

M23 Industrial

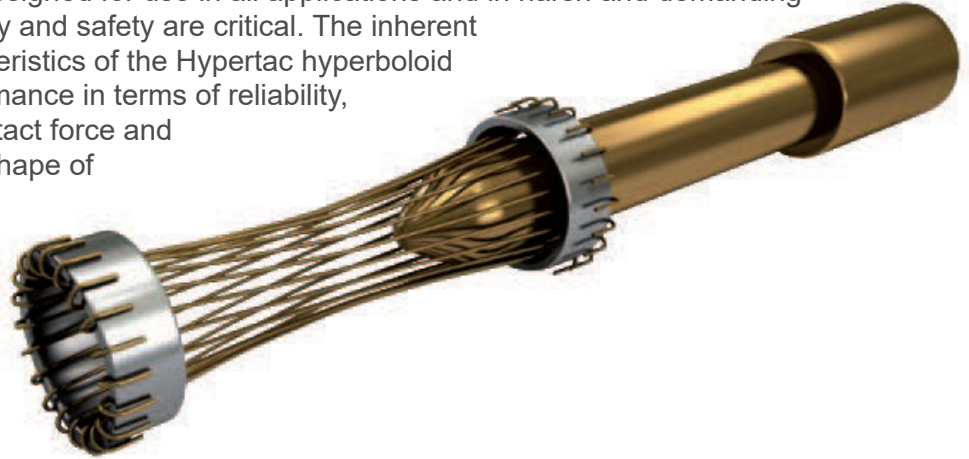
Series L & Series S

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>Low insertion/extraction forces</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>High density interconnect systems</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>Long contact life</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>Low cost of ownership</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>Lower contact resistance</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>Low power consumption</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>Higher current ratings</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>Maximum contact performance</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>Immunity to shock & vibration</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>Reliability under harsh environments</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> |

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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

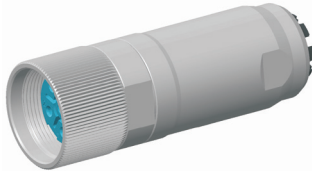
- Can accept cable diameter from 5 to 18.5 mm

UL certified

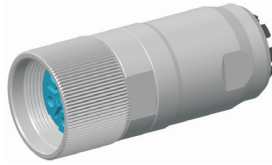
- UL/CSA approval file No. 178462

Type Overview

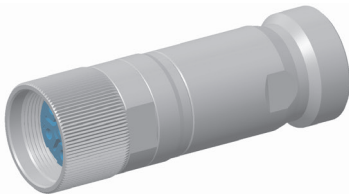
M23 Power Connectors Series L



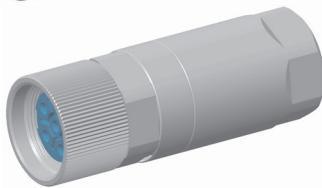
Cable plug with coupling ring



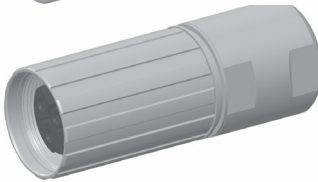
Cable plug with coupling ring



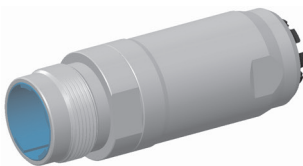
Cable plug with coupling ring



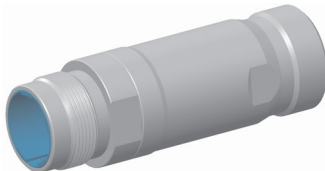
Cable plug with coupling ring



Cable plug with coupling ring



Cable extension with external thread



Cable extension with external thread



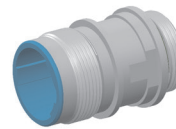
Cable extension with external thread



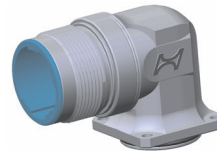
Straight receptacle with external thread



Straight receptacle with external thread



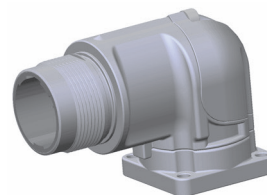
Straight receptacle with external thread



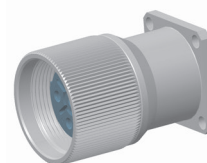
Fixed angled Straight receptacle with external thread



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

| | | | | |
|-------------------------|---|---|--|-------------|
| Contact diameter |  |  |  | |
| | 6 x 2 | 4 x 2 | 4 x 1 | 4 x 2 5 x 1 |

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

INNOVATION Series L (UL Version Series A)

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

SYSTEM 2000 Series L (UL Version Series A)

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

VERSION 1i Series L

| | | | | | |
|-------------------------------|-----|-----|-----|---|--------------|
| Nominal voltage [Vrms] | 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

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

SYSTEM 2000

| | | | |
|---|---|---|---|
| E | O | B | ROTATABLE ANGLED RECEPTACLE, CHROMIUM-PLATED |
| F | E | A | STRAIGHT RECEPTACLE, NICKEL-PLATED SHORT VERSION |

VERSION 1i

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

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

| | | | |
|---|---|---|--|
| R | L | A | EXTENSION, NICKEL-PLATED, CABLE CLAMP Ø 7.7-18.5 mm |
| P | L | A | PLUG, NICKEL-PLATED, CABLE CLAMP Ø 7.7-18.5 mm |

| | | | |
|---|---|---|---|
| V | L | A | PLUG, NICKEL-PLATED, MACHINED SOCKETS, CABLE CLAMP Ø 5-16 mm |
|---|---|---|---|

3 INSERTS

INNOVATION

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

VERSION 1i

| | | | |
|---|---|---|--|
| 0 | 6 | E | 6WAY, PINS 6 x Ø 2 mm, MACHINED CONTACTS |
| 0 | 6 | J | 6WAY, PINS 6 x Ø 2 mm, MACHINED CONTACTS |
| 0 | 6 | M | 6WAY, SOCKETS 6 x Ø 2 mm, MACHINED CONTACTS |

| | | | |
|---|---|---|--|
| 0 | 8 | A | 8WAY, PINS 4 x Ø 1 mm, 4 x Ø 2 mm, MACHINED CONTACTS |
| 0 | 8 | B | 8WAY, SOCKETS 4 x Ø 1 mm, 4 x Ø 2 mm, MACHINED CONTACTS |

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

| | | | |
|---|---|---|--|
| 0 | 8 | T | 8WAY, PINS 4 x Ø 1 mm, 4 x Ø 2 mm, MACHINED CONTACTS |
| 0 | 8 | X | 8WAY, PINS 4 x Ø 1 mm, 4 x Ø 2 mm, MACHINED CONTACTS |
| 0 | 8 | Z | 8WAY, SOCKETS 4 x Ø 1 mm, 4 x Ø 2 mm, 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


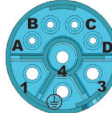
| | |
|---|---|
| 0 | 1 |
|---|---|

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

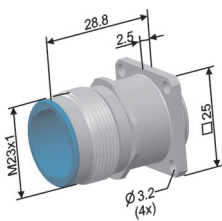
Available Connectors

M23 Power Connector Series L

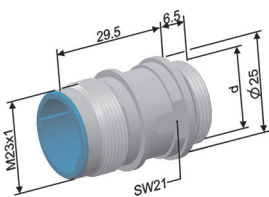
Power Receptacles - Innovation

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

Straight receptacle, long version

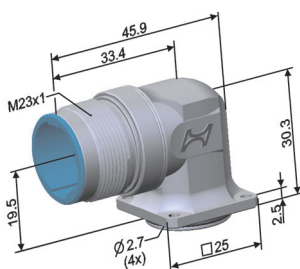


Straight receptacle, threaded connection



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

Fixed angled receptacle



Dimensions are in mm

* UL Version

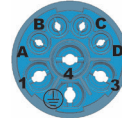
Power Receptacles - System 2000

CONTACT ARRANGEMENTS
VIEW MATING FACE

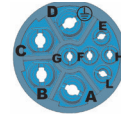
LAYOUT
DESCRIPTION
PART NUMBER CONFIGURATOR



06C



08K

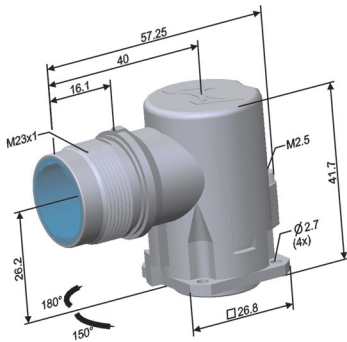


09A

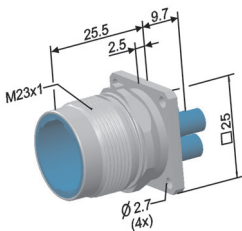
TERMINATION CROSS SECTION

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

Rotatable angled receptacle




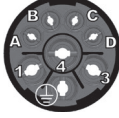
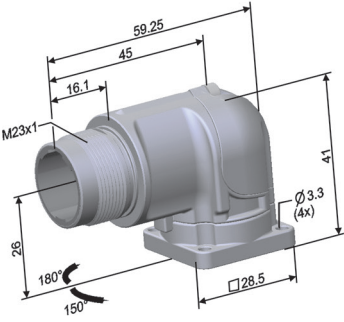
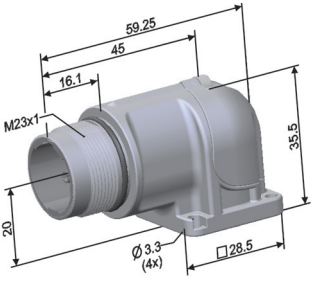
Straight receptacle, short version



Dimensions are in mm

* UL Version

Power Receptacles - System 2000

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

Dimensions are in mm

* UL Version

Power Extensions - Innovation

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

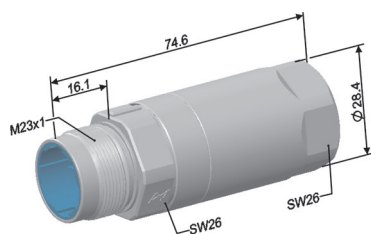
Dimensions are in mm

* UL Version

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

Power Extension - System 2000


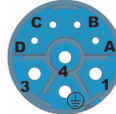
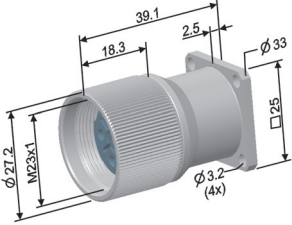
| CONTACT ARRANGEMENTS VIEW MATING FACE | SHELL | INSERT | 09A | | CABLE CLAMP |
|--|---------------|--------|------------------------------|------------------|-------------|
| | | | TERMINATION CROSS SECTION | | |
| | | | AWG 22-18/16 AWG 18-14/12 | without contacts | |
| LAYOUT DESCRIPTION PART NUMBER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



Dimensions are in mm

* UL Version


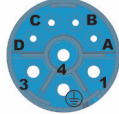
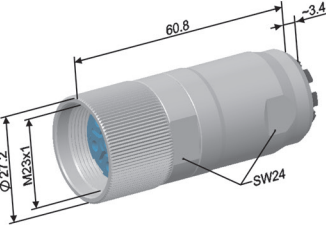
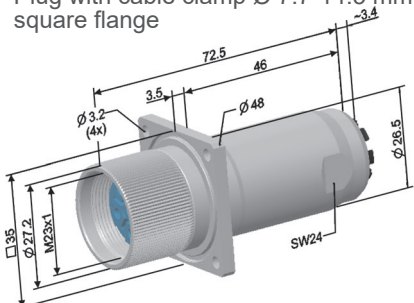
Power Panel Feed Through - Innovation

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

Dimensions are in mm

* UL Version

Power Plugs - Innovation

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

Dimensions are in mm

* UL Version

Note:

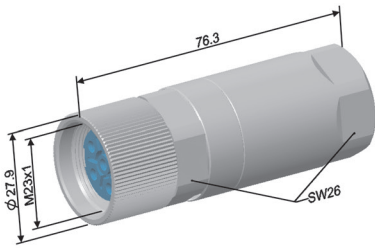
¹⁾ Terminals with insulation sleeve

Power Plugs - System 2000

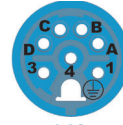
CONTACT ARRANGEMENTS
VIEW MATING FACE

LAYOUT
DESCRIPTION
PART NUMBER CONFIGURATOR

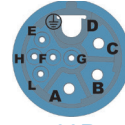
Plug with cable clamp Ø 7.7-18.5 mm



06D



08L



09B



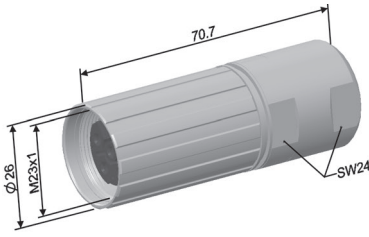
TERMINATION CROSS SECTION

| SHELL | INSERT | TERMINATION CROSS SECTION | | | | | | | | CABLE CLAMP | | |
|---------------|--------|---------------------------|-----------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------|------------------|------|
| | | AWG 18-14 | AWG 18-12 | AWG 24-18 AWG 18-14 | AWG 24-18 AWG 18-12 | AWG 26-16 AWG 18-14 | AWG 26-16 AWG 18-12 | AWG 24-18 AWG 18-14 | AWG 26-16 AWG 18-12 | | without contacts | |
| LPLA APLA* | 06D | FRON | | | | | | | | | 213 | |
| | | | 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 VIEW MATING FACE | | |  06M | |  08Z | | CABLE CLAMP | | |
|--|---------------------------|--------|---|-----------|--|------------------------|-------------------|------------------|------|
| | TERMINATION CROSS SECTION | | | | | | | | |
| | SHELL | INSERT | AWG 18-14 | AWG 14-12 | AWG 24-18 AWG 18-14 | AWG 24-18 AWG 14-12 | | without contacts | |
| LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR Plug with cable clamp Ø 5-16 mm, machined sockets  Flange can be ordered separately ¹⁾ | LVLA* | 06M | FRHN | | | | 260 261 262 | | |
| | | | | FRUN | | | | NNNN | |
| | | 08Z | | | | FRFH | | | |
| | | | | | | | | FRFU | |
| | | | | | | | | | NNNN |

Dimensions are in mm

* UL Version


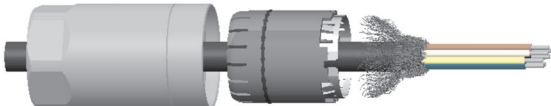




Note:

¹⁾ more information please contact factory

²⁾ 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 Without reducing sleeve from Ø 11–14.5 mm 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 Thickness of shielding up to Ø 1 mm 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 |


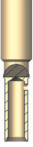


Contacts

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 ¹⁾ | [AWG] [mm ²] | 24 – 18 0.24 – 1 | 20 – 16 0.5 – 1.5 | 18 – 14 0.75 – 2.5 | 16 – 14 1.5 – 2.5 |
| Nominal current @ 20°C [A] ²⁾ | 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[®] Sockets - Innovation


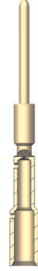



| Type | | K | B | D | H |
|---|-----------------------------|---|---|---|---|
| Contact diameter [mm] | | 1 | 2 | 2 | 2 |
| PART NUMBER AND LAYOUT | |  |  |  |  |
| | | 020.232.2000 | 020.090.1020 | 020.105.1020 | 020.123.1020 |
| Termination cross section ¹⁾ | [AWG] [mm ²] | 24 – 18 0.24 – 1 | 20 – 16 0.5 – 1.5 | 18 – 14 0.75 – 2.5 | 18 – 14 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:





¹⁾ Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm²] 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.

²⁾ 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  | 021.385.1020  | 021.380.1020  | 021.415.1020  | 021.384.1020  |
| Termination cross section ¹⁾ | [AWG] [mm ²] | 24 – 18 0.24 – 1 | 22 – 18/16 0.34 – 1/1.5 | 18 – 14 0.75 – 2.5 | 12 4 | 18 – 14/12 0.75 – 2.5/4 |
| Nominal current @ 20°C [A] ²⁾ | VDE | 9 | 9 | 30 | 30 | 30 |
| | USR | 9 | 9 | 30 | 30 | 30 |
| | CNR | 7.5 | 7.5 | 18 | 18 | 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  | 020.332.1020  | 020.331.1020  | 020.281.1020  |
| Termination cross section ¹⁾ | [AWG] [mm ²] | 24 – 18 0.24 – 1 | 26 - 16 0.14 – 1.5 | 18 – 14 0.75 – 2.5 | 18 – 12 1 – 4 |
| Nominal current @ 20°C [A] | VDE | 9 | 9 | 30 | 30 |
| | USR | 9 | 9 | 30 | 30 |
| | CNR | 7.5 | 7.5 | 18 | 18 |
| Crimping tol | | B150 | B151 | B151 | B179 |
| Positioner | | B055/A | B252 | B252 | B252 |





Note:

¹⁾ Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm²] 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.

²⁾ data only valid when plugged with Hypertac sockets.

Machined Pins - Version 1i


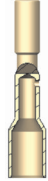

| Type | | R | W | L | Z |
|--|-----------------------------|---|--|--|--|
| Contact diameter [mm] | | 1 | 2 | 2 | 2 |
| PART NUMBER AND LAYOUT | | 021.382.1020  | 021415.1020  | 021.001009.1020  | 021.001004.1020  |
| Termination cross section ¹⁾ | [AWG] [mm ²] | 24 – 18 0.24 – 1.0 | 12 4 | 24 – 16 0.24 – 1.5 | 16 – 14 1.5 – 2.5 |
| Nominal current @ 20°C [A] ²⁾ | VDE USR CNR | 9 9 7.5 | 30 30 18 | 30 30 - | 30 30 - |
| 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  | 021.001025.1020  | 021.001018.1020  |
| Termination cross section ¹⁾ | [AWG] [mm ²] | 24 - 16 0.24 - 1.5 | 22 - 16 0.34 - 1.5 | 16 - 12 1.5 - 4 |
| Nominal current @ 20°C [A] ²⁾ | VDE USR CNR | 9 8 - | 30 30 - | 30 30 - |
| Crimping tool | | B151 | B151 | B179 |
| Positioner | | B306 | B305 | B305 |

Note:
¹⁾ Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm²] 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.
²⁾ 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 ¹⁾ | [AWG] [mm ²] | 24 – 18 0.24 – 1 | 18 – 14 0.75 – 2.5 | 14 – 12 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:

¹⁾ Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm²] 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 ¹⁾ | [AWG] [mm²] | 32 – 28 0.03 – 0.08 | 28 – 24 0.08 – 0.2 | 24 – 20 0.2 – 0.5 | - 0.75 - 1.0 |
| | Nominal current @ 20°C [A] | VDE USR CNR | 4 9 - | 6 9 - | 8 9 - | 8 9 - |
| | 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 2mm - 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 ¹⁾ | [AWG] [mm²] | 20 - 18 0.5 - 1.0 | 18 - 14 1.0 - 2.0 | - 2.5 - 4.0 |
| | Nominal current @ 20°C [A] | VDE USR CNR | 12 12 - | 18 18 - | 30 30 - |
| | 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 | |

Note:
¹⁾ Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm²] 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

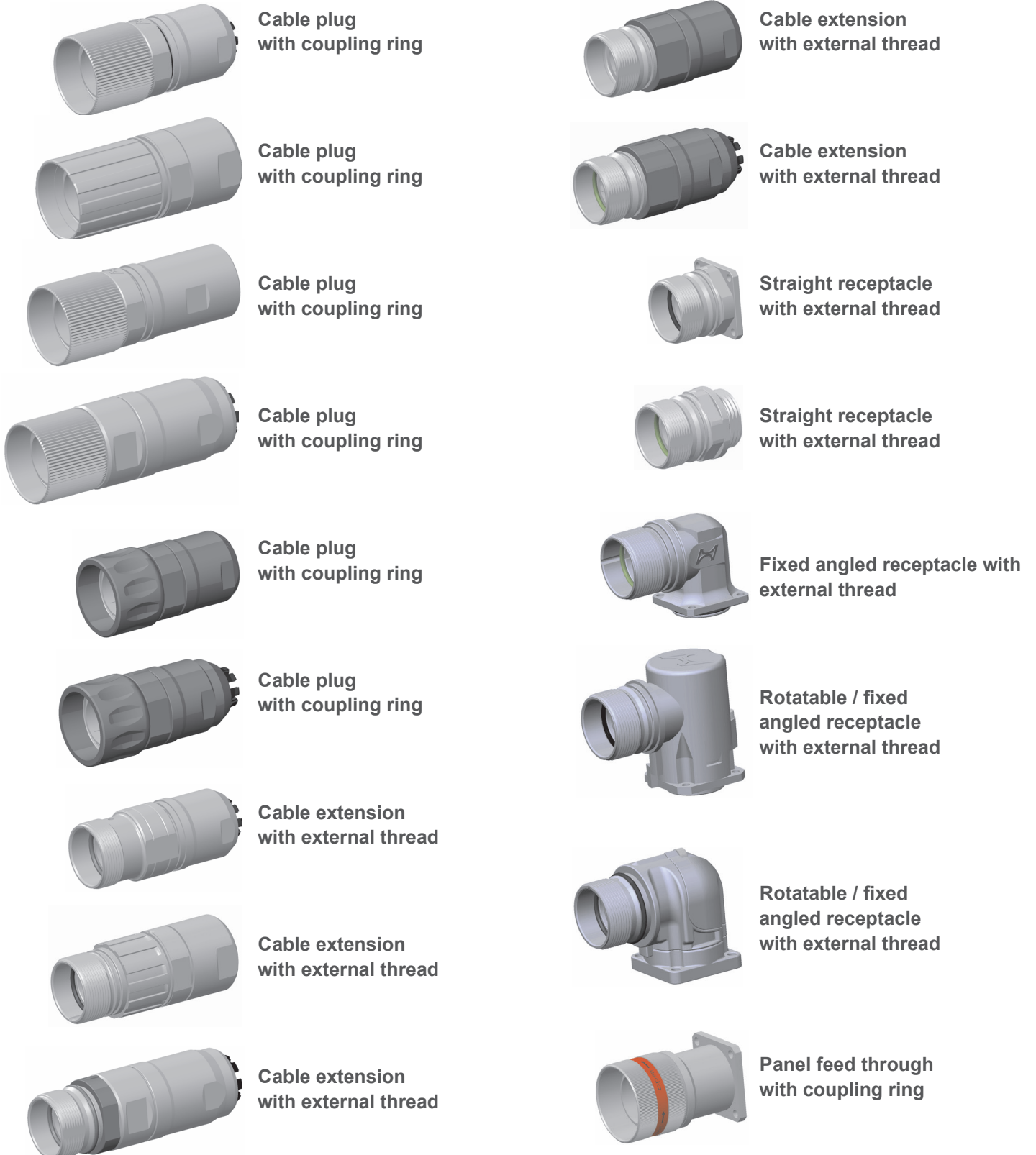
Robotics



- 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

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

Material

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

Finishes

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

Electrical

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



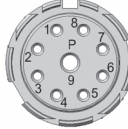



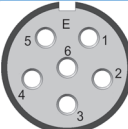
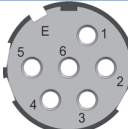
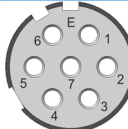
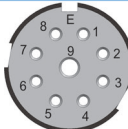
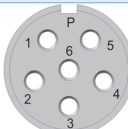
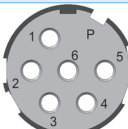
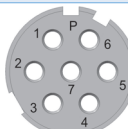
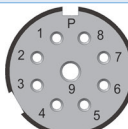
Physical and Environmental

| | | |
|------------------------------------|------------------------------------|--------------|
| 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 | 3 | DIN 60664-1 |
| Installation altitude | up to 2000 m | EN 61984 |
| Fire & Smoke | Recognition file No E 178462 | UL 1977 |
| RoHS | 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 1 x 2 |
|--|------------------------------|---|--|---|---|
| INSERTS FOR PLUGS AND PANEL FEED THROUGH CRIMP CONTACTS | | |  |  |  |
| | | | 06H | 07D | 09F |
| Part number | | | 030.704.2000 | 030.637.2000 | 030.627.2000 |
| INSERTS FOR RECEPTACLES AND EXTENSIONS CRIMP CONTACTS | | |  |  |  |
| | | | 06G | 07C | 09E |
| Part number | | | 030.697.2000 | 030.635.2000 | 030.625.2000 |
| Operating Voltage [V] | VDE (DC) | | 120 | 120 | 120 |
| IEC 60449 | VDE (AC) | | 50 | 50 | 50 |
| UL 1977 | USR (AC) | | 125 | 125 | 125 |
| INSERTS FOR RECEPTACLES IP67 UNMATED CRIMP PINS | | | | | |
| Part number | SEAB/UEAB SFOA/SFRA | | | | |
| Operating Voltage [V] | VDE (DC) | | | | |
| IEC 60449 | VDE (AC) | | | | |
| UL 1977 | USR (AC) | | | | |
| INSERTS FOR RECEPTACLES AND EXTENSIONS SOLDER CONTACTS | |  |  |  |  |
| | | 06C | 06E | 07A | 09C |
| Part number | with pins | 060.031.2000 | 1.164 | 1.085 | 1.053 |
| | with Hypertac sockets | 060.032.2000 | 1.139 | 1.086 | 1.056 |
| INSERTS FOR PLUGS SOLDER CONTACTS | |  |  |  |  |
| | | 06D | 06F | 07B | 09D |
| Part number | with pins | 060.029.2000 | 1.141 | 1.083 | 1.055 |
| | with Hypertac sockets | 060.030.2000 | 1.142 | 1.084 | 1.054 |
| Operating Voltage [V] | VDE (DC) | 120 | 63 | 120 | 16 |
| IEC 60449 | VDE (AC) | 50 | 50 | 50 | 16 |

| 9 x 1 | 12 x 1 | 12 x 1 code 20° | 16 x 1 | 17 x 1 | 21 x 0.6 |
|--------------|------------------------------|------------------------------|--------------|------------------------------|--------------|
| | | | | | |
| 09K | 12S | 12U | 16B | 17H | 21B |
| 030.677.2000 | 030.619.2000 | 030.623.2000 | 030.691.2000 | 030.679.2000 | 030.226.1000 |
| | | | | | |
| 09J | 12T | 12V | 16A | 17G | 21A |
| 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 | - |
| | | | | | |
| | 12A | 12C | | 17A | |
| | 030.400.2000 030.505.2000 | 030.387.2000 030.506.2000 | | 030.479.2000 030.504.2000 | |
| | 120 | 120 | | 120 | |
| | 50 | 50 | | 50 | |
| | 125 | 125 | | 125 | |
| | | | | | |
| 09A | 12E | | | | |
| 1.129 | 1.023 | | | | |
| 1.130 | 1.050 | | | | |
| | | | | | |
| 09B | 12F | | | | |
| 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

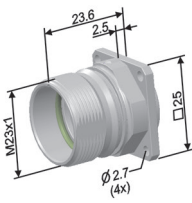
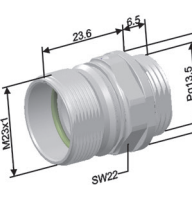
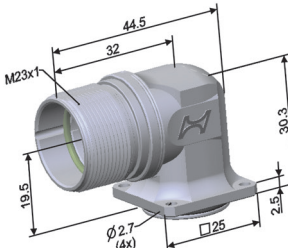
Note:

¹⁾ Contacts are shown on page 60 - 63

Available Connectors

M23 Signal Connectors Series S

Signal receptacles - IP67 unmated

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

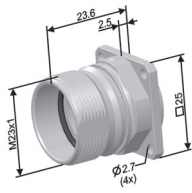
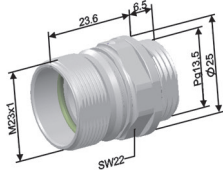
Dimensions are in mm

* UL Version

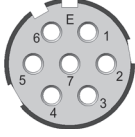
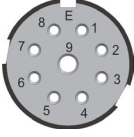
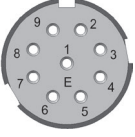
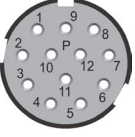
Note:

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

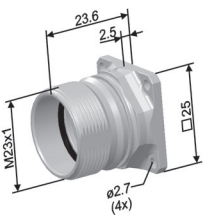
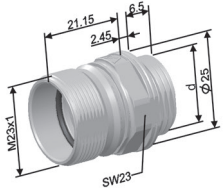
Signal receptacles with solder contacts 6 - 12way

| LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR | SHELL | NUMBER OF CONTACTS | CONTACT ARRANGEMENTS VIEW MATING FACE | | | |
|---|-------|-------------------------|--|--------------|-----|------|
| | | | 06C 6 x 2 | 06E 6 x 2 | | |
| | | | CONTACT STYLE | | | |
| | | | VIEW MATING FACE | | | |
| Straight receptacle  | SFNA | PINS WITH SOLDER CUP | 06C | MSBN | 06E | MSBN |
| | | SOCKETS WITH SOLDER CUP | | FSBN | | FSBN |
| Straight receptacle with threaded connection PG 13.5  | SFPA | PINS WITH SOLDER CUP | 06C | MSBN | 06E | MSBN |
| | | SOCKETS WITH SOLDER CUP | | FSBN | | FSBN |

Dimensions are in mm



| | | | | | | | | |
|---|------|---|------|---|------|---|------|-------------|
|  | |  | |  | |  | | CABLE CLAMP |
| <p>07A 7 x 2</p> | | <p>09C 8 x 1 / 1 x 2</p> | | <p>09A 9 x 1</p> | | <p>12E 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 | |

Signal receptacles for crimp contacts 6 - 17way

| LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR | SHELL |
|---|----------------|
| Straight receptacle  | SFFA* |
| Straight receptacle with threaded connection  <p style="margin-left: 20px;">d = SFQA = M20x1.5 SFLA = PG 13.5</p> | SFQA* SFLA* |







Dimensions are in mm

* UL Version

| CONTACT STYLE GENDER REVERSIBLE | TERMINATION CROSS SECTION | CONTACT ARRANGEMENTS VIEW MATING FACE | | | |
|------------------------------------|---|--|------|--------------|------|
| | | 06G 6 x 2 | | 07C 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 ¹⁾  | 06G | NNNN | 07C | NNNN |
| STAMPED HCS™ CONTACTS | CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾  | | - | | - |

Note:

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

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

CABLE CLAMP

000

000

Signal receptacles for crimp contacts 6 - 17way

| LAYOUT DESCRIPTION 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

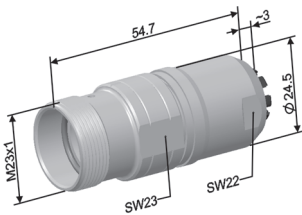
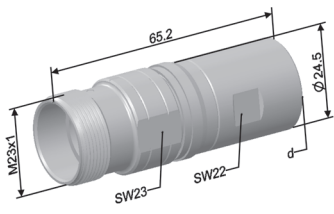
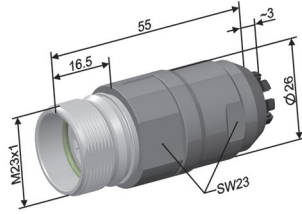
| CONTACT STYLE GENDER REVERSIBLE | TERMINATION CROSS SECTION | CONTACT ARRANGEMENTS VIEW MATING FACE | | | |
|------------------------------------|--|--|------|--------------|------|
| | | 06G 6 x 2 | | 07C 7 x 2 | |
| MACHINED CRIMP PINS | AWG 18-14 | 06G | MRRN | 07C | MRRN |
| | AWG 22-16 | | MRVN | | 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 ¹⁾ | 06G | NNNN | 07C | NNNN |
| STAMPED HCS™ CONTACTS | CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾ | | - | | - |

Note:

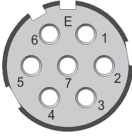
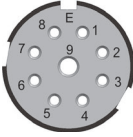
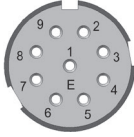
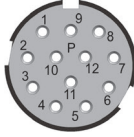
¹⁾ Machined contacts are shown on page 60-61, ²⁾ Stamped contacts are shown on page 62-63

|  | |  | |  | |  | |  | |  | | CABLE CLAMP | |
|--|------|---|--|---|------|---|------|---|------|---|------|-------------|------|
| 09E 8 x 1 / 1 x 2 | | 09J 9 x 1 | | 12T 12 x 1 | | 12V 12 x 1 (code 20°) | | 16A 16 x 1 | | 17G 17 x 1 | | | |
| CONTACT ARRANGEMENTS VIEW MATING FACE | | | | | | | | | | | | | |
| 09E | - | | | 09J | - | 12T | - | 12V | - | 16A | - | 17G | - |
| | - | | | | - | | - | | - | | - | | - |
| | MRSR | | | | - | | - | | - | | - | | - |
| | MRSV | | | | - | | - | | - | | - | | - |
| | MRWR | | | | - | | - | | - | | - | | - |
| | MRWV | | | | - | | - | | - | | - | | - |
| | - | | | | MRSN | | MRSN | | MRSN | | MRSN | | MRSN |
| | - | | | | MRWN | | MRWN | | MRWN | | MRWN | | MRWN |
| 09E | - | | | 09J | - | 12T | - | 12V | - | 16A | - | 17G | - |
| | - | | | | - | | - | | - | | - | | - |
| | 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 |
| | - | | | | NNNN | | NNNN | | NNNN | | NNNN | | NNNN |

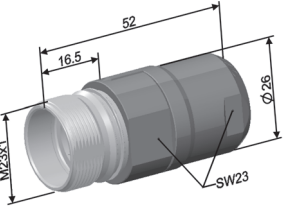
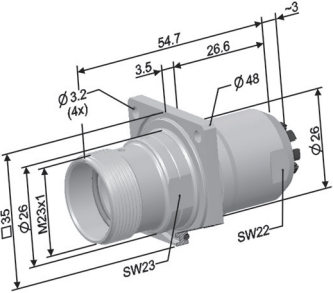
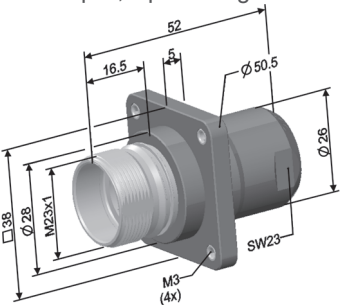
Signal receptacles with solder contacts 6 - 12way

| LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR | SHELL | NUMBER OF CONTACTS | CONTACT ARRANGEMENTS VIEW MATING FACE | | | |
|--|--------------|-------------------------|--|------|--------------|------|
| | | | 06C 6 x 2 | | 06E 6 x 2 | |
| | | | CONTACT STYLE | | | |
| Extension with cable clamp Ø 5.5-12 mm  | 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  | SRRA 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  | SROC | PINS WITH SOLDER CUP | 06C | MSBN | | MSBN |
| | | SOCKETS WITH SOLDER CUP | | FSBN | | FSBN |

Dimensions are in mm

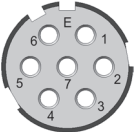
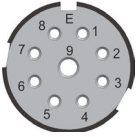
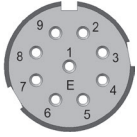
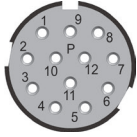
| CONTACT ARRANGEMENTS VIEW MATING FACE | | | | | | | | CABLE CLAMP |
|---|------|---|------|---|------|--|------|-------------|
| | | | | | | | | |
|  <p>07A 7 x 2</p> | |  <p>09C 8 x 1 / 1 x 2</p> | |  <p>09A 9 x 1</p> | |  <p>12E 12 x 1</p> | | |
| 07A | MSBN | 09C | MSAB | 09A | MSAN | 12E | MSAN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

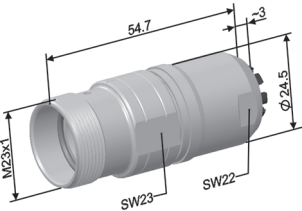
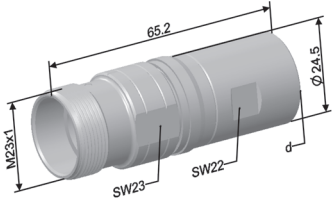
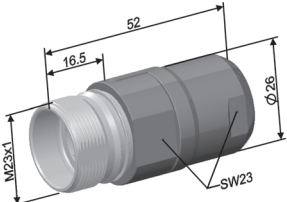
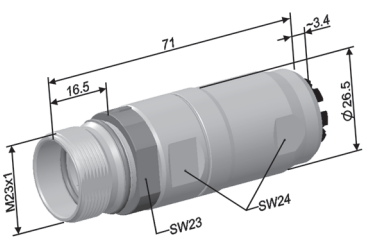
| LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR | SHELL | NUMBER OF CONTACTS | CONTACT ARRANGEMENTS VIEW MATING FACE | | |
|---|-------|-------------------------|--|------------------|------|
| | | | CONTACT STYLE | VIEW MATING FACE | |
| Extension, plastic shell, with cable specific cable clamps ¹⁾  | 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  | SRNA | PINS WITH SOLDER CUP | 06C | MSBN | MSBN |
| | | SOCKETS WITH SOLDER CUP | 06E | FSBN | FSBN |
| Extension, plastic shell, with cable specific cable clamps ¹⁾ , square flange  | SRWC | PINS WITH SOLDER CUP | 06C | MSBN | MSBN |
| | | SOCKETS WITH SOLDER CUP | 06E | FSBN | FSBN |

Dimensions are in mm

Note:
¹⁾ Cable specific cable clamp please contact factory



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

Signal extensions for crimp contacts 6 - 17way

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







Dimensions are in mm

* UL Version

| CONTACT STYLE GENDER REVERSIBLE | TERMINATION CROSS SECTION | CONTACT ARRANGEMENTS VIEW MATING FACE | | | |
|------------------------------------|---|--|------|--------------|------|
| | | 06G 6 x 2 | | 07C 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 ¹⁾  | 06G | NNNN | 07C | NNNN |
| STAMPED HCS™ CONTACTS | CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾  | | - | | - |

Note:

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

|  09E 8 x 1 / 1 x 2 | |  09J 9 x 1 | |  12T 12 x 1 | |  12V 12 x 1 (code 20°) | |  16A 16 x 1 | |  17G 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 | | | |
| - | MRWN | MRWN | MRWN | MRWN | | | | | | | | | | |
| 09E | - | | | 09J | - | 12T | - | 12V | - | 16A | - | 17G | - | 000 |
| | - | | | | - | | - | | - | | - | | | |
| | FROR | | | | - | | - | | - | | - | | | |
| | FROM | | | | - | | - | | - | | - | | | |
| | FRBR | | | | - | | - | | - | | - | | | |
| | FRBM | | | | - | | - | | - | | - | | | |
| | - | | | | FRON | | FRON | | FRON | | FRON | | | |
| - | FRBN | FRBN | FRBN | FRBN | | | | | | | | | | |
| 09E | NNNN | | | 09J | NNNN | 12T | NNNN | 12V | NNNN | 16A | NNNN | 17G | NNNN | 170 |
| | - | | | | 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 | SROC* |
| Extension with cable clamp Ø 5.5-12 mm, square flange | SRNA* |
| Extension, plastic shell, with cable specific cable clamps ³⁾ , square flange | SRWC* |
| Extension with cable clamp Ø 5-16 mm | SVRA* |

Flange can be ordered separately⁴⁾







Dimensions are in mm

* UL Version

| CONTACT STYLE GENDER REVERSIBLE | TERMINATION CROSS SECTION | CONTACT ARRANGEMENTS VIEW MATING FACE | | | |
|------------------------------------|--|--|-----|--------------|------|
| | | 06G 6 x 2 | | 07C 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 ¹⁾ | 06G | 07C | NNNN | NNNN |
| without contacts | - | | | - | |
| STAMPED HCS™ CONTACTS | CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾ | 06G | 07C | - | - |
| without contacts | - | | | - | |

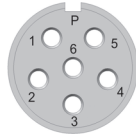
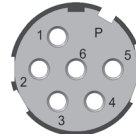
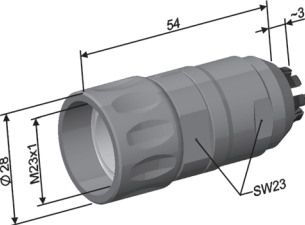
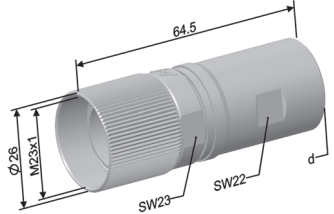
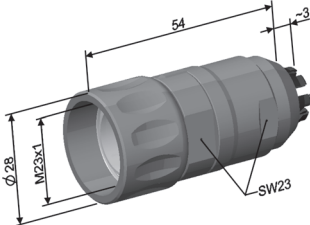
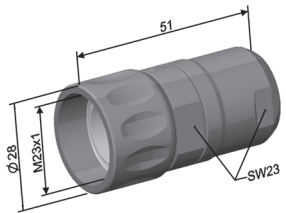
Note:

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

|  | |  | |  | |  | |  | |  | | CABLE CLAMP | | |
|--|------|---|--|---|------|---|------|---|------|---|------|-------------|-------------------|------|
| 09E 8 x 1 / 1 x 2 | | 09J 9 x 1 | | 12T 12 x 1 | | 12V 12 x 1 (code 20°) | | 16A 16 x 1 | | 17G 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 | 260 261 262 | |
| | - | | | 09J | NNNN | 12T | NNNN | 12V | NNNN | 16A | NNNN | 17G | | NNNN |

Note:
³⁾ Cable specific cable clamp please contact factory. ⁴⁾ More information please contact factory.

Signal plugs with solder contacts 6 - 12way

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

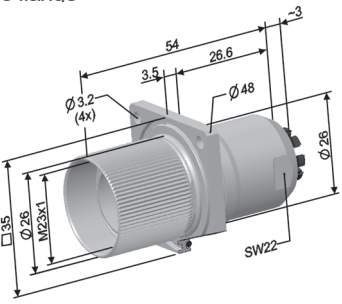
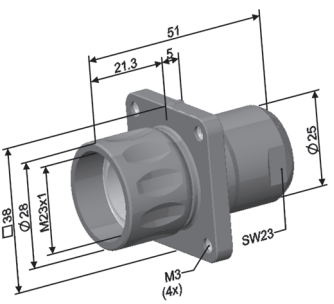
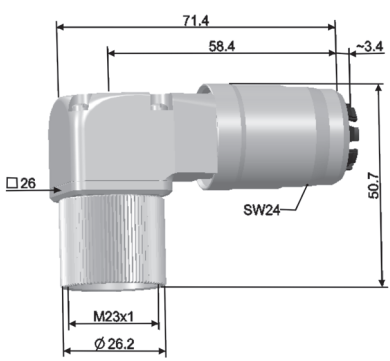
Dimensions are in mm

Note:

¹⁾ Cable specific cable clamp please contact factory

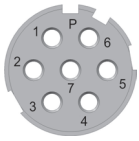
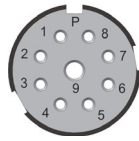
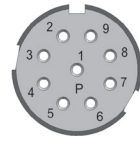
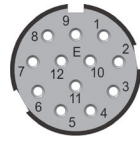
| CONTACT ARRANGEMENTS VIEW MATING FACE | | | | | | | | CABLE CLAMP |
|---------------------------------------|------|-----------------------------|------|---------------------|------|----------------------|------|-------------|
| 07B 7 x 2 | | 09D 8 x 1 / 1 x 2 | | 09B 9 x 1 | | 12F 12 x 1 | | |
| 07B | MSBN | 09D | MSAB | 09B | MSAN | 12F | MSAN | 169 |
| | FSBN | | FSAB | | FSAN | | FSAN | |
| 07B | MSBN | 09D | MSAB | 09B | MSAN | 12F | MSAN | 000 |
| | FSBN | | FSAB | | FSAN | | FSAN | |
| 07B | MSBN | 09D | MSAB | 09B | MSAN | 12F | MSAN | 169 |
| | FSBN | | FSAB | | FSAN | | FSAN | |
| 07B | MSBN | 09D | MSAB | 09B | MSAN | 12F | MSAN | ... |
| | FSBN | | FSAB | | FSAN | | FSAN | |

Signal plugs with solder contacts 6 - 12way

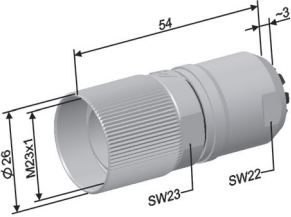
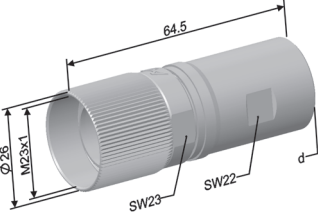
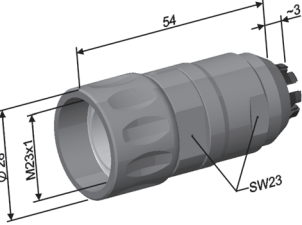
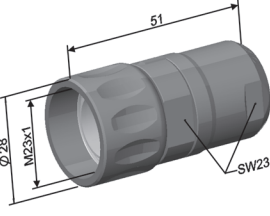
| LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR | SHELL | NUMBER OF CONTACTS | CONTACT ARRANGEMENTS VIEW MATING FACE | | |
|--|-------|-------------------------|--|------|------|
| | | | CONTACT STYLE | | |
| Plug with with cable clamp Ø 5.5–12 mm, square flange  | SPNA | PINS WITH SOLDER CUP | 06D | MSBN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

Dimensions are in mm

¹⁾ Cable specific cable clamp please contact factory

| | | | | | | | | |
|---|------|---|------|---|------|---|------|-------------|
|  | |  | |  | |  | | CABLE CLAMP |
| <p>07B 7 x 2</p> | | <p>09D 8 x 1 / 1 x 2</p> | | <p>09B 9 x 1</p> | | <p>12F 12 x 1</p> | | |
| CONTACT ARRANGEMENTS VIEW MATING FACE | | | | | | | | |
| 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 PART NUMBER CONFIGURATOR | SHELL |
|--|----------------|
| Plug with cable clamp Ø 5.5-12 mm  | SPNA* |
| Plug with cable clamp Ø 5.5-12 mm, threaded connection  <p>d = SRR = M20x1.5 SRGA = PG13.5</p> | SPRA* SPGA* |
| Plug, plastic shell, with cable clamp Ø 5.5-12 mm  | SPOC* |
| Plug, plastic shell, with cable specific cable clamps ³⁾  | SPUC* |


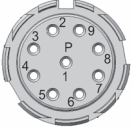
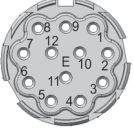
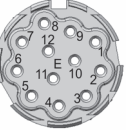
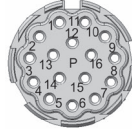

| CONTACT STYLE GENDER REVERSIBLE | TERMINATION CROSS SECTION | CONTACT ARRANGEMENTS VIEW MATING FACE | | | |
|------------------------------------|--|--|------|--------------|------|
| | | 06H 6 x 2 | | 07D 7 x 2 | |
| MACHINED CRIMP PINS | AWG 18-14 | 06H | MRRN | 07D | MRRN |
| | AWG 22-16 | | MRVN | | 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 ¹⁾ without contacts | 06H | NNNN | 07D | NNNN |
| STAMPED HCS™ CONTACTS | CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾ without contacts | | - | | - |

Dimensions are in mm

* UL Version

Note:

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

|  09F 8 x 1 / 1 x 2 | |  09K 9 x 1 | |  12S 12 x 1 | |  12U 12 x 1 (code 20°) | |  16B 16 x 1 | |  17H 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 | |
| - | | | MRWN | MRWN | MRWN | MRWN | MRWN | | | | | | | |
| 09F | - | | | 09K | - | 12S | - | 12U | - | 16B | - | 17H | - | 000 |
| | - | | | | - | | - | | - | | - | | - | |
| | 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 | 169 |
| | - | | | | NNNN | | NNNN | | NNNN | | NNNN | | NNNN | |

Signal plugs for crimp contacts 6 - 17way

| LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR | SHELL |
|--|-------|
| <p>Plug with cable clamp Ø 5.5-12 mm, square flange</p> | SPNA* |
| <p>Plug, plastic shell, with cable specific cable clamps¹⁾, square flange</p> | SPYC* |
| <p>Angled plug with cable clamp Ø 7.7-14.5 mm</p> | SPHA* |

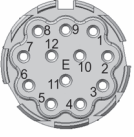
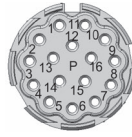
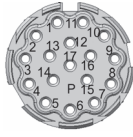
Dimensions are in mm

* UL Version

| CONTACT STYLE GENDER REVERSIBLE | TERMINATION CROSS SECTION | CONTACT ARRANGEMENTS VIEW MATING FACE | | | |
|------------------------------------|--|--|------|--------------|------|
| | | 06H 6 x 2 | | 07D 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 ¹⁾ without contacts | 06H | NNNN | 07D | NNNN |
| STAMPED HCS™ CONTACTS | CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾ without contacts | | - | | - |

Note:

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

|  09F 8 x 1 / 1 x 2 | |  09K 9 x 1 | |  12S 12 x 1 | |  12U 12 x 1 (code 20°) | |  16B 16 x 1 | |  17H 17 x 1 | | CABLE CLAMP | | |
|---|------|--|--|---|------|---|------|---|------|---|------|-------------|-----|------|
| CONTACT ARRANGEMENTS VIEW MATING FACE | | | | | | | | | | | | | | |
| 09F | - | | | | - | | | | | - | | 16914 | | |
| | - | | | | - | | | | | - | | | | |
| | MRSR | | | | - | | | | | - | | | | |
| | MRSV | | | | - | | | | | - | | | | |
| | MRWR | | | 09K | - | 12S | - | 12U | - | 16B | - | | 17H | |
| | MRWV | | | | - | | - | | - | | - | | | |
| | - | | | | MRSN | | MRSN | | MRSN | | MRSN | | | MRSN |
| | - | | | | MRWN | | MRWN | | MRWN | | MRWN | | | MRWN |
| 09F | - | | | | - | | | | | - | | ... | | |
| | - | | | | - | | | | | - | | | | |
| | FROR | | | | - | | | | | - | | | | |
| | FROM | | | | - | | | | | - | | | | |
| | FRBR | | | 09K | - | 12S | - | 12U | - | 16B | - | | 17H | |
| | FRBM | | | | - | | - | | - | | - | | | |
| | - | | | | FRON | | FRON | | FRON | | FRON | | | FRON |
| | - | | | | FRBN | | FRBN | | FRBN | | FRBN | | | FRBN |
| 09F | NNNN | | | | NNNN | | NNNN | | NNNN | | NNNN | 17003 | | |
| | - | | | | 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 | SPFA* |
| Plug with cable clamp Ø 5-16 mm | SVPA* |
| Flange can be ordered separately ³⁾ Panel feed through, square flange | SDBA* |



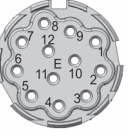
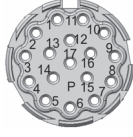
Dimensions are in mm

* UL Version

| CONTACT STYLE GENDER REVERSIBLE | TERMINATION CROSS SECTION | CONTACT ARRANGEMENTS VIEW MATING FACE | | | |
|------------------------------------|--|--|------|--------------|------|
| | | 06H 6 x 2 | | 07D 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 ¹⁾ without contacts | 06H | NNNN | 07D | NNNN |
| STAMPED HCS™ CONTACTS | CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾ without contacts | | - | | - |

Note:

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

|  | |  | |  | |  | |  | |  | | | |
|--|------|---|--|---|------|--|------|---|------|---|------|-----|------|
| 09F 8 x 1 / 1 x | | 09K 9 x 1 | | 12S 12 x 1 | | 12U 12 x 1 (code 20°) | | 16B 16 x 1 | | 17H 17 x 1 | | | |
| CONTACT ARRANGEMENTS VIEW MATING FACE | | | | | | | | | | | | | |
| 09F | - | | | 09K | - | 12S | - | 12U | - | 16B | - | 17H | - |
| | - | | | | - | | - | | - | | - | | - |
| | 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 |
| | - | | | | NNNN | | NNNN | | NNNN | | NNNN | | NNNN |

CABLE CLAMP

170

260
261
262

000

21 Pin Connectors

M23 Signal Connector Series S

Receptacle for 21 pin inserts

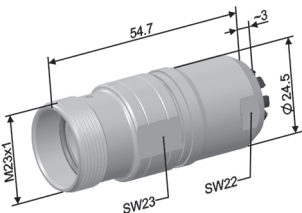
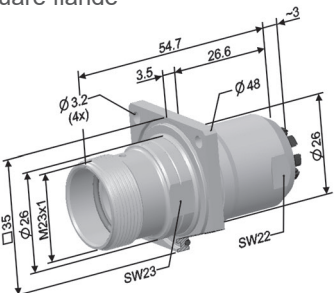
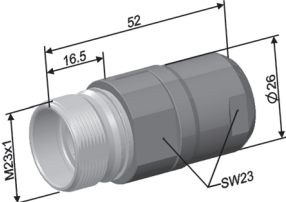
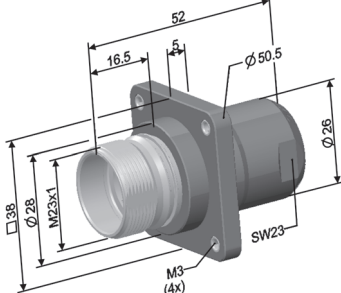
| LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR | SHELL | CONTACT STYLE | TERMINATION CROSS SECTION | VIEW MATING FACE | | CABLE CLAMP |
|--|-------|---|---------------------------|------------------|------|-------------|
| | | | | 21A 21 x 0.6 | | |
| Straight receptacle | SFOA | MACHINED CRIMP PINS |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

Dimensions are in mm

Note:

¹⁾ Machined contacts are shown on page 60-61

Extensions for 21 pin inserts

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

Dimensions are in mm

Note:

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

Plugs for 21 pin inserts

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

Dimensions are in mm








Note:

¹⁾ Machined contacts are shown on page 60-61

²⁾ Customized cable clamp please contact factory

Cable Clamps & Accessories






M23 Signal Connector Series S

| | | |
|---|---|---|
| Cable clamp no. 169 | Clamp range | |
|  | <p>With reducing sleeve from 5.5 – 8.5 mm Without reducing sleeve from 8 – 12 mm Can be used for shielded and non-shielded cables</p> | |
| Cable clamp no. 170 | Clamp range | |
|  | <p>With reducing sleeve from 7.7 – 12 mm Without reducing sleeve from 11 – 14.5 mm Can be used for shielded and non-shielded cables</p> | |
| Cable clamp no. 260/261/262 for SVPA/SVRA | Clamp range | |
|  | <p>.260 cable diameter 5 – 9 mm .261 cable diameter 9 – 15 mm .262 cable diameter 16mm Can be used for shielded and non-shielded cables</p> | |
| Thread protection cap | Part number | |
|  | <p>031.001053.1000</p> | |
| Dust shield caps | Part number | Description |
|  | <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 |  021.356.1020 |  021.311.1020 |  021.402.1020 |  021.072.1020 |
| Termination cross section ¹⁾ | [AWG] [mm ²] | 18 – 14 0.75 – 2.5 | 22 – 16 0.34 – 1.5 | 24 – 18 0.24 – 1.0 | 30 – 22 0.05 – 0.34 | 26 – 22 0.14 – 0.34 |
| Nominal current @ 20°C [A] ²⁾ | VDE USR CNR | 20 20 - | 20 20 - | 9 9 - | 9 - - | 3 - - |
| 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 |  020.263.1020 |  020.256.1020 |  020.353.1020 |  020.060.1020 |
| Termination cross section ¹⁾ | [AWG] [mm ²] | 20 - 16 0.5 - 1.5 | 18 - 14 0.75 - 2.5 | 24 - 18 0.24 - 1.0 | 30 - 22 0.05 - 0.34 | 26 - 22 0.14 - 0.34 |
| Nominal current @ 20°C [A] | VDE USR CNR | 20 20 - | 20 20 - | 9 9 - | 9 9 - | 3 - - |
| Crimping tool | | B151 | B151 | B150 | B150 | B151 |
| Positioner | | B201 | B201 | B055/A | B055/A | B378 |

Note:
¹⁾ Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm²] 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. ²⁾ data only valid when plugged with Hypertac sockets.

Machined pins - Series S (for receptacles IP67 unmated)

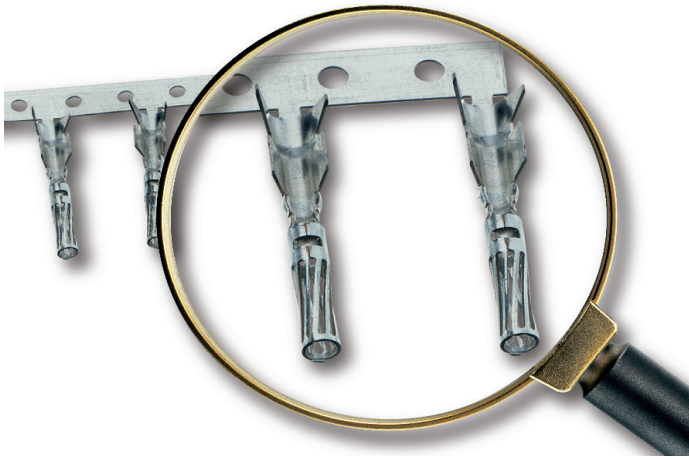
| Type | | A | E | M |
|--|-----------------------------|---|---|---|
| Contact diameter [mm] | | 1 | 1 | 1 |
| PART NUMBER AND LAYOUT | |  |  |  |
| | | 021.029.1020 | 021.129.1020 | 021.165.1020 |
| Termination cross section ¹⁾ | [AWG] [mm ²] | 26 - 22 0.14 - 0.34 | 24 - 18 0.24 - 1.0 | 24 - 18 0.24 - 1.0 |
| Nominal current @ 20°C [A] ²⁾ | 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:

¹⁾ Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm²] 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. ²⁾ 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.

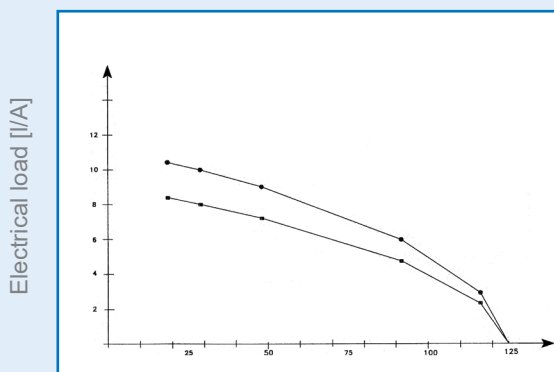
For all variations, the wire cage has the same design characteristics. In the contact area all single contact flaps are made in a circle shape which guarantees "wire quality". The HCS contacts on reels for crimping machines with automatic feeder lines are fully compatible with our machined Hypertac® 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°C to 125°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 ¹⁾ | AWG [mm ²] | 32 – 28 0.03 – 0.08 | 28 – 24 0.08 – 0.2 | 24 – 20 0.2 – 0.5 | 0.75 – 1.0 |
| Max. nominal current @ 20°C [A] | VDE USR CNR | 4 9 - | 6 9 - | 8 9 - | 8 9 - |
| 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 ¹⁾ | AWG [mm ²] | 32 – 28 0.03 – 0.08 | 28 – 24 0.08 – 0.2 | 24 – 20 0.2 – 0.5 | 0.75 – 1.0 |
| Max. nominal current @ 20°C [A] | VDE USR CNR | 4 9 - | 6 9 - | 8 9 - | 8 9 - |
| 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:


¹⁾ Mentioned crimp ranges are recommendations and only valid with flexible wires H05(07)V-K [mm²] 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

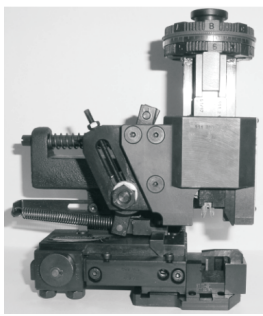
Crimping tools for machined Contacts

| 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> | MASTER GAUGE B190 (for B150 and B151) B230 (for B179) |
|  <p>A cylindrical metal positioner with a red band.</p> | POSITIONER B154, B157, B165, B201, B245, B252, B297, B305, B306, B341, B378 |
|  <p>A metal positioner with a spring mechanism.</p> | POSITIONER B055/A |

Crimping tools for stamped HCS™ contacts

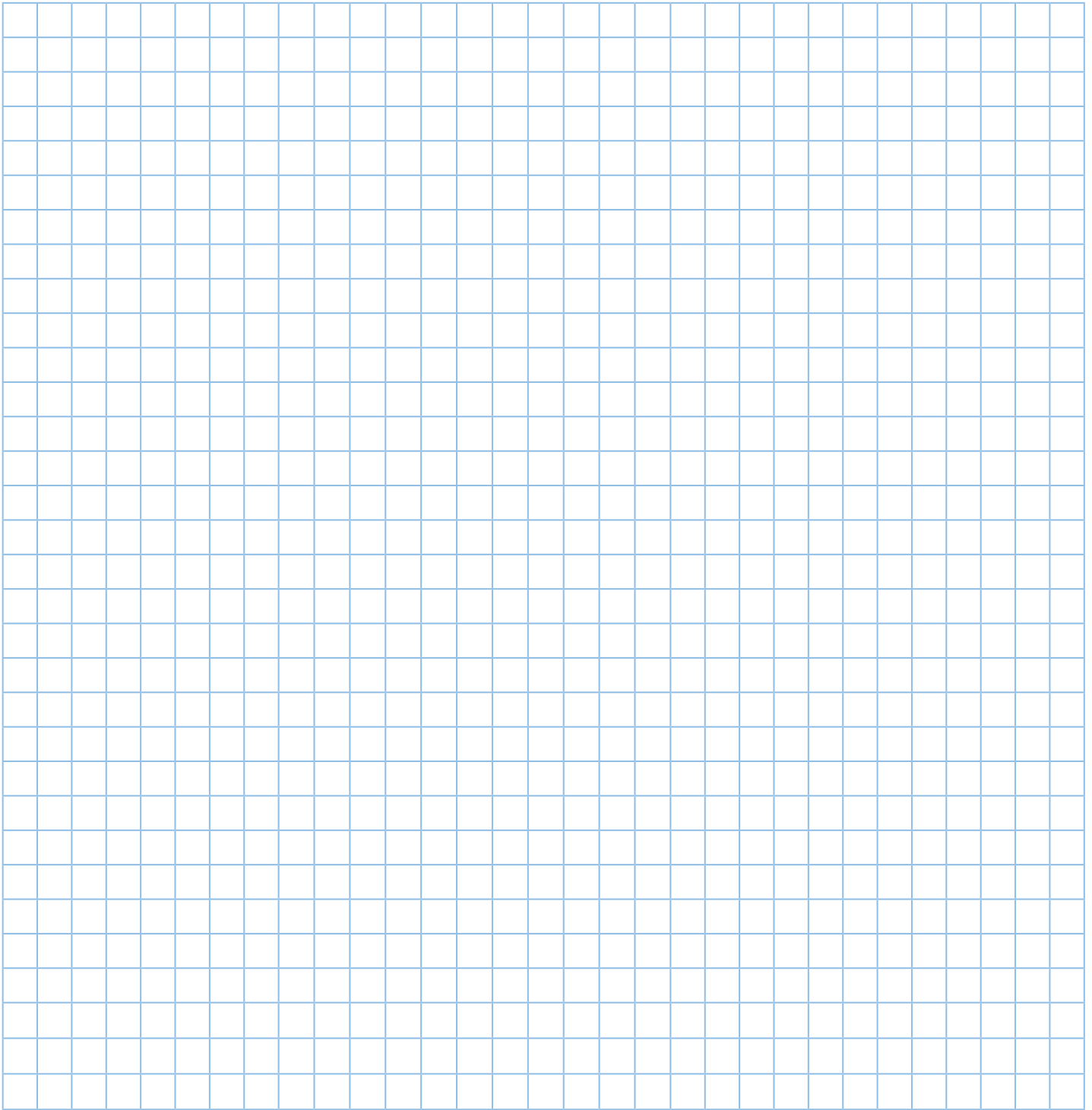
| Hand crimping tool with feeder line for small reels | Termination cross section | Part number |
|---|---|---|
|  | Ø 1 mm CONTACTS 0.032–0.08 mm ² , AWG 32-28 0.08–0.20 mm ² , AWG 28-24 0.20–0.52 mm ² , AWG 24-20 0.75–1.00 mm ² | Ø 1 mm CONTACTS B287/32-28 B287/28-24 B287/24-20 B287/0.75-1 |
| | Ø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

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

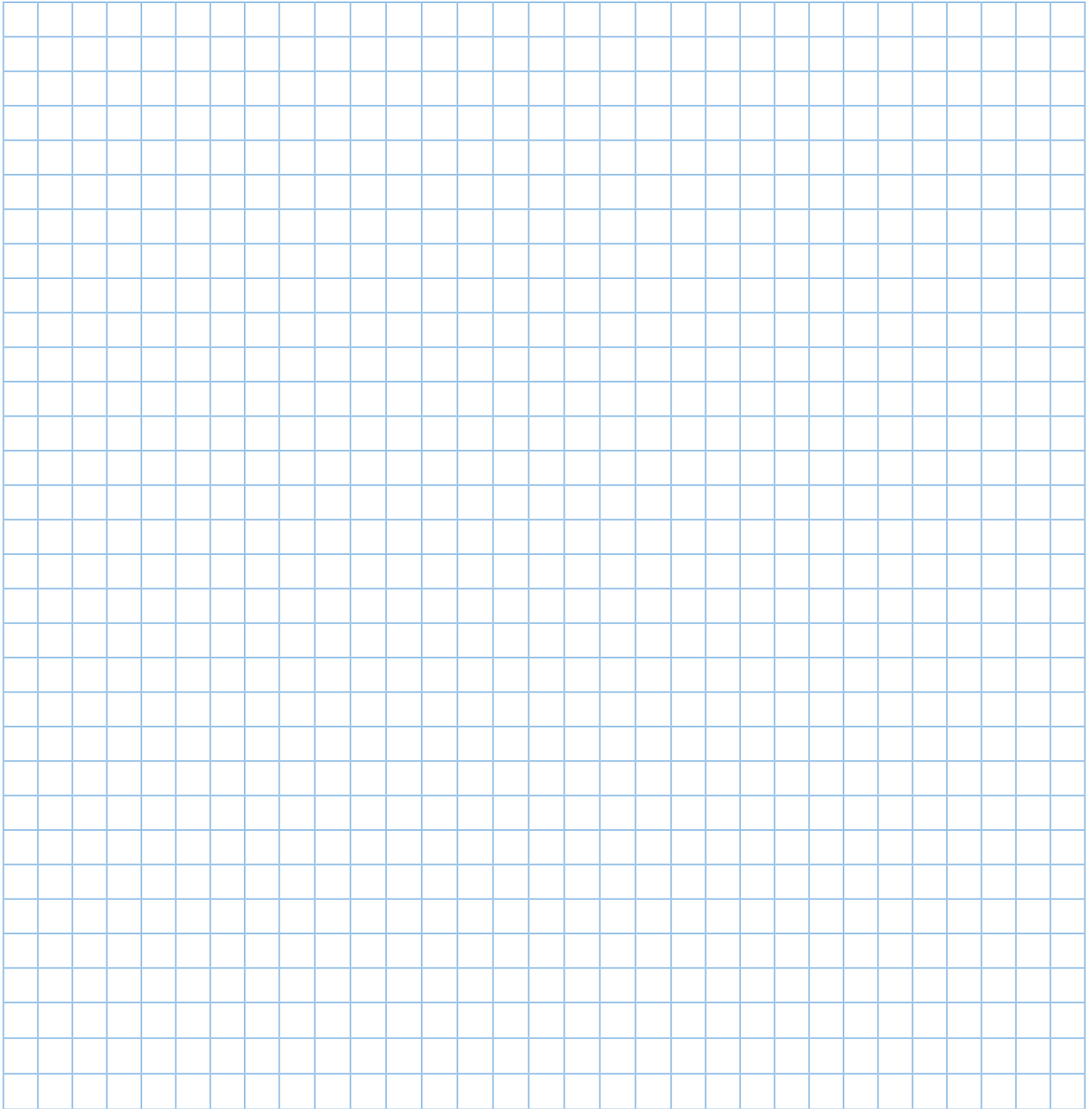
| Applicators for crimping machines with feeder line | Termination cross section | Part number |
|--|---|---|
| Schäfer/AMP  | Ø 1 mm CONTACTS 0.032–0.08 mm ² , AWG 32-28 0.08–0.20 mm ² , AWG 28-24 0.20–0.52 mm ² , AWG 24-20 0.75–1.00 mm ² | Ø 1 mm CONTACTS B288/32-28 B288/28-24 B288/24-20 B288/0.75-1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

Insertion and extraction tools

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



Notes:



Notes:

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