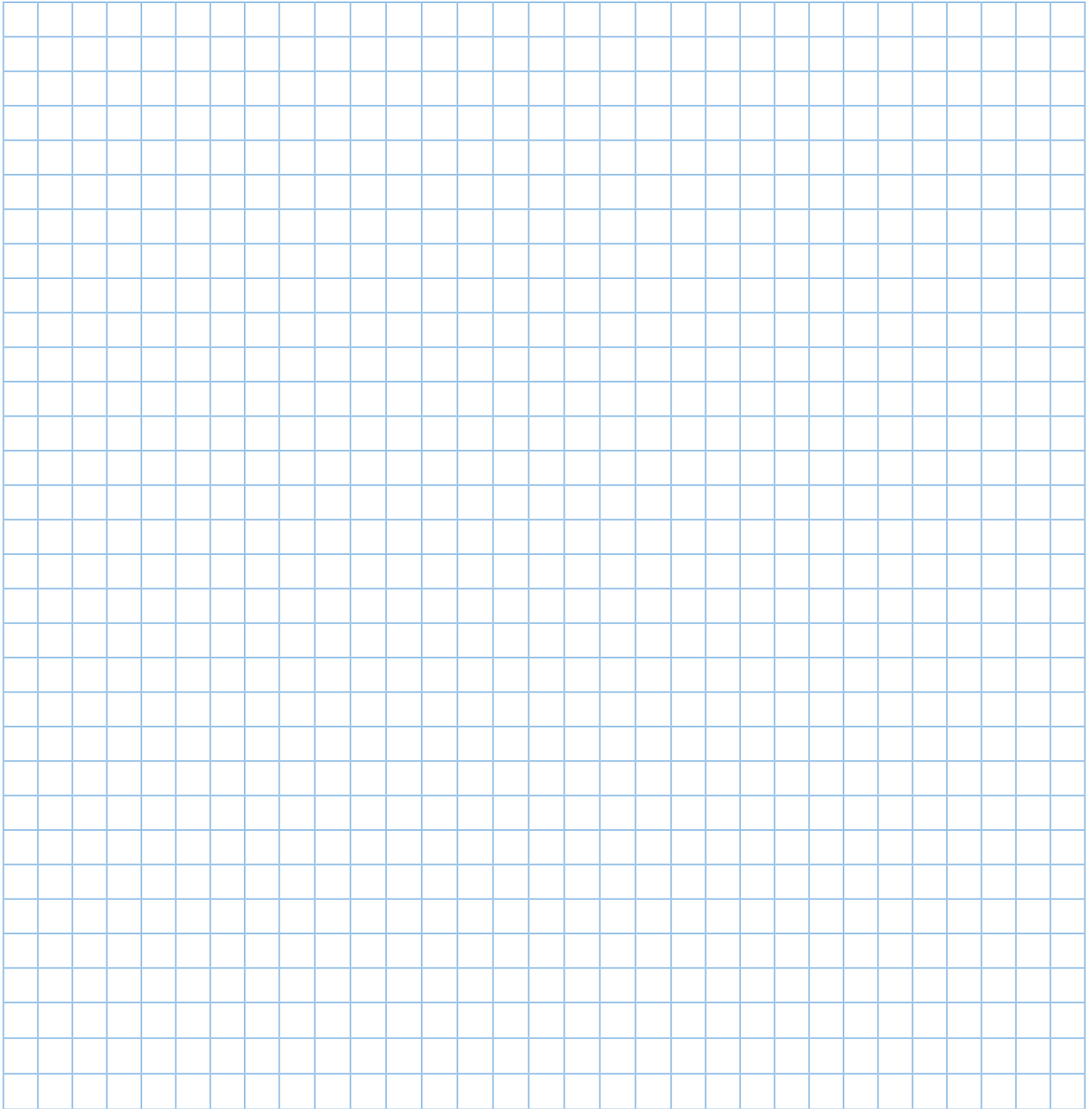
**Notes:**

---

---

---

---



**Notes:**

---

---

---

---

## Disclaimer 2026

All of the information included in this catalogue is believed to be accurate at the time of printing. It is recommended, however, that users should independently evaluate the suitability of each product for their intended application and be sure that each product is properly installed, used and maintained to achieve desired results.

Smiths Interconnect makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use.

Smiths Interconnect reserves the right to modify design and specifications, in order to improve quality, keep pace with technological development or meet specific production requirements.

No reproduction or use without express permission of editorial and pictorial content, in any manner.

# Worldwide Support

## Connectors

### Americas

#### Sales

connectors.uscsr@smithsinterconnect.com

#### Technical Support

connectors.ustechsupport@smithsinterconnect.com

### Europe

#### Sales

connectors.emeacsr@smithsinterconnect.com

#### Technical Support

connectors.emeatechsupport@smithsinterconnect.com

### Asia

#### Sales

asiacsr@smithsinterconnect.com

#### Technical Support

asiatechsupport@smithsinterconnect.com

## Fibre Optics & RF Components

### Americas

#### Sales

focom.uscsr@smithsinterconnect.com

#### Technical Support

focom.techsupport@smithsinterconnect.com

### Europe

#### Sales

focom.emeacsr@smithsinterconnect.com

#### Technical Support

focom.techsupport@smithsinterconnect.com

### Asia

#### Sales

focom.asiacsr@smithsinterconnect.com

#### Technical Support

focom.techsupport@smithsinterconnect.com

## Semiconductor Test

### Americas

#### Sales

semi.uscsr@smithsinterconnect.com

#### Technical Support

semi.techsupport@smithsinterconnect.com

### Europe

#### Sales

semi.emeacsr@smithsinterconnect.com

#### Technical Support

semi.techsupport@smithsinterconnect.com

### Asia

#### Sales

semi.asiacsr@smithsinterconnect.com

#### Technical Support

semi.techsupport@smithsinterconnect.com

# Connecting Global Markets

[more > smithsinterconnect.com](#) | [in](#) [X](#) [v](#)

Copyright© 2026 Smiths Interconnect, a Molex company | All rights reserved | Version 9.0

All of the information included in this catalogue is believed to be accurate at the time of printing.

The information contained within this document is subject at all times to applicable Export Control regulations and legal requirements.