

**Cable to Board
(Standard Footprint)**

.050"

9 thru 100 Contacts

Rugged Cable

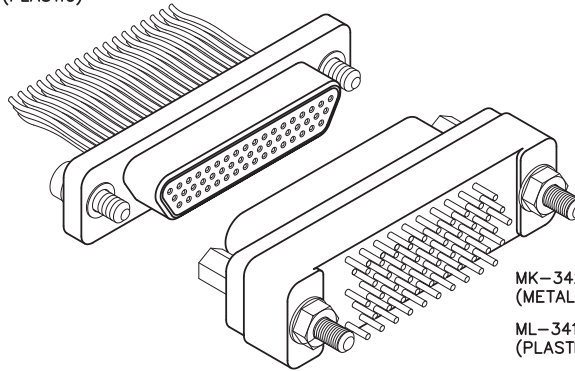
MM, MN

Rugged Board Mount

MK, ML

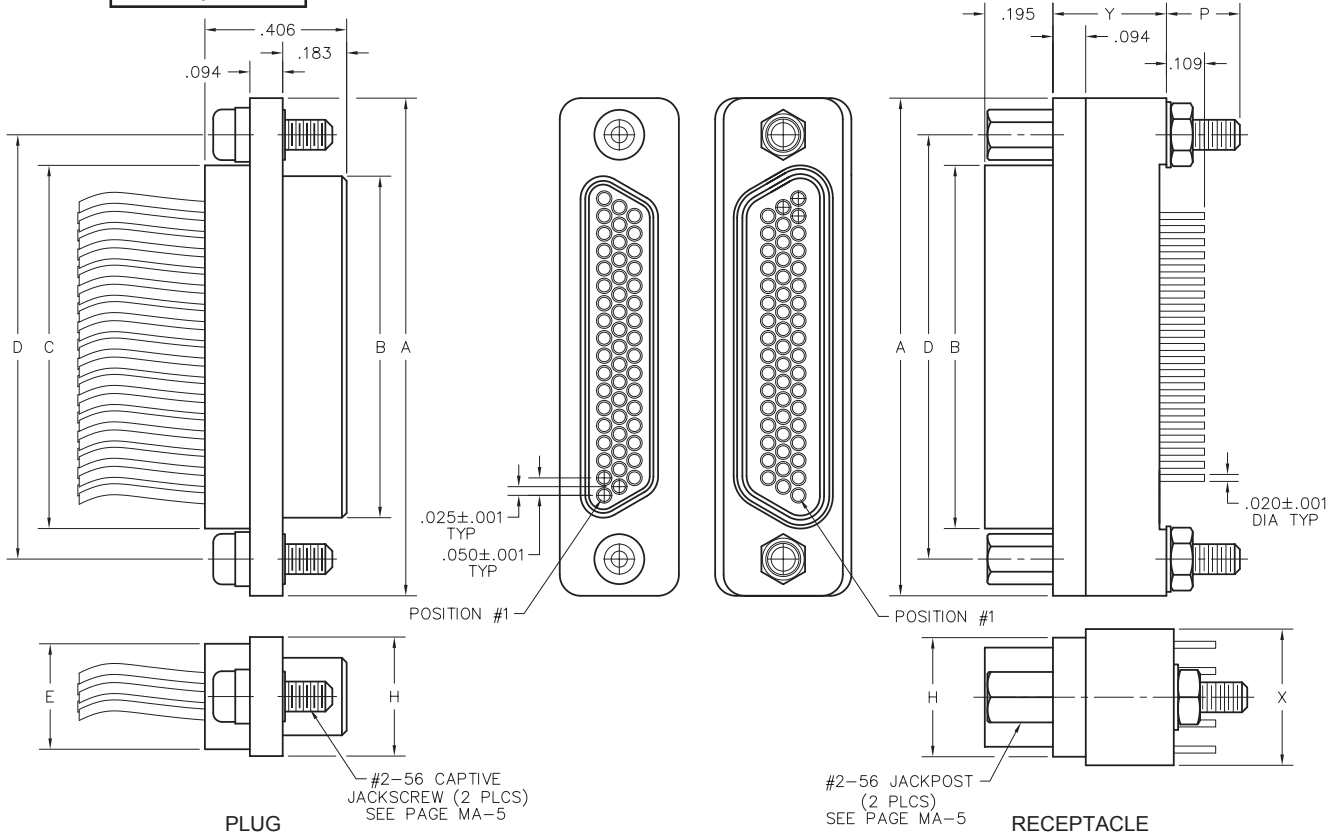
MM-312-051-161-45WP
(METAL)

MN-311-051-161-45WP
(PLASTIC)



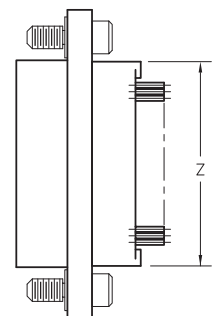
MK-342-051-225-2200
(METAL)

ML-341-051-225-2200
(PLASTIC)



SIZE	CONTACT ROWS	DIMENSIONS											HARDWARE	
		A	B		C	D	E	H	P	X	Y	Z***		
			PLUG MAX	RCPT MAX			POTTING WELL MAX							
9	2	.775	.334	.400	.390	.565	.270	.298	.210	.298	.280	.390	#2-56 UNC THD (.092 DIA THRU OR #2-56 UNC THREADED INSERT)	
15		.925	.484	.550	.540	.715								.540
21		1.075	.634	.700	.690	.865								.690
25		1.175	.734	.800	.790	.965								.780
31		1.325	.884	.950	.940	1.115								.930
37		1.475	1.034	1.100	1.090	1.265		.214		.330**	1.080			
51	3	1.425	.984	1.050	1.040	1.215	.310	.341	.219	.390	.325	1.046		
69		1.725	1.284	1.350	1.340	1.515						1.346		
100		2.160	1.384	1.508	1.432	1.800						.360	.384	.216

* = 69 POSITION CONNECTORS ARE AVAILABLE IN METAL ONLY.
** = 37 POSITION WITH TURNING HARDWARE "Y" DIMENSION IS .280.
*** = "Z" DIMENSION FOR TURNING JACKSCREW ONLY



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Polarized Keying Hardware

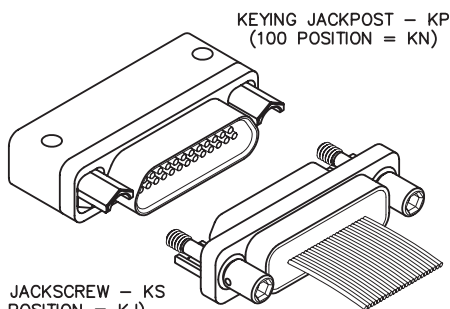


Select the appropriate two digit number above and include as the last two digits of the hardware code in the part number.
(Keying hardware is factory installed and non-removable).

Example:

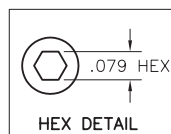
MM-213-025-161-99WA-KS11

MK-263-025-435-990S-KP11

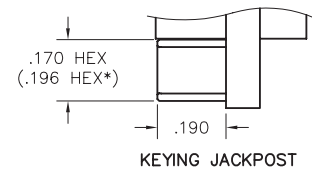


KEYING JACKSCREW - KS
(100 POSITION = KJ)

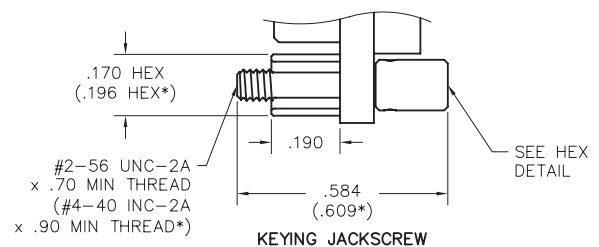
KEYING JACKPOST - KP
(100 POSITION = KN)



HEX DETAIL



KEYING JACKPOST



KEYING JACKSCREW

* = Dimensions for 100 position connectors

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PLUG: MM-312-051-161-45WP
RECEPTACLE: MK-342-051-225-2200
PLUG: MN-311-051-161-45WP
RECEPTACLE: ML-341-051-225-2200
XX-XXX-XXX-XXX-XXXX-XXX

PLUG	RECEPTACLE
SERIES	
MM .050" Rugged Metal I/O Connector MN .050" Rugged Plastic I/O Connector (MM & MN mate with MK, ML, MM, MN receptacles)	MK .050" Rugged Metal PC Board Mount Connector 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) 3 3-Row (Size 51 & 69***) 4 4-Row (Size 100)	2 2-Row (Sizes 9 thru 37) 3 3-Row (Size 51 & 69***) 4 4-Row (Size 100)
BODY STYLE: 1 Plug, straight, with ears	BODY STYLE: 4 Receptacle, straight, standard footprint
BODY MATERIAL: 1 Polyphenylene Sulfide (MN only) 2 Polyphenylene Sulfide with electroless nickel shell 3 Polyphenylene Sulfide with electrodeposited cadmium shell <input checked="" type="checkbox"/> 4 Polyphenylene Sulfide with hard anodized black shell 5 Polyphenylene Sulfide with stainless steel shell	BODY MATERIAL: 1 Polyphenylene Sulfide (ML only) 2 Polyphenylene Sulfide with electroless nickel shell 3 Polyphenylene Sulfide with electrodeposited cadmium shell <input checked="" type="checkbox"/> 4 Polyphenylene Sulfide with hard anodized black shell 5 Polyphenylene Sulfide with stainless steel shell
SIZE	
XXX 009, 015, 021, 025, 031, 037, 051, 069***, 100	XXX 009, 015, 021, 025, 031, 037, 051, 069***, 100
CONTACTS	
TYPE CONTACTS/TERMINATIONS: 11 Pin, straight, solder cup 14 Pin, straight, .500" pigtails (.018 dia) 15 Pin, straight, 1.000" pigtails (.018 dia) 16 Pin, straight, crimped wire	TYPE CONTACTS/TERMINATIONS: 22 Socket, straight, PCB leads, .109" 23 Socket, straight, PCB leads, .140" 24 Socket, straight, PCB leads, .172"
PLATING OPTIONS: 1 50 μ" Au contacts (crimp wire) 3 50 μ" Au contacts; 10 μ" Au terminations (solder cup, pigtail) 5 50 μ" Au contacts; Sn/Pb alloy terminations (pigtail) <input checked="" type="checkbox"/> 7 50 μ" Au contacts; SAC305 terminations (pigtail)	PLATING OPTIONS: 3 50 μ" Au contacts; 10 μ" Au terminations 5 50 μ" Au contacts; Sn/Pb alloy terminations <input checked="" type="checkbox"/> 7 50 μ" Au contacts; SAC305 terminations
HARDWARE	
STYLE OF HARDWARE: 00 None 22 Two fixed jacknut assemblies (62*) 41 Two turning jackscrews, allen head, retaining ring (81*) 42 Two long turning jackscrews, allen head, retaining ring (82*) 43 Two turning jackscrews, slot head, retaining ring (83*) 44 Two long turning jackscrews, slot head, retaining ring (84*) 45 Two turning jackscrews, allen head, captivated** (85*) 99 Keying hardware, see options below (Body material 2, 3 and 4 only)	STYLE OF HARDWARE: 00 None 22 Two fixed jacknut assemblies (62*) 41 Two turning jackscrews, allen head, retaining ring**** (81*) 99 Keying hardware, see options below (Body material 2, 3 and 4 only)
POLARIZATION / WIRING: 00 None XX For wiring codes, see page MA-3 & MA-4	POLARIZATION / WIRING 00 None
OPTIONS	
KSXX Two turning jackscrews. See page MA-6 for keying options (KJ*)	KPXX Two fixed jacknuts and interfacial sealing gasket. See page MA-6 for keying options (KN*) 900 Interfacial sealing gasket 0B7 Threaded inserts and interfacial sealing gasket

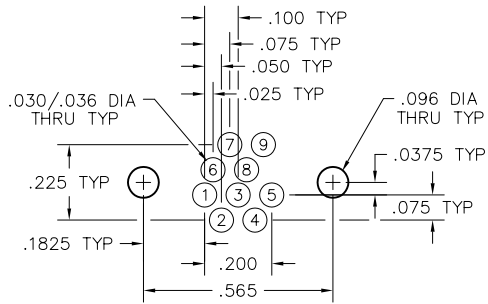
* = Use numbers or letters in parenthesis when ordering size 100. *** = 69 position connectors are available in metal only.
 ** = Captive hardware is factory installed and non-removable. **** = Connector body has no mounting holes.
 = Option not RoHS compliant

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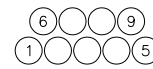
Recommended PC Board Layout

Straight, Standard Footprint

RECEPTACLE PC BOARD LAYOUT COMPONENT SIDE



CONNECTOR MATING FACE (RECEPTACLE)



9 POSITION



15 POSITION



21 POSITION



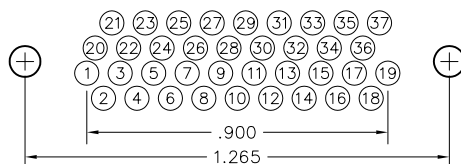
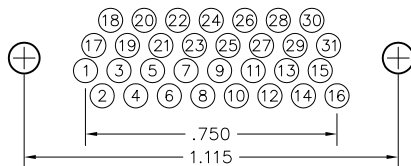
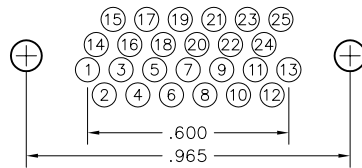
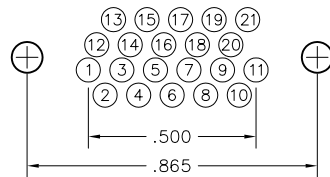
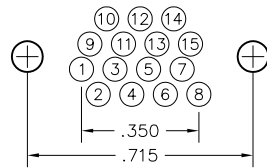
25 POSITION



31 POSITION



37 POSITION



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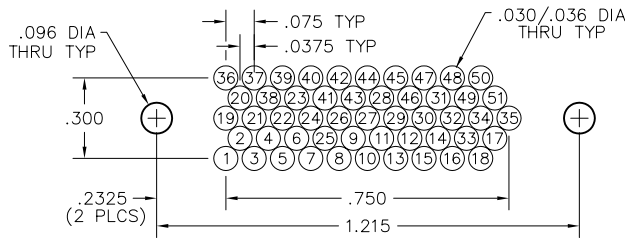
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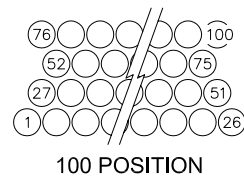
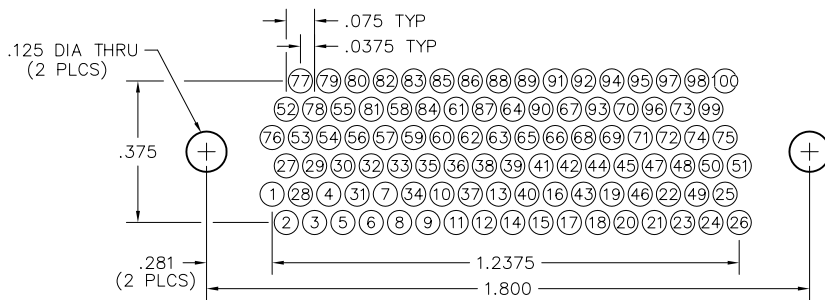
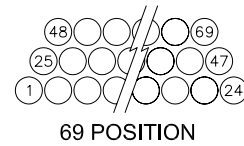
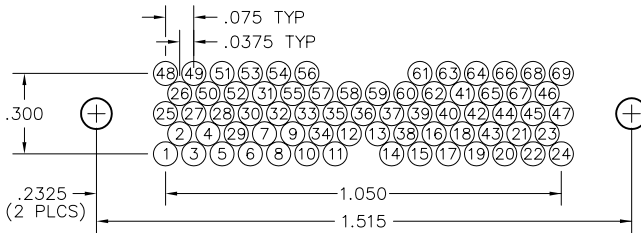
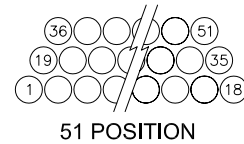
Recommended PC Board Layout

Straight, Standard Footprint

RECEPTACLE PC BOARD LAYOUT COMPONENT SIDE



CONNECTOR MATING FACE (RECEPTACLE)



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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

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Specifications

Materials and Finishes *

Contacts:	Pins: BeCu alloy strip per ASTM B194 Sockets: Brass per ASTM B121 / B121M or ASTM B16 / B16M or ASTM B453
Contact Finish:**	Gold plate per ASTM B488
Shells:	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
Aluminum Shell Finishes:**	Electroless Nickel per SAE AMS2404 Electrodeposited Cadmium per SAE AMS-QQ-P-416 Black Anodized per MIL-A-8625 Gold per MIL-DTL-45204
Molded Insulators:	Glass filled polyphenylene sulfide per MIL-M-24519
Embedment:	Insulating compound per MIL-I-16923
Jackscrews, Jackposts and Nuts:	Corrosion resistant steel per ASTM A320 or ASTM A484 / A484M and ASTM A582 / A582M Passivated per SAE AMS2700
Clips and Washers:	Corrosion resistant steel per ASME 18.24 or NASM35333 Passivated per ASME 18.24 or NASM35333
Guide Pins	Corrosion resistant steel per ASTM A484 / A484M and ASTM A582 / A582M Passivated per SAE AMS2700
Latches	Beryllium copper in accordance with ASTM B194 Electroless Nickel plate per SAE AMS2404
Interfacial Seal Gaskets:	Fluorosilicone per SAE AMS-R-25988
Tolerances:**	Unless otherwise specified: Fractions = $\pm 1/64$ " Decimals = ± 0.010 " 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

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

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