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Micro38999

CONNECTORS



For Harsh Environments



2M805 **Tri-Start**

2M804 **Push-Pull**

2M803 **Bayonet**

2M801 **Dual-Start**



The New
AEROSPACE STANDARD

About Amphenol® Aerospace

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*Amphenol Aerospace, Amphenol Commercial Air,
and Amphenol Industrial Operations Main Facility in Sidney, NY USA*

ABOUT AMPHENOL AEROSPACE:

Amphenol Aerospace, a Division of Amphenol Corporation, is one of the largest manufacturers of interconnect products in the world for the Military, Commercial Aerospace and Industrial markets. Amphenol designs, manufactures and markets circular and rectangular, electronic, fiber optic, EMI/EMP filter, and a variety of special applications connectors and interconnect systems.

Our state-of-the-art facility is nestled at the foothills of the Catskill Mountains in Sidney, NY. The Amphenol complex houses many technologies including CNC machining, die-casting, molding, impact and extruding, plating, screw machining and process controls. Our fully equipped material evaluation lab and engineering organization utilize the latest in computer aided design software and analysis tools, allowing us to design, test, and qualify advanced interconnect systems. Amphenol's interconnect products are supplied to thousands of OEMs worldwide and are supported by our worldwide sales and engineering force, including the largest global network of electronic distributors.



AMPHENOL AEROSPACE'S PHILOSOPHY

As a basic business philosophy, Amphenol Aerospace is dedicated to concentrating on those advanced and challenging market segments that demand an extraordinary level of supplier support and reaction. Our approach to implement this strategy is based on the following key principles:

FOCUS: Concentrate all resources on serving a limited number of tightly defined markets, and understanding the needs of those markets.

INNOVATION: Provide these markets new, creative solutions in both products and services.

RESPONSIVENESS: Identify and respond to the market and product needs more rapidly than any other supplier.

Performance is the sum of these principles. It is the measure of how well we continually and consistently implement our basic strategy and key principles.

QUALITY ASSURANCE:

Amphenol Aerospace has been awarded both AS9100 - Revision C and ISO9001:2008 Quality Assurance Certifications.

Micro38999 Reference Guide

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2M Series Selection Table

2M801, 2M803, 2M804 and 2M805



SERIES	2M805	2M804	2M803	2M801
Pages	Pages 28-39	Pages 40-57	Pages 58-67	Page 68-80
TYPE	Tri-Start ACME Thread	Push-Pull	Bayonet	Dual-Start ACME Thread
DESCRIPTION	"Anti-Decoupling" ratchet mechanism and ground spring for military airframes and avionics boxes. Fast mating.	Breakaway connector for headsets and tactical equipment. Gold-plated spring for long mating life and superior EMI shielding.	Quick-mating, light duty, general purpose. Not rated for immersion, 50 milliohms shell-to-shell resistance.	More rugged keys and threads. Faster mating.
CONTACTS	1 to 130	1 to 85	1 to 55	1 to 130
COUPLING	Tri-Start Thread	Push, Pull Quick-Disconnect	1/4 turn lock Bayonet	Threaded Coupling with 1 1/2 Turns to Full Mate
WATER IMMERSION, MATED	MIL-STD-810 Method 512 1 Meter for 1 Hour	MIL-STD-810 Method 512 1 Meter for 1 Hour	Splashproof	MIL-STD-810 Method 512 1 Meter for 1 Hour
EMI SHIELDING	Excellent	Excellent	Fair	Very Good
VIBRATION AND SHOCK	43.9 g's Random Vibration, Sine Vibration 60 g; 300 g's Shock	37 g's Random Vibration; 300 g's Shock	37 g's Random Vibration; 300 g's Shock	43.9 g's Random Vibration, Sine Vibration 60 g; 300 g's Shock
MATING CYCLES	500 Cycles	2000 Cycles	1000 Cycles Aluminum 2000 Cycles Stainless Steel	2000 Cycles (-16 Plugs) 500 Cycles (-26 Plugs)
ELECTRICAL PERFORMANCE	#12: 23 AMP, 1800 VAC #16: 13 AMP, 1800 VAC #20: 7.5 AMP, 750 VAC #23: 5 AMP, 500 VAC	#12: 23 AMP, 1800 VAC #16: 13 AMP, 1800 VAC #20: 7.5 AMP, 750 VAC #23: 5 AMP, 500 VAC	#12: 23 AMP, 1800 VAC #16: 13 AMP, 1800 VAC #20: 7.5 AMP, 750 VAC #23: 5 AMP, 500 VAC	#12: 23 AMP, 1800 VAC #16: 13 AMP, 1800 VAC #20: 7.5 AMP, 750 VAC #23: 5 AMP, 500 VAC
FILTERED	See pages 95, 96	See pages 95, 96	See pages 95, 96	See pages 95, 96

Size & Weight Comparison Charts

2M805 VS. D38999 Series III



2M805 Series

Weight Comparison: 2M805 VS. D38999 Series III

2M805 Layout	Number of Contacts	D38999 Layout	Number of Contacts	2M805 Weight	D38999 Aluminum	% Weight Savings	D38999 Composite	% Weight Savings
8-7	7 #23	9-35	6 #20	13.4	26.3	49%	19.9	33%
10-13	13 #23	11-35	13 #22D	23.0	35.7	36%	26.8	14%
11-19	19 #23	13-35	19 #22D	26.4	50.7	48%	38.5	31%
12-26	26 #23	17-26	26 #20	29.4	58.5	50%	62.6	53%
15-37	37 #23	15-35	37 #22D	42.7	72.1	41%	57.4	26%
18-55	55 #23	17-35	55 #22D	59.6	81.6	27%	65.6	9%
19-85	85 #23	21-35	85 #22D	59.8	119.7	50%	99.1	40%
23-130	130 #23	25-35	128 #22D	85.5	159.3	46%	136.6	37%

Size Comparison: 2M805 VS. D38999 Series III

2M805 Layout	Maximum Plug Diameter					Maximum Jam Nut Receptacle Diameter				
	2M805		D38999		% Reduction	2M805		D38999		% Reduction
	In.	mm.	In.	mm.		In.	mm.	In.	mm.	
8-7	.707	17.96	.859	21.81	17%	.775	19.69	1.201	30.51	35%
10-13	.804	20.42	.969	24.61	18%	.895	22.73	1.386	30.50	35%
11-19	.933	23.70	1.141	28.98	20%	.960	24.38	1.512	38.40	36%
12-26	.999	25.37	1.391	35.33	29%	1.075	27.31	1.764	44.81	39%
15-37	1.113	28.27	1.266	32.16	13%	1.218	30.86	1.638	41.61	26%
18-55	1.308	33.02	1.391	35.33	7%	1.404	35.66	1.764	44.81	20%
19-85	1.328	33.73	1.625	41.27	19%	1.465	37.21	2.075	52.71	29%
23-130	1.577	40.06	1.875	47.63	16%	1.720	43.69	2.323	59.00	26%

Note: Weights shown include contacts and represent a mated pair of plug and jam nut receptacle. Weights are in grams.

Size & Weight Comparison Charts

2M801 VS. D38999 Series III



2M801 Series

Weight Comparison: 2M801 VS. D38999 Series III

2M801 Layout	Number of Contacts	D38999 Layout	Number of Contacts	2M801 Weight	D38999 Aluminum	% Weight Savings	D38999 Composite	% Weight Savings
5-3	3	9-98	3	7.9	25.3	69%	19.9	60%
6-7	7	9-35	6	9.8	26.3	63%	19.9	51%
9-19	19	13-35	22	18.8	50.7	63%	38.5	51%
13-37	37	15-35	37	36.0	72.1	50%	57.4	37%
16-55	55	17-35	55	49.8	81.6	39%	65.6	24%
17-85	85	21-35	79	54.3	119.7	55%	99.1	45%
21-130	130	25-35	128	68.7	159.3	57%	136.6	50%

Size Comparison: 2M801 VS. D38999 Series III

2M801 Layout	Cable Plug Diameter					Jam Nut Receptacle Diameter				
	2M801		D38999		% Reduction	2M801		D38999		% Reduction
	In.	mm.	In.	mm.		In.	mm.	In.	mm.	
5-3	.540	13.72	.859	21.82	37%	.575	14.61	1.204	30.58	52%
6-7	.600	15.24	.859	21.82	30%	.635	16.13	1.204	30.58	47%
9-19	.810	20.57	1.156	29.36	30%	.830	21.08	1.516	38.51	45%
13-37	1.050	26.67	1.281	32.54	18%	1.078	27.38	1.641	41.68	34%
16-55	1.240	31.50	1.406	35.71	12%	1.264	32.11	1.766	44.86	28%
17-85	1.300	33.02	1.641	41.68	21%	1.325	33.66	2.078	52.78	36%
21-130	1.550	39.37	1.890	48.01	18%	1.625	41.28	2.323	59.00	30%

Note: Weights shown include contacts and represent a mated pair of plug and jam nut receptacle. Weights are in grams.

2M Series Technical Information

Inserts Arrangements

SERIES 2M INSERT ARRANGEMENTS

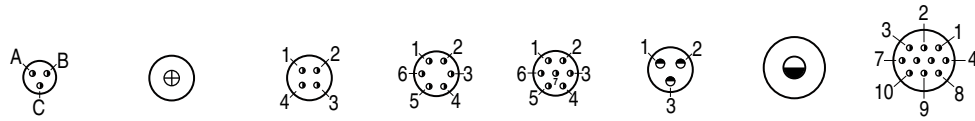
CONTACT SIZE	CONTACT QUANTITY					INSERT ARRANGEMENT			
	#23	#20	#20HD	#16	#12	2M801	2M803	2M804	2M805
Size #23 Contacts 5 Amp Max. Current 500 VAC #22-#28 AWG	3					5-3	5-3	5-3	NA
	4					6-4	6-4	6-4	8-4
	6					6-6	6-6	6-6	8-6
	7					6-7	6-7	6-7	8-7
	10					7-10	7-10	7-10	9-10
	13					8-13	8-13	8-13	10-13
	19					9-19	9-19	9-19	11-19
	26					10-26	10-26	10-26	12-26
	37					13-37	12-37	12-37	15-37
	55					16-55	14-55	14-55	18-55
	85					17-85	15-35	15-85	19-85
130					21-130	NA	NA	23-130	
Size #20HD Contacts 7.5 Amp Max. Current 750 VAC #20-#24 AWG.			3			6-23	6-23	6-23	8-23
			5			7-25	7-25	7-25	9-25
			8			8-28	8-28	8-28	10-28
			10			9-210	9-210	9-210	11-210
			20			13-220	12-220	12-220	15-220
			35			16-235	14-235	14-235	18-235
			41			17-241	NA	NA	19-241
		69			21-269	NA	NA	23-269	
Size #16 Contacts 13 Amp Max. Current 1800 VAC #16-#20 AWG				1		6-1	6-1	6-1	8-1
				2		8-2	8-2	8-2	10-2
				4		9-4	9-4	9-4	11-4
				5		10-5	10-5	10-5	12-5
				7		13-7	12-7	12-7	15-7
				12		16-12	14-12	14-12	18-12
				14		17-14	15-14	15-14	19-14
			22		21-22	NA	NA	23-22	
Size #12 Contacts 23 Amp Max. Current 1800 VAC #12-14 AWG					1	7-1	7-1	7-1	9-1
					2	10-2	10-2	10-2	12-2
					2	13-2	12-2	12-2	15-2
					3	13-3	12-3	12-3	15-3
					5	16-5	14-5	14-5	18-5
					7	17-7	15-7	15-7	19-7
				12	21-12	NA	NA	23-12	
Insert Arrangements with Mixed Size (Combo) Layouts	4	2				8-200	8-200	8-200	10-200
	8	2				9-201	9-201	9-201	11-201
	4			2		9-200	9-200	9-200	11-200
	8			2		10-202	10-202	10-202	12-202
	4				2	10-201	10-201	10-201	12-201
	6				2	13-200	12-200	12-200	15-200
	10				2	13-201	12-201	12-201	15-201
	12				1	10-200	10-200	10-200	12-200

2M Series Technical Information

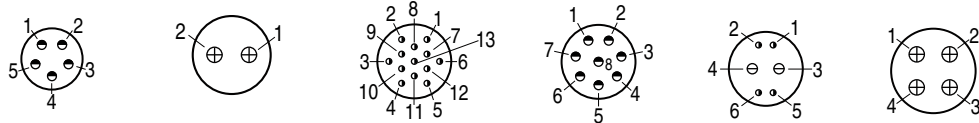
Insert Arrangements



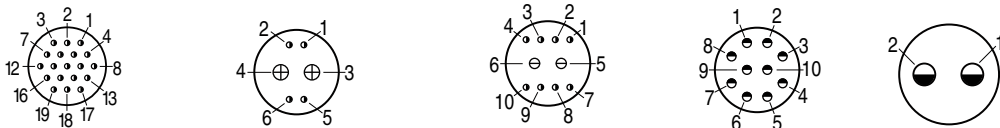
Front face of pin inserts illustrated (Socket Reversed)



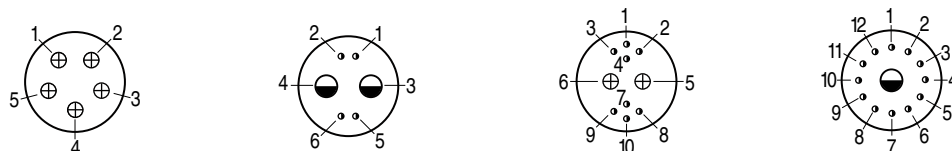
2M801 2M803 2M804	5-3	6-1*	6-4	6-6	6-7	6-23	7-1*	7-10
2M805	NA	8-1*	8-4	8-6	8-7	8-23	9-1*	9-10
No. of Contacts	3	1	4	6	7	3	1	10
Contact Size	#23	#16	#23	#23	#23	#20HD	#12	#23
DWV Voltage (VAC)	500	1800	500	500	500	750	1800	500
Current Rating (Amps)	5	13	5	5	5	7.5	23	5



2M801 2M803 2M804	7-25	8-2	8-13	8-28	8-200*	9-4
2M805	9-25	10-2	10-13	10-28	10-200*	11-4
No. of Contacts	5	2	13	8	2 4	4
Contact Size	#20HD	#16	#23	#20HD	#20 #23	#16
DWV Voltage (VAC)	750	1800	500	750	1000 500	1800
Current Rating (Amps)	7.5	13	5	7.5	7 5	13



2M801 2M803 2M804	9-19	9-200	9-201	9-210	10-2
2M805	11-19	11-200	11-201	11-210	12-2
No. of Contacts	19	2 4	2 8	10	2
Contact Size	#23	#16 #23	#20 #23	#20HD	#12
DWV Voltage (VAC)	500	1800 500	1000 500	750	1800
Current Rating (Amps)	5	13 5	7.5 5	7.5	23

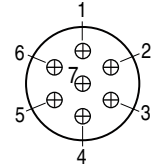
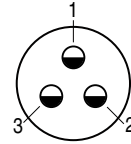
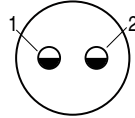
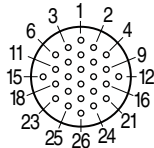


2M801 2M803 2M804	10-5	10-201	10-202*	10-200*
2M805	12-5	12-201	12-202*	12-200*
No. of Contacts	5	2 4	2 8	1 12
Contact Size	#16	#12 #23	#16 #23	#12 #23
DWV Voltage (VAC)	1800	1800 500	1800 500	1800 500
Current Rating (Amps)	13	23 5	13 5	23 5

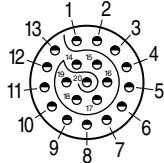
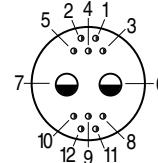
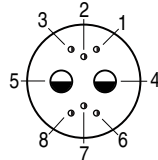
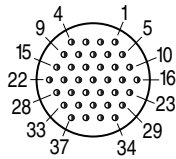
2M Series Technical Information

Insert Arrangements

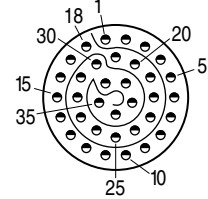
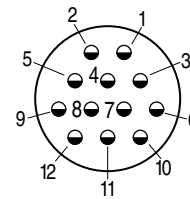
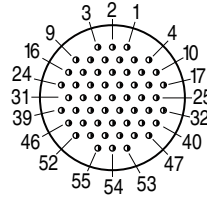
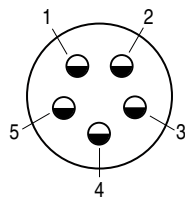
Front face of pin inserts illustrated (Socket Reversed)



2M801	10-26	13-2	13-3*	13-7
2M803 2M804	10-26	12-2	12-3*	12-7
2M805	12-26	15-2	15-3*	15-7
No. of Contacts	26	2	3	7
Contact Size	#23	#12	#12	#16
DWV Voltage (VAC)	500	1800	1800	1800
Current Rating (Amps)	5	23	23	13



2M801	13-37	13-200*		13-201		13-220
2M803 2M804	12-37	12-200		12-201		12-220
2M805	15-37	15-200*		15-201		15-220
No. of Contacts	37	2	6	2	10	20
Contact Size	#23	#12	#23	#12	#23	#20HD
DWV Voltage (VAC)	500	1800	500	1800	500	750
Current Rating (Amps)	5	23	5	23	5	7.5



2M801	16-5	16-55	16-12	16-235
2M803 2M804	14-5	14-55	14-12	14-235
2M805	18-5	18-55	18-12	18-235
No. of Contacts	5	55	12	35
Contact Size	#12	#23	#16	#20HD
DWV Voltage (VAC)	1800	500	1800	750
Current Rating (Amps)	23	5	13	7.5

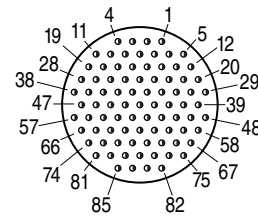
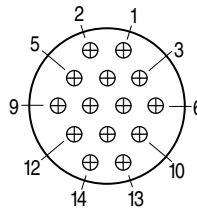
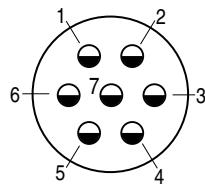
*Not tooled for every insert pattern

2M Series Technical Reference

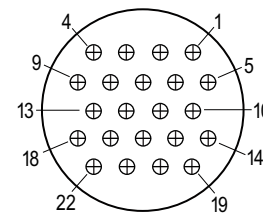
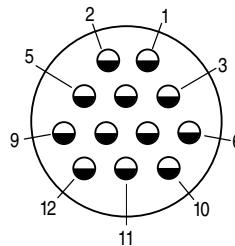
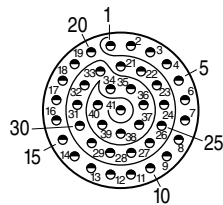
Insert Arrangements



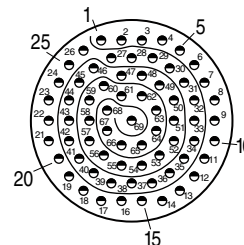
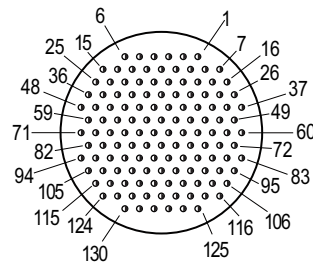
Front face of pin inserts illustrated (Socket Reversed)



2M801	17-7	17-14*	17-85
2M803 2M804	15-7	15-14	15-85
2M805	19-7	19-14*	19-85
No. of Contacts	7	14	85
Contact Size	#12	#16	#23
DWV Voltage (VAC)	1800	1800	500
Current Rating (Amps)	23	13	5



2M801	17-241*	21-12	21-22*
2M805	19-241*	23-12	23-22*
No. of Contacts	41	12	22
Contact Size	#20HD	#12	#16
DWV Voltage (VAC)	750	1800	1800
Current Rating (Amps)	7.5	23	13


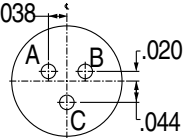
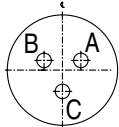

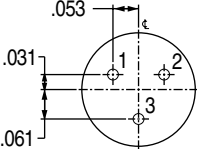
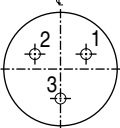

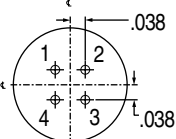
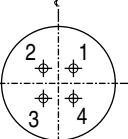

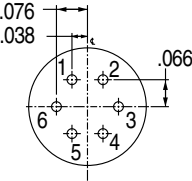
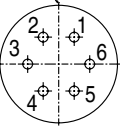

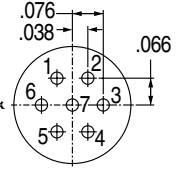
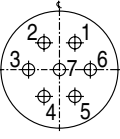
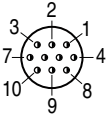
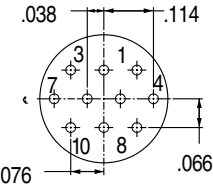
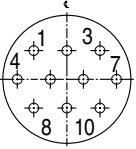


2M801	21-130	21-269
2M805	23-130	23-269
No. of Contacts	130	69
Contact Size	#23	#20HD
DWV Voltage (VAC)	500	750
Current Rating (Amps)	5	7.5

*Not tooled for every insert pattern

2M Series Technical Information

Straight PCB Footprints

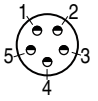
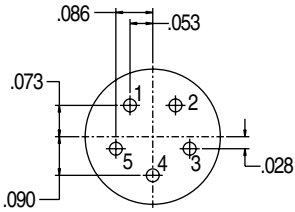
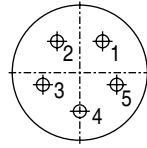

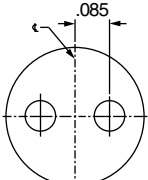
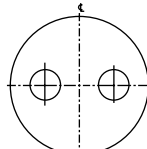
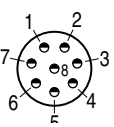
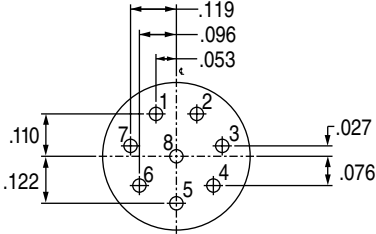
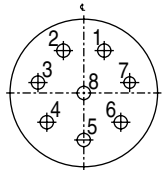
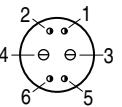
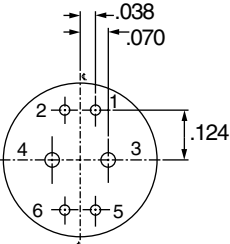
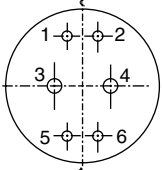
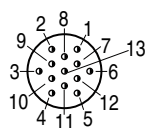
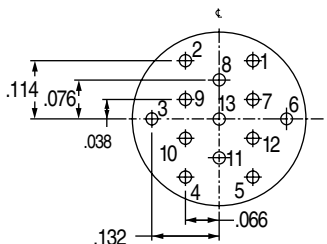
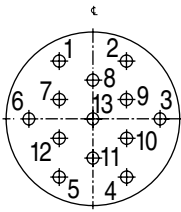
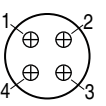
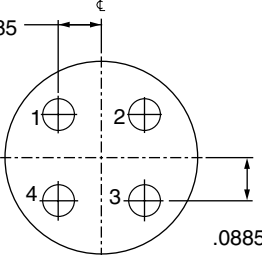
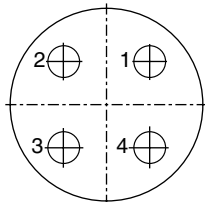
INSERT ARRANGEMENT	PIN CONNECTOR	SOCKET CONNECTOR
 <p>5-3 (3) #23 Contacts .022 Max. Dia Tail</p>		
 <p>6-23, 8-23 (3) #20HD Contacts .023 Max. Dia. Tail</p>		
 <p>6-4, 8-4 (4) #23 Contacts .022 Max. Dia Tail</p>		
 <p>6-6, 8-6 (6) #23 Contacts .022 Max. Dia. Tail</p>		
 <p>6-7, 8-7 (7) #23 Contacts .022 Max. Dia. Tail</p>		
 <p>7-10, 9-10 10 #23 Contacts .022 Max. Dia. Tail</p>		

Socket inserts are a mirror image of pin side. Socket side shown for cavity locations only, reference pin side for dimensions.

2M Series Technical Reference

Straight PCB Footprints

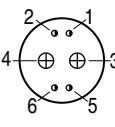
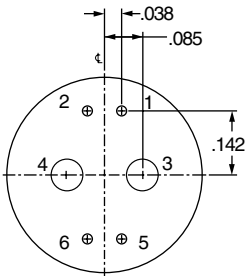
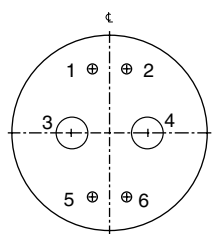
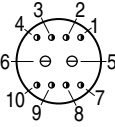
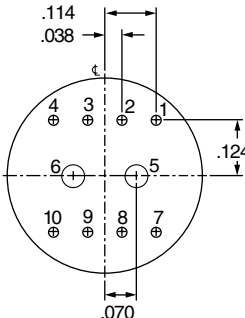
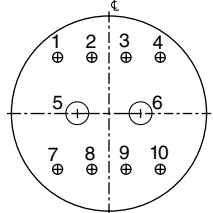
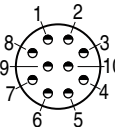
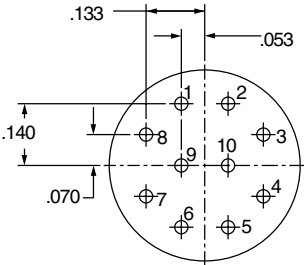
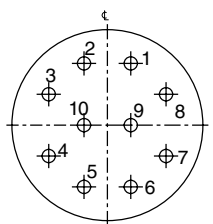
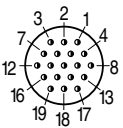
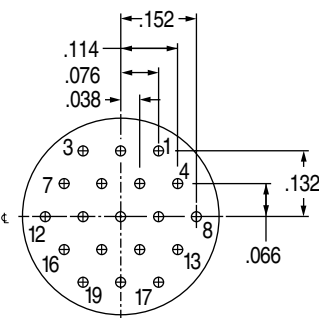
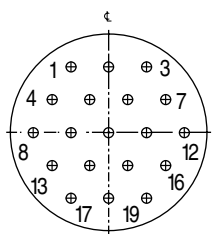
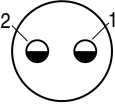
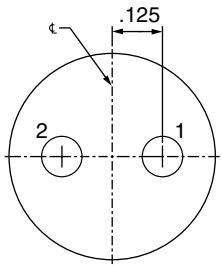
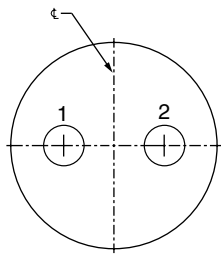


INSERT ARRANGEMENT	PIN CONNECTOR	SOCKET CONNECTOR
 <p>7-25, 9-25 (5) #20HD Contacts .028 Max. Dia Tail</p>		
 <p>8-2, 10-2 (2) #16 Contacts</p>		
 <p>8-28, 10-28 (8) #20HD Contacts</p>		
 <p>8-200*, 10-200* (2) #20 Contacts (4) #23 Contacts</p>		
 <p>8-13, 10-13 (13) #23 Contacts .022 Max. Dia. Tail</p>		
 <p>9-4, 11-4 (4) #16 Contacts</p>		

*Not tooled for every insert pattern

2M Series Technical Information

Straight PCB Footprints

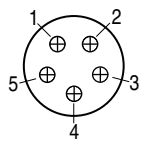
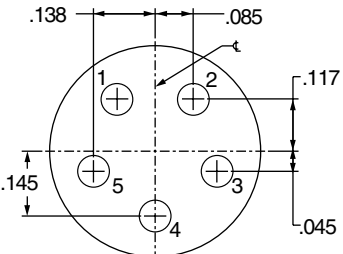
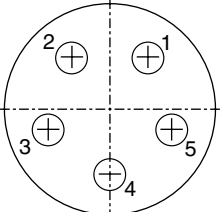
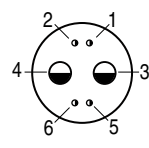
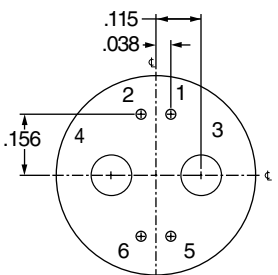
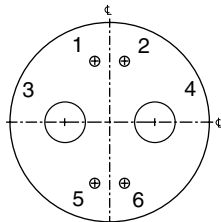
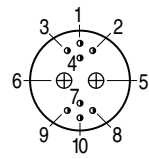
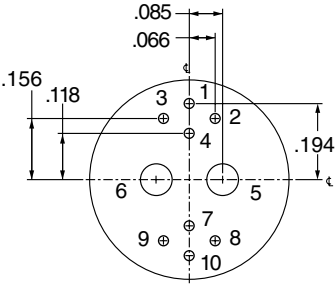
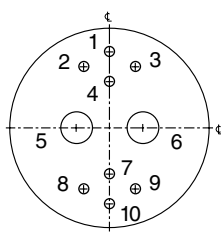
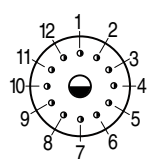
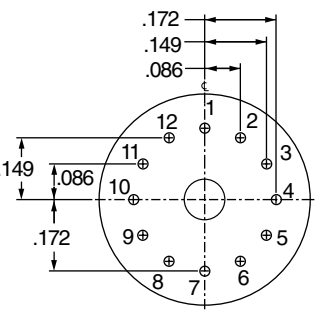
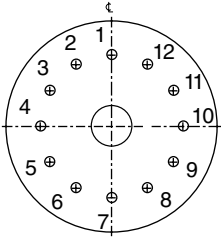
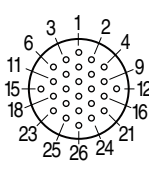
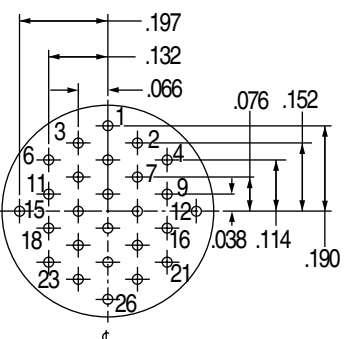
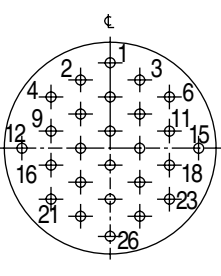
INSERT ARRANGEMENT	PIN CONNECTOR	SOCKET CONNECTOR
 <p>9-200, 11-200 (4) #23 Contacts (2) #16 Contacts</p>		
 <p>9-201, 11-201 (2) #20 Contacts (8) #23 Contacts</p>		
 <p>9-210*, 11-210* (10) #20HD Contacts</p>		
 <p>9-19, 11-19 (19) #23 Contacts .022 Max. Dia Tail</p>		
 <p>10-2, 12-2 (2) #12 Contacts</p>		

*Not tooled for every insert pattern

2M Series Technical Reference

Straight PCB Footprints

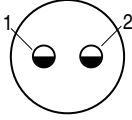
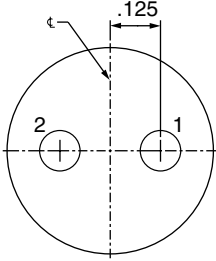
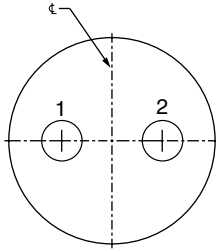
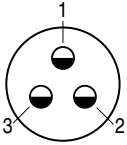
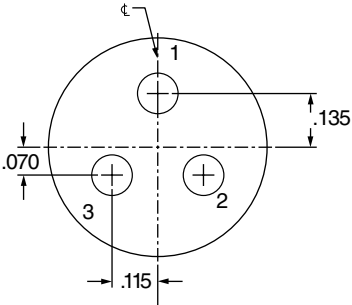
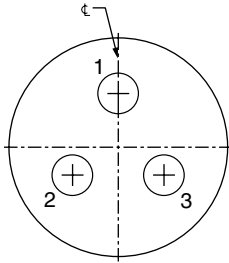
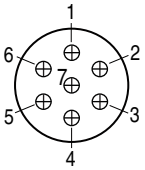
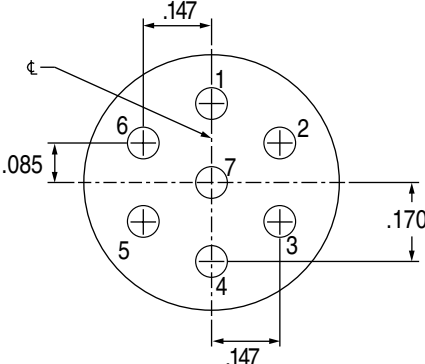
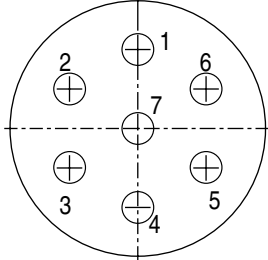
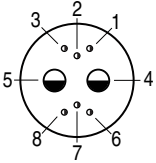
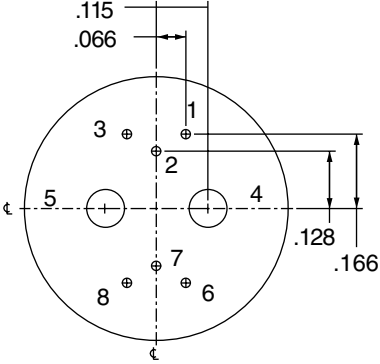
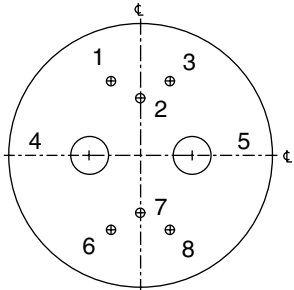


INSERT ARRANGEMENT	PIN CONNECTOR	SOCKET CONNECTOR
 <p>10-5, 12-5 (5) #16 Contacts</p>		
 <p>10-201, 12-201 (2) #12 Contacts (4) #23 Contacts</p>		
 <p>10-202*, 12-202* (2) #16 Contacts (8) #23 Contacts</p>		
 <p>10-200*, 12-200* (1) #12 Contact (12) #23 Contacts</p>		
 <p>10-26, 12-26 (26) #23 Contacts .022 Max. Dia. Tail</p>		

*Not tooled for every insert pattern

2M Series Technical Information

Straight PCB Footprints

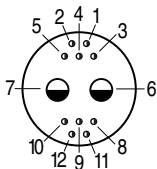
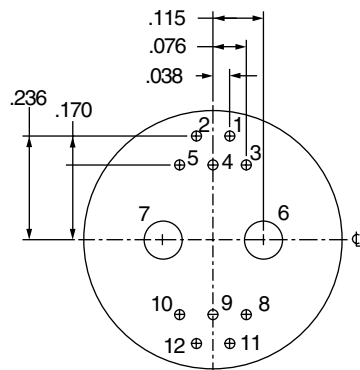
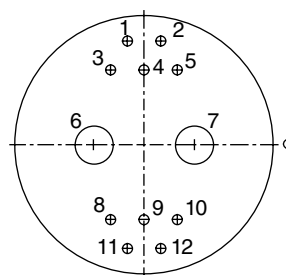
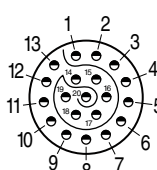
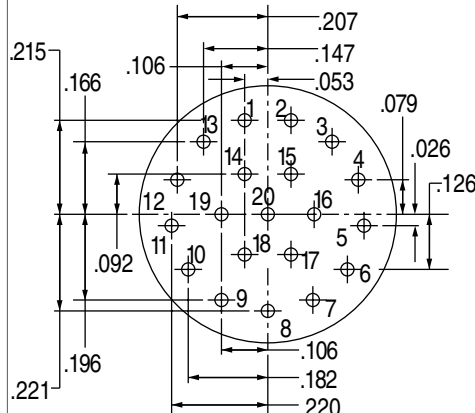
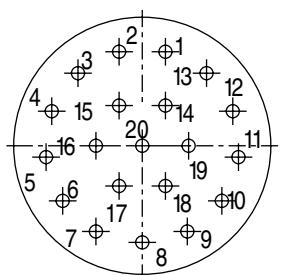
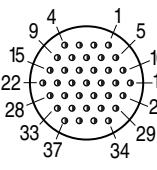
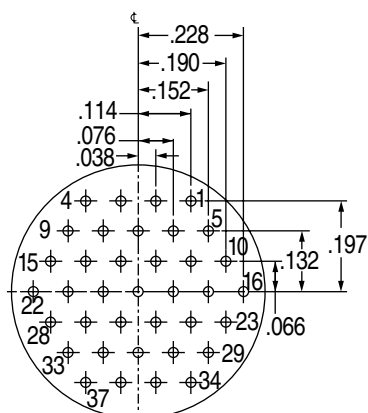
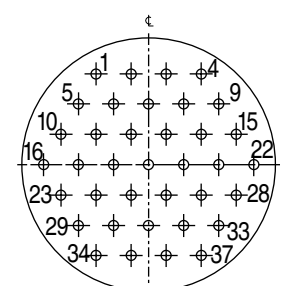
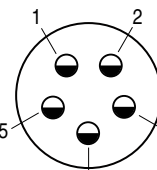
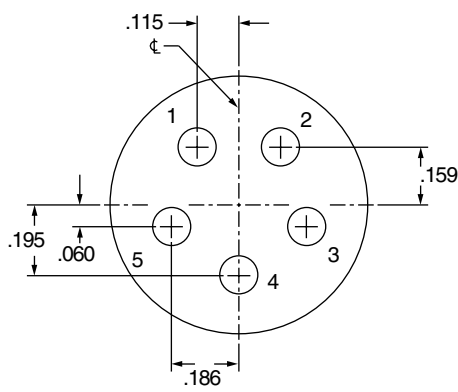
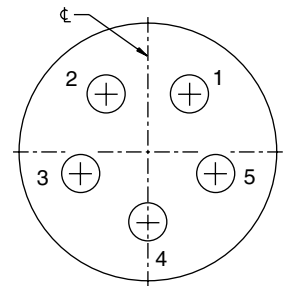
INSERT ARRANGEMENT	PIN CONNECTOR	SOCKET CONNECTOR
 <p>12-2, 13-2, 15-2 (2) #12 Contacts</p>		
 <p>12-3*, 13-3*, 15-3* (3) #12 Contacts</p>		
 <p>12-7, 13-7, 15-7 (7) #16 Contacts</p>		
 <p>12-200*, 13-200*, 15-200* (2) #12 Contacts (6) #23 Contacts</p>		

*Not tooled for every insert pattern

2M Series Technical Reference

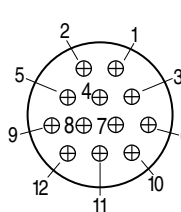
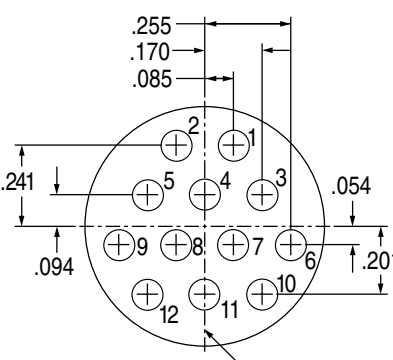
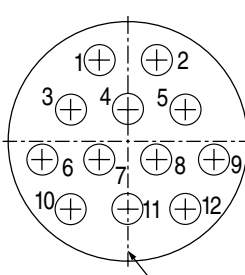
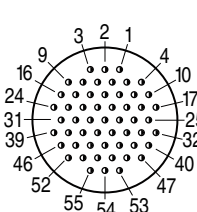
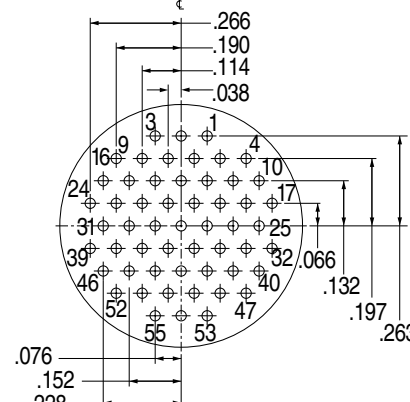
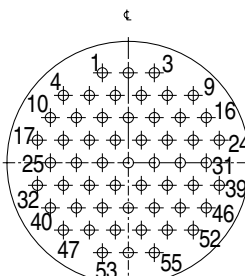
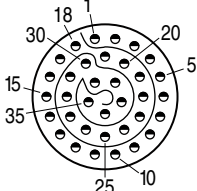
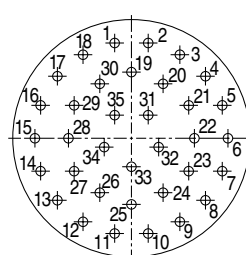
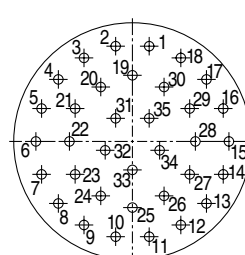
Straight PCB Footprints



INSERT ARRANGEMENT	PIN CONNECTOR	SOCKET CONNECTOR
 <p>12-201, 13-201, 15-201 (2) #12 Contacts (10) #23 Contacts</p>		
 <p>12-220, 13-220, 15-220 (20) #20HD Contacts</p>		
 <p>12-37, 13-37, 15-37 (37) #23 Contacts .022 Max. Dia. Tail</p>		
 <p>14-5, 16-5, 18-5 (5) #12 Contacts</p>		

2M Series Technical Information

Straight PCB Footprints

INSERT ARRANGEMENT	PIN CONNECTOR	SOCKET CONNECTOR
 <p>14-12, 16-12, 18-12 (12) #16 Contacts</p>		
 <p>14-55, 16-55, 18-55 (55) #23 Contacts .022 Max. Dia. Tail</p>		
 <p>14-235, 16-235, 18-235 (35) #20HD Contacts .023 Max. Dia. Tail</p>		

14-235, 16-235, 18-235

Pin. No.	X		Y		Pin. No.	X		Y		Pin. No.	X		Y	
	in.	mm.	in.	mm.		in.	mm.	in.	mm.		in.	mm.	in.	mm.
1	-.053	-1.35	.301	7.65	13	-.234	-5.94	-.196	-4.98	25	.000	0.00	-.209	-5.31
2	.053	1.35	.301	7.65	14	-.287	-7.29	-.104	-2.64	26	-.100	-2.54	-.172	-4.37
3	.153	3.89	.264	6.71	15	-.305	-7.75	.000	0.00	27	-.181	-4.60	-.104	-2.64
4	.234	5.94	.196	4.98	16	-.287	7.29	.104	2.64	28	-.199	-5.05	.000	0.00
5	.287	7.29	.104	2.64	17	-.234	-5.94	.196	4.98	29	-.181	-4.60	.104	2.64
6	.305	7.75	.000	0.00	18	-.153	-3.89	.264	6.71	30	-.100	-2.54	.172	4.37
7	.287	7.29	-.104	-2.64	19	.000	0.00	.209	5.31	31	-.053	-1.35	.073	1.85
8	.234	5.94	-.196	-4.98	20	.100	2.54	.172	4.37	32	.053	1.35	.073	1.85
9	.153	3.89	-.264	-6.71	21	.181	4.60	.104	2.64	33	.086	2.18	-.028	-0.71
10	.053	1.35	-.301	-7.65	22	.199	5.05	.000	0.00	34	.000	0.00	-.090	-2.29
11	-.053	-1.35	-.301	-7.65	23	.181	4.60	-.104	-2.64	35	-.086	-2.18	-.028	-0.71
12	-.153	-3.89	-.264	-6.71	24	.100	2.54	-.172	-4.37					

2M Series Technical Reference

Straight PCB Footprints



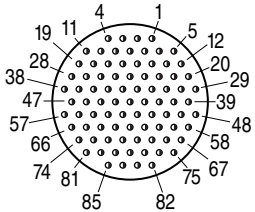
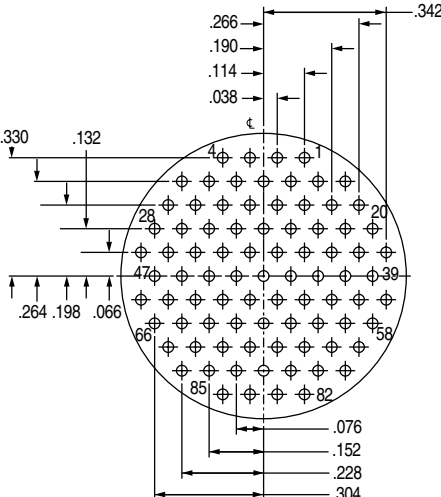
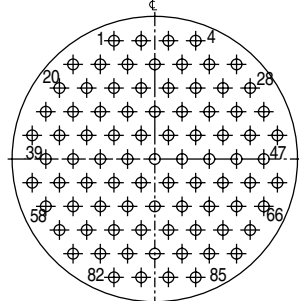
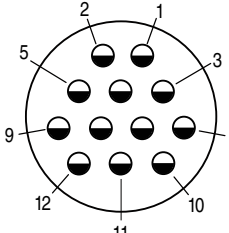
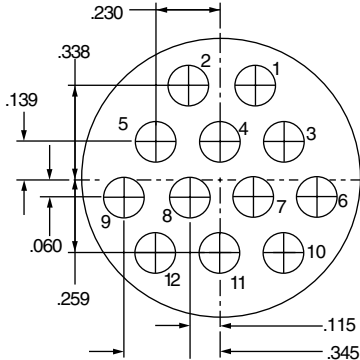
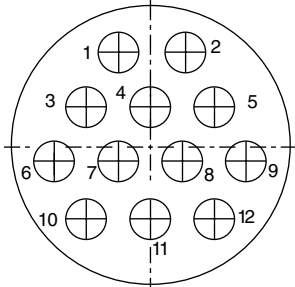
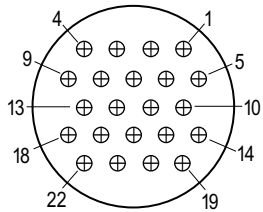
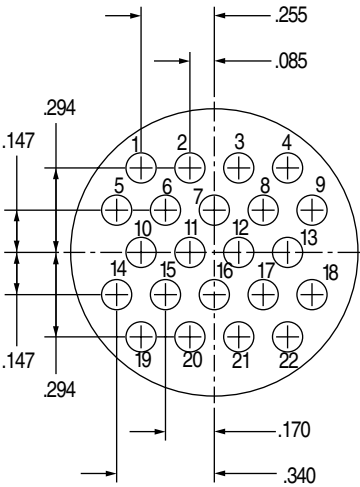
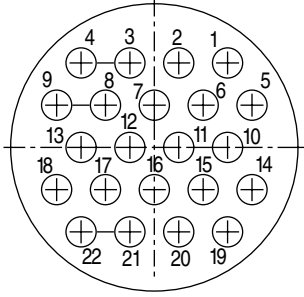
INSERT ARRANGEMENT	PIN CONNECTOR	SOCKET CONNECTOR
<p>15-7, 17-7, 19-7 (7) #12 Contacts</p>		
<p>15-14, 17-14, 19-14 (14) #16 Contacts</p>		
<p>15-241, 16-241, 18-241 (41) #20HD Contacts .028 Max. Dia. Tail</p>		

15-241, 16-241, 18-241

Pin. No.	X		Y		Pin. No.	X		Y		Pin. No.	X		Y	
	in.	mm.	in.	mm.		in.	mm.	in.	mm.		in.	mm.	in.	mm.
1	-.053	-1.35	.335	8.51	15	-.302	-7.67	-.154	-3.91	29	-.151	-3.84	-.171	-4.34
2	.053	1.35	.335	8.51	16	-.335	-8.51	-.053	-1.35	30	-.213	-5.41	-.081	-2.06
3	.154	3.91	.302	7.67	17	-.335	-8.51	.053	1.35	31	-.226	-5.74	.028	0.71
4	.240	6.10	.240	6.10	18	-.302	-7.67	.154	3.91	32	-.188	-4.78	.130	3.30
5	.302	7.67	.154	3.91	19	-.240	-6.10	.240	6.10	33	-.106	-2.69	.202	5.13
6	.335	8.51	.053	1.35	20	-.154	-3.91	.302	7.67	34	-.053	-1.35	.110	2.79
7	.335	8.51	-.053	-1.35	21	.000	0.00	.228	5.79	35	.053	1.35	.110	2.79
8	.302	7.67	-.154	-3.91	22	.106	2.69	.202	5.13	36	.119	3.02	.027	0.69
9	.240	6.10	-.240	-6.10	23	.188	4.78	.130	3.30	37	.096	2.44	-.076	-1.93
10	.154	3.91	-.302	-7.67	24	.226	5.74	.028	0.71	38	.000	0.00	-.122	-3.10
11	+.053	+1.35	-.335	-8.51	25	.213	5.41	-.081	-2.06	39	-.096	-2.44	-.076	-1.93
12	-.053	-1.35	-.335	-8.51	26	.151	3.84	-.171	-4.34	40	-.119	-3.02	.027	0.69
13	-.154	-3.91	-.302	-7.67	27	.055	1.40	-.222	-5.64	41	.000	0.00	.000	0.00
14	-.240	-6.10	-.240	-6.10	28	-.055	-1.40	-.222	-5.64					

2M Series Technical Information

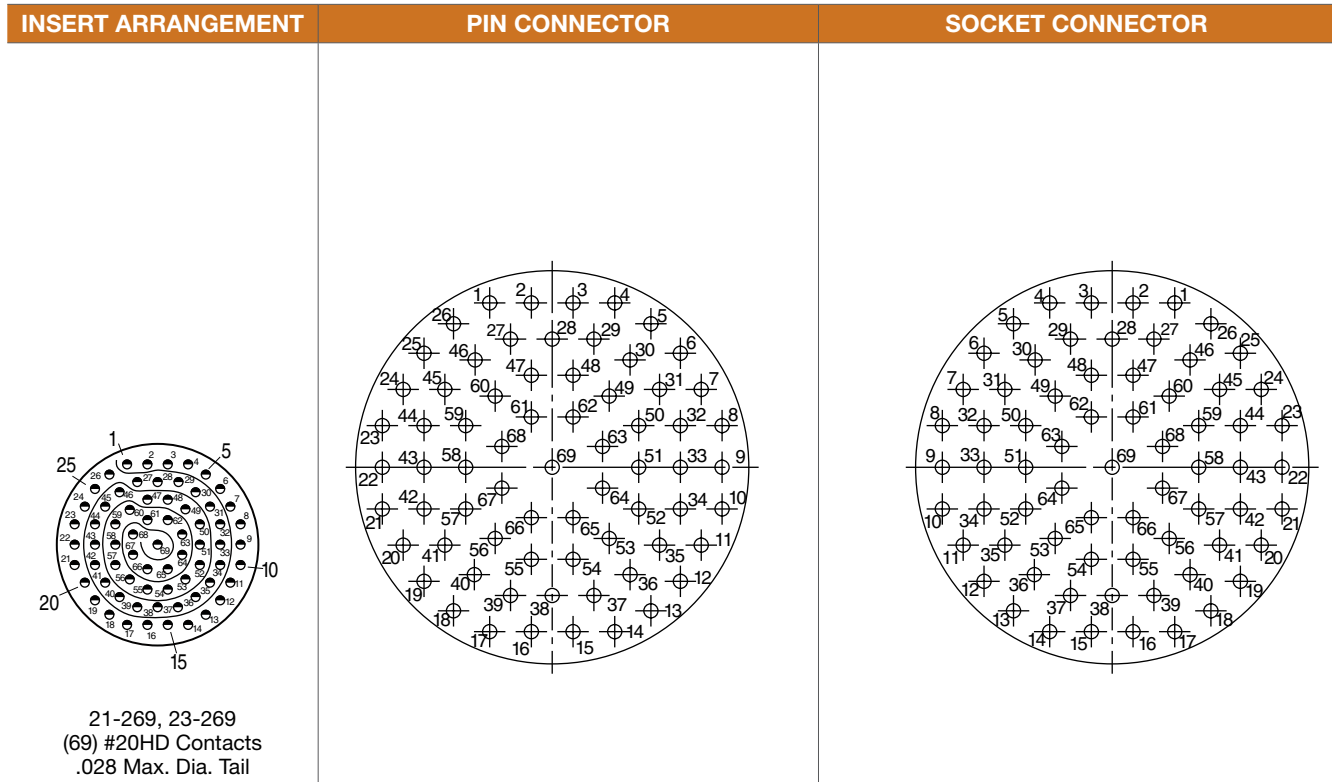
Straight PCB Footprints

INSERT ARRANGEMENT	PIN CONNECTOR	SOCKET CONNECTOR
 <p>17-85, 19-85 (85) #23 Contacts .022 Max. Dia. Tail</p>		
 <p>21-12, 23-12 (12) #12 Contacts</p>		
 <p>21-22*, 23-22* (22) #16 Contacts</p>		

*Not tooled for every insert pattern

2M Series Technical Reference

Straight PCB Footprints



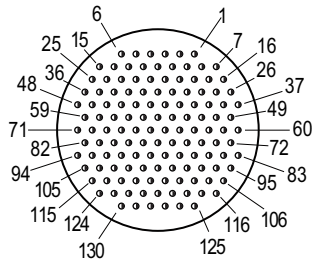
21-269, 23-269														
Pin. No.	X		Y		Pin. No.	X		Y		Pin. No.	X		Y	
	in.	mm.	in.	mm.		in.	mm.	in.	mm.		in.	mm.	in.	mm.
1	-.159	-4.04	.418	10.62	24	-.379	-9.63	.198	5.03	47	-.053	-1.35	.234	5.94
2	-.053	-1.35	.418	10.62	25	-.326	-8.28	.290	7.37	48	.053	1.35	.234	5.94
3	.053	1.35	.418	10.62	26	-.251	-6.38	.365	9.27	49	.145	3.68	.181	4.60
4	.159	4.04	.418	10.62	27	-.106	-2.69	.326	8.28	50	.220	5.59	.106	2.69
5	.251	6.38	.365	9.27	28	.000	0.00	.326	8.28	51	.220	5.59	.000	0.00
6	.326	8.28	.290	7.37	29	.106	-2.69	.326	8.28	52	.220	5.59	-.106	-2.69
7	.379	9.63	.198	5.03	30	.198	5.03	.273	6.93	53	.145	3.68	-.181	-4.60
8	.432	10.97	.106	2.69	31	.273	6.93	.198	5.03	54	.053	1.35	-.234	-5.94
9	.432	10.97	.000	0.00	32	.326	8.28	.106	2.69	55	-.053	-1.35	-.234	-5.94
10	.432	10.97	-.106	-2.69	33	.326	8.28	.000	0.00	56	-.145	-3.68	-.181	-4.60
11	.379	9.63	-.198	-5.03	34	.326	8.28	-.106	-2.69	57	-.220	-5.59	-.106	-2.69
12	.326	8.28	-.290	-7.37	35	.273	6.93	-.198	-5.03	58	-.220	-5.59	.000	0.00
13	.251	6.38	-.365	-9.27	36	.198	5.03	-.273	-6.93	59	-.220	-5.59	.106	2.69
14	.159	4.04	-.418	-10.62	37	.106	2.69	-.326	-8.28	60	-.145	-3.68	.181	4.60
15	.053	1.35	-.418	-10.62	38	.000	0.00	-.326	-8.28	61	-.053	-1.35	.128	3.25
16	-.053	-1.35	-.418	-10.62	39	-.106	-2.69	-.326	-8.28	62	.053	1.35	.128	3.25
17	-.159	-4.04	-.418	-10.62	40	-.198	-5.03	-.273	-6.93	63	.128	3.25	.053	1.35
18	-.251	-6.38	-.365	-9.27	41	-.273	-6.93	-.198	-5.03	64	.128	3.25	-.053	-1.35
19	-.326	-8.28	-.290	-7.37	42	-.326	-8.28	-.106	-2.69	65	.053	1.35	-.128	-3.25
20	-.379	-9.63	-.198	-5.03	43	-.326	-8.28	.000	0.00	66	-.053	-1.35	-.128	-3.25
21	-.432	-10.97	-.106	-2.69	44	-.326	-8.28	.106	2.69	67	-.128	-3.25	-.053	-1.35
22	.432	-10.97	.000	0.00	45	-.273	-6.93	.198	5.03	68	-.128	-3.25	.053	1.35
23	-.432	-10.97	.106	2.69	46	-.198	-5.03	.273	6.93	69	.000	0.00	.000	0.00

2M Series Technical Information

Straight PCB Footprints

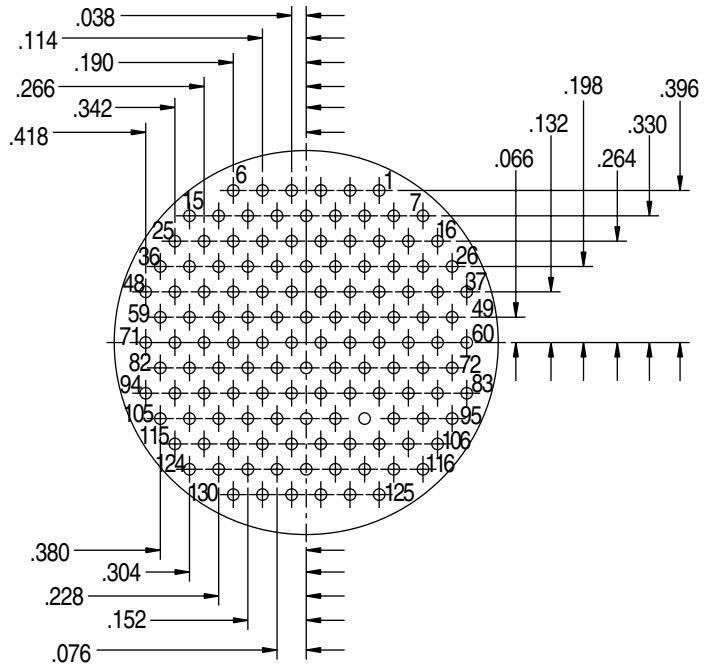
Technical Reference

INSERT ARRANGEMENT

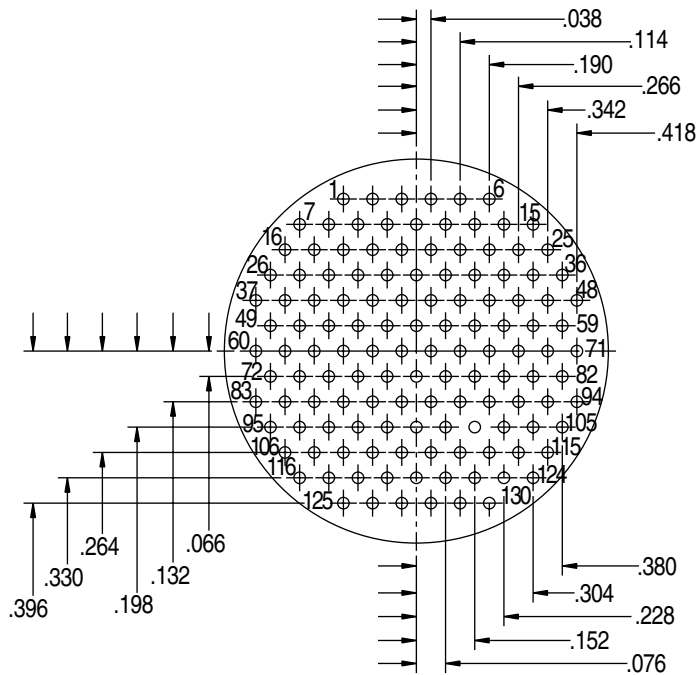


21-130, 23-130
(130) #23 Contacts
.022 Max. Dia Tail

PIN CONNECTOR



SOCKET CONNECTOR



2M Series Performance Specifications

Materials and Finishes



PERFORMANCE SPECIFICATIONS

Current Rating (Maximum)	Size #23 contact: 5 AMPS. Size #20 contact: 7.5 AMPS. Size #16 contact: 13 AMPS. Size #12 contact: 23 AMPS.
Test Voltage (Dielectric Withstanding Voltage) Mated Connectors	Size #23 contacts: 750 VAC RMS sea level, 400 VAC RMS 40,000 feet Size #20 contacts: 1800 VAC RMS sea level, 400 VAC RMS 40,000 feet Size #20HD contacts: 1000 VAC RMS sea level, 400 VAC RMS 40,000 feet Size #16 contacts: 1800 VAC RMS sea level, 1000 VAC RMS 40,000 feet Size #12 contacts: 1800 VAC RMS sea level, 1000 VAC RMS 40,000 feet
Insulation Resistance	5000 megohms minimum
Contact Resistance	Size #23 contact: 73 millivolt drop at 5 AMPS. test current Size #20 contact: 55 millivolt drop at 7.5 AMPS. test current Size #16 contact: 49 millivolt drop at 13 AMPS. test current Size #12 contact: 42 millivolt drop at 23 AMPS. test current
Operating Temperature	-65° C. to +150° C.
Immersion, Mated	1 meter water immersion for 1 hour (2M803 Series splash proof only)
Magnetic Permeability	2.0 μ maximum

MATERIALS AND FINISHES

Aluminum Shell, Barrel, and Coupling Nut	Aluminum alloy 6061 T6
Stainless Steel Shell, Barrel Coupling Nut	Passivated Stainless Steel, 200° C
Front and Rear Inserts	Polyphenylene Sulfide (PPS)
Contact Retention Clip	Beryllium copper, heat-treated
Grommet, Peripheral Seal and Interfacial Seal	Fluorosilicone Rubber
Contacts	Gold Plated Copper alloy
Socket Contact Hood	Passivated Stainless steel
Adhesives	Various Epoxies & RTV's
Potting Compound, PCB and Solder Cup Versions	High Strength Epoxy

Please refer to the comprehensive 2M Series Product Specification for additional parameters and test methods. Filter and Hermetic designs have different specifications. (Please refer to individual sections)

Contact Amphenol Aerospace for more information at 800-678-0141 • www.amphenol-aerospace.com

2M Series Performance Specifications

Complete Product Specifications

DESCRIPTION	REQUIREMENT	PROCEDURE																											
ELECTRICAL																													
Contact resistance	SAE AS39029 Table V <table border="1"> <thead> <tr> <th>Wire Size</th> <th>Test Current</th> <th>Max Voltage Drop</th> </tr> </thead> <tbody> <tr><td>12</td><td>23</td><td>42</td></tr> <tr><td>14</td><td>17</td><td>40</td></tr> <tr><td>16</td><td>13</td><td>49</td></tr> <tr><td>20</td><td>7.5</td><td>55</td></tr> <tr><td>22</td><td>5</td><td>73</td></tr> <tr><td>24</td><td>3</td><td>45</td></tr> <tr><td>26</td><td>2</td><td>52</td></tr> <tr><td>28</td><td>1.5</td><td>54</td></tr> </tbody> </table>	Wire Size	Test Current	Max Voltage Drop	12	23	42	14	17	40	16	13	49	20	7.5	55	22	5	73	24	3	45	26	2	52	28	1.5	54	EIA-364-06 Test current in amperes. Voltage drop in millivolts. Silver-coated copper wire, +25°C.
Wire Size	Test Current	Max Voltage Drop																											
12	23	42																											
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Low level contact resistance	<table border="1"> <thead> <tr> <th>Wire Size</th> <th>Max. Milliohms</th> </tr> </thead> <tbody> <tr><td>16</td><td>5</td></tr> <tr><td>20</td><td>9</td></tr> <tr><td>22</td><td>15</td></tr> <tr><td>24</td><td>20</td></tr> <tr><td>26</td><td>31</td></tr> <tr><td>28</td><td>50</td></tr> </tbody> </table>	Wire Size	Max. Milliohms	16	5	20	9	22	15	24	20	26	31	28	50	EIA-364-23 100 milliamperes maximum and 20 millivolts maximum open circuit voltage													
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Insulation resistance	5000 megohms minimum	EIA-364-21 500 volts DC ± 50 volts. Test between adjacent contacts and contacts to shell.																											
Dielectric withstanding voltage, sea level	No breakdown or flashover #23 contacts 500 volts #20HD contacts 750 volts #16 contacts 1800 volts #12 contacts 1800 volts	EIA-364-20 AC RMS 60 Hz. One minute dwell. Unmated or mated																											
Dielectric withstanding voltage, 40,000 feet altitude	No breakdown or flashover #23 contacts 100 volts #20HD contacts 150 volts #16 contacts 1000 volts #12 contacts 1000 volts	EIA-364-20 AC RMS 60 Hz. One minute dwell. mated condition																											
Current carrying capacity	<table border="1"> <thead> <tr> <th>Contact Size</th> <th>Max Current</th> </tr> </thead> <tbody> <tr><td>12</td><td>23</td></tr> <tr><td>16</td><td>13</td></tr> <tr><td>20</td><td>7.5</td></tr> <tr><td>23</td><td>5</td></tr> </tbody> </table>	Contact Size	Max Current	12	23	16	13	20	7.5	23	5	EIA-364-70 Method 1																	
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2M Series Performance Specifications

Complete Product Specifications



DESCRIPTION	REQUIREMENT	PROCEDURE																															
Shell-to-shell conductivity, Initial	<p>The maximum voltage drop across a mated pair shall not exceed the values shown.</p> <table border="1"> <thead> <tr> <th>Series</th> <th>Voltage Drop</th> </tr> </thead> <tbody> <tr> <td>2M801</td> <td>2.5</td> </tr> <tr> <td>2M803</td> <td>100</td> </tr> <tr> <td>2M804</td> <td>2</td> </tr> <tr> <td>2M805</td> <td>2</td> </tr> </tbody> </table>	Series	Voltage Drop	2M801	2.5	2M803	100	2M804	2	2M805	2	EIA-364-83 Electroless Nickel Plated Connectors																					
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Shell-to-shell conductivity, after conditioning (48 hours salt spray)	<p>The maximum voltage drop across a mated pair shall not exceed the values shown.</p> <table border="1"> <thead> <tr> <th>Series</th> <th>Voltage Drop</th> </tr> </thead> <tbody> <tr> <td>2M801</td> <td>2.5</td> </tr> <tr> <td>2M803</td> <td>200</td> </tr> <tr> <td>2M804</td> <td>4</td> </tr> <tr> <td>2M805</td> <td>2</td> </tr> </tbody> </table>	Series	Voltage Drop	2M801	2.5	2M803	200	2M804	4	2M805	2	EIA-364-83 Electroless Nickel Plated Connectors																					
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Shielding effectiveness, high frequency (1GHz-10GHz)	<table border="1"> <thead> <tr> <th rowspan="2">Frequency</th> <th colspan="2">dB Min. Attenuation</th> </tr> <tr> <th>Series 2M801, 2M804</th> <th>Series 2M805</th> </tr> </thead> <tbody> <tr> <td>1 GHz</td> <td>55</td> <td>85</td> </tr> <tr> <td>3 GHz</td> <td>50</td> <td>69</td> </tr> <tr> <td>5 GHz</td> <td>45</td> <td>66</td> </tr> <tr> <td>19 GHz</td> <td>40</td> <td>65</td> </tr> </tbody> </table>	Frequency	dB Min. Attenuation		Series 2M801, 2M804	Series 2M805	1 GHz	55	85	3 GHz	50	69	5 GHz	45	66	19 GHz	40	65	EIA-364-66 Electroless Nickel Plated Connectors														
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Perform Spec

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2M Series Performance Specifications

Complete Product Specifications

DESCRIPTION	REQUIREMENT	PROCEDURE
MECHANICAL		
Vibration, Sine	No discontinuity of greater than 1 microsecond, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after vibration test.	MIL-STD-202 Method 204, test Condition G 12 sweep cycles per axes, 20 min. per 10-2000-10Hz @ temp. 2M801/2M805 - 60 g 2M803/2M804 - 30 g
Vibration, Random	No discontinuity of greater than 1 microsecond, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after vibration test.	EIA-364-28 Test Condition V Letter I 100 milliamp test current 50- 2,000 Hz @ temp. 2M801/2M805 - 43.9 g RMS 2M803/2M804 - 37.80 g RMS
Gunfire Vibration	No discontinuity of greater than 1 microsecond, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after vibration test.	MIL-STD-810F Method 519.5
Mechanical Shock	No discontinuity of greater than 1 microsecond, no cracking, breaking or loosening of parts, plug shall not become disengaged from receptacle. Connectors shall meet electrical requirements after shock test.	EIA-364-27 Condition D 300 G, halvesine, 3ms, 3 axes
Mechanical durability, at ambient temperature	No deterioration which will adversely affect the connector after 2000 cycles (where applicable) of mating and unmating. Connectors shall meet contact resistance, insulation resistance, shell-to-shell resistance, DWV, and mating and unmating force.	EIA-364-09
Solderability, PC tail contacts	95% solder coverage. Smooth, bright and even finish.	EIA-364-52 Category 3 8 hours steam aging prior to test 245° C, 4-5 sec. dwell 10X magnification
Resistance To Soldering Heat	No damage to connector. Connectors shall meet insulation resistance and waterproof sealing requirements.	EIA-364-56 260° C, 10 seconds (PC tail)

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