

M23 Industrial

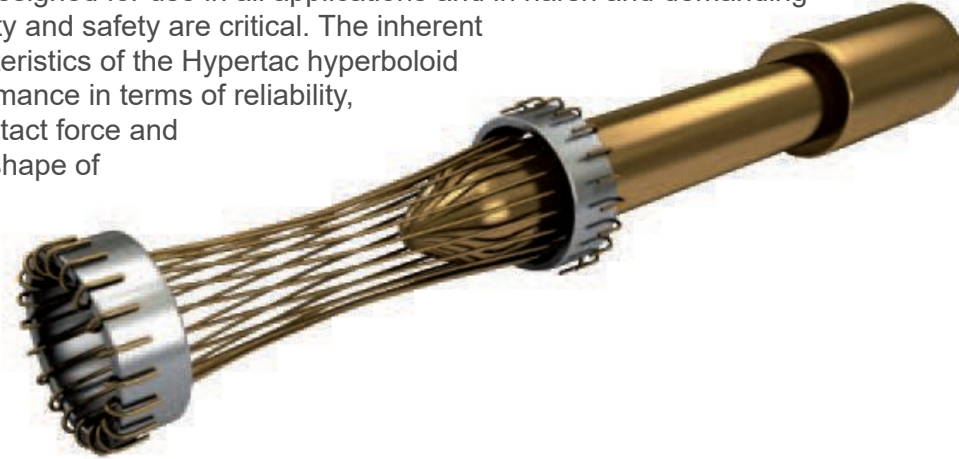
Series L & Series S

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 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 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 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 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 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 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 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 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 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 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

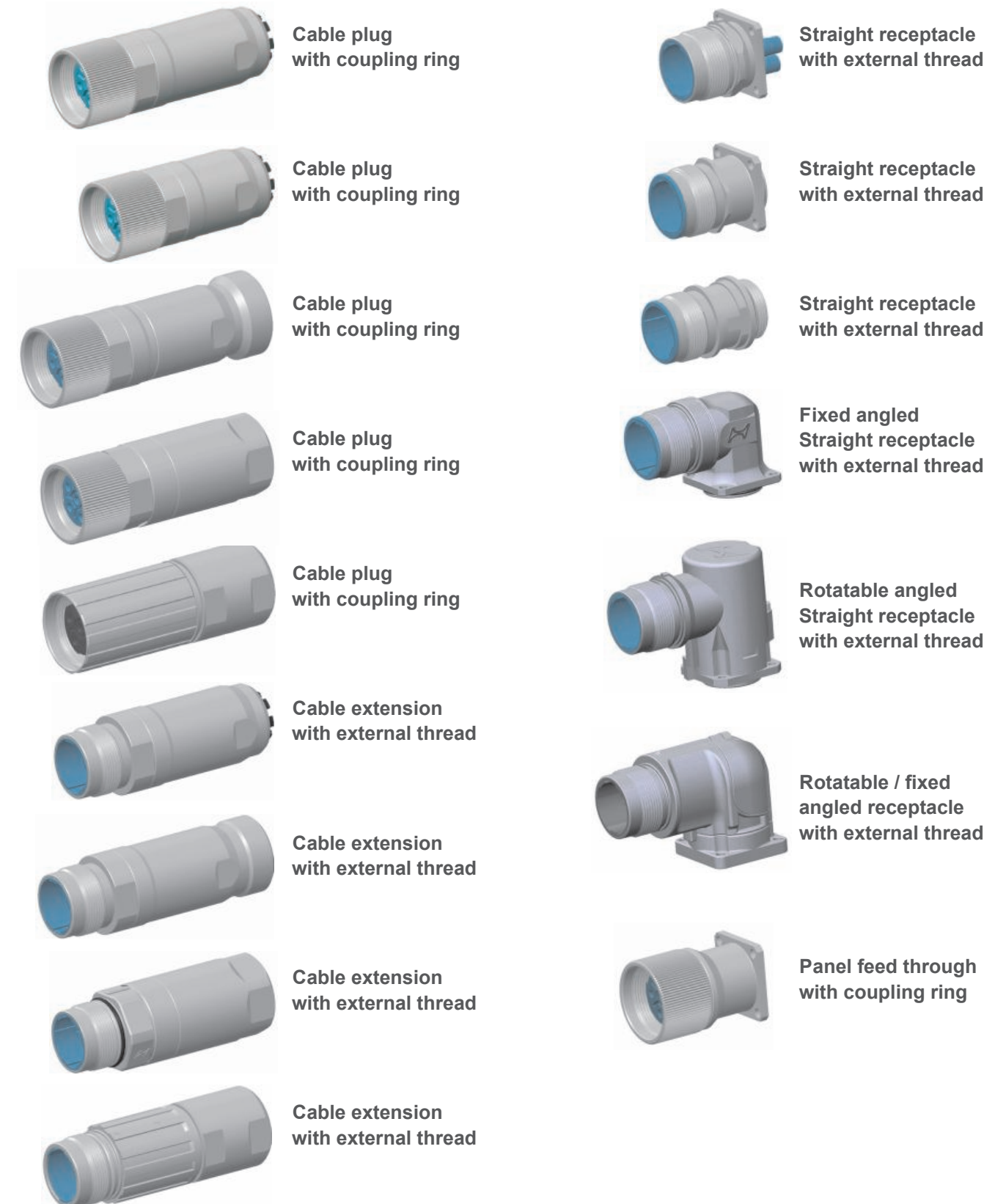
- Can accept cable diameter from 5 to 18.5 mm

UL certified

- UL/CSA approval file No. 178462

Type Overview

M23 Power Connectors Series L



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

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


Physical and environmental		Standards
Operating temperature range	-40°C... +125°C	EN 61984
Storage conditions	-40°C... +70°C / min. humidity 40%	–
Environmental level Contamination level	IP67 (mated) 2	DIN EN 60529 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 (Ø 1mm) ≤ 3.0 mΩ (Ø 2mm)	–
Contact resistance (stamped contacts)	≤ 5.0 mΩ (Ø 1mm) ≤ 5.0 mΩ (Ø 2mm)	–
Overvoltage category	III	EN 61984

INNOVATION Series L (UL Version Series A)

Nominal voltage [V _{rms}]	630	630	250	–	DIN EN 60512
	600	600	250	–	USR
	600	600	250	–	CNR

SYSTEM 2000 Series L (UL Version Series A)

Nominal voltage [V _{rms}]	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 [V _{rms}]	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

2 CONNECTOR LAYOUT

INNOVATION							
E	E	A	STRAIGHT RECEPTACLE, NICKEL-PLATED LONG VERSION	R	F	A	EXTENSION, NICKEL-PLATED, THREADED CONNECTION M25x1.5, CABLE CLAMP Ø 7.7-14.5 mm
E	B	A	STRAIGHT RECEPTACLE, NICKEL-PLATED THREADED CONNECTION PG13.5	D	A	A	PANEL FEED THROUGH, NICKEL-PLATED, SQUARE FLANGE
E	D	A	STRAIGHT RECEPTACLE, NICKEL-PLATED THREADED CONNECTION M20x1.5	P	N	A	PLUG, NICKEL-PLATED, CABLE CLAMP Ø 7.7-14.5 mm
E	A	B	FIXED ANGLED RECEPTACLE, CHROMIUM-PLATED	P	R	A	PLUG, NICKEL-PLATED, SHORT VERSION, CABLE CLAMP Ø 7.7-14.5 mm
R	N	A	EXTENSION, NICKEL-PLATED, 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
R	P	A	EXTENSION, 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
SYSTEM 2000							
E	O	B	ROTATABLE ANGLED RECEPTACLE, CHROMIUM-PLATED	R	L	A	EXTENSION, NICKEL-PLATED, CABLE CLAMP Ø 7.7-18.5 mm
F	E	A	STRAIGHT RECEPTACLE, NICKEL-PLATED SHORT VERSION	P	L	A	PLUG, NICKEL-PLATED, CABLE CLAMP Ø 7.7-18.5 mm
VERSION 1i							
G	D	G	ROTATABLE ANGLED RECEPTACLE, CHROMIUM-PLATED	V	L	A	PLUG, NICKEL-PLATED, MACHINED SOCKETS, CABLE CLAMP Ø 5-16 mm
G	F	G	FIXED ANGLED RECEPTACLE, CHROMIUM-PLATED	V	M	A	PLUG, NICKEL-PLATED, STAMPED HCS™ SOCKETS, CABLE CLAMP Ø 5-16 mm
Y	M	A	EXTENSION, NICKEL-PLATED, CABLE CLAMP Ø 5-16 mm				

3 INSERTS

INNOVATION							
0	6	A	6WAY, PINS 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	6	B	6WAY, SOCKETS 6 x Ø 2 mm; MACHINED CONTACTS	0	8	B	8WAY, SOCKETS 4 x Ø 1 mm, 4 x Ø 2 mm, MACHINED CONTACTS
SYSTEM 2000							
0	6	C	6WAY, PINS 6 x Ø 2 mm, MACHINED CONTACTS	0	8	L	8WAY, SOCKETS 4 x Ø 1 mm, 4 x Ø 2 mm, MACHINED CONTACTS
0	6	D	6WAY, SOCKETS 6 x Ø 2 mm, MACHINED CONTACTS	0	9	A	9WAY, PINS 5 x Ø 1 mm, 4 x Ø 2 mm, MACHINED CONTACTS
0	8	K	8WAY, PINS 4 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
VERSION 1i							
0	6	E	6WAY, PINS 6 x Ø 2 mm, MACHINED CONTACTS	0	8	T	8WAY, PINS 4 x Ø 1 mm, 4 x Ø 2 mm, MACHINED CONTACTS
0	6	J	6WAY, PINS 6 x Ø 2 mm, MACHINED CONTACTS	0	8	X	8WAY, PINS 4 x Ø 1 mm, 4 x Ø 2 mm, MACHINED CONTACTS
0	6	M	6WAY, SOCKETS 6 x Ø 2 mm, MACHINED CONTACTS	0	8	Z	8WAY, SOCKETS 4 x Ø 1 mm, 4 x Ø 2 mm, MACHINED CONTACTS
0	6	F	6WAY, SOCKETS 6 x Ø 2 mm, STAMPED HCS™ CONTACTS	0	8	U	8WAY, SOCKETS 4 x Ø 1 mm, 4 x Ø 2 mm, STAMPED HCS™ 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	F	R	B	N	HYPERTAC SOCKETS - Ø 2 mm AWG 20-16, PLUG
M	R	K	N	PINS - Ø 2 mm AWG 18-14, RECEPTACLE	F	R	D	N	HYPERTAC SOCKETS - Ø 2 mm AWG 18-14, PLUG
M	R	E	C	PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 20-16, RECEPTACLE	F	R	H	N	HYPERTAC SOCKETS - Ø 2 mm AWG 18-14, PLUG (terminals with insulation sleeves)
M	R	E	K	PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-14, RECEPTACLE	F	R	K	B	HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 20-16, PLUG
M	R	P	N	PINS - Ø 2 mm AWG 16-14, EXTENSION	F	R	K	D	HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-14, PLUG
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	F	R	O	N	HYPERTAC SOCKETS - Ø 2 mm AWG 18-14, PLUG
M	R	W	N	PINS - Ø 2 mm AWG 12, RECEPTACLE	F	R	R	N	HYPERTAC SOCKETS - Ø 2 mm AWG 18-12, PLUG
M	R	R	S	PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-14, RECEPTACLE	F	R	F	O	HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-14, PLUG
M	R	R	W	PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 12, RECEPTACLE	F	R	F	R	HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-12, PLUG
M	R	T	U	PINS - Ø 1 mm, AWG 22-18/16, Ø 2 mm AWG 18-14/12, EXTENSION	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
VERSION 1i									
M	R	L	N	PINS - Ø 2 mm AWG 24-16, RECEPTACLE	M	R	I	N	PINS - Ø 2 mm AWG 16-12, EXTENSION
M	R	Z	N	PINS - Ø 2 mm AWG 16-14, RECEPTACLE	M	R	Y	J	PINS - Ø 1 mm, AWG 24-16, Ø 2 mm AWG 22-16, EXTENSION
M	R	W	N	PINS - Ø 2 mm AWG 12, RECEPTACLE	M	R	Y	I	PINS - Ø 1 mm, AWG 24-16, Ø 2 mm AWG 16-12, EXTENSION
M	R	R	L	PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 24-16, RECEPTACLE	F	R	H	N	HYPERTAC SOCKETS - Ø 2 mm AWG 18-14, PLUG
M	R	R	Z	PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 16-14, RECEPTACLE	F	R	U	N	HYPERTAC SOCKETS - Ø 2 mm AWG 14-12, HYPERTAC PLUG
M	R	R	W	PINS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 12, RECEPTACLE	F	R	F	H	HYPERTAC SOCKETS - Ø 1 mm, AWG 24-18, Ø 2 mm AWG 18-14, PLUG
M	R	J	N	PINS - Ø 2 mm AWG 22-16, EXTENSION	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	2	6	0	VARIABLE CABLE CLAMP, EXTENSION & PLUG VERSION 1i, CLAMP RANGE 5 – 9 mm
1	7	0	VARIABLE CABLE CLAMP, EXTENSION & PLUG INNOVATION, CLAMP RANGE 7.7 – 14.5 mm	2	6	1	VARIABLE CABLE CLAMP, EXTENSION & PLUG VERSION 1i, CLAMP RANGE 9 – 15 mm
2	1	3	VARIABLE CABLE CLAMP, EXTENSION & PLUG SYSTEM 2000, CLAMP RANGE 7.7 – 18.5 mm	2	6	2	CABLE CLAMP, EXTENSION & PLUG VERSION 1i, CABLE DIAMETER 16 mm

6 VERSION NUMBER

0 1 DEPENDING ON TYPE AND SPECIAL DESIGN, SEE DETAILED DESCRIPTION OF THE CONNECTOR DESIGN

Available Connectors

M23 Power Connector Series L

Power Receptacles - Innovation

CONTACT ARRANGEMENTS VIEW MATING FACE			06A		08A				CABLE CLAMP
			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		
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	Straight receptacle, long version	LEEA	06A	MRCN	MRKN			NNNN*	00002
						MREC			
							MREK		
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	Straight receptacle, threaded connection	LEBA LEDA	06A	MRCN	MRKN			NNNN*	000
						MREC			
							MREK		
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	Fixed angled receptacle	LEAB	06A	MRCN	MRKN			NNNN*	00002
						MREC			
							MREK		

Dimensions are in mm * Not UL Version

Power Receptacles - System 2000

CONTACT ARRANGEMENTS VIEW MATING FACE			06C		08K		09A				CABLE CLAMP
			TERMINATION CROSS SECTION								
	SHELL	INSERT	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		
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	Rotatable angled receptacle	LEOB	06C	MRSN	MRWN					NNNN*	000
						MRRS		MRRW		NNNN*	
								MRRS		MRRW	
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	Straight receptacle, short version	LFEA	06C	MRSN	MRWN					NNNN*	000
						MRRS		MRRW		NNNN*	
								MRRS		MRRW	

Dimensions are in mm * Not UL Version

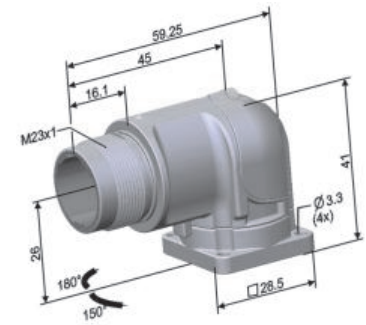
Power Receptacles - System 2000

CONTACT ARRANGEMENTS VIEW MATING FACE			06E		08T				CABLE CLAMP			
			TERMINATION CROSS SECTION									
	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		
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	Rotatable angled receptacle	LGDG	06E	MRLN						000		
				MRZN							NNNN*	
					MRWN							NNNN*
			08T			MRRL						NNNN*
								MRRZ				NNNN*
									MRRW			NNNN*
Fixed angled receptacle	LGFG	06E	MRLN						000			
			MRZN							NNNN*		
				MRWN							NNNN*	
		08T			MRRL						NNNN*	
							MRRZ				NNNN*	
								MRRW			NNNN*	

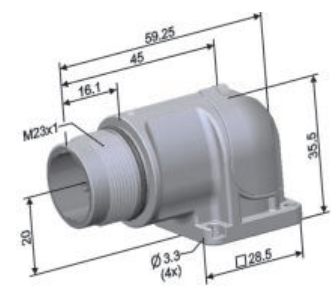
Dimensions are in mm

* Not UL Version

Rotatable angled receptacle



Fixed angled receptacle



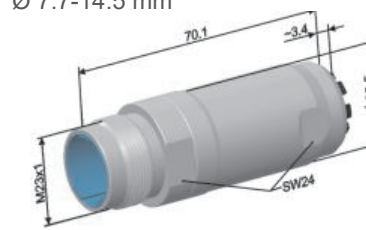
Power Extensions - Innovation

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

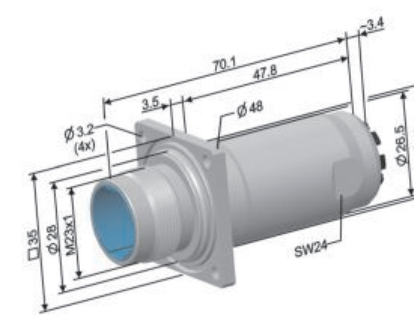
Dimensions are in mm

* Not UL Version

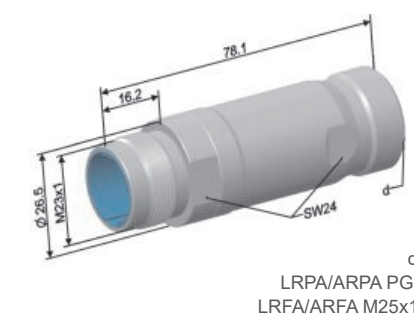
Extension with cable clamp
Ø 7.7-14.5 mm



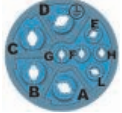
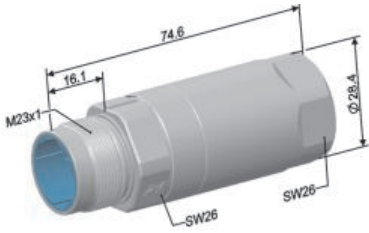
Extension with cable clamp
Ø 7.7-14.5 mm, square flange



Extension with cable clamp
Ø 7.7-14.5 mm, threaded connection


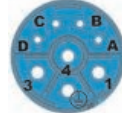
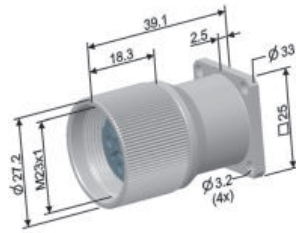


Power Extension - System 2000

CONTACT ARRANGEMENTS VIEW MATING FACE			 09A		CABLE CLAMP
			TERMINATION CROSS SECTION		
	SHELL	INSERT	AWG 22-18/16	AWG 18-14/12	
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR					
Extension with cable clamp Ø 7.7-18.5 mm					
					
	LRLA	09A	MRTU		213
				NNNN*	


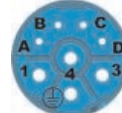
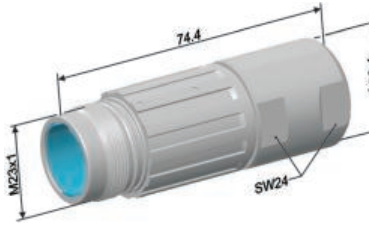
Dimensions are in mm * Not UL Version

Power Panel Feed Through - Innovation

CONTACT ARRANGEMENTS VIEW MATING FACE			 06B		 08B		CABLE CLAMP	
			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								
								
	LDA A	06B	FRBN	FRDN			NNNN*	
		08B			FRKB		FRKD	
							NNNN*	
							000	

Dimensions are in mm * Not UL Version

Power Extension - Version 1i

CONTACT ARRANGEMENTS VIEW MATING FACE			 06J		 08X		CABLE CLAMP	
			TERMINATION CROSS SECTION					
	SHELL	INSERT	AWG 22-16	AWG 16-12	AWG 24-16	AWG 22-16		AWG 24-16
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR								
Extension with cable clamp Ø 5-16 mm								
								
	LYMA	06J	MRJN	MRIN				NNNN*
					MRYJ			
		08X				MRYI		
								NNNN*
								260 261 262

Dimensions are in mm * Not UL Version

Note:
1) more information please contact factory

Power Plugs - Innovation

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

Dimensions are in mm * UL Version

Power Plugs - System 2000



CONTACT ARRANGEMENTS VIEW MATING FACE			06D		08L		09B				CABLE CLAMP	
			TERMINATION CROSS SECTION									
	SHELL	INSERT	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
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	LPLA	06D	FRON	FRRN							NNNN*	
		08L			FRFO	FRFR		FRPO			NNNN*	
Plug with cable clamp Ø 7.7-18.5 mm	LPLA	09B							FRFO		NNNN*	
										FRPR	NNNN*	

Dimensions are in mm * Not UL Version

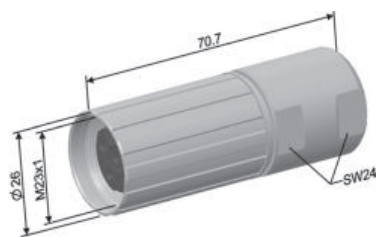
Note:

¹⁾ Terminals with insulation sleeve

Power Plugs - Version 1i

CONTACT ARRANGEMENTS VIEW MATING FACE							CABLE CLAMP	
			06M	08Z	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	LVLA*	06M	FRHN				260 261 262	
				FRUN				NNNN
		08Z			FRFH			
								FRFU



Plug with cable clamp Ø 5-16 mm, machined sockets



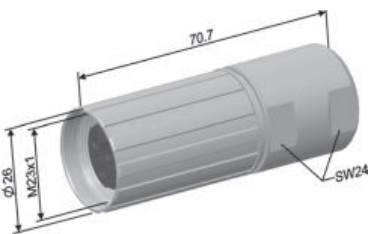
Flange can be ordered separately ¹⁾

Dimensions are in mm

* UL Version

CONTACT ARRANGEMENTS VIEW MATING FACE							CABLE CLAMP
			CONTACTS TO BE ORDERED SEPARATELY STAMPED HCS™ CONTACTS ON REELS ²⁾				
	SHELL	INSERT	without contacts				
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	LVMA	06F	NNNN*				260 261 262
		08U	NNNN*				

Plug with cable clamp Ø 5-16 mm, stamped HCS™ sockets



Flange can be ordered separately ¹⁾

Dimensions are in mm

* Not 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	
	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	
Cable clamp no. 213 for LPLA/LRLA	Clamp range	
	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	
Cable clamp no. 260/261/262 for LVMA/LYMA	Clamp range	
	.260 cable diameter Ø 5–9 mm .261 cable diameter Ø 9–15 mm .262 cable diameter Ø 16mm Can be used for shielded and non-shielded cables	
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
Nominal current @ 20°C [A] ²⁾	VDE USR CNR	9 8 7	20 20 14	20 20 14
Crimping tool		B150	B151	B151
Positioner		B055/A	B157	B157

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
Nominal current @ 20°C [A]	VDE USR CNR	9 8 7	20 20 14	22 20 12
Crimping tool		B150	B151	B151
Positioner		B055/A	B157	B154

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
Nominal current @ 20°C [A] ²⁾	VDE USR CNR	9 9 7.5	9 9 7.5	30 30 18	30 30 18
Crimping tool		B151	B151	B179	B179
Positioner		B245	B252	B245	B245

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
Nominal current @ 20°C [A]	VDE USR CNR	9 9 7.5	9 9 7.5	30 30 18
Crimping tool		B150	B151	B151
Positioner		B055/A	B252	B252

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 USR CNR	9 9 7.5	20 12 -	30 - -
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					
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
Nominal current @ 20°C [A]	VDE	4	6	8	8
	USR	9	9	9	9
	CNR	-	-	-	-
Hand crimping tool with feeder line for small reels		B287/32-28	B287/28-24	B287/24-20	B287/0.75-1
Applicator for Schäfer/AMP crimping machines		B288/32-28	B288/28-24	B288/24-20	B288/0.75-1
Applicator for Kirsten PP3 crimping machine		B286/32-28	B286/28-24	B286/24-20	B286/0.75-1
Number of contacts on reel	[Pieces]	9000	9000	9000	9000
Number of contacts on small reel	[Pieces]	300	300	300	300

HCS™ Stamped Sockets Ø 1mm - Version 1i

Type		E	F	G
Contact diameter [mm]		2	2	2
PART NUMBER AND LAYOUT				
Termination cross section ¹⁾	[AWG] [mm ²]	20 - 18 0.5 - 1.0	18 - 14 1.0 - 2.0	- 2.5 - 4.0
Nominal current @ 20°C [A]	VDE	12	18	30
	USR	12	18	30
	CNR	-	-	-
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

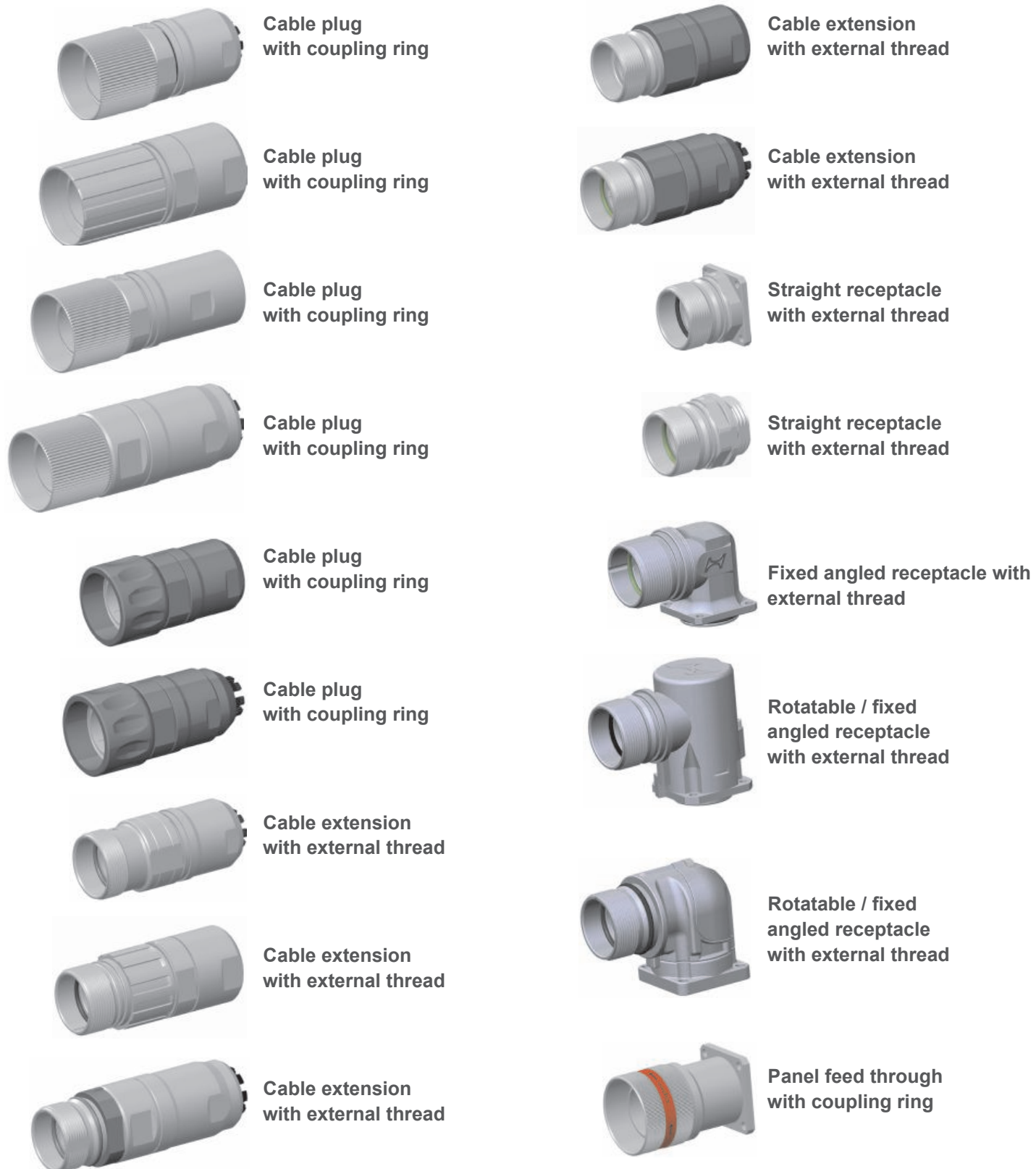
Robotics



- 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

6 x 1 3 x 2	9 x 1	12 x 1	12 x 1 code 20°	16 x 1	17 x 1	21 x 0.6
09H	09K	12S	12U	16B	17H	21B
030.629.2000	030.677.2000	030.619.2000	030.623.2000	030.691.2000	030.679.2000	030.226.1000
09G	09J	12T	12V	16A	17G	21A
030.631.2000	030.676.2000	030.617.2000	030.621.2000	030.701.2000	030.678.2000	030.225.1000
120	120	120	120	120	120	32
50	50	50	50	50	50	32
125	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	WITHOUT INSERT, INSERTS TO BE ORDERD SEPARATELY
1	2	A	12WAY, FOR PINS 12 x Ø 1 mm

FOR SOLDER CONTACTS			
0	0	0	WITHOUT INSERT, INSERTS TO BE ORDERD SEPARATELY
0	6	C	6WAY, FOR CONTACTS 6 x Ø 2 mm E-PART
0	6	D	6WAY, FOR CONTACTS 6 x Ø 2 mm P-PART
0	6	E	6WAY, FOR CONTACTS 6 x Ø 2 mm E-PART
0	6	F	6WAY, FOR CONTACTS 6 x Ø 2 mm P-PART
0	7	A	7WAY, FOR CONTACTS 7 x Ø 2 mm E-PART
0	7	B	7WAY, FOR CONTACTS 7 x Ø 2 mm P-PART

FOR CRIMP CONTACTS			
0	0	0	WITHOUT INSERT, INSERTS TO BE ORDERD SEPARATELY
0	6	G	6WAY, FOR CONTACTS 6 x Ø 2 mm E-PART
0	6	H	6WAY, FOR CONTACTS 6 x Ø 2 mm P-PART
0	7	C	7WAY, FOR CONTACTS 7 x Ø 2 mm E-PART
0	7	D	7WAY, FOR CONTACTS 7 x Ø 2 mm P-PART
0	9	E	9WAY, FOR CONTACTS 8 x Ø 1 + 1 x Ø 2 mm E-PART
0	9	F	9WAY, FOR CONTACTS 8 x Ø 1 + 1 x Ø 2 mm P-PART
0	9	G	9WAY, FOR CONTACTS 6 x Ø 1 + 3 x Ø 2 mm E-PART
0	9	H	9WAY, FOR CONTACTS 6 x Ø 1 + 3 x Ø 2 mm P-PART
0	9	J	9WAY, FOR CONTACTS 9 x Ø 1 mm E-PART
0	9	K	9WAY, FOR CONTACTS 9 x Ø 1 mm P-PART

1	2	C	12WAY, CODE 20°, FOR PINS Ø 12 x 1 mm
1	7	A	17WAY, FOR PINS 17 x Ø 1 mm

FOR SOLDER CONTACTS			
0	9	C	9WAY, FOR CONTACTS 8 x Ø 1 + 1 x Ø 2 mm E-PART
0	9	D	9WAY, FOR CONTACTS 8 x Ø 1 + 1 x Ø 2 mm P-PART
0	9	A	9WAY, FOR CONTACTS 9 x Ø 1 mm P-PART
0	9	B	9WAY, FOR CONTACTS 9 x Ø 1 mm E-PART
1	2	E	12WAY, FOR CONTACTS 12 x Ø 1 mm P-PART
1	2	F	12WAY, FOR CONTACTS 12 x Ø 1 mm E-PART

FOR CRIMP CONTACTS			
1	2	S	12WAY, FOR CONTACTS 12 x Ø 1 mm E-PART
1	2	T	12WAY, FOR CONTACTS 12 x Ø 1 mm P-PART
1	2	U	12WAY, CODE 20°, FOR CONTACTS 12 x Ø 1 mm E-PART
1	2	V	12WAY, CODE 20°, FOR CONTACTS 12 x Ø 1 mm P-PART
1	6	A	16WAY, FOR CONTACTS 16 x Ø 1 mm E-PART
1	6	B	16WAY, FOR CONTACTS 16 x Ø 1 mm P-PART
1	7	G	17WAY, FOR CONTACTS 17 x Ø 1 mm E-PART
1	7	H	17WAY, FOR CONTACTS 17 x Ø 1 mm P-PART
2	1	A	21WAY, FOR CONTACTS 21 x Ø 0.6 mm E-PART
2	1	B	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	WITHOUT PINS, PINS TO BE ORDERED SEPARATELY	M	R	E	N	PINS, Ø 1 mm, AWG 24 - 18
M	R	A	N	PINS, Ø 1 mm, AWG 26 - 22	M	R	M	N	PINS, Ø 1 mm, AWG 24 - 18 (terminals with insulation sleeves)
WITH CRIMP CONTACTS									
N	N	N	N	WITHOUT CONTACTS, MACHINED OR STAMPED CONTACTS TO BE ORDERED SEPARATELY	F	R	R	N	HYPERTAC SOCKETS - Ø 2 mm, AWG 20 - 16
M	R	R	N	PINS - Ø 2 mm, AWG 18 - 14	F	R	M	N	HYPERTAC SOCKETS - Ø 2 mm, AWG 18 - 14
M	R	V	N	PINS - Ø 2 mm, AWG 22 - 16	F	R	O	R	HYPERTAC SOCKETS - Ø 1 mm + Ø 2 mm, AWG 24 - 18, AWG 20 - 16
M	R	S	R	PINS - Ø 1 mm + Ø 2 mm, AWG 24 - 18, AWG 18 - 14	F	R	O	M	HYPERTAC SOCKETS - Ø 1 mm + Ø 2 mm, AWG 24 - 18, AWG 18 - 14
M	R	S	V	PINS - Ø 1 mm + Ø 2 mm, AWG 24 - 18, AWG 22 - 16	F	R	B	R	HYPERTAC SOCKETS - Ø 1 mm + Ø 2 mm, AWG 30 - 22, AWG 20 - 16
M	R	W	R	PINS - Ø 1 mm + Ø 2 mm, AWG 30 - 22, AWG 18 - 14	F	R	B	M	HYPERTAC SOCKETS - Ø 1 mm + Ø 2 mm, AWG 30 - 22, AWG 18 - 14
M	R	W	V	PINS - Ø 1 mm + Ø 2 mm, AWG 30 - 22, AWG 22 - 16	F	R	O	N	HYPERTAC SOCKETS - Ø 1 mm, AWG 24 - 18
M	R	S	N	PINS - Ø 1 mm, AWG 24 - 18	F	R	B	N	HYPERTAC SOCKETS - Ø 1 mm, AWG 30 - 22
M	R	W	N	PINS - Ø 1 mm, AWG 30 - 22	F	R	F	N	HYPERTAC SOCKETS - Ø 0.6 mm, AWG 26 - 22
M	R	G	N	PINS - Ø 0.6 mm, AWG 26 - 22					
WITH SOLDER CONTACTS (built-in)									
M	S	B	N	PINS - Ø 2 mm	F	S	B	N	HYPERTAC SOCKETS - Ø 2 mm
M	S	A	B	PINS - Ø 1 mm + Ø 2 mm	F	S	A	B	HYPERTAC SOCKETS - Ø 1 mm + Ø 2 mm
M	S	A	N	PINS - Ø 2 mm	F	S	A	N	HYPERTAC SOCKETS - Ø 2 mm

5 CABLE CLAMPING

0	0	0	WITHOUT CABLE CLAMP, ALL RECEPTACLES & PANEL FEED THROUGH	2	6	0	VARIABLE CABLE CLAMP, EXTENSION & PLUG CLAMP RANGE 5-9 mm
1	6	9	VARIABLE CABLE CLAMP, EXTENSION & PLUG CLAMP RANGE 5.5 - 12 mm	2	6	1	VARIABLE CABLE CLAMP, EXTENSION & PLUG CLAMP RANGE 9-15 mm
1	7	0	VARIABLE CABLE CLAMP, EXTENSION & PLUG CLAMP RANGE 7.7 - 14.5 mm	2	6	2	CABLE CLAMP, EXTENSION & PLUG CABLE DIAMETER 16 mm
.	.	.	SPECIFIC CABLE CLAMP, CONNECTORS WITH PLASTIC SHELL, PLEASE CONTACT FACTORY				

6 VERSION NUMBER

0	1	DEPENDENT ON TYPE AND SPECIAL DESIGN, SEE DETAILED DESCRIPTION OF THE CONNECTOR DESIGN
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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	MRAN	MRAN	MRAN	000
			AWG 24-18	MREN	MREN	MREN	
			AWG 24-18 ¹⁾	MRMN	MRMN	MRMN	
			without contacts ²⁾	NNNN*	NNNN*	NNNN*	
Straight receptacle, threaded connection PG13.5 	SFRA	MACHINED CRIMP PINS	AWG 26-22	MRAN	MRAN	MRAN	000
			AWG 24-18	MREN	MREN	MREN	
			AWG 24-18 ¹⁾	MRMN	MRMN	MRMN	
			without contacts ²⁾	NNNN*	NNNN*	NNNN*	
Fixed angled receptacle 	SEAB	MACHINED CRIMP PINS	AWG 26-22	MRAN	MRAN	MRAN	000
			AWG 24-18	MREN	MREN	MREN	
			AWG 24-18 ¹⁾	MRMN	MRMN	MRMN	
			without contacts ²⁾	NNNN*	NNNN*	NNNN*	


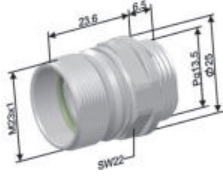
Dimensions are in mm

* Not 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		
Straight receptacle 	SFNA	PINS WITH SOLDER CUP	MSBN	MSBN
		SOCKETS WITH SOLDER CUP	FSBN	FSBN
Straight receptacle with threaded connection PG 13.5 	SFPA	PINS WITH SOLDER CUP	MSBN	MSBN
		SOCKETS WITH SOLDER CUP	FSBN	FSBN

Dimensions are in mm

CONTACT ARRANGEMENTS VIEW MATING FACE							CABLE CLAMP
07A 7 x 2	09C 8 x 1 / 1 x 2	09A 9 x 1	12E 12 x 1				
	MSBN	MSAB	MSAN	MSAN		000	
07A	FSBN	FSAB	FSAN	FSAN		000	
	MSBN	MSAB	MSAN	MSAN		000	
07A	FSBN	FSAB	FSAN	FSAN		000	

Signal receptacles for crimp contacts 6 - 17way

LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR

SHELL

Straight receptacle

SFFA

Straight receptacle with threaded connection

SFQA SFLA

Dimensions are in mm * Not 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		MRRN		MRRN
	AWG 22-16		MRVN		MRVN
	AWG 24-18, 18-14		-		-
	AWG 24-18, 22-16	06G	-	07C	-
	AWG 30-22, 18-14		-		-
	AWG 30-22, 22-16		-		-
	AWG 24-18		-		-
	AWG 30-22		-		-
MACHINED CRIMP SOCKETS	AWG 20-16		FRRN		FRRN
	AWG 18-14		FRMN		FRMN
	AWG 24-18, 20-16		-		-
	AWG 24-18, 18-14	06G	-	07C	-
	AWG 30-22, 20-16		-		-
	AWG 30-22, 18-14		-		-
	AWG 24-18		-		-
	AWG 30-22		-		-
MACHINED CONTACTS	CONTACTS TO BE ORDERED SEPARATELY ¹⁾		NNNN*		NNNN*
STAMPED HCS™ CONTACTS	CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾	06G	-	07C	-

CONTACT ARRANGEMENTS VIEW MATING FACE														
09E 8 x 1 / 1 x 2		09G 6 x 1 / 3 x 2		09J 9 x 1		12T 12 x 1		12V 12 x 1 (code 20°)		16A 16 x 1		17G 17 x 1		
09E	-	-	-	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MRSR	MRSR	-	-	-	-	-	-	-	-	-	-	-	
	MRSV	MRSV	-	-	-	-	-	-	-	-	-	-	-	
	MRWR	MRWR	-	-	-	-	-	-	-	-	-	-	-	
	MRWV	MRWV	-	-	-	-	-	-	-	-	-	-	-	
	-	-	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN
	-	-	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN
09E	-	-	-	-	-	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	-	-	-	
	FROR	FROR	-	-	-	-	-	-	-	-	-	-	-	
	FROM	FROM	-	-	-	-	-	-	-	-	-	-	-	
	FRBR	FRBR	-	-	-	-	-	-	-	-	-	-	-	
	FRBM	FRBM	-	-	-	-	-	-	-	-	-	-	-	
	-	-	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON
	-	-	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN
09E	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	
	-	-	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	

CABLE CLAMP

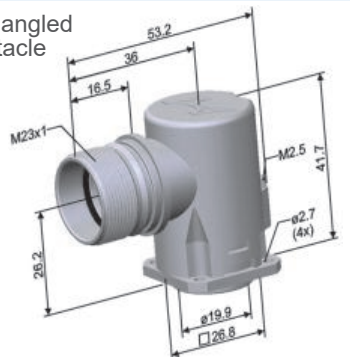
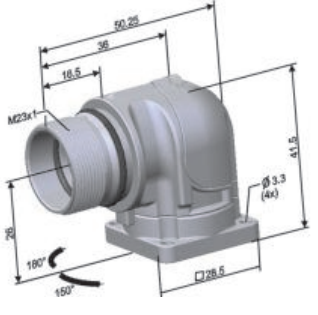
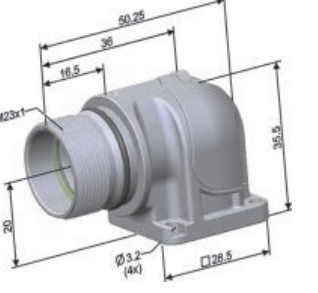
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Note:

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

Signal receptacles for crimp contacts 6 - 17way

LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	SHELL	CONTACT STYLE GENDER REVERSIBLE	TERMINATION CROSS SECTION		CONTACT ARRANGEMENTS VIEW MATING FACE							CABLE CLAMP				
			06G 6 x 2	07C 7 x 2	09E 8 x 1 / 1 x 2	09G 6 x 1 / 3 x 2	09J 9 x 1	12T 12 x 1	12V 12 x 1 (code 20°)	16A 16 x 1	17G 17 x 1					
Rotatable angled receptacle	SFMB	MACHINED CRIMP PINS	AWG 18-14	MRRN	-	-	-	-	-	-	-	-	-	000		
	SFYB		AWG 22-16	MRVN	-	-	-	-	-	-	-	-	-		000	
			AWG 24-18, 18-14	-	-	-	-	-	-	-	-	-	-			-
			AWG 24-18, 22-16	-	-	-	-	-	-	-	-	-	-			-
			AWG 30-22, 18-14	-	-	-	-	-	-	-	-	-	-			-
			AWG 30-22, 22-16	-	-	-	-	-	-	-	-	-	-			-
			AWG 24-18	-	-	-	-	-	-	-	-	-	-			-
	SGDG		AWG 20-16	FRRN	-	-	-	-	-	-	-	-	-		000	
			AWG 18-14	FRMN	-	-	-	-	-	-	-	-	-			
			AWG 24-18, 20-16	-	-	-	-	-	-	-	-	-	-			
		AWG 24-18, 18-14	-	-	-	-	-	-	-	-	-	-				
		AWG 30-22, 20-16	-	-	-	-	-	-	-	-	-	-				
		AWG 30-22, 18-14	-	-	-	-	-	-	-	-	-	-				
		AWG 24-18	-	-	-	-	-	-	-	-	-	-				
	SGFG	MACHINED CONTACTS	CONTACTS TO BE ORDERED SEPARATELY ¹⁾ without contacts		06G	NNNN*	07C	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	000			
		STAMPED HCS™ CONTACTS	CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾ without contacts		06G	-	07C	-	NNNN*	NNNN*	NNNN*	NNNN*		NNNN*		

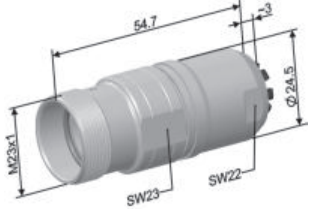
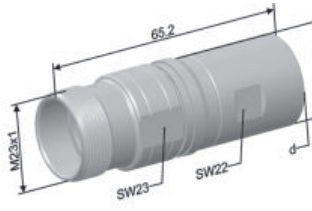
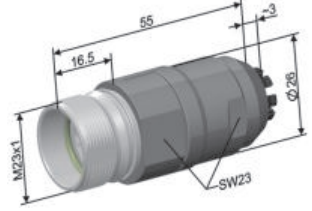
Dimensions are in mm

* Not UL Version

Note:

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

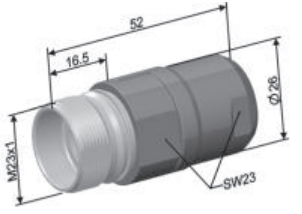
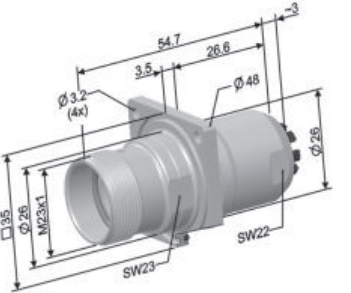
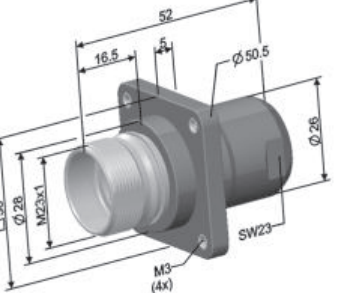
Signal receptacles with solder contacts 6 - 12way

LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	SHELL	NUMBER OF CONTACTS	CONTACT ARRANGEMENTS VIEW MATING FACE	
			06C 6 x 2	06E 6 x 2
Extension with cable clamp Ø 5.5-12 mm 	SRNA	PINS WITH SOLDER CUP	MSBN	MSBN
		SOCKETS WITH SOLDER CUP	FSBN	FSBN
Extension with cable clamp Ø 5.5-12 mm, threaded connection  d = SRRA = M20x1.5 SRGA = PG13.5	SRRA SRGA	PINS WITH SOLDER CUP	MSBN	MSBN
		SOCKETS WITH SOLDER CUP	FSBN	FSBN
Extension, plastic shell, with cable clamp Ø 5.5-12 mm 	SROC	PINS WITH SOLDER CUP	MSBN	MSBN
		SOCKETS WITH SOLDER CUP	FSBN	FSBN

Dimensions are in mm

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

Signal extensions 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		CONTACT ARRANGEMENTS VIEW MATING FACE	
Extension, plastic shell, with cable specific cable clamps ¹⁾ 	SRUC	06C	MSBN	MSBN	
			FSBN	FSBN	
Extension with cable clamp Ø 5.5-12 mm, square flange 	SRNA	06C	MSBN	MSBN	
			FSBN	FSBN	
Extension, plastic shell, with cable specific cable clamps ¹⁾ , square flange 	SRWC	06C	MSBN	MSBN	
			FSBN	FSBN	

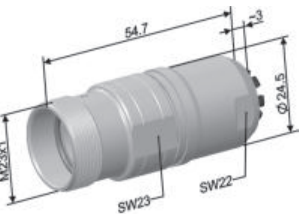
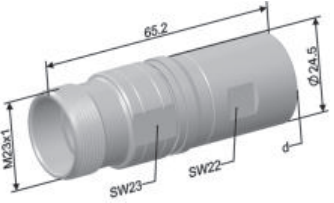
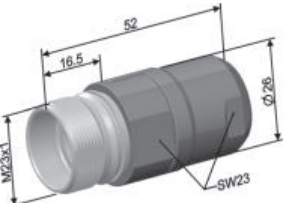
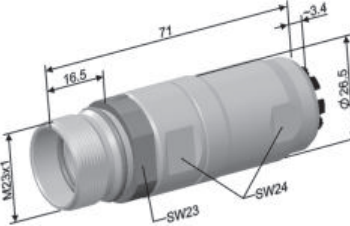
Dimensions are in mm

CONTACT ARRANGEMENTS VIEW MATING FACE							CABLE CLAMP
07A 7 x 2	09C 8 x 1 / 1 x 2	09A 9 x 1	12E 12 x 1				
	MSBN	MSAB	MSAN	MSAN		...	
07A	09C	09A	12E			...	
	FSBN	FSAB	FSAN	FSAN		...	
	MSBN	MSAB	MSAN	MSAN		16901	
07A	09C	09A	12E			16901	
	FSBN	FSAB	FSAN	FSAN		...	
	MSBN	MSAB	MSAN	MSAN		...	
07A	09C	09A	12E			...	
	FSBN	FSAB	FSAN	FSAN		...	

Note:

¹⁾ Cable specific cable clamp please contact factory

Signal extensions for crimp contacts 6 - 17way

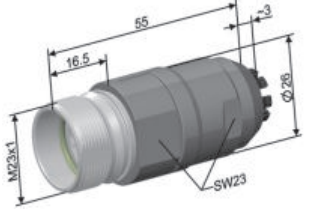
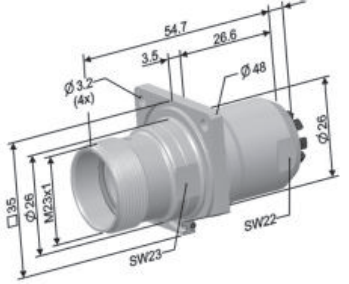
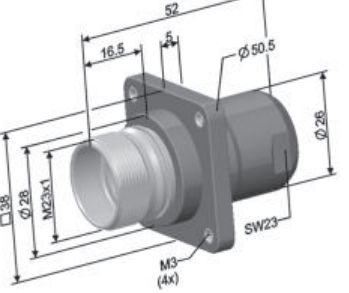
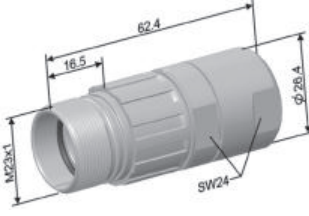
LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	SHELL	CONTACT STYLE GENDER REVERSIBLE	TERMINATION CROSS SECTION		CONTACT ARRANGEMENTS VIEW MATING FACE							CABLE CLAMP			
			06G 6 x 2	07C 7 x 2	09E 8 x 1 / 1 x 2	09G 6 x 1 / 3 x 2	09J 9 x 1	12T 12 x 1	12V 12 x 1 (code 20°)	16A 16 x 1	17G 17 x 1				
Extension with cable clamp Ø 5.5-12 mm	SRNA	MACHINED CRIMP PINS	AWG 18-14	MRRN	MRRN	-	-	-	-	-	-	-	-	169	
			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	-	-	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN		MRSN
AWG 30-22	-	-	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN				
Extension with cable clamp Ø 5.5-12 mm, threaded connection	SRRA SRGA	MACHINED CRIMP SOCKETS	AWG 20-16	FRRN	FRRN	-	-	-	-	-	-	-	-	000	
			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	-	-	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON		
AWG 30-22	-	-	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN					
Extension, plastic shell, with cable specific cable clamps ³⁾	SRUC	MACHINED CONTACTS	CONTACTS TO BE ORDERED SEPARATELY ¹⁾		-	-	-	-	-	-	-	-	...		
			NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*				
Extension with cable clamp Ø 7.7-14.5 mm	SRFA	MACHINED CONTACTS	CONTACTS TO BE ORDERED SEPARATELY ¹⁾		-	-	-	-	-	-	-	-	170		
			NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*				
		STAMPED HCS™ CONTACTS	CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾		-	-	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*			

Dimensions are in mm * Not UL Version

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

Note:

Signal extensions for crimp contacts 6 - 17way

LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	SHELL	CONTACT STYLE GENDER REVERSIBLE	TERMINATION CROSS SECTION		CONTACT ARRANGEMENTS VIEW MATING FACE							CABLE CLAMP				
			06G 6 x 2	07C 7 x 2	09E 8 x 1 / 1 x 2	09G 6 x 1 / 3 x 2	09J 9 x 1	12T 12 x 1	12V 12 x 1 (code 20°)	16A 16 x 1	17G 17 x 1					
Extension with cable clamp Ø 5.5-12 mm	SROC	MACHINED CRIMP PINS	AWG 18-14	MRRN	MRRN	-	-	-	-	-	-	-	-	-	169	
			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	-	-	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN		MRSN
AWG 30-22	-	-	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN	MRWN				
Extension with cable clamp Ø 5.5-12 mm, square flange	SRNA	MACHINED CRIMP SOCKETS	AWG 20-16	FRRN	FRRN	-	-	-	-	-	-	-	-	-	16901	
			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	-	-	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON		
AWG 30-22	-	-	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN					
Extension, plastic shell, with cable specific cable clamps ³⁾ , square flange	SRWC	MACHINED CRIMP SOCKETS	AWG 20-16	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	-	-	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON			
AWG 30-22	-	-	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN	FRBN						
Extension with cable clamp Ø 5-16 mm	SVRA	MACHINED CONTACTS	CONTACTS TO BE ORDERED SEPARATELY ¹⁾		NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	260 261 262			
		STAMPED HCS™ CONTACTS	CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾		-	-	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*				

Dimensions are in mm *Not UL Version

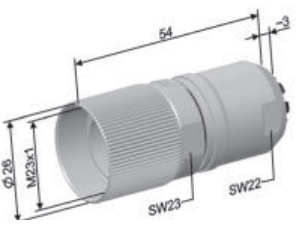
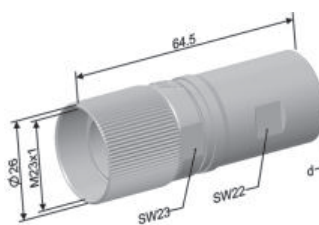
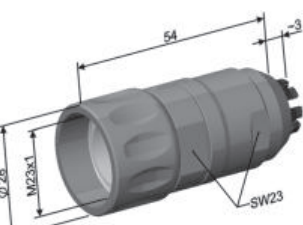
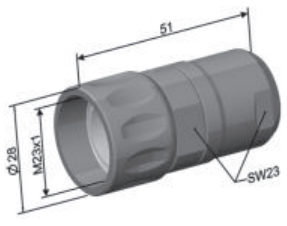
Note:

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

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		
			06D 6 x 2	06F 6 x 2	
		CONTACT STYLE	CONTACT ARRANGEMENTS VIEW MATING FACE		
Plug with cable clamp Ø 5.5–12 mm 	SPNA	PINS WITH SOLDER CUP	MSBN	MSBN	
		SOCKETS WITH SOLDER CUP	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	MSBN	MSBN	
		SOCKETS WITH SOLDER CUP	FSBN	FSBN	
Plug, plastic shell, with cable clamp Ø 5.5–12 mm 	SPOC	PINS WITH SOLDER CUP	MSBN	MSBN	
		SOCKETS WITH SOLDER CUP	FSBN	FSBN	
Plug, plastic shell, with cable specific cable clamps ¹⁾ 	SPUC	PINS WITH SOLDER CUP	MSBN	MSBN	
		SOCKETS WITH SOLDER CUP	FSBN	FSBN	

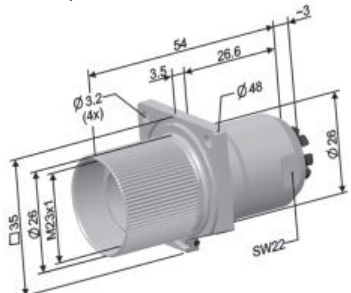
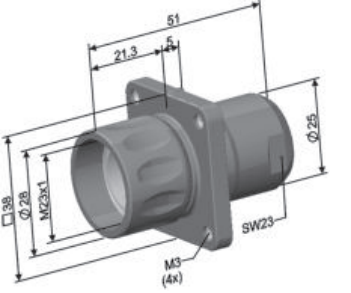
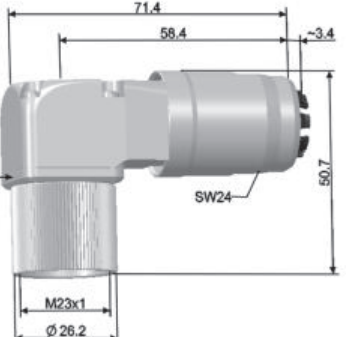
Dimensions are in mm

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				
	MSBN	MSAB	MSAN	MSAN		169	
07B	09D	09B	12F			169	
	FSBN	FSAB	FSAN	FSAN		169	
	MSBN	MSAB	MSAN	MSAN		000	
07B	09D	09B	12F			000	
	FSBN	FSAB	FSAN	FSAN		000	
	MSBN	MSAB	MSAN	MSAN		169	
07B	09D	09B	12F			169	
	FSBN	FSAB	FSAN	FSAN		169	
	MSBN	MSAB	MSAN	MSAN		...	
07B	09D	09B	12F			...	
	FSBN	FSAB	FSAN	FSAN		...	

Note:

¹⁾ Cable specific cable clamp please contact factory

Signal plugs with solder contacts 6 - 12way

LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	SHELL	NUMBER OF CONTACTS	CONTACT ARRANGEMENTS VIEW MATING FACE		
			06D 6 x 2	06F 6 x 2	
		CONTACT STYLE			
Plug with with cable clamp Ø 5.5–12 mm, square flange 	SPNA	PINS WITH SOLDER CUP	MSBN	MSBN	
		SOCKETS WITH SOLDER CUP	FSBN	FSBN	
Plug, plastic shell, with cable specific cable clamps ¹⁾ , square flange 	SPYC	PINS WITH SOLDER CUP	MSBN	MSBN	
		SOCKETS WITH SOLDER CUP	FSBN	FSBN	
Angled plug with cable clamp Ø 7.7-14.5 mm 	SPHA	PINS WITH SOLDER CUP	MSBN	MSBN	
		SOCKETS WITH SOLDER CUP	FSBN	FSBN	

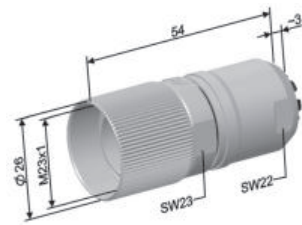
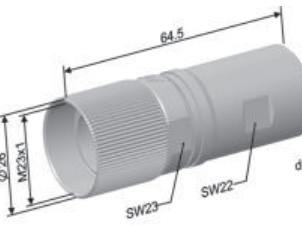
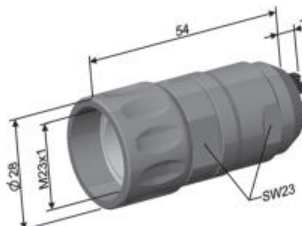
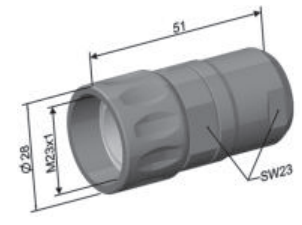
Dimensions are in mm

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				
	MSBN	MSAB	MSAN	MSAN		16914	
07B	09D	09B	12F				
	FSBN	FSAB	FSAN	FSAN		...	
07B	09D	09B	12F			17003	
	FSBN	FSAB	FSAN	FSAN			

Note:

¹⁾ Cable specific cable clamp please contact factory

Signal plugs for crimp contacts 6 - 17way

LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR	SHELL	CONTACT STYLE GENDER REVERSIBLE	TERMINATION CROSS SECTION		CONTACT ARRANGEMENTS VIEW MATING FACE							CABLE CLAMP			
			06H 6 x 2	07D 7 x 2	09F 8 x 1 / 1 x 2	09H 6 x 1 / 3 x 2	09K 9 x 1	12S 12 x 1	12U 12 x 1 (code 20°)	16B 16 x 1	17H 17 x 1				
Plug with cable clamp Ø 5.5-12 mm 	SPNA	MACHINED CRIMP PINS	AWG 18-14	MRRN	MRRN	-	-	-	-	-	-	-	-	-	169
Plug with cable clamp Ø 5.5-12 mm, threaded connection  d = SRRA = M20x1.5 SRGA = PG13.5	SPRA SPGA		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	-	-	-	-	-	-	-	-	-	-	-	
Plug, plastic shell, with cable clamp Ø 5.5-12 mm 	SPOC	MACHINED CRIMP SOCKETS	AWG 20-16	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	-	-	-	-	-	-	-	-	-	-	-	
Plug, plastic shell, with cable specific cable clamps ³⁾ 	SPUC	MACHINED CONTACTS	CONTACTS TO BE ORDERED SEPARATELY ¹⁾		NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	169	
		STAMPED HCS™ CONTACTS	CONTACTS ON REELS TO BE ORDERED SEPARATELY ²⁾		-	-	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*		

Dimensions are in mm * Not 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

Signal plugs for crimp contacts 6 - 17way

LAYOUT DESCRIPTION PART NUMBER CONFIGURATOR

SHELL

Plug with cable clamp Ø 5.5-12 mm, square flange

SPNA

Plug, plastic shell, with cable specific cable clamps¹⁾, square flange

SPYC

Angled plug with cable clamp Ø 7.7-14.5 mm

SPHA

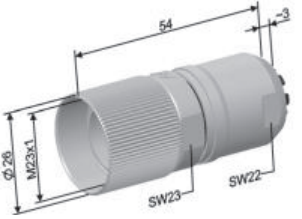
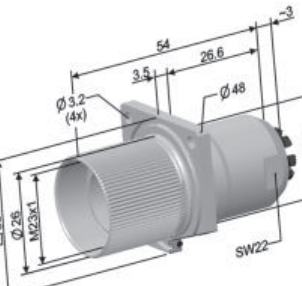
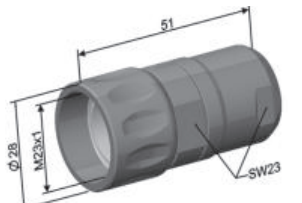
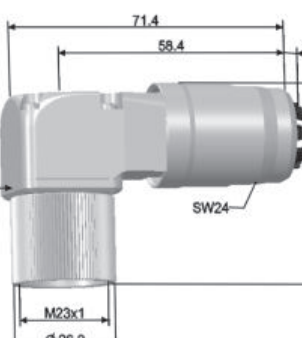
Dimensions are in mm * Not UL Version

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	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	-	-
MACHINED CRIMP SOCKETS	AWG 20-16	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	-	-
MACHINED CONTACTS	CONTACTS TO BE ORDERED SEPARATELY ¹⁾	NNNN*	NNNN*
	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

CONTACT STYLE GENDER REVERSIBLE	CONTACT ARRANGEMENTS VIEW MATING FACE														CABLE CLAMP	
	09F 8 x 1 / 1 x 2	09H 6 x 1 / 3 x 2	09K 9 x 1	12S 12 x 1	12U 12 x 1 (code 20°)	16B 16 x 1	17H 17 x 1									
09F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16914
	MRSR	MRSR	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MRSV	MRSV	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MRWR	MRWR	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MRWV	MRWV	-	-	-	-	-	-	-	-	-	-	-	-	-	
	-	-	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	MRSN	
09H	-	-	-	-	-	-	-	-	-	-	-	-	-	-	...	
	FROR	FROR	-	-	-	-	-	-	-	-	-	-	-	-		
	FROM	FROM	-	-	-	-	-	-	-	-	-	-	-	-		
	FRBR	FRBR	-	-	-	-	-	-	-	-	-	-	-	-		
	FRBM	FRBM	-	-	-	-	-	-	-	-	-	-	-	-		
	-	-	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON	FRON		
09K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17003	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
09F	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*		
	-	-	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*	NNNN*		

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 *Not UL Version

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	
	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	
Cable clamp no. 170 	Clamp range	
	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	
Cable clamp no. 260/261/262 for SVPA/SVRA 	Clamp range	
	.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	
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 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 -	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 -	9 9 -	9 9 -	3 - -
Crimping tool	B151	B151	B150	B150	B151
Positioner	B201	B201	B055/A	B055/A	B378

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.

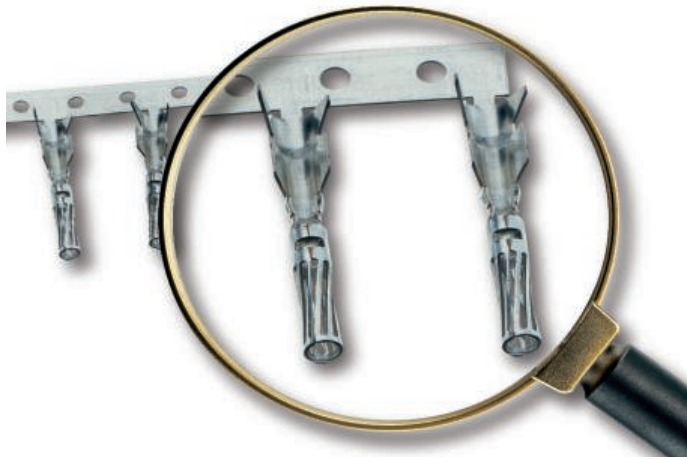
Machined pins - Series S (for receptacles IP67 unmated)

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 USR CNR	9 8 7	9 8 7
Crimping tool	B150	B150	B150
Positioner	B055/A	B055/A	B055/A

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.

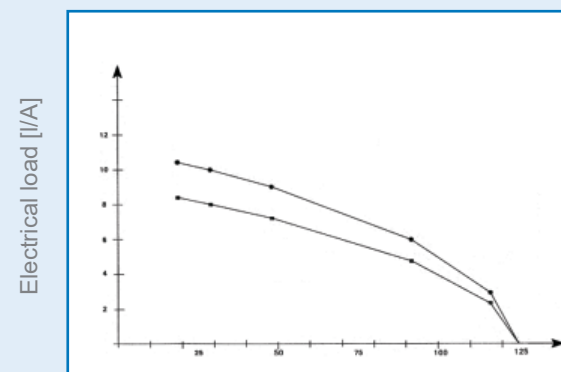
For all variations, the wire cage has the same design characteristics. In the contact area all single contact flaps are made in a circle shape which guarantees "wire quality". The HCS contacts on reels for crimping machines with automatic feeder lines are fully compatible with our machined Hypertac®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

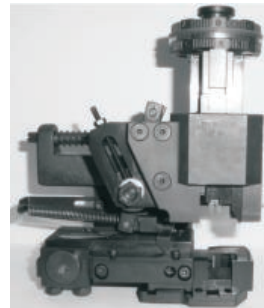
Hand crimping tools	Part number
	B150
	B151
	B179

Crimp accessories	Part number
	MASTER GAUGE B190 (for B150 and B151) B230 (for B179)
	POSITIONER B154, B157, B165, B201, B245, B252, B297, B305, B306, B341, B378
	POSITIONER B055/A

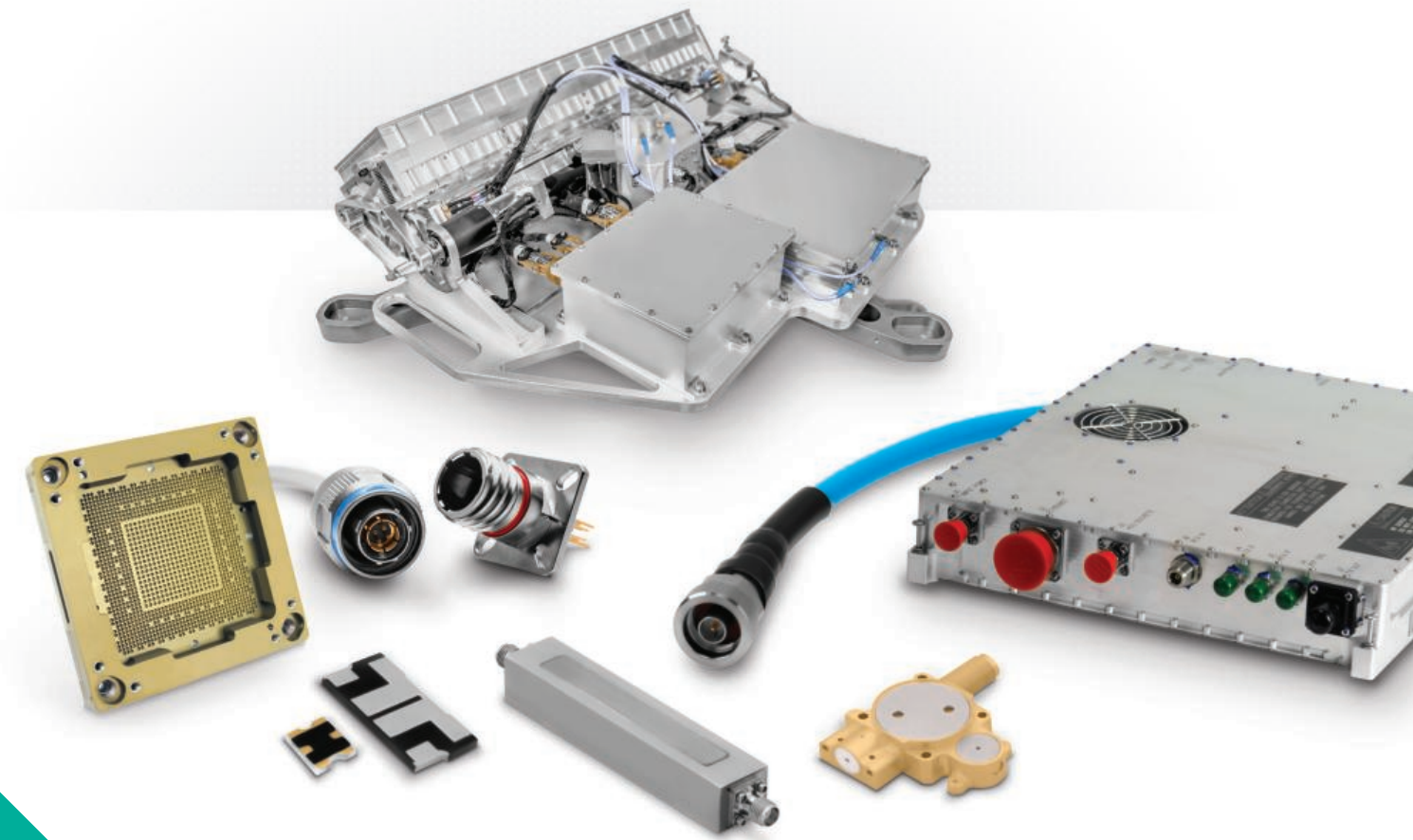
Crimping tools for stamped HCS™ contacts

Hand crimping tool with feeder line for small reels	Termination cross section	Part number
	Ø 1 mm CONTACTS 0.032–0.08 mm², AWG 32-28 0.08-0.20 mm², AWG 28-24 0.20-052 mm², AWG 24-20 0.75-1.00 mm²	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 mm², AWG 20-18 1.00-2.00 mm², 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 mm², 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 mm², AWG 32-28 0.08-0.20 mm², AWG 28-24 0.20-052 mm², AWG 24-20 0.75-1.00 mm²	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 mm², AWG 20-18 1.00-2.00 mm², AWG 18-14 2.50–4.00 mm², AWG12	Ø 2 mm CONTACTS on demand on demand on demand

Product Portfolio



- Antenna Systems
 - Cable Assemblies
 - Connector Solutions
 - Ferrite Components & Assemblies
 - RF Filter Components & Assemblies
 - Integrated Microwave Assemblies
 - Millimeter-Wave Solutions
 - RF Components
 - Test Sockets and WLCSP Probe Heads
 - Time & Frequency Systems

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