Amphenol® Amphe-Lite™ Subminiature Cylindrical Connectors

12-094-4

Amphenol

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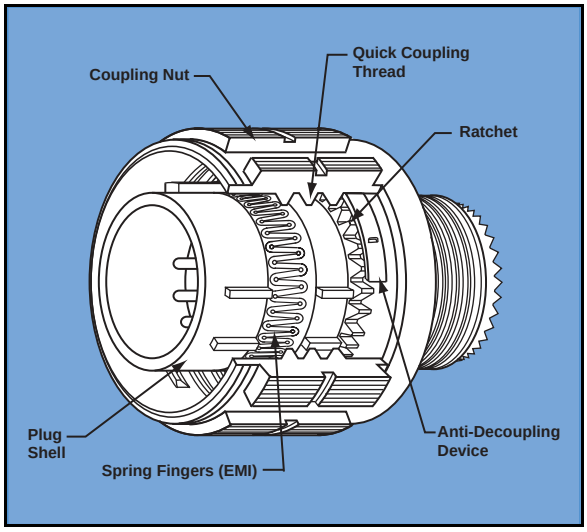
Please visit our Website at www.amphenol-industrial.com

Also visit www.amphenol-aerospace.com. Amphenol Industrial Operations and Amphenol Aerospace are both located at Sidney, NY. Together with other Amphenol divisions worldwide, Amphenol offers one of the broadest ranges of interconnect products in the marketplace.

Amphenol Aerospace and Amphenol Industrial Operations operate quality systems that are certified to ISO-9001 and AS-9100 by third party registrars.

Amphe-Lite Series

Amphenol's ultimate commercial subminiature connector



Commercial 38999, Series III Type Composite Connectors

The Amphe-Lite Connector Series is designed for communications equipment manufacturers with signal, power, RF or fiber optic interconnect requirements in harsh environments such as communication towers, outdoor and roof-top applications. This commercial 38999, Series III type composite connector series is ideal for communications equipment, manufacturing process control and medical equipment.

The Amphe-Lite offers the highest performance capabilities for severe environment applications, and yet is cost effective enough for general duty and non-environmental applications.

The Amphe-Lite is UL Recognized, file E115497.

RoHS Compliant Product Available - Consult Amphenol Industrial Operations.

Features and Benefits of the Amphe-Lite Series:

- Service Class F Amphe-Lite connectors provide excellent EMI shielding and grounding through electroless nickel plating and spring grounding rings. Environmental sealing is ensured with interfacial seals to prevent contact corrosion. Composite shells are completely immune to corrosion problems.
- Service Class U provides a non-conductive shell when EMI shielding is not a criteria.
- Class F Composite shells resist severe corrosion, and provide plating endurance from salt spray exposure for a minimum of 2000 hours.
- Completely mates in one 360-degree turn of the coupling nut to provide the fastest and easiest equipment assembly and maintenance possible.
- Acme threads provide coupling durability. Thicker wall sections and a greater coupling surface area improve strength and shock resistance. Blunting of the thread on both the coupling nut and receptacle eliminates cross coupling.
- Recessed pins minimize potential contact damage in this 100% scoop-proof connector. In a blind mating application, mating shells cannot "scoop" the pins and cause a shorting or bending of contacts.
- A rigid dielectric insert with excellent electrical characteristics provides durable protection to the contacts. The socket contacts are probe proof, and all contacts are rear insertable and rear removable. Available in sizes 10 power, 12, 16, 20 and 22D contacts are plated in the standard 50 micro inches minimum gold, with 100 micro inches as an option.

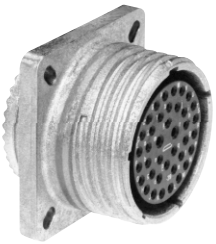
Optional Features:

- Conductive and non-conductive options are available. See pg. 22.
- Amphe-Lite connectors allow for use of many contact types: fiber optics, shielded coaxial, twinax ground plane versions, and power contacts. (See pages 23, 24). Consult Amphenol Industrial for more information on combinations of different types of contacts in one connector shell - what Amphenol calls their new "Combo-C" inserts.
- Non-magnetic Amphe-Lite is a new variation - Amphenol offers one of the few 100% non-magnetic connectors with high contact density available today. See page 24.

Designed for Performance

Numerous advantages in performance capability are designed into the Amphenol® Amphe-Lite Connector. A positive shoulder to shoulder coupling design, grounding fingers, and electroless nickel plating provide superior EMI shielding capability of 65 dB minimum at 10 GHz.

Amphe-Lite Shell Styles



wall mount receptacle

straight plug

jam nut receptacle

Amphe-Lite Series

performance criteria, specifications

Amphenol® Amphe-Lite connectors provide EMI shielding capability which exceeds MIL-DTL-38999 Series III requirements.

The Amphe-Lite connector with EMI grounding fingers and conductive finishes has proven to be the ultimate in EMI shielding effectiveness. The charts at right illustrate shielding effectiveness data which is typical of connectors tested with the nickel finish over a wide frequency range.

These capabilities along with a 125°C temperature rating and superior moisture sealing protection provide the user with a connector that can withstand the most rigorous application. UL RTI rating is 105°C.

CONTACT RATING

Contact Size	Test Current		Maximum Millivolt Drop Crimp*
	Crimp	Hermetic	
22D	5	3	73
20	7.5	5	55
16	13	10	49
12	23	17	42
10 (Power)	33	NA	33

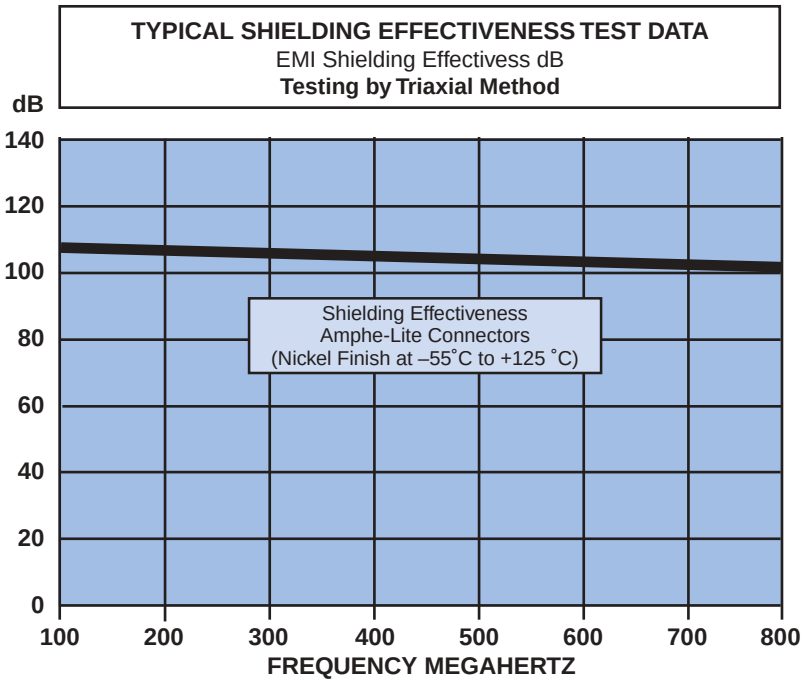
* When using silver plated wire.

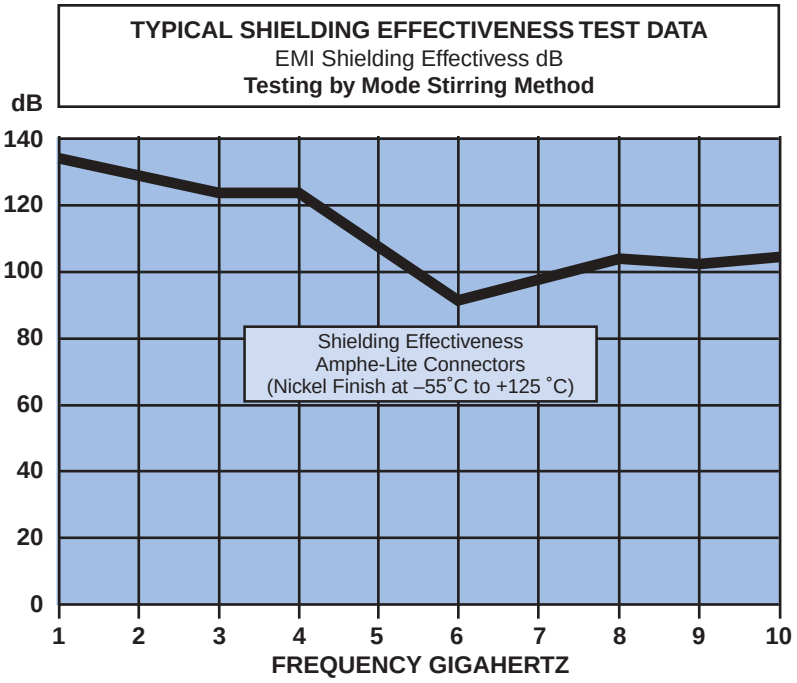
Contact Size	Crimp Well Data	
	Well Diameter	Nominal Well Depth
22D	.0345 ±.0010	.141
20	.047 ±.001	.209
16	.067 ±.001	.209
12	.100 ±.002	.209
10 (Power)	.137 ±.002	.355

SERVICE RATING

Service Rating	Suggested Operating Voltage (Sea Level)		Test Voltage (Sea Level)
	AC (RMS)	DC	
M	400	550	1300 VRMS
N	300	450	1000 VRMS
I	600	850	1800 VRMS
II	900	1250	2300 VRMS

** Please note that the establishment of electrical factors is left entirely in the designers hands, since he is in the best position to know what voltage, switching surges, transients, etc. can be expected in a particular circuit.





Test data beyond 2GHz is subject to equipment variation.

FINISH DATA

Amphe-lite connectors are available in the following finishes:

- Conductive Electroless Nickel Plated Composite (Service Class F)
- Black Composite, unplated (Service Class U)

See how to order page 22.

Amphe-Lite Series

insert availability and identification

Shell Size/Arrg.	Service Rating	Total Contacts	Contact Size							
			22D	20	16	12	12 (Coax)	10 (Power)	8 (Coax)	8†† (Twinax)
9-35	M	6	6							
9-94	M	2		2						
9-98	I	3		3						
11-2★	I	2			2					
11-5	I	5		5						
11-35	M	13	13							
11-98	I	6		6						
11-99	I	7		7						
13-4★	I	4			4					
13-8	I	8		8						
13-13	I, Fiber Optic	4			2*	2				
13-35	M	22	22							
13-98	I	10		10						
15-5★	II	5			5					
15-15	I	15		14	1					
15-18	I	18		18						
15-19	I	19		19						
15-35	M	37	37							
15-97	I	12		8	4					
15-AC	M	26	24		2					
17-2	M	39	38							1
17-6	I	6				6				
17-8★	II	8			8					
17-22★	NA	4					2		2	
17-26	I	26		26						
17-31	M	19	4	11	4					
17-35	M	55	55							
17-99	I	23		21	2					
19-11★	II	11			11					
19-31	M	15	12			1			2	
19-32	I	32		32						
19-35	M	66	66							
21-11★	I	11				11				
21-16★	II	16			16					
21-35	M	79	79							
21-39	I	39		37	2					
21-41	I	41		41						
21-75★	M	4								(See Note)
23-6★	M	6								6
23-21★	II	21			21					
23-35	M	100	100							
23-53	I	53		53						
23-54	M	53	40		9	4				
23-55	I	55		55						
25-4	I	56		48	8					
25-7	NA	99	97							2
25-8★	NA	8								8
25-11	N	11		2				9		
25-17	M	42	36							6
25-19★	I	19				19				
25-20	N	30		10	13*		4			3
25-24★	I	24			12	12				
25-26	I	25		16		5			4	
25-29★	I	29			29					
25-35	M	128	128							
25-37★	I	37			37					
25-43	I	43		23	20					
25-46	I	46		40	4				2†	
25-61	I	61		61						

★ Ground plane proprietary option available. Arrg. 9-5 is exclusively ground plane type. See page 24 for further information of ground plane connectors.

† For RG180/U and RG195/U cables only. (Contact Sidney, NY for other cable application).

†† Size 8 Coax and Twinax are interchangeable.

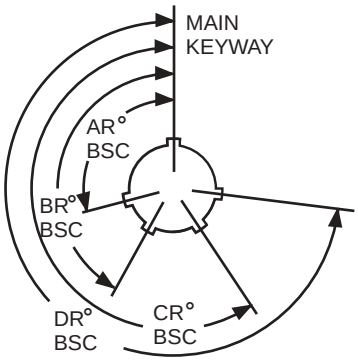
Amphe-Lite Series

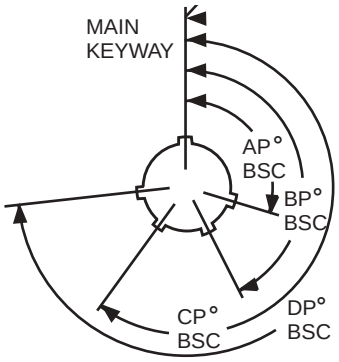
alternate insert positioning

MASTER KEY/KEYWAY POSITION

Shell Size	Key & keyway arrangement identification letter	AR° or AP° BSC	BR° or BP° BSC	CR° or CP° BSC	DR° or DP° BSC
9	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
	E	91	131	197	240
11, 13, and 15	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C	53	156	220	255
	D	119	146	176	298
	E	51	141	184	242
17 and 19	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
21, 23, and 25	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272

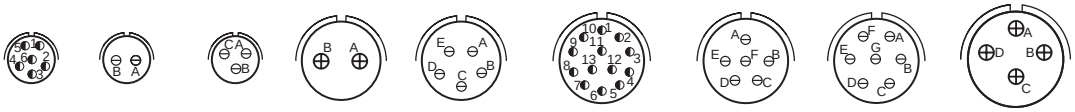
A plug with a given rotation letter will mate with a receptacle with the same rotation letter. The angles for a given connector are the same whether it contains pins or sockets. Inserts are not rotated in conjunction with the master key/keyway.



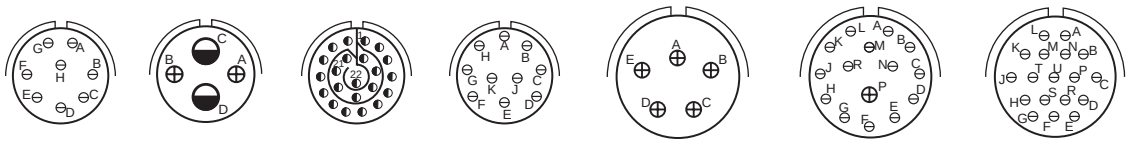


Amphe-Lite Series
insert arrangements

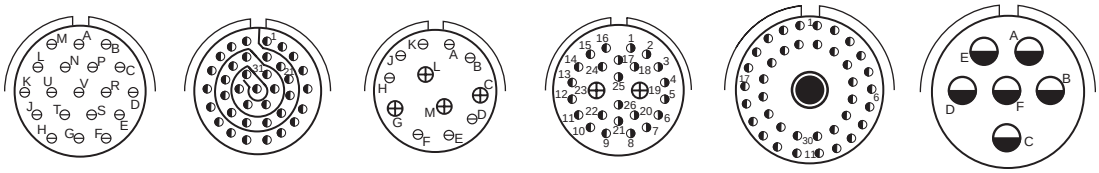
front face of pin inserts illustrated



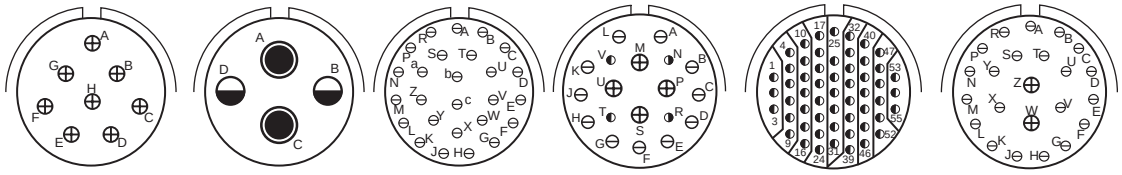
Insert Arrangement	9-35	9-94	9-98	11-2	11-5	11-35	11-98	11-99	13-4
Service Rating	M	M	I	I	I	M	I	I	I
Number of Contact	6	2	3	2	5	13	6	7	4
Contact Size	22D	20	20	16	20	22D	20	20	16



Insert Arrangement	13-8	13-13	13-35	13-98	15-5	15-15	15-18
Service Rating	I	I, Fiber Optic	M	I	II	I	I
Number of Contacts	8	2 2	22	10	5	14 1	18
Contact Size	20	16 12	22D	20	16	20 16	20
		Dedicated to Fiber Optics					



Insert Arrangement	15-19	15-35	15-97	15-AC	17-2	17-6
Service Rating	I	M	I	M	M	I
Number of Contacts	19	37	8 4	24 2	38 1	6
Contact Size	20	22D	20 16	22D 16	22D 8 Twinax	12

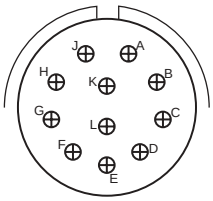


Insert Arrangement	17-8	17-22	17-26	17-31	17-35	17-99
Service Rating	II	Coax	I	M	M	I
Number of Contacts	8	2 2	26	4 11 4	55	21 2
Contact Size	16	12 Coax 8 Coax	20	22D 20 16	22D	20 16

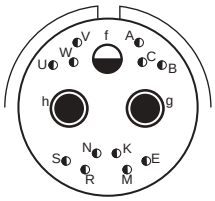
CONTACT LEGEND 8 10 12 16 20 22D

Amphe-Lite Series
insert arrangements

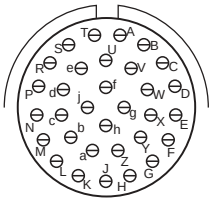
front face of pin inserts illustrated



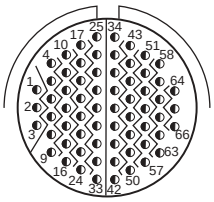
Insert Arrangement	**19-11**
Service Rating	**II**
Number of Contacts	**11**
Contact Size	**16**



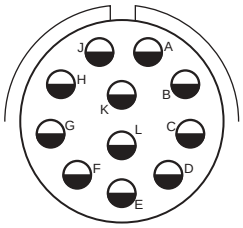
19-31			
M			
2	**1**	**12**	
8 Coax	**12**	**22D**	



19-32	
I	
32	
20	



19-35	
M	
66	
22D	



21-11	
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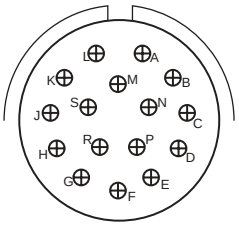
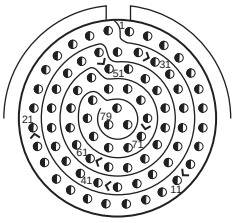
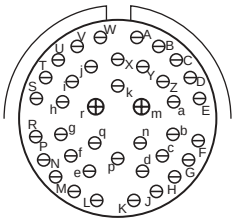


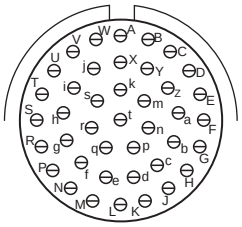
Insert Arrangement	**21-16**
Service Rating	**II**
Number of Contacts	**16**
Contact Size	**16**



21-35	
M	
79	
22D	



21-39	
I	
37	**2**
20	**16**



21-41	
I	
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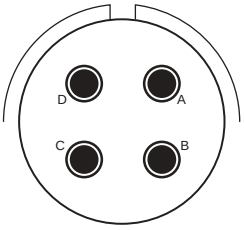
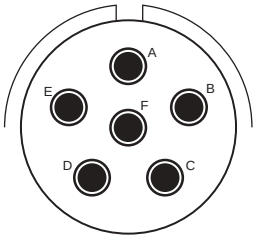
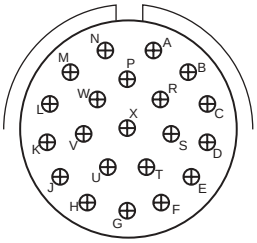


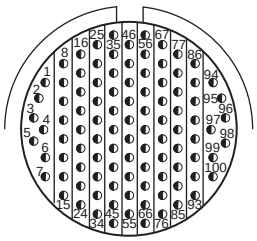
Insert Arrangement	**21-75**
Service Rating	**M**
Number of Contacts	**4**
Contact Size	**8 Coax**



23-6	
M	
6	
8 Twinax	

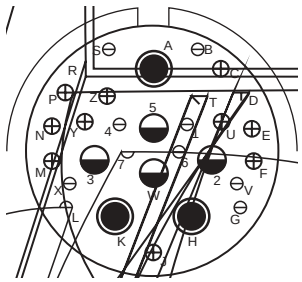


23-21	
II	
21	
16	



23-35	
M	
100	
22D	

Note: Size 8 cavities can be supplied with either twinax or coax per customer requirement.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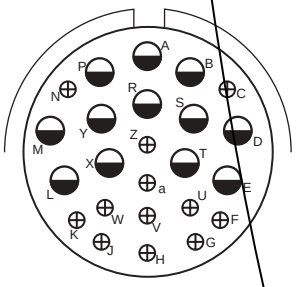
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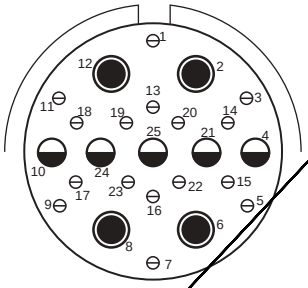
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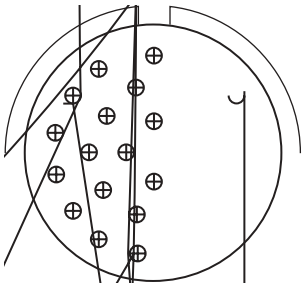
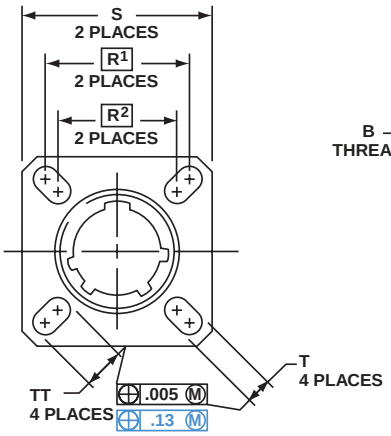
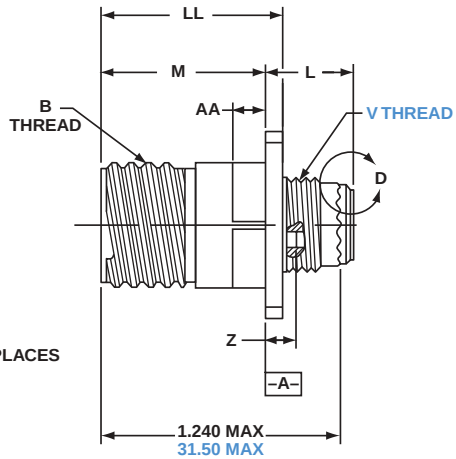
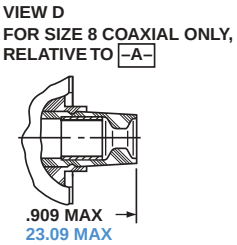


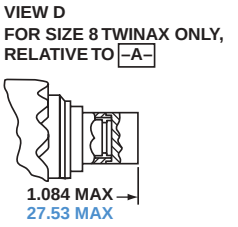
Amphe-Lite Series
AL00 wall mounting receptacle, composite

AL00F ( )*
AL00FD ( )*
AL00U ( )*
AL00UD ( )*









* To complete order number, see page 22.

Inches

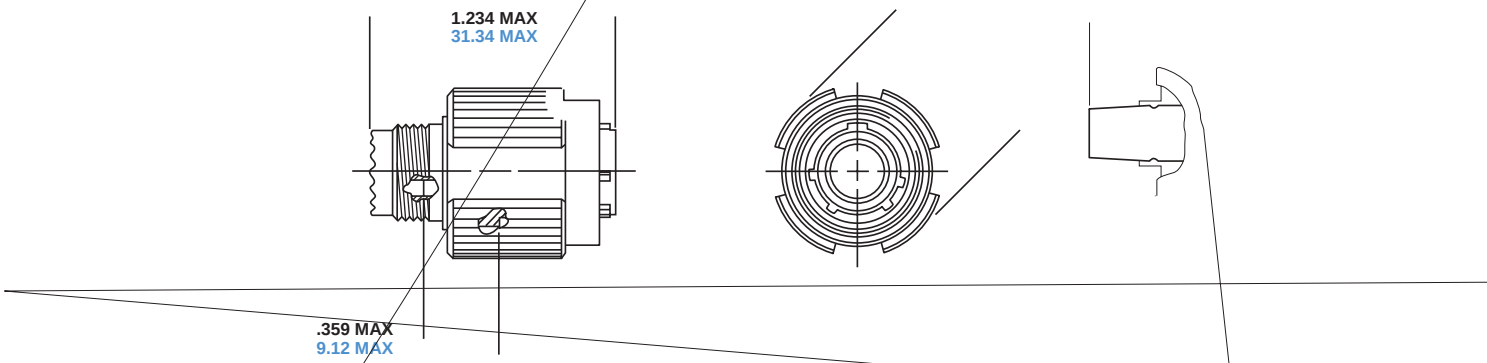
Shell Size	B Thread Class 2A 0.1P-0.3L-TS (Plated)	L Max.	M +.000 –.005	R1	R2	S Max.	T +.008 –.006	Z Max.	AA Max. Panel Thickness	LL ±.005	TT +.008 –.006
9	.6250	.514	.775	.719	.594	.948	.128	.198	.234	.913	.216
11	.7500	.514	.775	.812	.719	1.043	.128	.198	.234	.913	.194
13	.8750	.514	.775	.906	.812	1.137	.128	.198	.234	.913	.194
15	1.0000	.514	.775	.969	.906	1.232	.128	.198	.234	.913	.173
17	1.1875	.514	.775	1.062	.969	1.323	.128	.198	.234	.913	.194
19	1.2500	.514	.775	1.156	1.062	1.449	.128	.198	.234	.913	.194
21	1.3750	.545	.745	1.250	1.156	1.575	.128	.228	.204	.911	.194
23	1.5000	.545	.745	1.375	1.250	1.701	.154	.228	.204	.911	.242
25	1.6250	.545	.745	1.500	1.375	1.823	.154	.228	.204	.911	.242

Millimeters

Shell Size	L Max.	M +.00 –.13	R1	R2	S Max	T +.20 –.13	V Thread Metric	Z Max.	AA Max.	LL ±.13	TT +.20 –.13
9	13.06	19.69	18.26	15.09	24.1	3.25	M12X1-6g	5.03	5.94	23.19	5.49
11	13.06	19.69	20.62	18.26	26.5	3.25	M15X1-6g	5.03	5.94	23.19	4.93
13	13.06	19.69	23.01	20.62	28.9	3.25	M18X1-6g	5.03	5.94	23.19	4.93
15	13.06	19.69	24.61	23.01	31.3	3.25	M22X1-6g	5.03	5.94	23.19	4.39
17	13.06	19.69	26.97	24.61	33.7	3.25	M25X1-6g	5.03	5.94	23.19	4.93
19	13.06	19.69	29.36	26.97	36.9	3.25	M28X1-6g	5.03	5.94	23.19	4.93
21	13.84	18.92	31.75	29.36	40.1	3.25	M31X1-6g	5.79	5.18	23.14	4.93
23	13.84	18.92	34.93	31.75	43.3	3.91	M34X1-6g	5.79	5.18	23.14	6.15
25	13.84	18.92	38.10	34.93	46.4	3.91	M37X1-6g	5.79	5.18	23.14	6.15

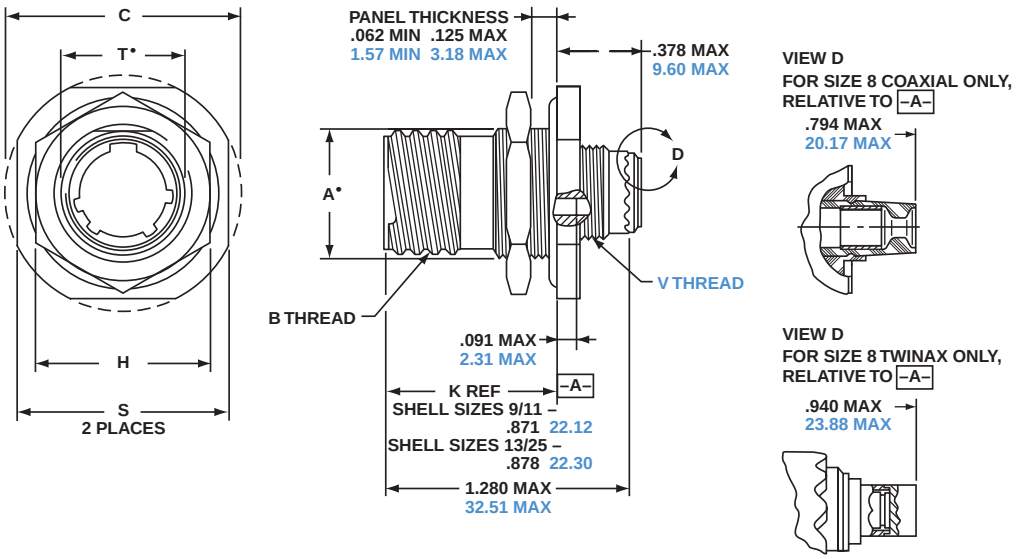
All dimensions for reference only

☐ Designates true position dimensioning


1.234 MAX
31.34 MAX
.359 MAX
9.12 MAX

Amphe-Lite Series
AL07 jam nut receptacle, composite

AL07F ( )*
AL07FD ( )*
AL07U ( )*
AL07UD ( )*



* To complete order number see page 22.

Inches

Shell Size	A• +.000 –.010	B Thread Class 2A 0.1P-0.3L-TS (Plated)	C Max.	H Hex +.017 –.016	S ±.010	T• +.010 –.000
9	.669	.6250	1.199	.875	1.062	.697
11	.769	.7500	1.386	1.062	1.250	.822
13	.955	.8750	1.511	1.250	1.375	1.007
15	1.084	1.0000	1.636	1.375	1.500	1.134
17	1.208	1.1875	1.761	1.438	1.625	1.259
19	1.333	1.2500	1.949	1.562	1.812	1.384
21	1.459	1.3750	2.073	1.688	1.938	1.507
23	1.575	1.5000	2.199	1.812	2.062	1.634
25	1.709	1.6250	2.323	2.000	2.188	1.759

Millimeters

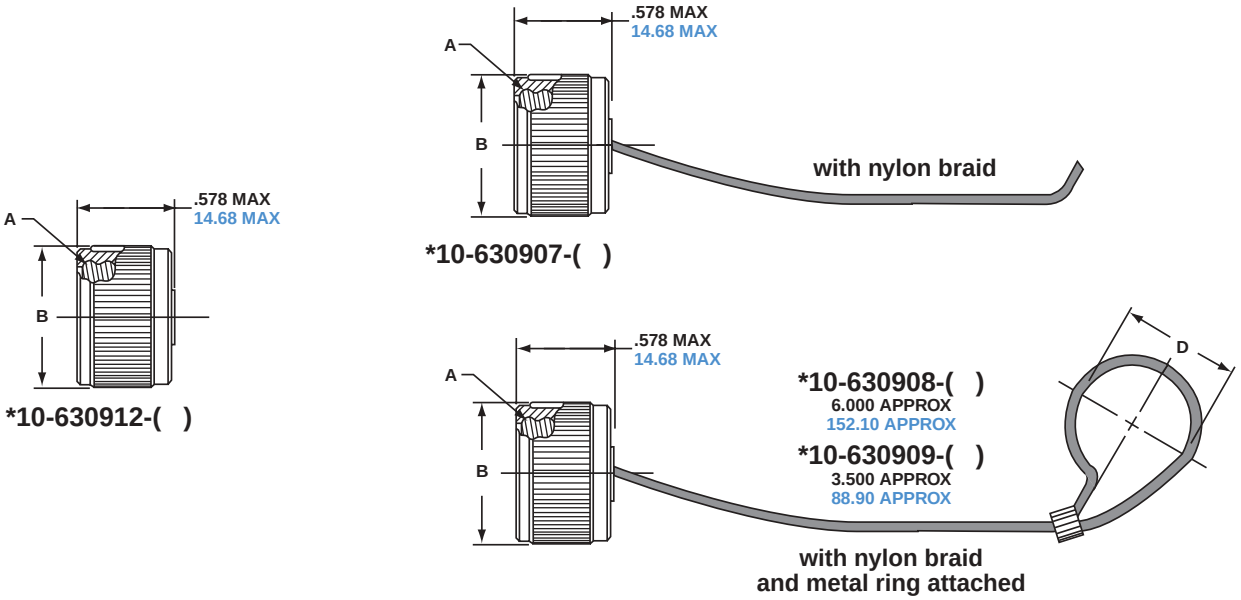
Shell Size	A• +.00 –.25	C Max.	H Hex +.43 –.41	S ±.25	T• +.25 –.00	V Thread Metric
9	16.99	30.45	22.23	26.97	17.70	M12X1-6g
11	19.53	35.20	25.40	31.75	20.88	M15X1-6g
13	24.26	38.38	30.18	34.93	25.58	M18X1-6g
15	27.53	41.55	33.32	38.10	28.80	M22X1-6g
17	30.68	44.73	36.53	41.28	31.98	M25X1-6g
19	33.86	49.50	39.67	46.02	35.15	M28X1-6g
21	37.06	52.65	42.80	49.23	38.28	M31X1-6g
23	40.01	55.85	46.02	52.37	41.50	M34X1-6g
25	43.41	59.00	50.80	55.58	44.68	M37X1-6g

All dimensions for reference only.

• D shaped panel cut-out dimensions to prevent connector from turning

Amphe-Lite – accessories

receptacle protection cap



* To complete order number, add shell size and suffix number.
For example, shell size 11: 10-630912-011.

Inches

Shell Size	A Thread Class 2B 0.1P-0.3L-TS	B Dia. Max.	D Dia. +.010 –.000
9	.6250	.875	.703
11	.7500	1.000	.844
13	.8750	1.125	1.016
15	1.0000	1.250	1.141
17	1.1875	1.438	1.266
19	1.2500	1.500	1.391
21	1.3750	1.625	1.516
23	1.5000	1.750	1.641
25	1.6250	1.875	1.766

Finish	10-No Suffix
Black composite, unplated	-( )

Millimeters

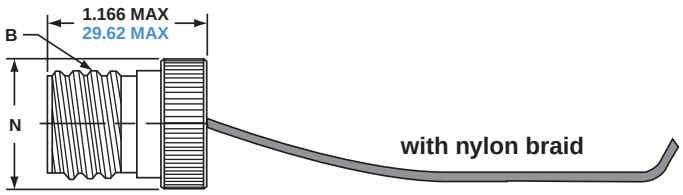
Shell Size	B Dia. Max.	D Dia +.25 –.00
9	22.23	17.86
11	25.40	21.44
13	28.58	25.81
15	31.75	28.98
17	36.53	32.16
19	38.10	35.33
21	41.28	38.51
23	44.45	41.68
25	47.63	44.86

All dimensions for reference only.

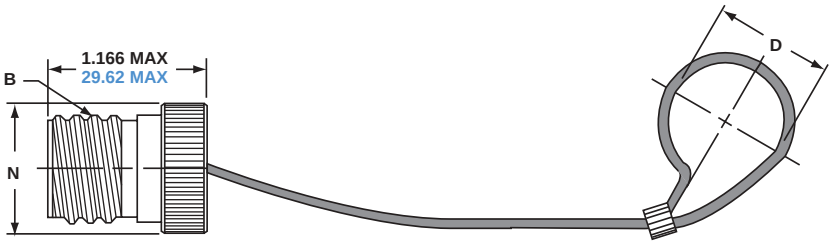
Amphe-Lite – accessories

plug protection cap

***10-630910-( )**



***10-630911-( )**



* To complete order number, add shell size and suffix number.
For example, shell size 11 with electroless nickel, 10-630910-11F

Inches

Shell Size	A Thread Class 2A 0.1P-0.3L-TS	D +.030 –.000	N Dia. Max.
9	.6250	.516	.895
11	.7500	.641	1.000
13	.8750	.766	1.171
15	1.0000	.891	1.299
17	1.1875	1.016	1.436
19	1.2500	1.141	1.543
21	1.3750	1.266	1.670
23	1.5000	1.343	1.787
25	1.6250	1.516	1.914

Finish	10-No Suffix
Electroless nickel	-( )F
Black composite, unplated	-0( )

Millimeters

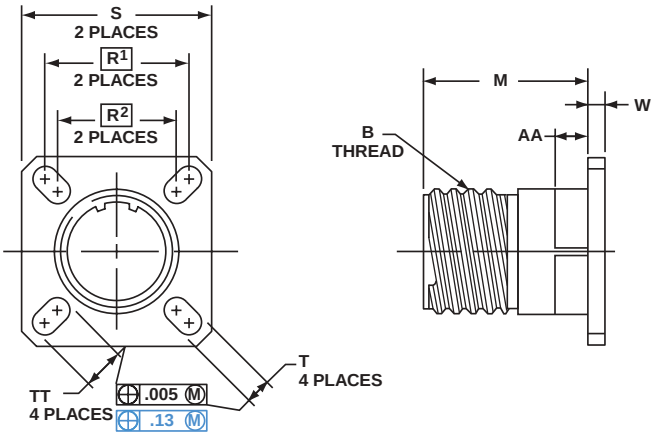
Shell Size	D +.25 –.00	N Dia. Max.
9	13.11	22.73
11	16.28	25.40
13	19.46	29.74
15	22.63	32.99
17	25.81	36.47
19	28.98	39.19
21	32.16	42.42
23	34.11	45.39
25	38.51	48.62

All dimensions for reference only.

Amphe-Lite – accessories

dummy receptacle

***10-630913-( )**



* To complete order number, add shell size and suffix number.
For example, shell size 11 with electroless nickel,10-630913-11F.

Finish	10-No Suffix
Electroless nickel	-( )F
Black composite, unplated	-0( )

Inches

Shell Size	B Thread Class 2A 0.1P-0.3L-TS (Plated)	M +.020 –.000	R1	R2	S ±.010	T +.008 –.006	W ±.010	AA Max. Panel Thickness	TT +.008 –.006
9	.6250	.822	.719	.594	.938	.128	.098	.234	.216
11	.7500	.822	.812	.719	1.031	.128	.098	.234	.194
13	.8750	.822	.906	.812	1.125	.128	.098	.234	.194
15	1.0000	.822	.969	.906	1.219	.128	.098	.234	.173
17	1.1875	.822	1.062	.969	1.312	.128	.098	.234	.194
19	1.2500	.822	1.156	1.062	1.438	.128	.098	.234	.194
21	1.3750	.791	1.250	1.156	1.562	.128	.125	.204	1.94
23	1.5000	.791	1.375	1.250	1.688	.154	.125	.204	.242
25	1.6250	.791	1.500	1.375	1.812	.154	.125	.204	.242

Millimeters

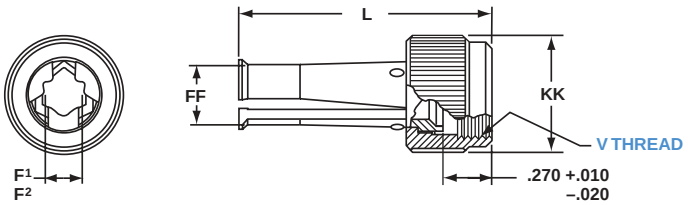
Shell Size	M +.51 –.00	R1	R2	S ±.25	T +.20 –.15	W ±.25	AA Max.	TT +.20 –.15
9	20.88	18.26	15.09	23.83	3.25	2.49	5.94	5.49
11	20.88	20.62	18.26	26.19	3.25	2.49	5.94	4.93
13	20.88	23.01	20.62	28.58	3.25	2.49	5.94	4.93
15	20.88	24.61	23.01	30.96	3.25	2.49	5.94	4.39
17	20.88	26.97	24.61	33.32	3.25	2.49	5.94	4.93
19	20.88	29.36	26.97	36.53	3.25	2.49	5.94	4.93
21	20.09	31.75	29.36	39.67	3.25	3.18	5.18	4.93
23	20.09	34.93	31.75	42.88	3.91	3.18	5.18	6.15
25	20.09	38.10	34.93	46.02	3.91	3.18	5.18	6.15

All dimensions for reference only.

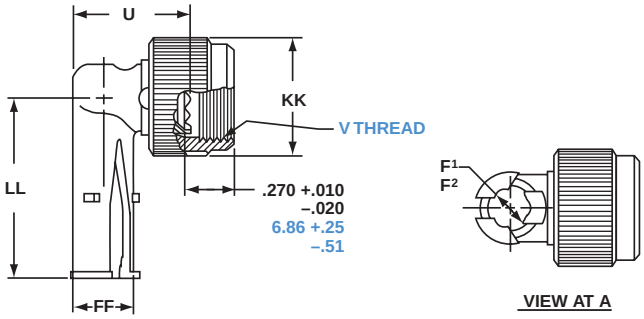
□ Designates true position dimensioning

Amphe-Lite – accessories
cable clamps

STRAIGHT STYLE
*10-630934-XXX



90 DEGREE ELBOW STYLE
*10-630935-XXX



* To complete order number, add shell size and suffix number.
For example, shell size 11 with electroless nickel, 10-630934-11F.

Finish	10-No Suffix
Electroless nickel	-( )F

Inches

Shell Size	F1 Min. Dia. Cable	F2 Max. Dia. Cable	L Max.	U Max.	FF Dia. Max.	KK Dia. Max.	LL Max.
9	.094	.203	1.431	.656	.347	.629	1.015
11	.141	.250	1.431	.688	.394	.756	1.062
13	.172	.323	1.431	.750	.467	.883	1.125
15	.203	.422	1.431	.859	.566	1.011	1.328
17	.234	.500	1.431	.937	.644	1.138	1.392
19	.265	.562	1.431	1.000	.706	1.265	1.453
21	.297	.625	1.492	1.062	.769	1.393	1.609
23	.328	.703	1.492	1.141	.847	1.488	1.656
25	.359	.765	1.492	1.203	.909	1.616	1.719

Millimeters

Shell Size	F1 Min. Dia. Cable	F2 Max. Dia. Cable	L Max.	U Max.	FF Dia. Max.	KK Dia. Max.	LL Max.
9	2.39	5.16	36.35	16.66	8.81	15.98	25.78
11	3.58	6.35	36.35	17.48	10.01	19.20	26.97
13	4.37	8.20	36.35	19.05	11.86	22.43	28.58
15	5.16	10.72	36.35	21.82	14.38	25.68	33.73
17	5.94	12.70	36.35	23.80	16.36	28.91	35.36
19	6.73	14.27	36.35	25.40	17.93	32.13	36.91
21	7.54	15.88	37.90	26.97	19.53	35.38	40.87
23	8.33	17.86	37.90	28.98	21.51	37.80	42.06
25	9.12	19.43	37.90	30.56	23.09	41.05	43.66

All dimensions for reference only.

Amphe-Lite Series

contacts, sealing plugs, plastic dust caps

STANDARD CONTACTS FOR AMPHE-LITE SERIES

Contact Size	Pin Part Number	Socket Part Number
8 (Coax)	21-33102-21	21-33101-21
8 (Twinax)	21-33190-529	21-33191-530
10 (Power)	10-597448-105	10-597449-105
12	10-597448-125	10-597449-125
16	10-597448-165	10-597449-165
20	10-597448-205	10-597449-205
22D	10-597448-725	10-597449-452

Above part numbers include standard 500 cycle finish designation - gold plating over suitable underplate in accordance with MIL-C-39029.

For other contact options available for use in Amphe-Lite connectors, (thermocouple) consult Sidney, NY.

PLASTIC DUST CAPS

Shell Size	Plug	Receptacle
9	10-70506-14	10-70500-10
11	10-70506-16	10-70500-12
13	10-70500-18	10-70500-14
15	10-70500-20	10-70500-16
17	10-70500-22	10-70500-19
19	10-70500-24	10-70500-20
21	10-70524-1	10-70500-22
23	10-70506-28	10-70500-24
25	10-70500-28	10-70524-1

For protection caps see pages 12 and 13.

SEALING PLUGS

Contact Size	Proprietary No.
8 (Coax)	10-482099-8
8 (Twinax)	T3-4008-59P
10 (Power)	10-576225
12	10-405996-121
16	10-405996-161
20	10-405996-201
22D	10-405996-221

Amphe-Lite Series

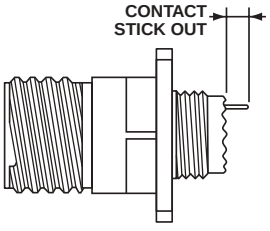
contacts – printed circuit board, wire wrap

SOCKETS

PCB Socket Contacts	Size	Tail Dia	Contact Stickout Max/Min (See Illustration below)		
			AL00	AL06	AL07
10-497623-15	22D	.019	.291 .226	.316 .251	.242 .182
10-497623-25	22D	.019	.868 .803	.893 .828	.819 .759
10-497623-35	22D	.019	.348 .283	.373 .308	.299 .239
10-497623-45	22D	.019	.208 .143	.233 .168	.159 .099
10-497623-75	22D	.019	.146 .081	.171 .106	.097 .037
10-497623-105	22D	.019	.028 NS	.053 .000	.021 NS
10-497623-145	22D	.019	.609 .539	.634 .564	.560 .495
10-497623-155	22D	.019	.423 .358	.448 .383	.374 .314
10-497643-15	20	.019	.348 .294	.373 .319	.299 .250
10-497643-25	20	.019	.213 .159	.238 .184	.164 .115
10-497643-35	20	.019	.555 .501	.580 .526	.506 .457
10-497643-45	20	.019	.138 .084	.163 .109	.089 .040
10-497650-15	16	.040	.255 .201	.280 .226	.206 .157
Wire Wrap Contacts		Tail Square			
10-497577-15	22D	.025	.155 .090	.180 .115	.106 .046
10-497577-25	22D	.025	.002 NS	.027 NS	NS NS
10-497577-35	22D	.025	.201 .136	.226 .161	.152 .092
10-497577-55	22D	.025	.566 .501	.591 .526	.517 .457
10-497621-15	20	.025	.151 .101	.176 .126	.102 .057
10-497621-25	20	.025	.605 .555	.630 .580	.556 .511
10-497621-35	20	.025	.308 .258	.333 .283	.259 .214

Items highlighted are most popular and most readily available.

All dimensions for reference only.
Consult Sidney, NY for specific contact contour stickout data.
NS designates No Stickout.



See also catalog 12-170, Amphenol Cylindrical Connectors for PCB Applications. This catalog provides the most commonly used insert pattern pin-out drawings which have been tooled for the purpose of attaching cylindrical connectors to printed circuit boards.

PINS

PCB Pin Contacts	Size	Tail Dia	Contact Stickout Max/Min (See Illustration below)		
			AL00	AL06	AL07
10-407552-15	22M	.019	.335 .280	.360 .305	.286 .236
10-407552-55	22M	.019	.224 .169	.249 .194	.175 .125
10-407552-85	22M	.019	.060 .010	.085 .035	.011 NS
10-407552-95	22M	.019	NS	NS	NS
10-407552-115	22M	.019	.002 NS	.023 NS	NS
10-497640-15	20	.019	.348 .298	.373 .323	.299 .254
10-497640-25	20	.019	.213 .163	.238 .188	.164 .119
10-497640-45	20	.019	NS	NS	NS
10-497640-65	20	.019	.138 .088	.163 .113	.089 .044
10-497596-15	20	.025	.058 .012	.083 .037	.009 NS
10-497596-25	20	.025	.148 .102	.173 .127	.099 .058
10-497596-35	20	.025	.229 .183	.254 .208	.180 .139
10-497596-55	20	.025	.346 .300	.371 .325	.297 .256
10-497695-15	16	.040	.255 .205	.280 .230	.206 .161
10-497630-25	16	.062	.348 .298	.373 .323	.299 .254
10-497630-35	16	.062	.060 .010	.085 .035	.011 NS
10-497630-45	16	.062	.108 .062	.133 .087	.059 .018
10-597502-15	12	.081	.228 .178	.252 .203	.179 .134
Wire Wrap Contacts		Tail Square			
10-407572-15	22D	.025	.014 NS	.498 .007	NS NS
10-407572-35	22D	.025	.155 .105	.180 .130	.106 .061
10-407572-45	22D	.025	.255 .205	.280 .230	.206 .161
10-407572-75	22D	.025	.521 .475	.546 .500	.472 .431
10-407584-25	20	.025	.605 .559	.630 .584	.556 .515
10-407584-35	20	.025	.308 .262	.333 .287	.259 .218

PCB socket and pin part numbers include finish designation - gold plating over suitable underplate in accordance with MIL-C-39029. For other finish variations, consult Sidney, NY.

Note: 22M and 22D contacts are interchangeable.

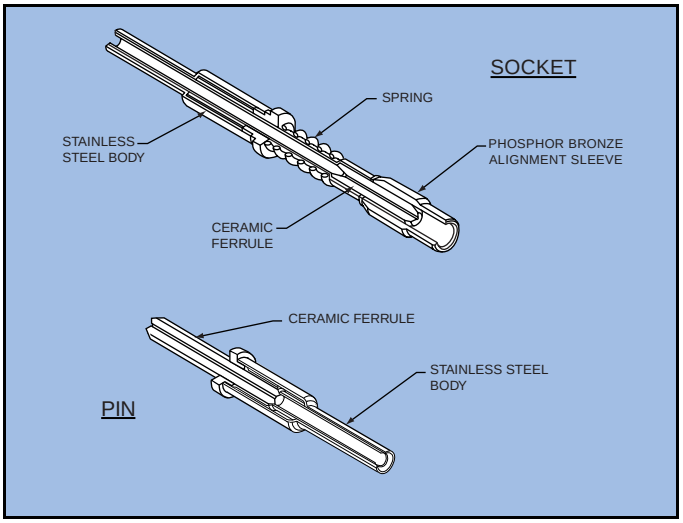
For other contact options available for use in Amphe-Lite connectors (thermocouple, fiber optic), consult Sidney, NY.

Amphe-Lite Series

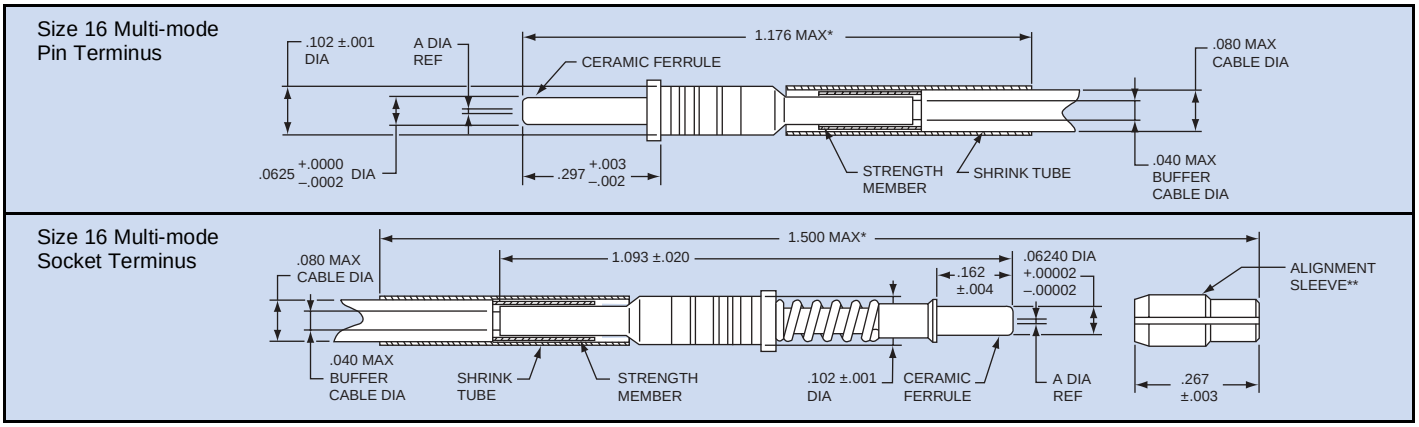
fiber optic termini – multi-mode, size 16

Amphenol® Multi-mode, Size 16 Termini
Features and Performance Levels:

- Ceramic alignment ferrule which precisely positions the fiber within the termini
- Phosphor bronze alignment sleeve, assembled on the socket after polishing insures accurate fiber to fiber alignment (a ceramic alignment sleeve is also available).
- Typical insertion loss for 100/140 fiber with .2 NA at 820 nm is .5 to .7 dB using Air Gap (AG) polish technique
  Use of the ceramic ferrule and sleeve maximizes the ability to hold extremely tight dimensional tolerances while maintaining accurate concentricity, thus providing superior and consistent optical loss performance.
- Termination accomplished using the industry proven epoxy/polish method. Can be polished Air Gap (AG) or Physical contact (PC).
- Socket cleaning optional. Consult Amphenol, Sidney, NY for termini cleaning tool. For application tools consult Sidney, NY.



Multi-mode Size 16 Fiber Optic Termini



Amphenol® Multi-Channel fiber optic connectors are supplied less contacts. Order multi-mode termini by Amphenol part number designation as shown in the chart below. Consult Amphenol, Sidney, NY for further availability.

* Indicated dimension when fully assembled.

Ordering Information
Multi-mode Termini (Size 16) for Amphe-Lite Connectors

Fiber Size† Core/Cladding Dia (Microns)	Size 16 Socket	Size 16 Pin	A Dia Ref	
			Inches	Microns
50/125	CF-198035-010	CF-198036-010	.0050	127
62.5/125				
100/140	CF-198035-017	CF-198036-017	.0057	145
100/140/172	CF-198035-029	CF-198036-029	.0069	175
100/140/172	CF-198035-29A	CF-198036-29A	.0068	173.5
200/230	CF-198035-053	CF-198036-053	.0093	236
200/240	CF-198035-057	CF-198036-057	.0097	245
200/280	CF-198035-074	CF-198036-074	.0114	290
200/300	CF-198035-080	CF-198036-080	.0120	305

† Additional sizes available upon request: consult Amphenol, Sidney, NY for availability.

Power contacts can be purchased separately, contact Amphenol, Sidney, NY.

Amphe-Lite Series

fiber optic termini – multi-mod

Amphenol® Multi-mode, Size 20 Termini
Features and Performance Levels:

- Designed for use in size 20 cavities of Amphe-Lite co
- Designed with similar high performance compon proven size 16 termini
- Comparable performance and reliability to th can be expected
- Offers increased termini density in Amp nectors
- Maintains fiber optic/electrical hyb
- Allows for multiple fiber accom
- Termination accomplished polish method. Can be p tact (PC).
- Socket cleaning o termini cleaning

Size 20 M
Pin Te

sem-

Amphe-Lite Series
application tools

The following data includes information pertaining to the application tools which have been established for crimping, inserting, and removing contacts incorporated in the Amphe-Lite Series connectors. For additional information on coaxial contact tools see catalog 12-130.

All crimping tools included are the “full cycling” type.
There is a possibility of additional crimping tools other than those included being available at present or in the future for this specific application.

RECOMMENDED CRIMPING TOOLS

Contact Size/Type	Crimping Tool	Turret Die or Positioner
12 Pin and Socket	M22520/1-01	M22520/1-04
16 Pin and Socket	M22520/1-01 M22520/7-01	M22520/1-04 M22520/7-04
20 Pin and Socket	M22520/1-01 M22520/2-01 M22520/7-01	M22520/1-04 M22520/2-10 M22520/7-08
22D Pin	M22520/2-01 M22520/7-01	M22520/2-09 M22520/7-07
22D Socket	M22520/2-01 M22520/7-01	M22520/2-07 M22520/7-05
8 Twinax Center Pin and Socket	M22520/2-01	M22520/2-37
8 Twinax Intermediate Outer Pin & Socket	M22520/5-01	M22520/5-200

Contact Size/Type	Crimping Tool	Turret Die or Positioner
8 Coaxial Inner Pin and Socket	M22520/2-01	M22520/2-31
8 Coaxial Outer Pin and Socket	M22520/5-01	M22520/5-05 Die Closure B
	M22520/5-01	M22520/5-41 Die Closure B
	M22520/10-01	M22520/10-07 Die Closure B
16 Coaxial Inner Pin and Socket	M22520/2-01	M22520/2-35
16 Coaxial Outer Pin and Socket	M22520/4-01	M22520/4-02
12 Coaxial Inner Pin and Socket	M22520/2-01	M22520/2-34
12 Coaxial Outer Pin and Socket	M22520/31-01	M22520/31-02
10 (Power)	TP201423	1716P-1

Where 2 or 3 tools are listed for a contact size, only one tool and its die or positioner are required to crimp the contact.

The above crimping tools and positioners are available from the approved tool manufacturer.

INSERTION TOOLS

Use with Contact Size	Plastic Tools		Metal Tools			
			Angle Type		Straight Type Proprietary Part Number	Color
	MS Part Number	Color	MS Part Number	Proprietary Part Number		
10 (Power)	M81969/14-05*	Gray / (White)	M81969/8-11	†	†	Green
12	M81969/14-04*	Yellow / (White)	M81969/8-09	11-8674-12	11-8794-12	Yellow
16	M81969/14-03*	Blue / (White)	M81969/8-07	11-8674-16	11-8794-16	Blue
20	M81969/14-10*	Red / (Orange)	M81969/8-05	11-8674-20	11-8794-20	Red
22D	M81969/14-01*	Green / (White)	M81969/8-01	11-8674-24	11-8794-24	Black
8 Coaxial	None Required					
8 Twinax	None		M81969/46-06**	None		Red

REMOVAL TOOLS

Use with Contact Size	Plastic Tools		Metal Tools				
			For Unwired Contacts Proprietary Part Number	Angle Type		Straight Type Proprietary Part Number	Color
	MS Part Number	Color		MS Part Number	Proprietary Part Number		
10 (Power)	M81969/14-05*	(Gray) / White	†	M81969/8-12	†	†	Green / White
12	M81969/14-04*	(Yellow) / White	11-10050-11	M81969/8-10	11-8675-12	11-8795-12	Yellow / White
16	M81969/14-03*	(Blue) / White	11-10050-10	M81969/8-08	11-8675-16	11-8795-16	Blue / White
20	M81969/14-10*	(Orange)/ Red	11-10050-9	M81969/8-06	11-8675-20	11-8795-20	Red / White
22D	M81969/14-01*	(Green) / White	11-10050-7	M81969/8-02	11-8675-24	11-8795-24	Green / White
8 Coaxial	M81969/14-12	Green	None	None	11-9170	DRK264-8††	N/A
8 Twinax	M81969/14-12	Green	None	M81969/46-12**	11-9170	N/A	N/A

The M81969/8, 11-8674, 11-8675,and 11-8794 metal contact insertion and removal tools will accommodate wires having the maximum outside diameter as follows: Contact size 12–.155, 16–.109, 20–.077, 22D–.050. When wire diameters exceed those specified, the plastic tools must be used.

* Double end insertion/removal tool.

† To be determined.

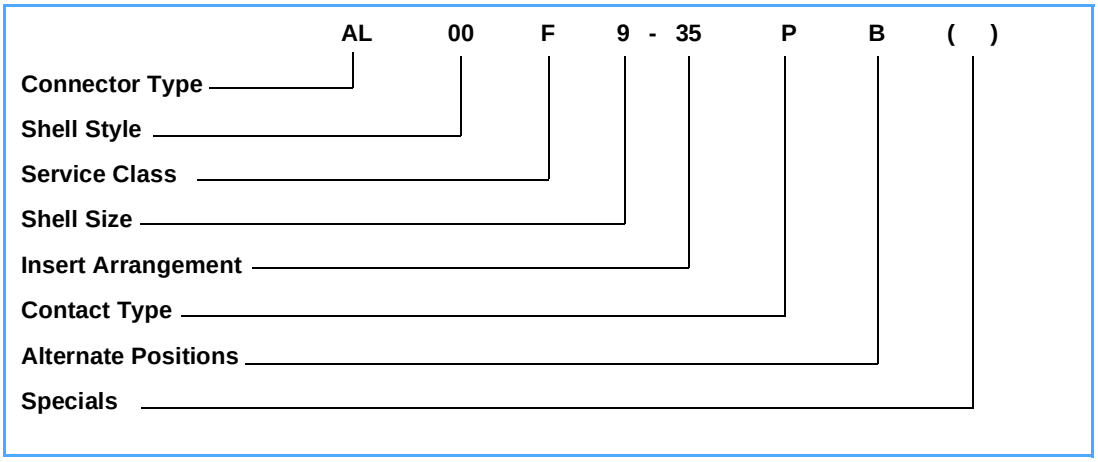
** Twinax insertion tools are available only in a straight type, metal version.

†† Contact Daniels Manufacturing Co. for availability.

Amphe-Lite Series

how to order

Amphenol® Amphe-Lite Composite Connectors can be ordered by coded part number.
Ordering procedure is illustrated by part number AL00F9-35PB as shown below:



Connector Type
AL . . . designates Amphe-Lite Connector Series

Shell Style
00 . . . designates wall mount receptacle
06 . . . designates straight plug
07 . . . designates jam nut receptacle

Service Class
F . . . . electroless nickel plated composite shells, with fluorinated silicone rubber components for increased fluid resistance
FD . . . electroless nickel plating composite shells, with dimethyl silicone rubber components
U . . . . black composite, unplated, with fluorinated silicone rubber components for increased fluid resistance
UD. . . black composite, unplated, with dimethyl silicone rubber components

Shell Size
9 thru 25 available

Insert Arrangement
See insert arrangement chart, page 3. See insert configurations illustrated on pages 5-8.

Contact Type
P . . . . designates standard 500 cycle pin contacts
S . . . . designates standard 500 cycle socket contacts
C . . . . designates pin PC tail contacts loaded in connector (see page 17).
D . . . . designates socket PC tail contacts loaded in connector (see page 17).

Alternate Positions
Locksmith keying - rotation of minor keys. “N” not required for normal position, see page 4.

Specials
NMG . designates non-magnetic connectors.
See page 24 for description of the new non-magnetic product offering of 100% non-magnetic style Amphe-lite connectors. Other specials include optional contact styles and contact platings. Also includes a high decoupling style of Amphe-Lite. Consult Amphenol, Sidney, NY for part numbering suffix for specials.

Standard Packaging
The Amphe-Lite Series is shipped with connectors and contacts packaged in bulk. Consult Amphenol Industrial, Sidney NY for special packaging requirements

RoHS COMPLIANT PRODUCT
AVAILABLE - Consult Amphenol Industrial Operations.

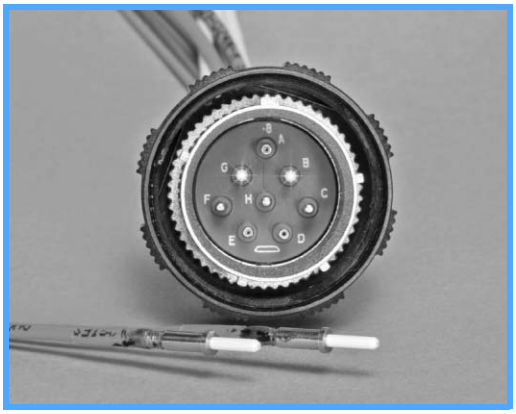
Amphe-Lite – capabilities

fiber optics, coax contacts, flex termination, PC tails

FIBER OPTIC

Fiber optic termini connectors offer a precision optic interconnect system within the Amphe-Lite connector. The Amphe-Lite connector provides protection from damage in severe environmental and physical conditions. Optical performance is optimized utilizing the ceramic alignment features employed by the termini. Insertion losses are typically .8dB and can range from .5 to 1.5 dB, depending on test conditions.

See pages 18-20 for fiber optic termini features and how to order. Ask for publication 12-352 or contact Sidney, NY for more information on Amphenol Fiber Optic Connectors.
Also available with MT and LC termination within an Amphe-Lite shell kit. Contact Amphenol, Sidney for more information.



Fiber Optics and Coax Contacts

CONNECTORS WITH COAX CONTACTS

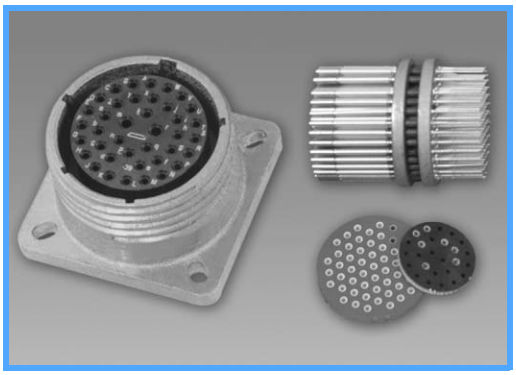
For shielded wire applications, coaxial contacts can be incorporated into Amphe-Lite connectors. Designed-in crimp or solder types are available to fit various RG and special cables. High performance coaxial contacts eliminate discontinuities or impedance variations due to movement of parts under axial load.

For further information on coax contacts ask for catalog 12-130

FILTER CONNECTORS FOR EMI PROTECTION

EMI shielding protection can be integrated into the Amphe-Lite connector with a planar array filter device. This provides a cost effective alternative to discrete devices mounted inside the box, and provides the weight and space savings necessary for modern electronic systems.

Amphenol's industrial connectors with filter protection are called the Amphe-dB Series; a family of popular industrial cylindricals that are enhanced to provide EMI protection. The Amphe-dB Series family includes the Amphe-Lite filter with a planar filter device and also MIL-5015 and MIL-C-26482 connectors which incorporate chip capacitor board filter devices.



Amphe-dB - Amphe-Lite Connector with Planar Array Filter

FLEX TERMINATION ASSEMBLIES FOR PRINTED CIRCUIT BOARD APPLICATIONS

Amphenol provides flex termination assemblies for printed circuit board attachment. Flex circuits are available for Amphe-Lite connectors in flat or sculptured styles. Sculptured® Flexible Circuits with built-in terminations eliminate the failures associated with crimped or solder-on contacts, and they are designed to geometrically fit the tight space requirements within a unit. They plug into a printed circuit board and create a self-locking terminal pad which eliminates the need for an additional interconnect to the PCB.

Consult Amphenol Industrial Operations for information on Amphe-Lite connectors with flex circuits.

Flex Termination Assemblies

PC TAIL CONTACTS IN AMPHE-LITE CONNECTORS

Another Amphe-Lite option allowing for greater flexibility, is the jam nut with the stand-off adapter. This combination provides a means to fasten a PCB or rigid flex to the rear of a jam nut shell. Shell style designator is a 0P. An example part number is AL0PF17-35P. Consult Amphenol Industrial Operations for further information.

Amphe-Lite Jam Nut Connector with Stand-off Adapter and PC Tails

See catalogs online at
www.amphenol-industrial.com

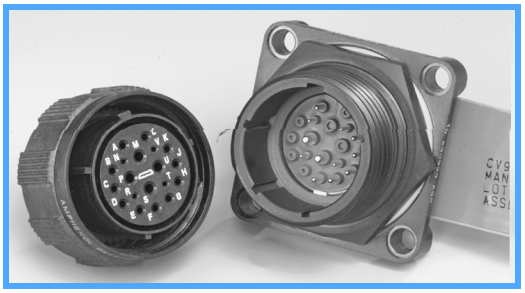
Amphe-Lite Series – capabilities

non-magnetic connectors, ground plane connectors, twinax contacts, power contacts

NON-MAGNETIC AMPHE-LITE CONNECTORS

A new product offering from Amphenol is the non-magnetic Amphe-Lite style which is made of a durable corrosion resistant composite material for harsh environments.The same triple start thread used on standard Amphe-Lite connectors allows for complete mating in a single turn of the coupling nut. IP67 sealing grommets and interfacial seals are standard. It is an ideal solution for MRI equipment in the medical market, and in other test equipment where a 100% non-magnetic multi-conductor connector is required.

With up to 128 size 22D contacts in one connector, the Amphenol non-magnetic Amphe-Lite is one of the few 100% non-magnetic connectors available today. It is available in a straight plug and three receptacle shell styles: wall mount, in-line and jam nut. Non-magnetic styles are available with many of the standard Amphe-Lite inserts. A wide variety of contact styles can be incorporated, and it can also be assembled with Amphenol ACT flex circuits.



Non-Magnetic Amphe-Lite Connector with Power Contacts, Fiber Optics and Flex Circuitry

GROUND PLANE CONNECTORS

Amphenol offers Amphe-Lite connectors for data bus, LAN and coax/triax/twinax transmission lines with conductive inserts that ground the outer conductor of the coax, triax or twinax contact to the shell. These connectors are sold “less contacts”. They will accommodate size 8 coax, triax or twinax contacts or size 12 and 16 coax contacts.

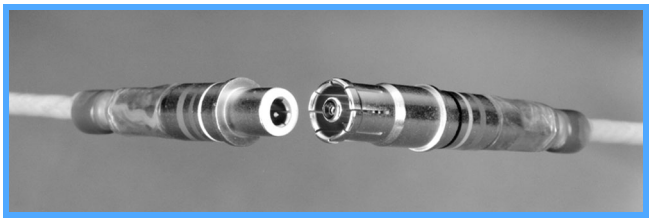
The insert availability chart on page 3 indicates the patterns that are available in a ground plane version, (see those designated with a star symbol), and consult Amphenol, Sidney NY for ordering procedures.

Ground Plane Connector with Metallic Insert and Concentric Twinax Contacts

CONNECTORS WITH CONCENTRIC TWINAX CONTACTS

The size 8 concentric twinax contact was developed for use in MIL-STD-1553 Airborne multiplex data bus applications which require high performance interconnect characteristics in multi-pin connectors. The Amphe-Lite Series with concentric twinax contacts are ideal for communication data bus applications. The concentric twinax contact is crimp terminable to twisted-shielded cable.

For further information on concentric twinax contacts ask for Amphenol Catalog 12-130.



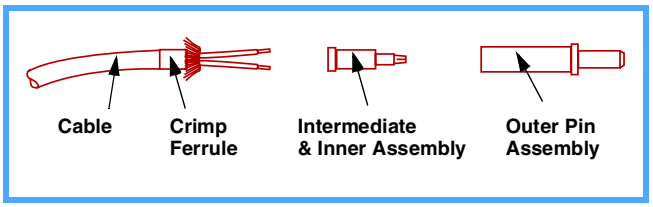
Concentric Twinax Contacts Qualified to M39029/90 and /91

CONNECTORS WITH REDUCED COMPONENT TWINAX (RCT) CONTACTS

The RCT (Reduced Component Twinax) contact meets MIL-C-39029/90 and /91 requirements for intermateability and performance while reducing the number of user-assembled components from seven to three. The inner conductors and outer barrel of the RCT are each terminated to the cable by a crimp joint, so no costly assembly soldering operations are required. Features include:

- Three user assembled components
- Available in size 8 and size 10 contacts
- MIL-C-17/176-00002 cable termination
- For installation in Amphe-Lite connectors
- Termination completed in only two crimping operations
- Inner conductors stripped to common length, eliminating multiple measurements

For further information on RCT contacts ask for Amphenol Catalog 12-130.



RCT (Reduced Component Twinax) Contact

CONNECTORS WITH POWER CONTACTS

Size 10 power, size 12 and size 16 contacts are available in many standard insert arrangements. These contacts provide a wide range of power transmission capabilities. Standard contacts are gold plated to maintain a superior conductive surface. For further information on insert patterns that contain power contacts refer to the insert availability chart on page 3.