

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, ESA/ESCC-3401, and DO-160



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	

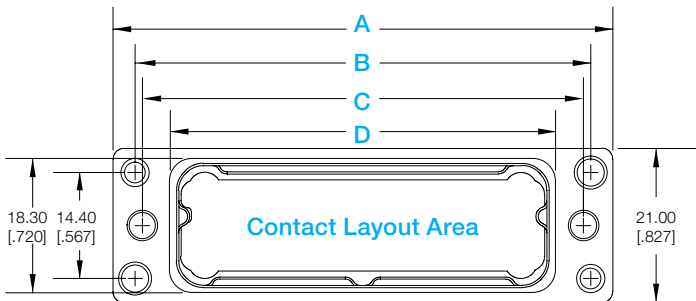
MECHANICAL

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

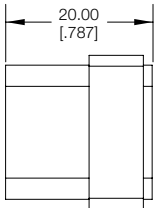
ENVIRONMENTAL

Operating Temperature	-55 to 175°C
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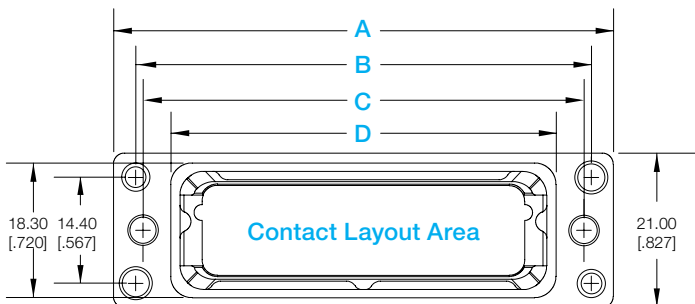
MALE FACE VIEW



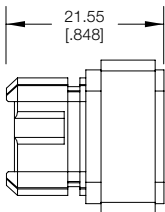
MALE SIDE VIEW



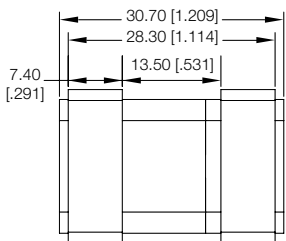
FEMALE FACE VIEW



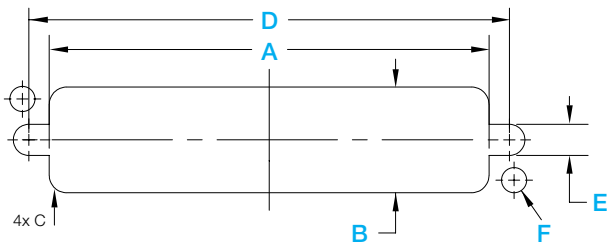
FEMALE SIDE VIEW



MATING VIEW



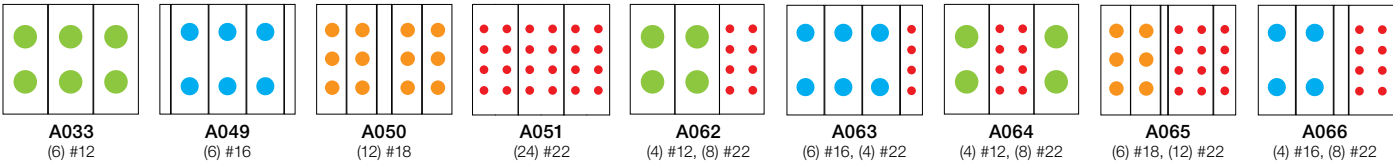
SHELL SIZE	Contact Layout Dimension	A	B	C	D
X	18.00 [1.709]	46.00 [1.811]	40.00 [1.575]	38.00 [1.496]	30.40 [1.197]
S	40.00 [1.574]	68.00 [2.678]	62.00 [2.441]	60.00 [2.363]	52.40 [2.063]
M	65.00 [2.362]	93.00 [3.662]	87.00 [3.426]	85.00 [3.347]	77.40 [3.048]



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]		

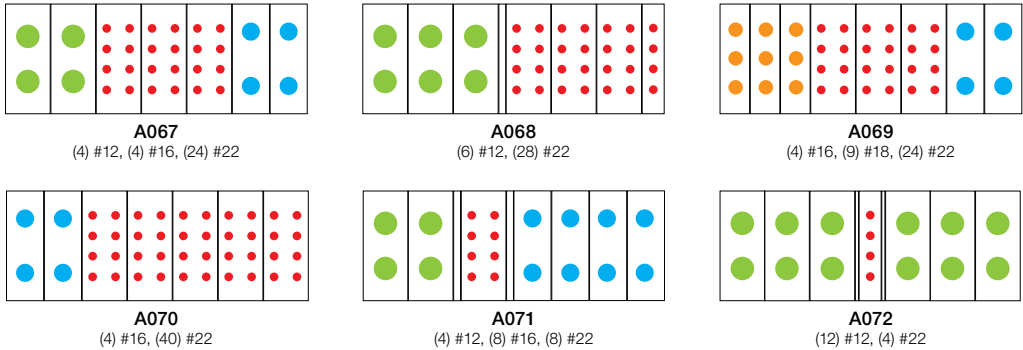
Scale 1:1

Shell Size X



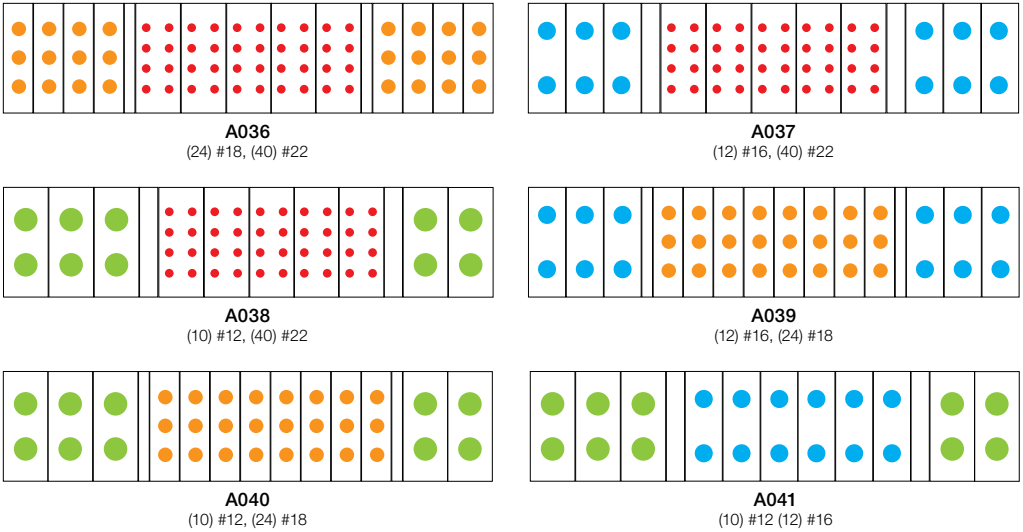
All 'X' modules measure 14.60 [.575] in height and 18.00 [.708] in length

Shell Size S



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

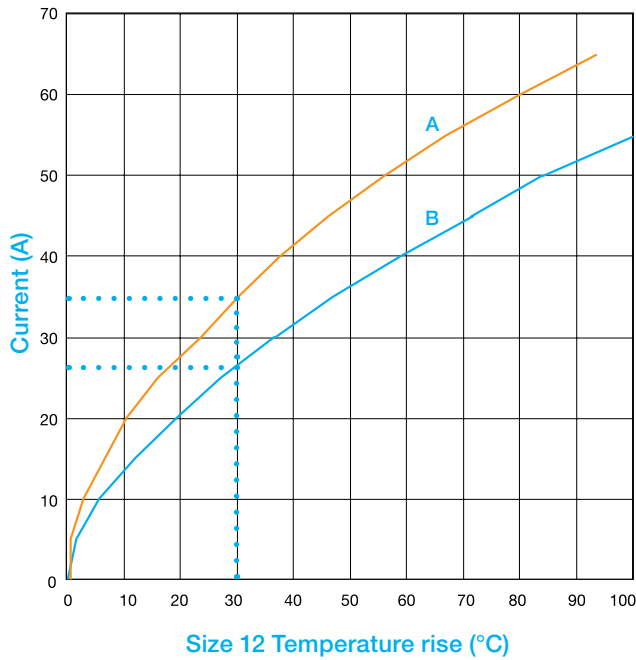
Shell Size M



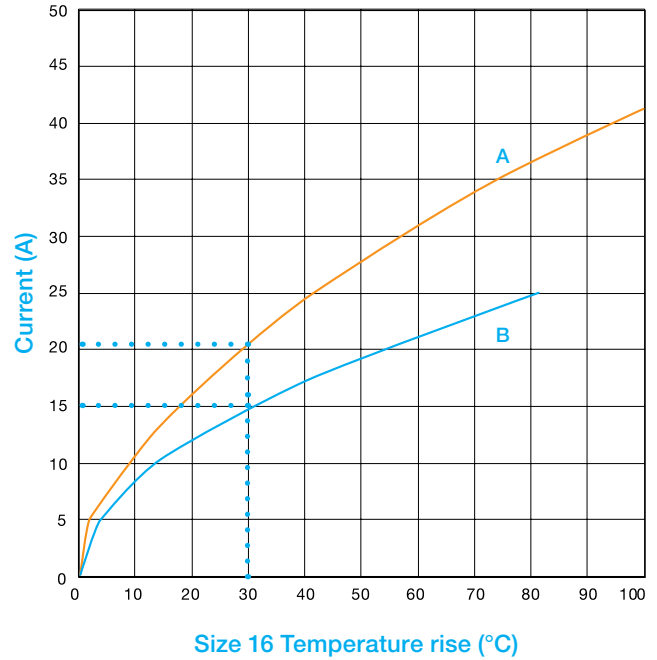
All 'M' modules measure 14.60 [.575] in height and 65.00 [2.560] in length

Contact Size Chart			
#12	#16	#18	#22

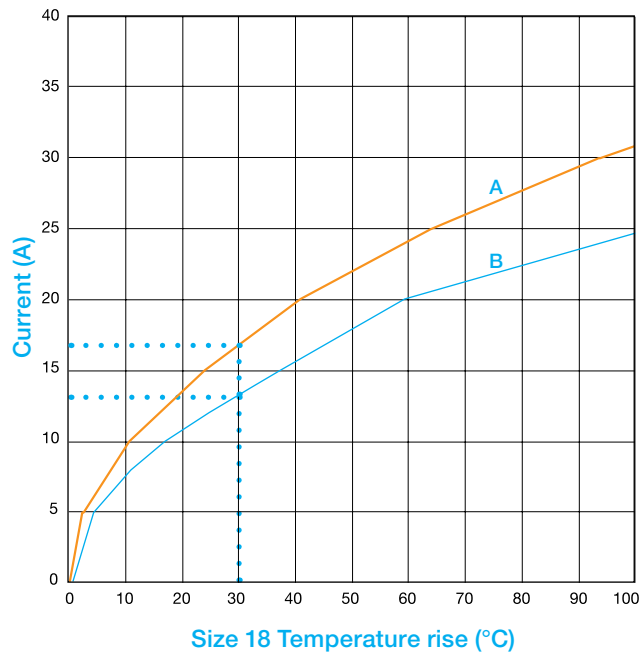
Tested per IEC Publication 60512-3, Test 5a



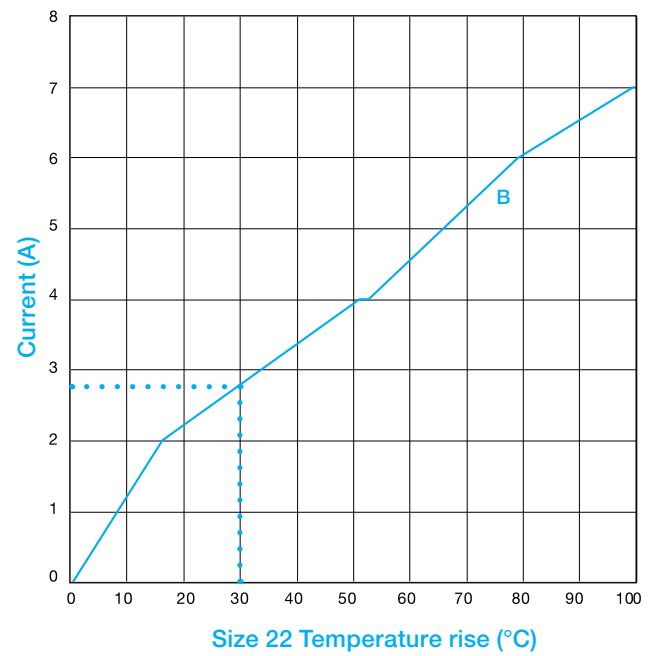
- A** Developed with (6) #12 high conductivity contacts
- B** Developed with (6) #12 standard conductivity contacts



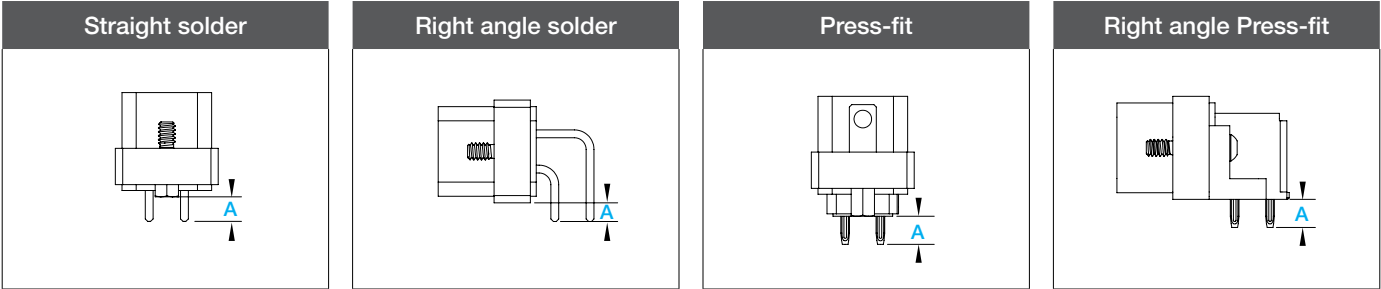
- A** Developed with (6) #16 high conductivity contacts
- B** Developed with (6) #16 standard conductivity contacts



- 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 >= 2.29 [.090]	5.72 [.225]
93	Straight press-fit, for use with PCBs >= 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]

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

^{*1} 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



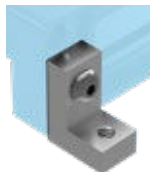
B1

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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