

Amphenol®



97 E Pre-Earth FMLB

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Amphenol® Pre-Earth/First Mate Last Break Connectors are designed for applications where a protective circuit from the ground contact to the shell is critical. These connectors provide a path for any stray voltage to be shunted to a safe ground avoiding harm to the operator and the voltage sensitive equipment.

Features

- Pre-earth (contact grounded to shell) design.
- First mate, last break capability.
- Designed to meet IEC/EN 61984 (in processing) UL recognition file E115497
- Class IP67 protection, receptacle in unmated and plug in mated condition.
- MIL-5015 dimensions and performance where applicable. Intermateable with MS 5015 and 97 Series.
- Offer shell styles: 3102A box mount, 3106A straight plug.
- Standard plating is black zinc alloy. Green zinc and other plating types are optional.

Targeted Applications

- Servo motor
- Robots
- Machinery
- Semiconductor Equipment
- Process control & testing
- Measurement equipment
- FA equipment
- Industrial equipment

Specifications

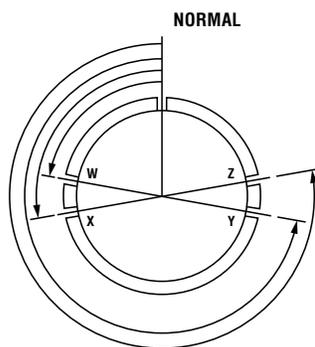
Electrical Characteristics					
Rated Current	Contact Size	#16	#12	#8	#4
	Amperes	13	23	46	80
Rated Voltage	Refer to individual insert pattern				
Dielectric Withstanding Voltage	2000V - 3000V AC				
Insulation Resistance	5000M (Min) @500V DC				

Materials and Mechanical	
Components	Material & Coating
Shell	Aluminum Alloy with optional plating
Coupling nut	Aluminum Alloy with optional plating
Contact	Copper alloy with silver plating(Au plating optional)
Seal insert	Silicon rubber
Hard insert	Plastic resin
Retaining Ring	Copper alloy with nickel plating
Earth pin	Copper alloy with silver plating
Gasket	Silicon rubber
Durability	100 mating cycles minimum
Contact termination	Soldering

Environmental	
Waterproof Rating	IP67
Operating Temperature	-55°C to 125°C

Safety	
Pre-earth and First Mate Last Break	
Designed to meet IEC/EN 61984, certification in process	
Underwriters Laboratories approved	

Alternate Insert Positioning



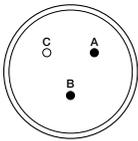
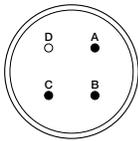
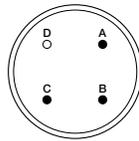
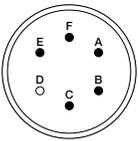
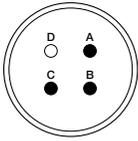
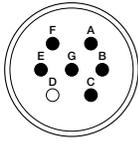
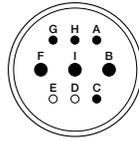
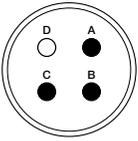
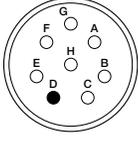
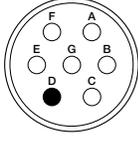
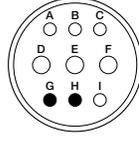
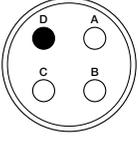
FRONT FACE OF PIN INSERT

Contact Arrangement	Total Contacts	Contact Size	Alternate Insert Position			
			W	X	Y	Z
10SL-3	3	#16	-	-	-	-
14S-2	4	#16	-	120°	240°	-
18-10	4	#12	-	120°	240°	-
18-12	6	#16	80°	-	-	280°
20-4	4	#12	45°	110°	250°	-
20-15	7	#12	80°	-	-	280°
20-18	9	6X #16, 3X #12	-	-	-	-
22-22	4	#8	-	110°	250°	-
22-23	8	#12	35°	-	-	-
24-10	7	#8	80°	-	-	280°
24-11	9	3X #8, 6X #12	-	-	-	-
32-17	4	#4	45°	110°	250°	-

Note: Shadowed are tooled, not shadowed will too soon

Applicable Cable Size			
Total Contacts	Soldering Well Diameter	Wire AWG	Wire Area
#16	φ1.76	#22 - #16	1.25mm ²
#12	φ2.70	#14 - #12	3.50mm ²
#8	φ4.70	#10 - #8	8.00mm ²
#4	φ7.50	#6 - #4	22.00mm ²

Insert Arrangement

	10SL-3		14S-2		18-10		18-12	
Insert Pattern								
Contact Size	#16		#16		#12		#16	
Ground Pin Number	C		D		D		D	
Rated Voltage (r.m.s)	AC200V	AC320V	AC200V	AC400V	AC250V	AC500V	AC200V	AC400V
Overtoltage (r.m.s)	III	II	III	II	III	II	III	II
Pollution Degree	3	2	3	2	3	2	3	2
Dielectric Withstanding Voltage	AC2000V (r.m.s)		AC2000V (r.m.s)		AC3000V (r.m.s)		AC2000V (r.m.s)	
Current Capacity	13A		13A		23A		13A	
	20-4		20-15		20-18		22-22	
Insert Pattern								
Contact Size	#12		#12		#12 #16		#8	
Ground Pin Number	D		D		D, E		D	
Rated Voltage (r.m.s)	AC250V	AC400V	AC250V		AC250V		AC250V	AC500V
Overtoltage (r.m.s)	III	II	III		III		III	II
Pollution Degree	3	2	3		3		3	2
Dielectric Withstanding Voltage	AC2800V (r.m.s)		AC2000V (r.m.s)		AC2000V (r.m.s)		AC3000V (r.m.s)	
Current Capacity	23A		23A		#12:23A #16:13A		46A	
	22-23		24-10		24-11		32-17	
Insert Pattern								
Contact Size	#12		#8		#8 #12		#4	
Ground Pin Number	D		D		G, H		D	
Rated Voltage (r.m.s)	AC250V		AC250V		AC250V		AC250V	AC500V
Overtoltage (r.m.s)	III		III		III		III	II
Pollution Degree	3		3		3		3	2
Dielectric Withstanding Voltage	AC2000V (r.m.s)		AC2000V (r.m.s)		AC2000V (r.m.s)		AC2800V (r.m.s)	
Current Capacity	23A		46A		#8:46A #12:23A		80A	

- Front view of pin insert or rear of socket insert illustrated.
- "●" indicate the ground contact location.
- Current capacity shows the maximum permitted current per contact.
- Overtoltage Category and Pollution Degree is prescribed in a EN standard.
- UL certified under E115497, TUV certification is in process.

Alternate Insert Positioning

1	2	3	4	5	6	7	8	9	
97	-3102	E	-20	-10	P	W	(400)	(955)	
Product Line	Shell Style	Service Class	Shell Size	Insert Arrangement	Contact Type		Alternate Insert Position	Deviation	Shell Finish Suffix
	3120 Box Receptacle	E: Environmental resistant	10SL	3	P	Pin Contact	W	400 FMLB Contact Grounded to Shell	(955) Black zinc alloy with less pre-filled cup
	3106 Straight Plug		14S	2	S	Socket Contact	X	402 FMLB Contact W/O Grounded to shell	(958) Gray zinc alloy
	3108 Angle Plug		18	10, 12			Y		
			20	4, 15, 18			Z		
			22	22, 23					
			24	10, 11					
			32	17					



3102E
Wall mount receptacle
Water proof un-mated



3106E
Straight plug
Water proof mated



3108E
Angle plug
Water proof mated



AMPHENOL CORPORATION

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Mouser Electronics

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