

## Board (Narrow Footprint) to Flex Cable

.050"

9 thru 100 Contacts

Rugged Board Mount

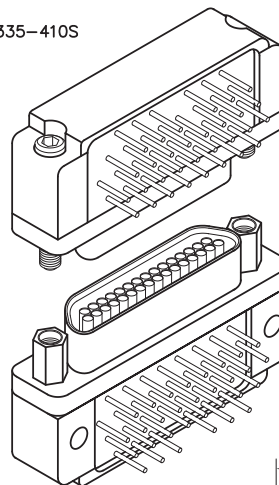
Flex Cable

**MK, ML**

**MK, ML**

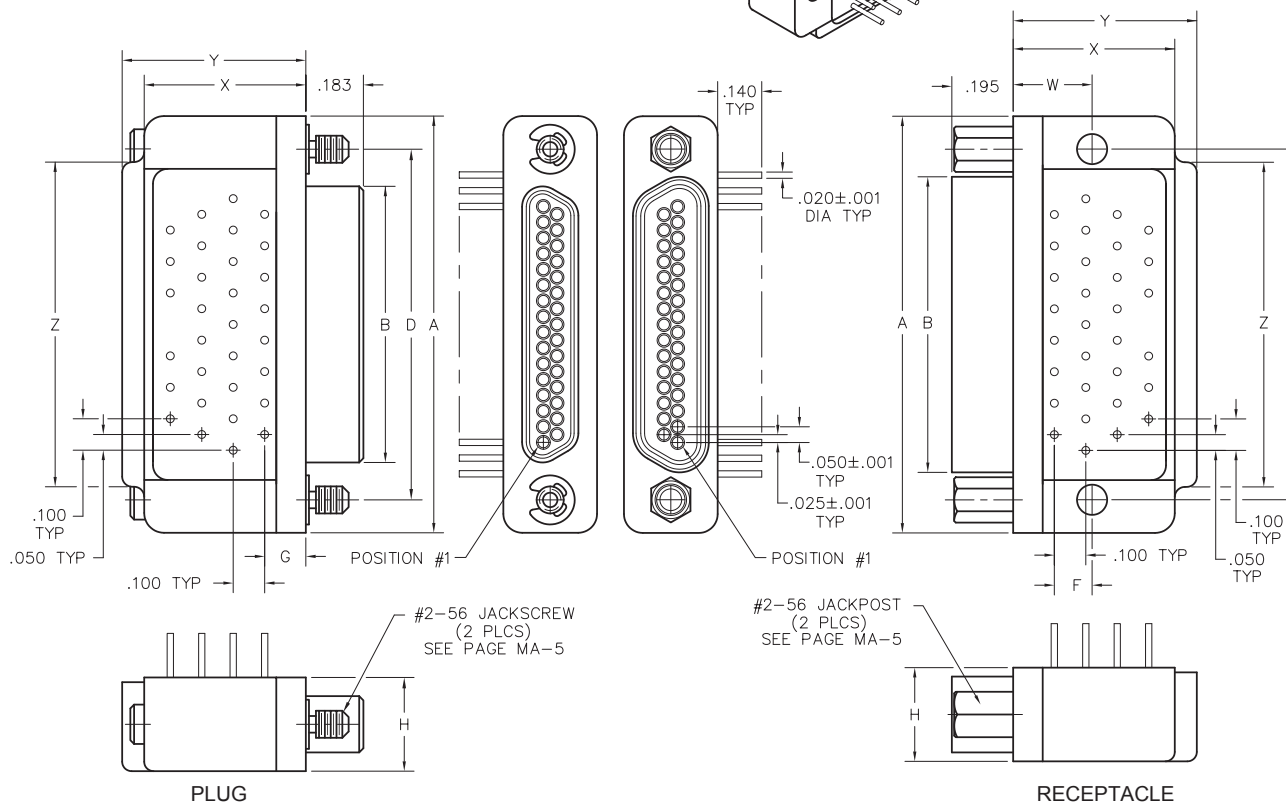
MK-253-031-335-410S  
(METAL)

ML-251-031-335-410S  
(PLASTIC)



MK-263-031-445-220S  
(METAL)

ML-261-031-445-220S  
(PLASTIC)



SIZE	CONTACT ROWS	DIMENSIONS											HARDWARE	MOUNTING HOLE	
		A	B		D	F	G	H	W	X MAX	Y MAX	Z			
			PLUG MAX	RCPT MAX											
9	2	.775	.334	.400	.565	.020	.230								
15		.925	.484	.550	.715										
21		1.075	.634	.700	.865										
25		1.175	.734	.800	.965										
31		1.325	.884	.950	1.115										
37	1.475	1.034	1.100	1.265					.450	.520	1.180				
51	3	1.425	.984	1.050	1.215	.150	.150	.341	.300	.430	.650	1.220			
69*		1.725	1.284	1.350	1.515										
100		2.160	1.384	1.508	1.800										.200

\* = 69 POSITION CONNECTORS ARE AVAILABLE IN METAL ONLY.

— CLICK HERE —

**REQUEST QUOTE**

www.geminelec.com

PAGE 1 OF 9 PAGES

(800) 882-6414 | sales@geminelec.com

**PLUG:** MK-253-031-335-410S  
**RECEPTACLE:** MK-263-031-445-220S  
**PLUG:** ML-251-031-335-410S  
**RECEPTACLE:** ML-261-031-445-220S  
 XX-XXX-XXX-XXX-XXXX-XXX

**PLUG**

**RECEPTACLE**

SERIES	
MK .050" Rugged Metal PC Board Mount Connector	MK .050" Rugged Metal PC Board Mount Connector
ML .050" Rugged Plastic PC Board Mount Connector (MK & ML mate with MK, ML, MM, MN receptacles)	ML .050" Rugged Plastic PC Board Mount Connector (MK & ML mate with MK, ML, MM, MN plugs)

BODY	
2 2-Row (Sizes 9 thru 37)	2 2-Row (Sizes 9 thru 37)
3 3-Row (Size 51 & 69***)	3 3-Row (Size 51 & 69***)
4 4-Row (Size 100)	4 4-Row (Size 100)

BODY STYLE:	
5 Plug, right angle, narrow footprint, w/ mtg holes	6 Receptacle, right angle, narrow footprint, w/ mtg holes

BODY MATERIAL:	
1 Polyphenylene Sulfide (ML only)	1 Polyphenylene Sulfide (ML only)
2 Electroless nickel shell w/ PPS insulator	2 Electroless nickel shell w/ PPS insulator
3 Electrodeposited cadmium shell w/ PPS insulator <input checked="" type="checkbox"/>	3 Electrodeposited cadmium shell w/ PPS insulator <input checked="" type="checkbox"/>
4 Hard anodized black shell w/ PPS insulator	4 Hard anodized black shell w/ PPS insulator
5 Stainless steel shell w/ PPS insulator	5 Stainless steel shell w/ PPS insulator

SIZE	
XXX 009, 015, 021, 025, 031, 037, 051, 069***, 100	XXX 009, 015, 021, 025, 031, 037, 051, 069***, 100

CONTACTS	
<b>TYPE CONTACTS/TERMINATIONS:</b>	<b>TYPE CONTACTS/TERMINATIONS:</b>
32 Pin, right angle, PCB leads, .109"	43 Socket, right angle, PCB leads, .109"
33 Pin, right angle, PCB leads, .140"	44 Socket, right angle, PCB leads, .140"
34 Pin, right angle, PCB leads, .172"	45 Socket, right angle, PCB leads, .172"
<b>PLATING OPTIONS:</b>	<b>PLATING OPTIONS:</b>
3 50 μ" Au contacts: Au terminations	3 50 μ" Au contacts: Au terminations
5 50 μ" Au contacts: Sn/Pb alloy terminations <input checked="" type="checkbox"/>	5 50 μ" Au contacts: Sn/Pb alloy terminations <input checked="" type="checkbox"/>
7 50 μ" Au contacts: SAC305 terminations	7 50 μ" Au contacts: SAC305 terminations

HARDWARE	
<b>STYLE OF HARDWARE:</b>	<b>STYLE OF HARDWARE:</b>
00 None	00 None
22 Two fixed jacknut assemblies (62*)	22 Two fixed jacknut assemblies (62*)
41 Two turning jackscrews, allen head, retaining ring**** (81*)	41 Two turning jackscrews, allen head, retaining ring**** (81*)
<b>POLARIZATION / WIRING:</b>	<b>POLARIZATION / WIRING:</b>
0R Reversed body polarization	0R Reversed body polarization
0S Standard body polarization	0S Standard body polarization

OPTIONS	
94P Mil-Spec footprint (size 100 only) Standard body polarization	900 Interfacial sealing gasket
0B7 Threaded inserts, standard body polarization	0B7 Threaded inserts and interfacial sealing gasket, standard body polarization
0BJ Mil-Spec footprint (size 100 only) with threaded inserts, standard body polarization	

\* = Use numbers in parenthesis when ordering size 100.  
 \*\*\* = 69 position connectors are available in metal only.  
 \*\*\*\* = Connector body has no mounting holes.  
 = Option not RoHS compliant

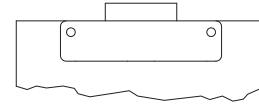
— CLICK HERE —

# Recommended PC Board Layout

Right Angle, Narrow Footprint  
Standard Polarization

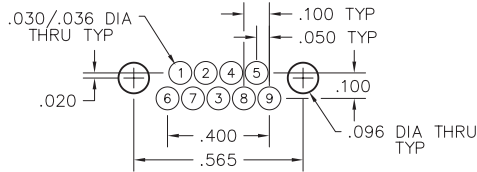


CONNECTOR MATING FACE



PC BOARD LAYOUT  
COMPONENT SIDE

**PLUG**  
PC BOARD LAYOUT  
COMPONENT SIDE

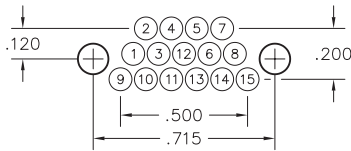
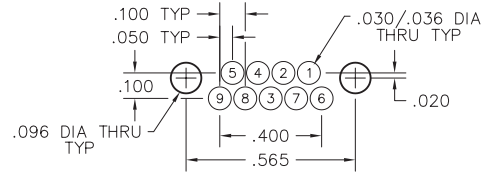


CONNECTOR  
MATING FACE\*  
(RECEPTACLE)

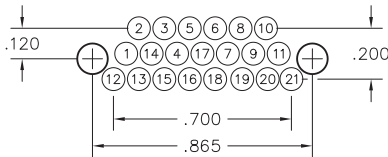
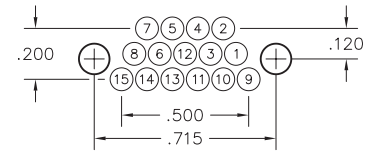


9 POSITION

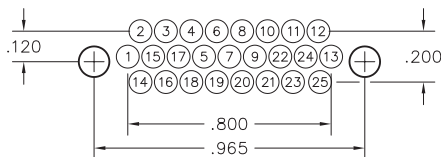
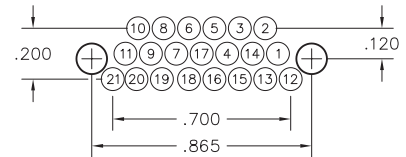
**RECEPTACLE**  
PC BOARD LAYOUT  
COMPONENT SIDE



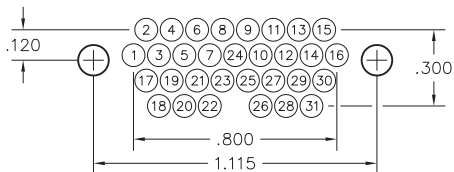
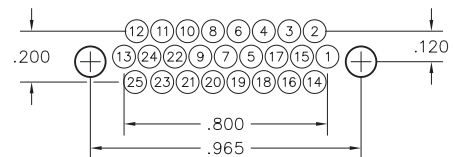
15 POSITION



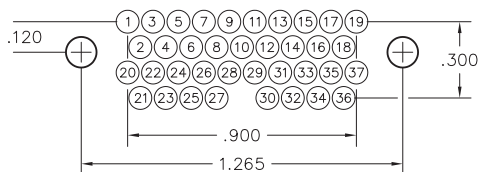
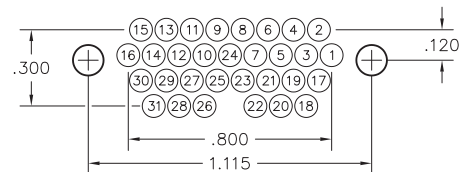
21 POSITION



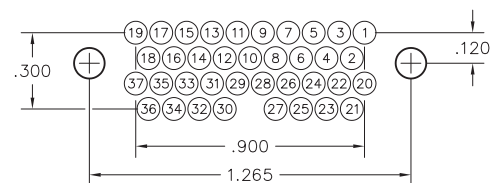
25 POSITION



31 POSITION



37 POSITION



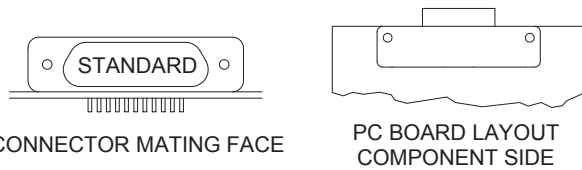
— CLICK HERE —

**REQUEST QUOTE**

www.geminelec.com

PAGE 3 OF 9 PAGES

(800) 882-6414 | sales@geminelec.com

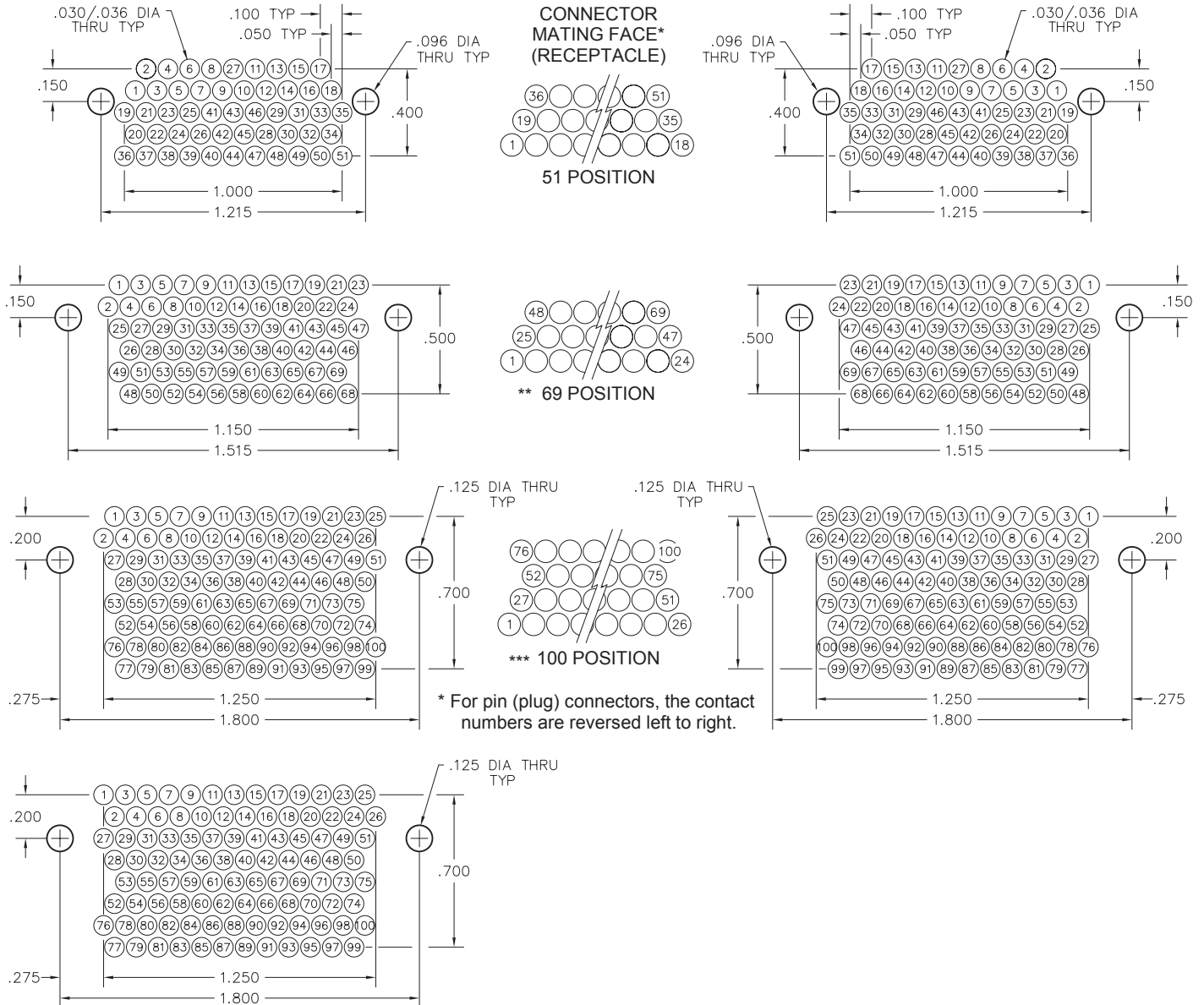


## Recommended PC Board Layout

Right Angle, Narrow Footprint  
Standard Polarization

**PLUG  
PC BOARD LAYOUT  
COMPONENT SIDE**

**RECEPTACLE  
PC BOARD LAYOUT  
COMPONENT SIDE**



**Mil-Spec Footprint**

For Mil-Spec footprint, use "Option" -94P

- \*\* = 69 and 100 positions not available in low profile (MS, MR)
- \*\*\* = 100 position not available in thru-cut body style (R, S)

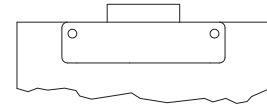
— CLICK HERE —

# Recommended PC Board Layout

Right Angle, Narrow Footprint  
Reverse Polarization

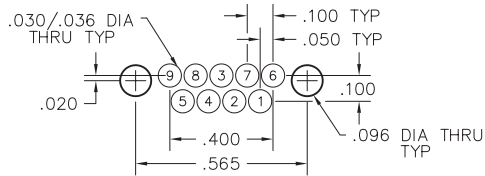


CONNECTOR MATING FACE



PC BOARD LAYOUT  
COMPONENT SIDE

**PLUG**  
PC BOARD LAYOUT  
COMPONENT SIDE

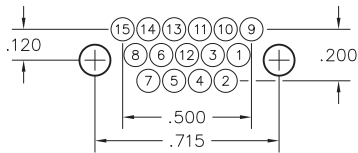
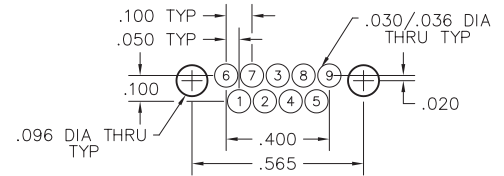


CONNECTOR  
MATING FACE\*  
(RECEPTACLE)

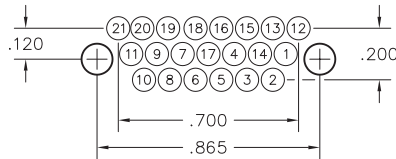
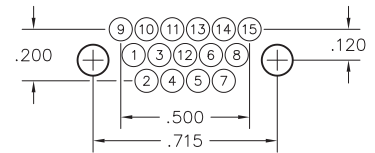


9 POSITION

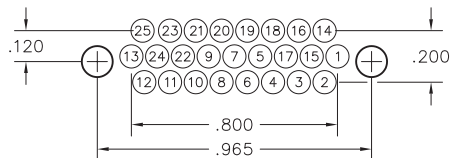
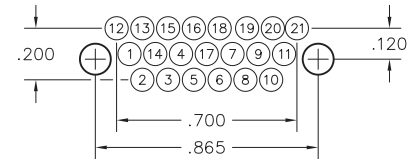
**RECEPTACLE**  
PC BOARD LAYOUT  
COMPONENT SIDE



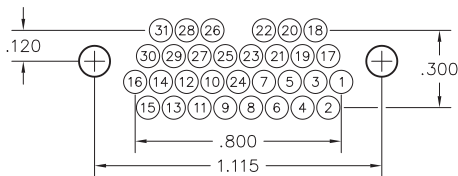
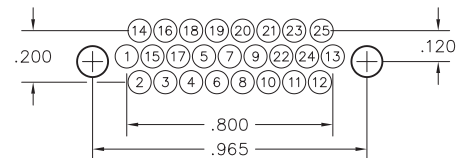
15 POSITION



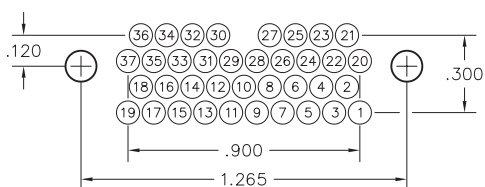
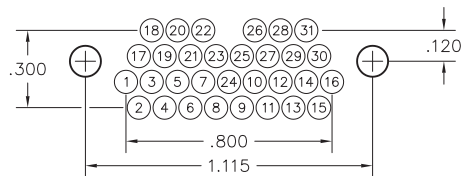
21 POSITION



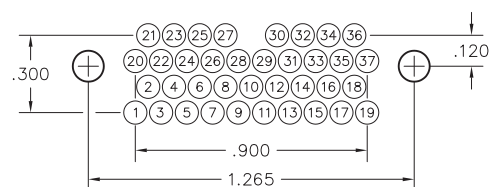
25 POSITION



31 POSITION



37 POSITION



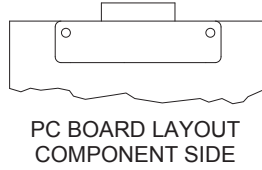
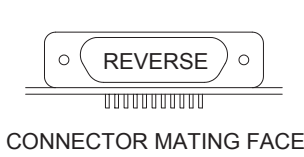
— CLICK HERE —

**REQUEST QUOTE**

www.geminelec.com

PAGE 5 OF 9 PAGES

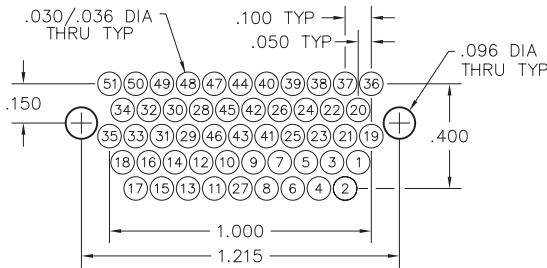
(800) 882-6414 | sales@geminelec.com



## Recommended PC Board Layout

Right Angle, Narrow Footprint  
Reverse Polarization

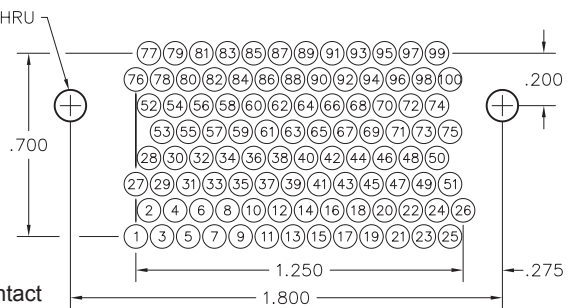
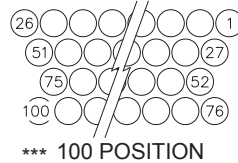
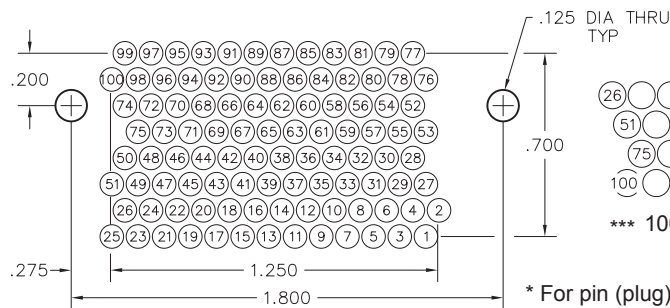
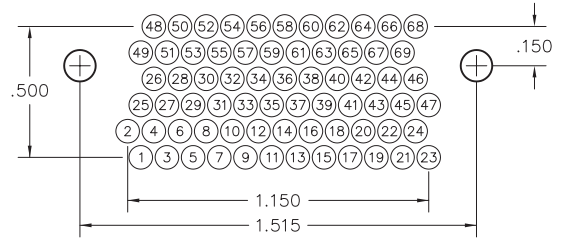
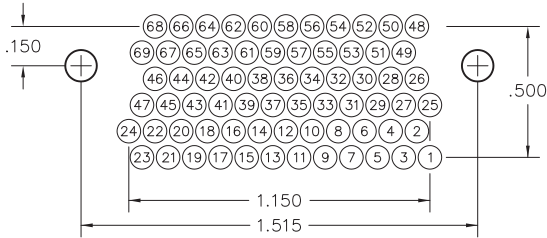
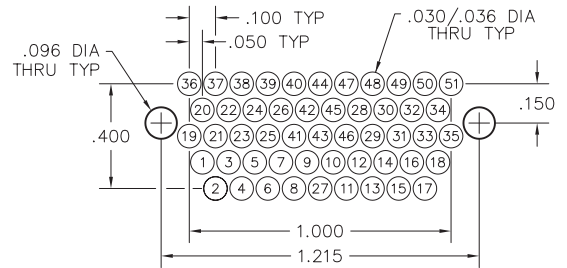
**PLUG**  
PC BOARD LAYOUT  
COMPONENT SIDE



**CONNECTOR MATING FACE\* (RECEPTACLE)**



**RECEPTACLE**  
PC BOARD LAYOUT  
COMPONENT SIDE



\* For pin (plug) connectors, the contact numbers are reversed left to right.

\*\* = 69 and 100 positions not available in low profile (MS, MR)

\*\*\* = 100 position not available in thru-cut body style (R, S)

— CLICK HERE —

**REQUEST QUOTE**

www.geminelec.com

PAGE 6 OF 9 PAGES

(800) 882-6414 | sales@geminelec.com

# Mating Matrix for AirBorn "M" Series Connectors

## RECEPTACLES

P L U G S	MA (Strip)	MC (Circular)	MM (Hybrid)	MK (Metal) PC Board	ML (Plastic) PC Board	MM (Metal) I/O	MN (Plastic) I/O	MP (Plastic) I/O	MQ (Metal) I/O	MR (Plastic) PC Board	MS (Metal) PC Board	
	MA (Strip)	XX										
	MC (Circular)		XX									
	MM (Hybrid)			XX								
	MK (Metal) PC Board				BB	BB	BI	BI				
	ML (Plastic) PC Board				BB	BB	BI	BI				
	MM (Metal) I/O				IB	IB	II	II				
	MN (Plastic) I/O				IB	IB	II	II				
	MP (Plastic) I/O								II	II	IB	IB
	MQ (Metal) I/O								II	II	IB	IB
MR (Plastic) PC Board								BI	BI	BB	BB	
MS (Metal) PC Board								BI	BI	BB	BB	

I/O Connectors

MM-MN-MP-MQ

PC Board Mounted Connectors

MK-ML-MR-MS

Inter-mateable Connectors

MK-ML-MM-MN  
MP-MQ-MR-MS

**KEY:**

BB = PC Board Mounted Plug with PC Board Mounted Receptacle

BI = PC Board Mounted Plug with I/O Receptacle

IB = I/O Plug with PC Board Mounted Receptacle

II = I/O Plug with I/O Receptacle

For Military Configurations, See pages MIL-1 thru MIL-22

— CLICK HERE —

## Specifications

### Materials and Finishes \*

<b>Contacts:</b>	Pins: BeCu alloy strip per ASTM B194 Sockets: Brass per ASTM B121 / B121M or ASTM B16 / B16M or ASTM B453
<b>Contact Finish:**</b>	Gold plate per ASTM B488
<b>Shells:</b>	Aluminum Alloy 6061-T6 per SAE AMS-QQ-A-250/11 or 6061-T6511 per SAE AMS-QQ-A-200/8 or Stainless Steel 300 series per ASTM A484 / A484M and ASTM A582 / A582M Passivated per SAE AMS2700
<b>Aluminum Shell Finishes:**</b>	Electroless Nickel per SAE AMS2404 Electrodeposited Cadmium per SAE AMS-QQ-P-416 Black Anodized per MIL-A-8625 Gold per MIL-DTL-45204
<b>Molded Insulators:</b>	Glass filled polyphenylene sulfide per MIL-M-24519
<b>Embedment:</b>	Insulating compound per MIL-I-16923
<b>Jackscrews, Jackposts and Nuts:</b>	Corrosion resistant steel per ASTM A320 or ASTM A484 / A484M and ASTM A582 / A582M Passivated per SAE AMS2700
<b>Clips and Washers:</b>	Corrosion resistant steel per ASME 18.24 or NASM35333 Passivated per ASME 18.24 or NASM35333
<b>Guide Pins</b>	Corrosion resistant steel per ASTM A484 / A484M and ASTM A582 / A582M Passivated per SAE AMS2700
<b>Latches</b>	Beryllium copper in accordance with ASTM B194 Electroless Nickel plate per SAE AMS2404
<b>Interfacial Seal Gaskets:</b>	Fluorosilicone per SAE AMS-R-25988
<b>Tolerances:**</b>	Unless otherwise specified: Fractions = $\pm 1/64$ " Decimals = $\pm .010$ " Angles = $\pm 5^\circ$ Wire lengths: insulated/stranded = $+1.0"/-0.0$ " uninsulated/solid = $+0.2"/-0.0$ "

Note: AirBorn can manufacture special configurations for your exact specifications.

\* = Reference the above listed specifications or an equivalent industry standard when applicable

\*\* = When ordering to Mil Spec P/N, Mil Spec requirements apply

## Performance

### Reference MIL-DTL-83513

AirBorn "M" Series meets or exceeds MIL-DTL-83513 Performance Specifications

<b>Contact Rating:</b>	3-amperes maximum
<b>Solderability:</b>	Terminals (except crimp) tested in accordance with MIL-STD-202, Method 208
<b>Wire Size:</b>	Stranded #26 AWG or solid #25 AWG standard (consult factory for other sizes and types)
<b>Test Voltage:</b>	600 V, RMS, 60 Hz
<b>Operating Temperature:</b>	-55° C to +125° C
<b>Insulation Resistance:</b>	5,000 megohms minimum @ 500 VDC
<b>Durability:</b>	500 connector mating cycles
<b>Vibration:</b>	Tested in accordance with MIL-STD-1344, Method 2005, Condition IV, according to MIL-83513
<b>Shock:</b>	Tested in accordance with MIL-STD-1344, Method 2004, Condition E, according to MIL-83513
<b>Salt Spray:</b>	Mated connectors tested in accordance with MIL-STD-1344, Method 1001, Test Condition B
<b>Humidity:</b>	Mated connectors tested in accordance with MIL-STD-1344, Method 1002, Type II (except steps 7a and 7b)
<b>Thermal Shock:</b>	Tested to the temperature extremes of MIL-STD-1344, Method 1003, Test Condition A (except step 3, temperature shall be 125° C)
<b>Contact Resistance:</b>	0.065 volt maximum drop @ 2.5 amps (.026 ohms)
<b>Contact Engaging Force:</b>	6.0 ounce maximum, with .0221 diameter test sleeve per contact
<b>Contact Separating Force:</b>	0.5 ounce minimum, with .0230 diameter test sleeve per contact
<b>Crimp Strength:</b>	5 pound minimum tensile strength
<b>Mating &amp; Unmating Force:</b>	10 ounces maximum per contact

— [CLICK HERE](#) —

**REQUEST QUOTE**

[www.geminelec.com](http://www.geminelec.com)

PAGE 9 OF 9 PAGES

(800) 882-6414 | [sales@geminelec.com](mailto:sales@geminelec.com)