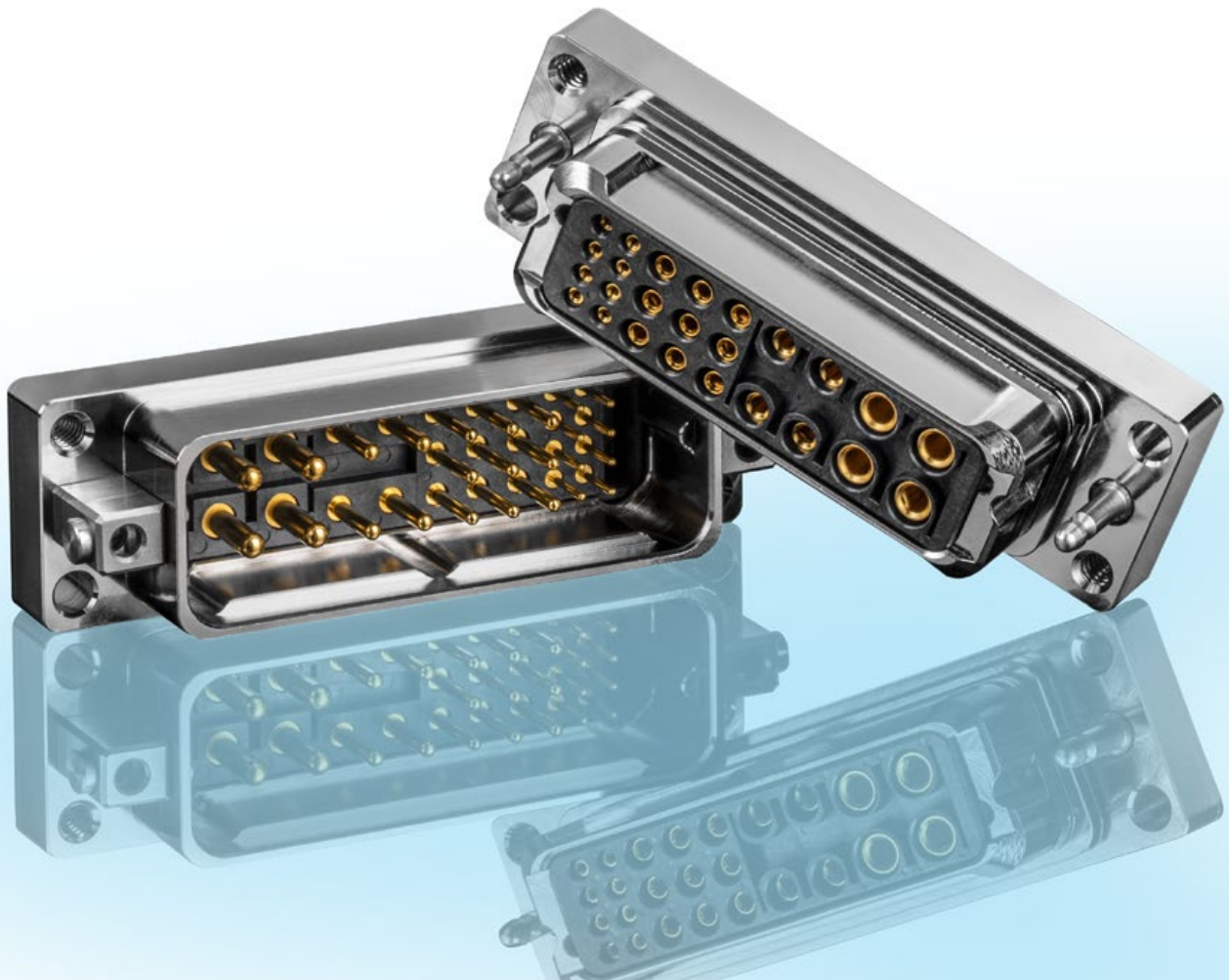


# SP MAX

## RUGGED POWER & SIGNAL CONNECTORS FOR RUGGED ENVIRONMENTS

- Developed specifically for power and signal management in military, space, satellite, and commercial air applications
- Precision machined shell, available in three sizes, provides EMI/RFI protection
- Combine a multitude of contact sizes in a single connector including #12, #16, #18, and #22 contacts
- Performance compatibility to EN4165 and ESA/ESCC-3401



**Positronic®**  
an Amphenol company

THE SCIENCE OF **CERTAINTY®**

M027 22/12

### FEATURES

- Liquid crystal polymer (LCP) insulators ensure proper operation from -55°C to 175°C
- Rated up to 35A per contact at 30°C temperature rise
- Integral blind mating allows for up to 2mm of offset
- Machined contacts in crimp, solder, or press-fit termination options
- Slim metal housing allows for heat dissipation and shielding
- Hardware options include angle brackets, boardlocks, jackscrews, and a quick-locking system
- Sequential mating, selective loading, and customized contact positioning helps solve difficult application solutions

### APPLICATIONS

- Power and signal I/O
- LRUs for military, space, satellite, and commercial air applications
- Ground-based, air/space transport, and operation in harsh environments (deep space complex and planetary-based communications)
- Battery and solar power distribution and management
- High-wattage switchable power supplies
- Inside-the-box power and signal distribution

### TECH SPECS

#### GENERAL

Part Number Prefix	SM
Performance Level	Mil/Aero Spaceflight
Qualifications	FAR-25-853(a) FAR-25-855(d)
RoHS Compliance	Yes (by default)

#### MATERIAL AND FINISHES

Insulator	LCP
Insulator Color	Black
Flammability Rating	UL 94V-0
Contact Material	Copper alloy
Contact Plating	Gold flash 0.76µm Au (min) 1.27µm Au (min)
Shell Material	Aluminum

#### ELECTRICAL

Insulator Resistance	2.5 GΩ	
Proof Voltage (rms)	Up to 2200V	
Working Voltage (rms)	Up to 600V	
Initial Contact Resistance	As low as 0.5 mΩ	
Contact Current Rating at 30°C Temperature Rise	Standard Conductivity	High Conductivity
Size 12	27A	35A
Size 16	15A	21A
Size 18	13A	17A
Size 22	3A	

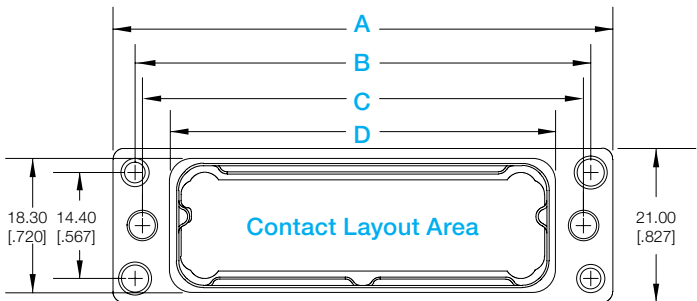
#### MECHANICAL

Shape	Rectangular
Body Style	Free cable Panel mount
Insulator Construction	One-piece
Locking System	Optional
Contact Style	Fixed Removable
Contact Size	#22 #18 #16 #12
Female Contact Design	Closed entry
Contact Retention Mechanism	Metal clip Press-in
Contact Retention	27N to 67N ( 6 lbs to 15 lbs)
Contact Termination	Wire PCB
Mating Cycles	500
Blind Mating Allowance	Up to 2mm offset

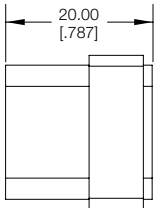
#### ENVIRONMENTAL

Operating Temperature	-55 to 175°C
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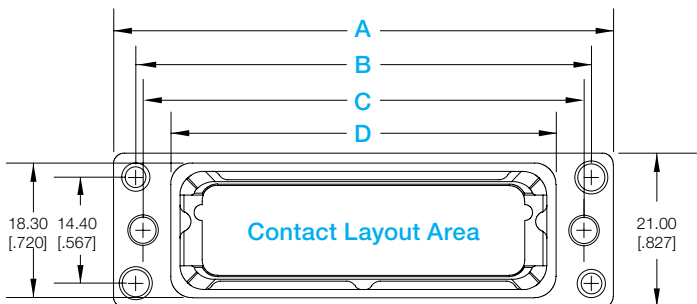
MALE FACE VIEW



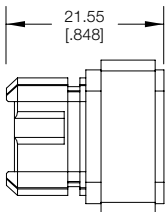
MALE SIDE VIEW



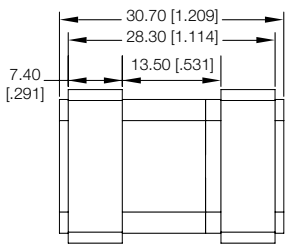
FEMALE FACE VIEW



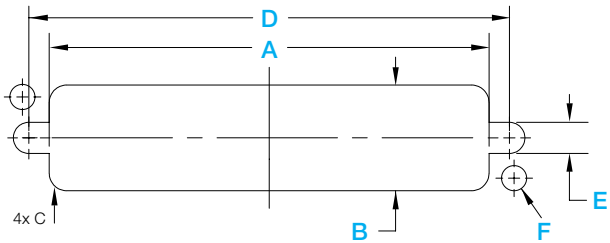
FEMALE SIDE VIEW



MATING VIEW



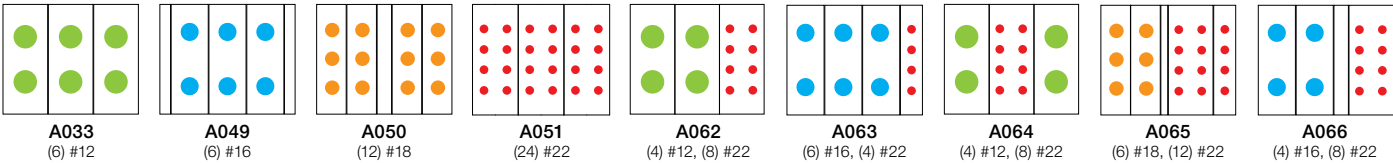
SHELL SIZE	Contact Layout Dimenison	A	B	C	D
X	18.00 [1.709]	46.00 [1.811]	40.00 [1.575]	38.00 [1.496]	30.40 [1.197]
S	40.00 [1.574]	68.00 [2.678]	62.00 [2.441]	60.00 [2.363]	52.40 [2.063]
M	65.00 [2.362]	93.00 [3.662]	87.00 [3.426]	85.00 [3.347]	77.40 [3.048]



SHELL SIZE	A	B	C	D	E	F
X	30.80 [1.213]			38.00 [1.496]		
S	52.80 [2.078]	18.70 [1.736]	3.10 [1.22]	60.00 [2.362]	5.50 [1.216]	4.50 [1.77]
M	77.80 [3.063]			85.00 [3.346]		

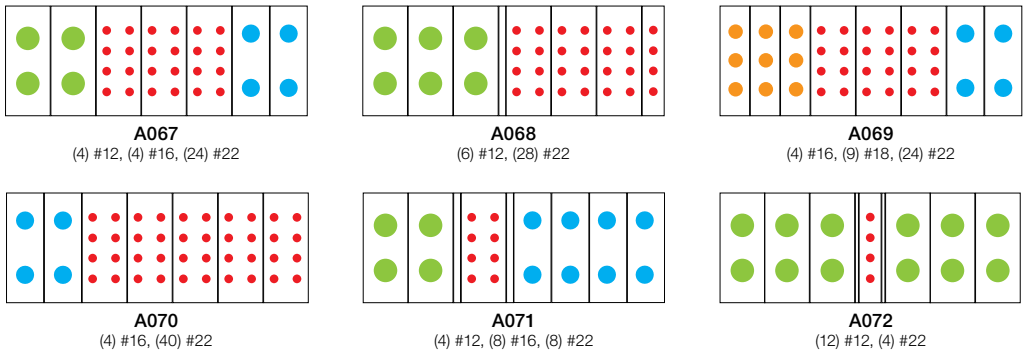
Scale 1:1

Shell Size X



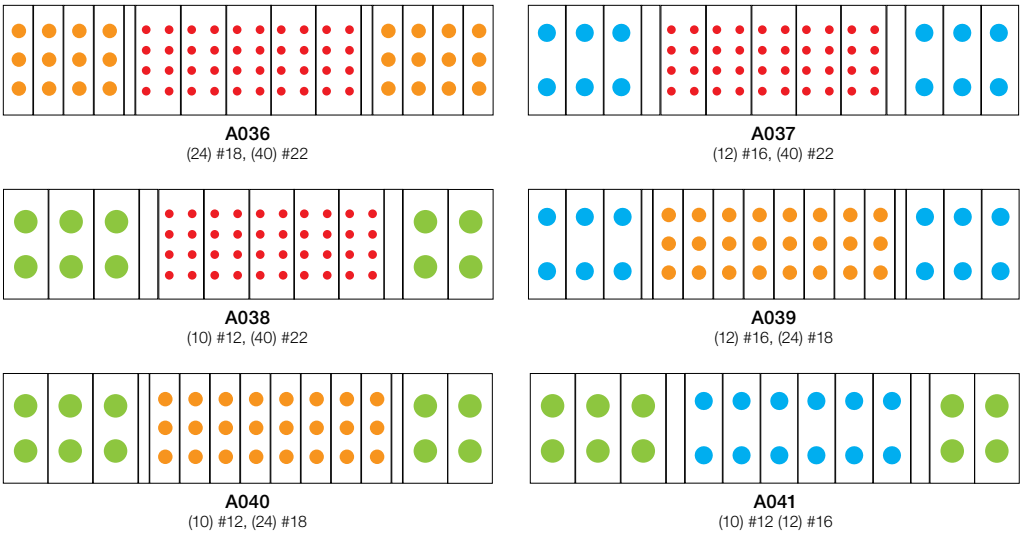
All 'X' modules measure 14.60 [.575] in height and 18.00 [.708] in length

Shell Size S



All 'S' modules measure 14.60 [.575] in height and 40.00 [1.574] in length

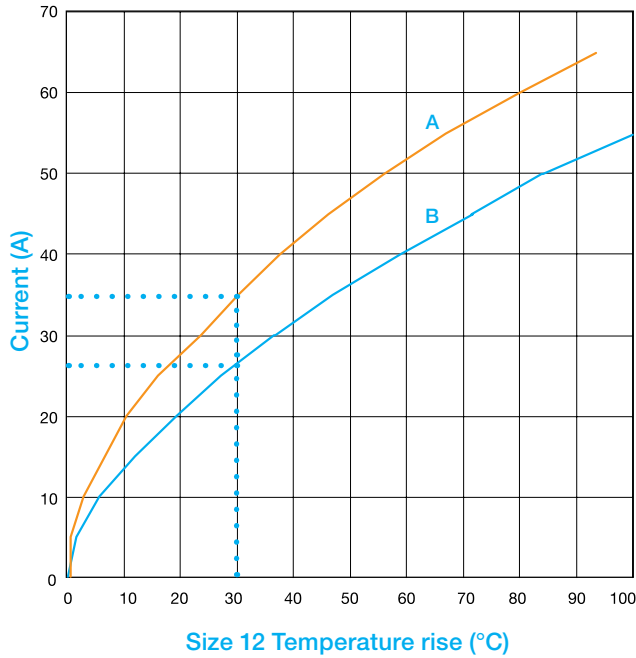
Shell Size M



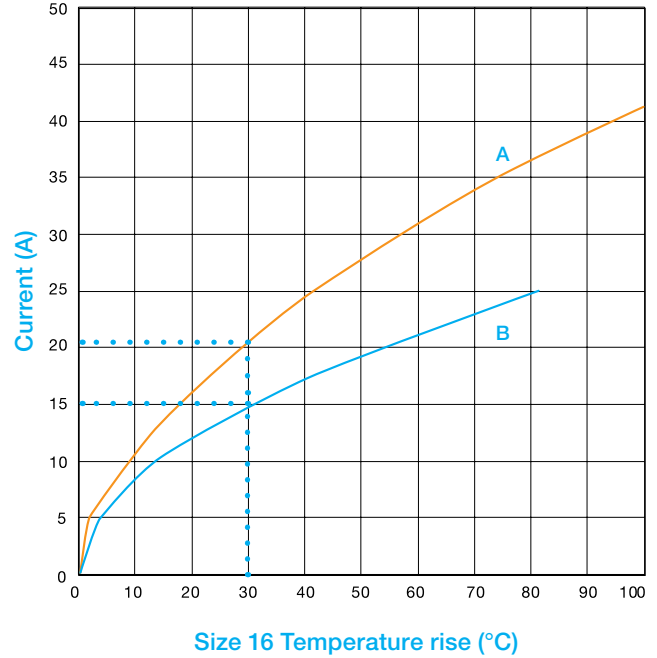
All 'M' modules measure 14.60 [.575] in height and 65.00 [2.560] in length

Contact Size Chart			
#12	#16	#18	#22

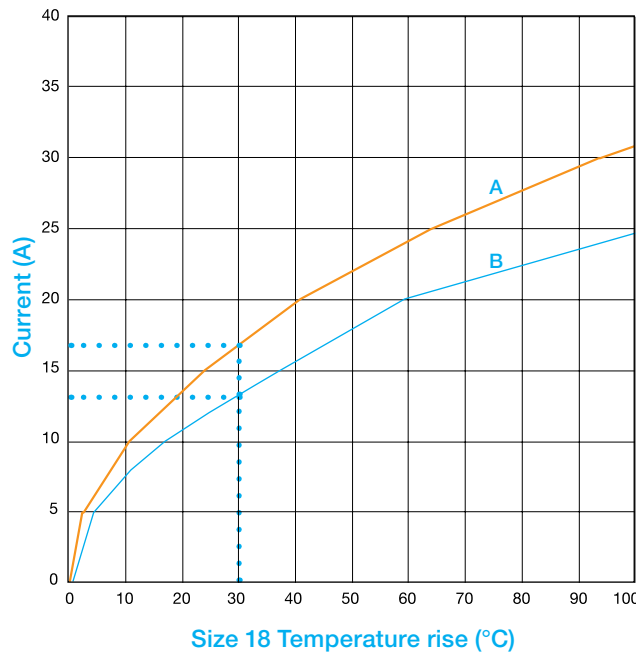
Tested per IEC Publication 60512-3, Test 5a



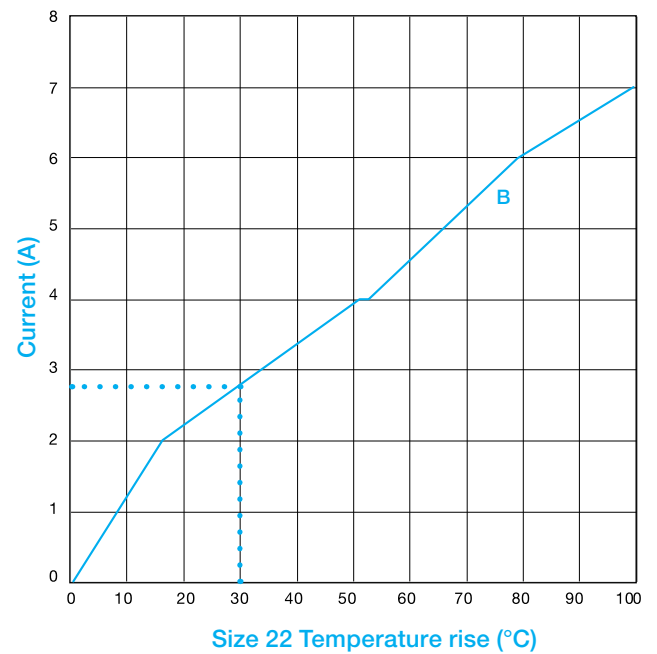
- A** Developed with (6) #12 high conductivity contacts
- B** Developed with (6) #12 standard conductivity contacts



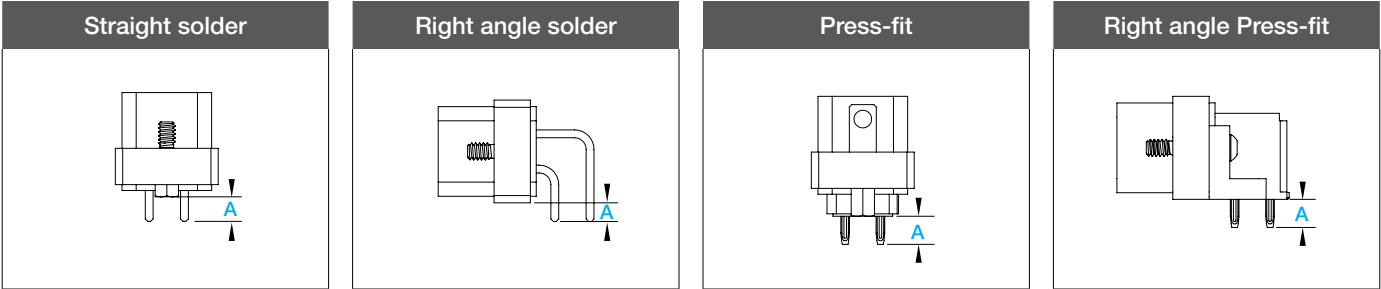
- A** Developed with (6) #16 high conductivity contacts
- B** Developed with (6) #16 standard conductivity contacts



- A** Developed with (6) #18 high conductivity contacts
- B** Developed with (6) #18 standard conductivity contacts



- B** Developed with (6) #22 standard conductivity contacts



Code	Termination type	A
30	Straight solder	5.00 [.197]
38	Straight solder, high conductivity power contacts (from size 18)	5.00 [.197]
40	Right angle solder	5.00 [.197]
48	Right angle solder, high conductivity power contacts (from size 18)	5.00 [.197]
63	Right angle press-fit, for use with PCBs $\geq 2.29$ [.090]	5.72 [.225]
93	Straight press-fit, for use with PCBs $\geq 2.29$ [.090]	5.72 [.225]

Size	Standard Conductivity Female	High Conductivity Female	Stranded AWG [mm²]
12	FC1210P2/AA	FC1210P2S/AA	#10 [6.0]
12	FC1212P2/AA	FC1212P2S/AA	#12 [4.0]
12	FC1210P2/AA	FC1210P2S/AA	#10 [6.0]
12	FC1212P2/AA	FC1212P2S/AA	#12 [4.0]
16	FC112P2/AA-PA907	FC112P2S/AA-PA907	#12 [4.0]
16	FC114P2/AA-PA907		#14-16 [2.5-1.5]
16	FC116P2/AA-PA907		#16-18-20 [1.5-1.0-0.5]
16	FC120P2/AA-PA907		#20-22-24 [0.5-0.3-0.25]
16	FC112P2/AA-PA907	FC112P2S/AA-PA907	#12 [4.0]
16	FC114P2/AA-PA907		#14-16 [2.5-1.5]
16	FC116P2/AA-PA907		#16-18-20 [1.5-1.0-0.5]
16	FC120P2/AA-PA907		#20-22-24 [0.5-0.3-0.25]
18	FC1816P2/AA	FC1816P2S/AA	#16-18 [1.5-1.0]
18	FC1820P2/AA	FC1820P2S/AA	#20 [0.5]
18	FC1816P2/AA	FC1816P2S/AA	#16-18 [1.5-1.0]
18	FC1820P2/AA	FC1820P2S/AA	#20 [0.5]
22	FC422P9/AA		#22-26 [0.3-0.12]

	<b>SM</b>	<b>X</b>	<b>A049</b>	-	<b>M</b>	<b>A</b>	<b>30</b>	<b>C</b>	-	<b>T7</b>	<b>S1</b>	
Series												Termination Side Accessories
<b>SM</b> SP MAX												<b>XX</b> None
Shell Sizes												<b>B1</b> Angle brackets, through holes
<b>X</b> 18 mm of active insulator												<b>B2</b> Angle brackets, threaded holes
<b>S</b> 40 mm of active insulator												<b>B3</b> Angle brackets, integrated boardlocks
<b>M</b> 65 mm of active insulator												<b>S1</b> Standoffs, 4-40
Contact Layout												<b>S2</b> Standoffs, boardlocks
<b>Axxx</b> Select from layout codes on page 4												Mating Side Accessories
Contact Gender												<b>XX</b> None
<b>M</b> Male pin												<b>T7</b> Fixed male jackscrews
<b>S</b> Female socket												<b>E7</b> Rotating female jackposts
<b>R</b> Female socket with sealing ring												<b>QP</b> Quick locking pin
<b>C</b> Female socket with conductive sealing ring												<b>QS</b> Quick locking socket
Shell Options												<b>K1</b> Keying guide, 2x male pins, for use with K2
<b>A</b> Electroless nickel												<b>K2</b> Keying guide, 2x female sockets, for use with K1
<b>B</b> Electroless nickel, non-conductive panel gasket												<b>K3</b> Keying guide, 1x male pin (left), 1x female socket (right), for use with K4
<b>C</b> Electroless nickel, conductive panel gasket												<b>K4</b> Keying guide, 1x female socket (left), 1x male pin (right), for use with K3
<b>D</b> Electroless nickel PTFE												Contact Plating
<b>E</b> Electroless nickel PTFE, non-conductive panel gasket												<b>X</b> No contacts
<b>F</b> Electroless nickel PTFE, conductive panel gasket												<b>A</b> Gold flash, Au over 0.51µm Ni (min) over Cu
Termination Type												<b>C</b> 0.76µm Au (min) over 0.76µm Ni (min) over Cu
<b>00</b> Wire, order contacts separately <sup>*1</sup>												<b>D</b> 1.27µm Au (min) over 1.52µm Ni (min) over Cu
<b>30</b> Straight solder												<b>E</b> 1.27µm Au (min) over Cu
<b>38</b> Straight solder, high conductivity power contacts (from size 18)												
<b>40</b> Right angle solder												
<b>48</b> Right angle solder, high conductivity power contacts (from size 18)												
<b>63</b> Right angle press-fit, for use with PCBs >= 2.29 [.090]												
<b>93</b> Straight press-fit, for use with PCBs >= 2.29 [.090]												

<sup>\*1</sup> Available on female connector only. Contact Technical Sales for availability of crimp contacts on male connector.

All SP Max products  
are RoHS-compliant  
by default.



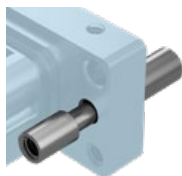
**T7**  
Fixed male jackscrews



**QP**  
Quick locking pin



**K1**  
Keying guide,  
2x male pins,  
for use with K2



**E7**  
Rotating female jackposts



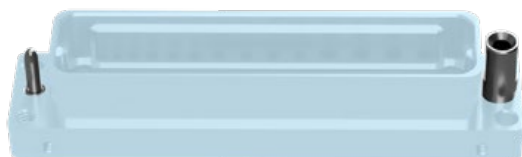
**QS**  
Quick locking socket



**K2**  
Keying guide, 2x female  
sockets, for use with K1

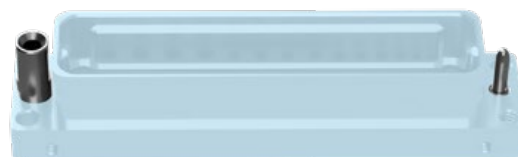
## K3

Keying guide, 1x male pin (left), 1x female socket (right), for use with K4



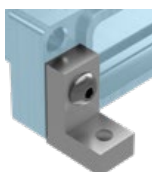
## K4

Keying guide, 1x female socket (left), 1x male pin (right), for use with K3



## B1

Angle brackets, through holes



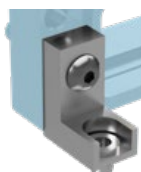
## B2

Angle brackets, threaded holes



## B3

Angle brackets, integrated boardlocks



## S1

Standoffs, 4-40



## S2

Standoffs, boardlocks



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## Sales Offices

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For the nearest sales office visit  
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