

INCH-POUND

MIL-PRF-18148/4
28 March 2011

PERFORMANCE SPECIFICATION SHEET

RECEPTACLES, ADAPTER, ELECTRIC, AIRCRAFT STORAGE BATTERY

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-PRF-18148.

REQUIREMENTS:

1. Part or identifying number. The part or identifying number (PIN) of the receptacle covered by this specification sheet shall be M18148/4-1. The M18148/4-1 receptacle is an add-on adapter which installed into the MS25182-2 connector. The M18148/4-1 facilitates charging from external power sources by eliminating the need to disconnect the MS25182-2 plug from the battery during such charging.
3. Dimensions and weight. The dimensions and configuration of the receptacle shall be as shown on figures 1 through 3 herein. The weight of the receptacle shall be as specified in 3.12.4 as modified herein.
4. Receptacles. The body of each receptacle shall be molded in one piece from rigid insulating material. The contacts shall be insulated from each other.
5. MIL-PRF-18148 variance. The plug shall comply with MIL-PRF-18148 except as follows.
 - 5.1 Modify the following paragraphs:
 - 2.2.1 Specifications and standards. Add under STANDARDS:

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“FEDERAL STANDARDS

"FED-STD-595/15042	-	Blue, Gloss
"FED-STD-595/17038	-	Miscellaneous, Gloss
"FED-STD-595/25042	-	Blue, Semigloss
"FED-STD-595/27038	-	Miscellaneous, Semigloss
"FED-STD-595/35042	-	Blue, Flat or Lusterless
"FED-STD-595/37030	-	Miscellaneous, Flat or Lusterless
"FED-STD-595/37031	-	Miscellaneous, Flat or Lusterless”

“DEPARTMENT OF DEFENSE SPECIFICATIONS

“MIL-PRF-18148/1	-	Plug, Electric, Two-Wire, Aircraft Storage Battery”
“MIL-PRF-18148/2	-	Plug, Electric, Four-Wire, Aircraft Storage Battery”

3.4 Materials and components. Insert after the second sentence: “Aluminum, polycarbonate, or polyester (see 6.8.1) shall not be used in the construction of M18148/4-1 receptacles. Nickel-plated ferrous steel shall not be used in the construction of the terminations used to connect M18148/4-1 receptacles to the MS25182-2 plug.”

3.6.2. Receptacles. Delete the entire text and insert: “The M18148/4-1 shall engage with the MS25182-2 plug.”

3.8.2 Electrical connections. Insert after the first sentence: "Each M18148/4-1 plug receptacle shall include as its electrical connections, two sockets concentric with the cable entry holes of the MS25182-2 plug and two terminations that mate with the studs inside the MS25182-2 plug. If the terminations and sockets are plated, the plating shall be conductive and resist rusting and corrosion. Each M18148/4-1 receptacle shall be made so that polarity is maintained throughout. The symbols “-” and “+” shall be marked at all terminations and on the front of the M18148/4-1 to indicate correct polarity. Each M18148/4-1 shall include fasteners (e.g., bolts/screws, washers, lockwashers, etc.) for connecting the M18148/4-1 to the MS25182-2 plug. No part of the electric circuit of the M18148/4-1 shall be exposed except through the sockets.”

3.10.1 Color. Insert after the first sentence: “The body of each receptacle shall be a color conforming to requirements of FED-STD-595 within the range of color numbers 15042, 17038, 25042, 27038, 35042, 37030, or 37031 (black).”

3.12.4 Weight. Insert after the first sentence: “The weight of each M18148/4-1 receptacle shall be not greater than 0.52 lb.”

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5.2 Add the following paragraph:

“3.12.17 Plating adhesion. Plating shall remain intact and the terminal fasteners and terminations shall not be damaged after being tested in accordance with 4.5.19. The items shall also meet the requirements of 3.11 of MIL-PRF-18148 during and after testing.”

5.3 Modify the following paragraphs:

4.2 Qualification inspection. Insert after the end of the first sentence: “(see table II of MIL-PRF-18148/4).”

4.3 Conformance inspection. Insert after the end of the first sentence: “(see table II of MIL-PRF-18148/4).”

4.5.5 Plug preparation procedure. Delete the text and insert: “Unscrew the two bolts on the body of the MS25182-2 plug and separate the shell halves to access the interior. Attach the terminations of the M18148/4-1 to the MS25182-2 studs on each bus. Examine the polarity to ensure correct placement of markings in relation to terminations and studs. Ensure there is no interference with the body of the connector that would cause a force on the bus and electrical socket. Torque each nut to 100-140 in-lb to fasten the terminations to the bus. The M18148/4-1 will remain on the MS25182-2 throughout the remainder of the test sequence, except for the immersion test.”

4.5.9 Contact resistance test (applies only to plugs). Delete the title of the paragraph and substitute: “Contact resistance test.”

4.5.9.a. In step a, delete the text and insert: “a. Preparation: install the MS18148/4-1 add-on into a MS25182-2 four-wire connector, and solder a voltage tap to the location specified by point A on figure 3 of MIL-PRF-18148/4. Repeat this for both the positive and negative terminals. Attach a P/N 5003 quick disconnect manufactured by Rebling Plastics to the MS18148/4-1 add-on. Remove the dust covers from the quick disconnect’s terminals and attach a voltage tap to each terminal as specified by point B on figure 3 of MIL-PRF-18148/4. Attach 000-gauge cable to the terminals of the MS25182-2 four-wire connector and the P/N 5003 quick disconnect, and connect all voltage taps to appropriate instrumentation. Attach the 000-gauge cables to an appropriate power supply.”

4.5.9.f(1). In step (1), delete the text and insert: “(1) Monitor the potential difference between the tap soldered at point A and the tap attached at point B of the positive bus of the assembly as shown on figure 3. Note the largest potential difference.”

4.5.9.f(2). In step (2), delete the text and insert: “(2) Monitor the potential difference between the tap soldered at point A and the tap attached at point B of the negative bus of the assembly as shown in figure 5. Note the largest potential difference.”

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4.5.9.g. In step g, delete the text and insert: “Examine the plug for the requirements of 3.11 and 3.12.8 both of MIL-PRF-18148.”

4.5.9.1 Contact resistance test at room temperature. Delete the text and insert: “Mate all plugs and receptacles. Stabilize all connectors at room temperature (see 4.4.1 of MIL-PRF-18148). Perform the test of 4.5.9, as modified by MIL-PRF-18148 with all connectors and the environment at room temperature.”

4.5.9.2 Contact resistance test at low temperature. Delete the text and insert: “Mate all plugs and receptacles. Stabilize all connectors at low temperature (see 4.4.1). Perform the test of 4.5.9 on the cold connectors in a room temperature environment.”

4.5.9.3 Contact resistance test at high temperature. Delete the text and insert: “Mate all plugs and receptacles. Stabilize all connectors at high temperature (see 4.4.1). Perform the test of 4.5.9 on the hot connectors in a room temperature environment.”

5.4 Add the following paragraphs:

“4.5.19 Plating adhesion. Bake samples of metal parts prepared as those supplied with assembled receptacles at $438^{\circ} \pm 15^{\circ} \text{ C}$ ($800^{\circ} \pm 20^{\circ} \text{ F}$) for 24 hours in an oven with a reducing atmosphere. Examine the samples for the requirements of 3.12.17.”

“6.8.6 Materials and components. M18148/4-1 receptacles that have passed the testing required for qualification and have worked acceptably in practice have used terminations and contact pins made of tellurium copper.”

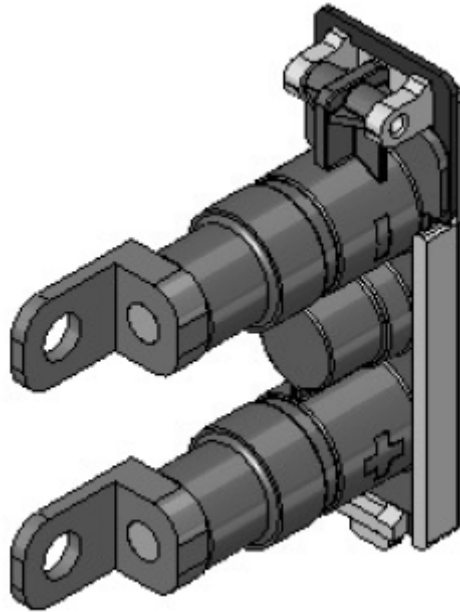
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TABLE I. Qualification inspection of M18148/4-1.

Test number	Examinations and tests	Qualification sample number			Conformance inspection sample number		Requirement Paragraph 1/	Method of inspection paragraph 1/
		1	2	3	1	2		
1	INCOMING INSPECTION	X	X	X	X	X	3.12.1	4.5.1
2	VISUAL AND MECHANICAL	X	X	X	X	X	3.8.2 (S), 3.10, 3.12.2	4.5.2
3	DIMENSIONS	X			X		3.12.3	4.5.3
4	WEIGHT	X	X	X	X	X	3.12.4 (S)	4.5.4
5	ELECTRICAL PERFORMANCE	X	X	X	X	X	3.8.2, 3.11	4.5.20 (N)
6	STRESS TESTS AT 77°F	X	X	X	X	X	---	---
6a	Dielectric strength	X	X	X	X	X	3.11, 3.12.5	4.5.6.1
6b	Insulation resistance	X	X	X	X	X	3.11, 3.12.6	4.5.7.1
6c	Contact resistance	X	X	X	X	X	3.11, 3.12.8	4.5.9.1 (S)
7	STRESS TESTS AT -65°F			X			---	---
7a	Dielectric strength			X			3.11, 3.12.5	4.5.6.2
7b	Insulation resistance			X			3.11, 3.12.6	4.5.7.2
7c	Contact resistance			X			3.11, 3.12.8	4.5.9.2 (S)
8	STRESS TESTS AT 160°F			X			---	---
8a	Dielectric strength			X			3.11, 3.12.5	4.5.6.3
8b	Insulation resistance			X			3.11, 3.12.6	4.5.7.3
8c	Contact resistance			X			3.11, 3.12.8	4.5.9.3 (S)
9	LIFE	X	X		X		3.11, 3.12.10	4.5.11.2
10	TEMPERATURE SHOCK			X			3.11, 3.12.11	4.5.12, 4.5.6.1
11	MECHANICAL SHOCK		X				3.11, 3.12.12	4.5.13, 4.5.6.1
12	HUMIDITY			X			3.11, 3.12.14	4.5.14, 4.5.7.1
13	IMMERSION	X					3.10, 3.11, 3.12.15	4.5.15, 4.5.7.1, 4.5.10
14	SALT FOG	X	X			X	3.10, 3.11, 3.12.15	4.5.16, 4.5.7.1, 4.5.10
15	VIBRATION		X				3.11, 3.12.13	4.5.17.2, 4.5.6.1
16	PLATING ADHESION	X	X	X			3.11, 3.12.17 (N)	4.5.19 (N)

1/ All paragraphs referenced are in MIL-PRF-18148, except those annotated with an (N) or (S). Paragraphs with an (N) are new paragraphs added by the specification sheet and paragraphs with an (S) are paragraphs that have been modified by the specification sheet.

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ISOMETRIC

FIGURE 1. Dimensions and configuration for M18148/4-1 receptacle.

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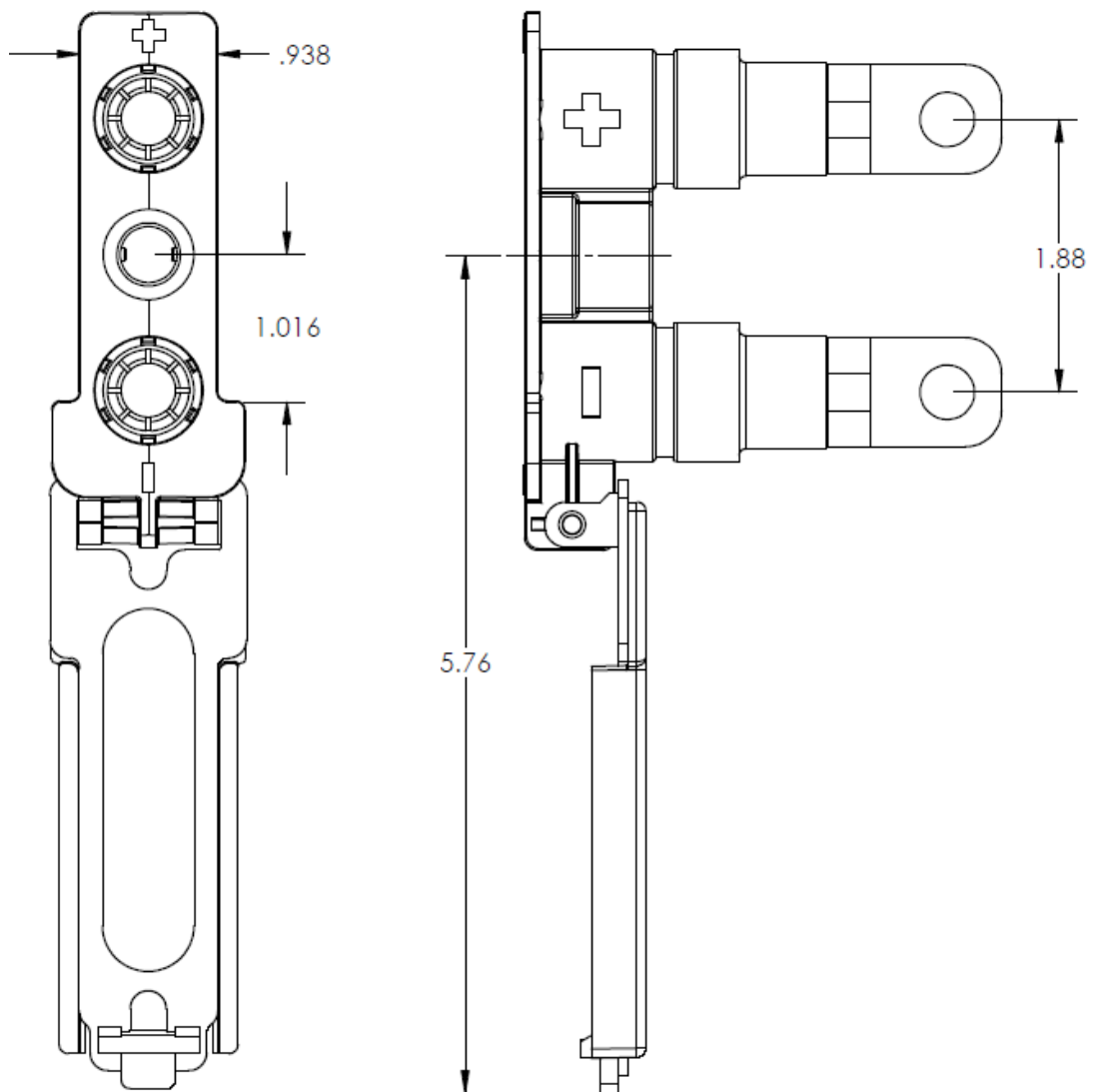


FIGURE 1. Dimensions and configuration for M18148/4-1 receptacle – Continued.

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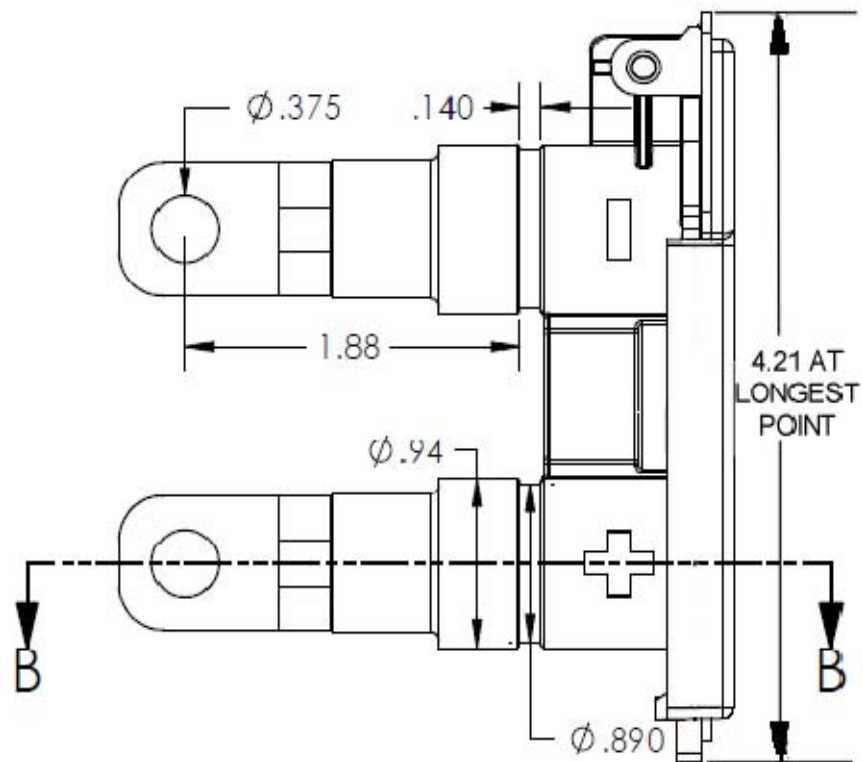


FIGURE 1. Dimensions and configuration for M18148/4-1 receptacle - Continued.

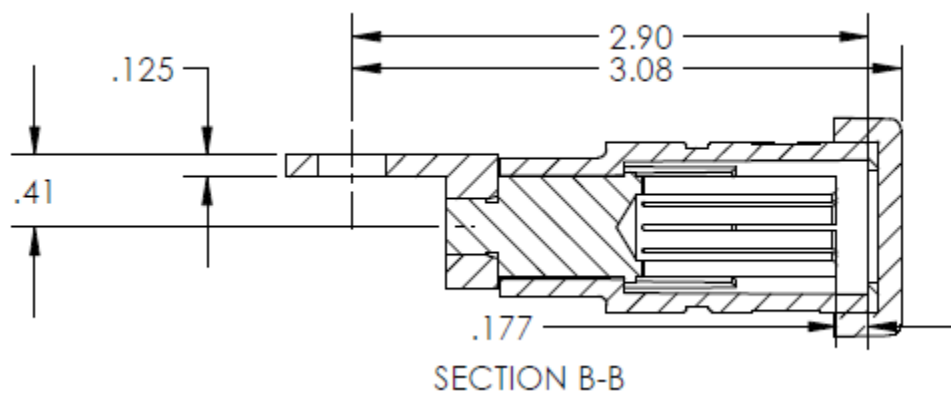


FIGURE 2. Section views for M18148/4-1 receptacles.

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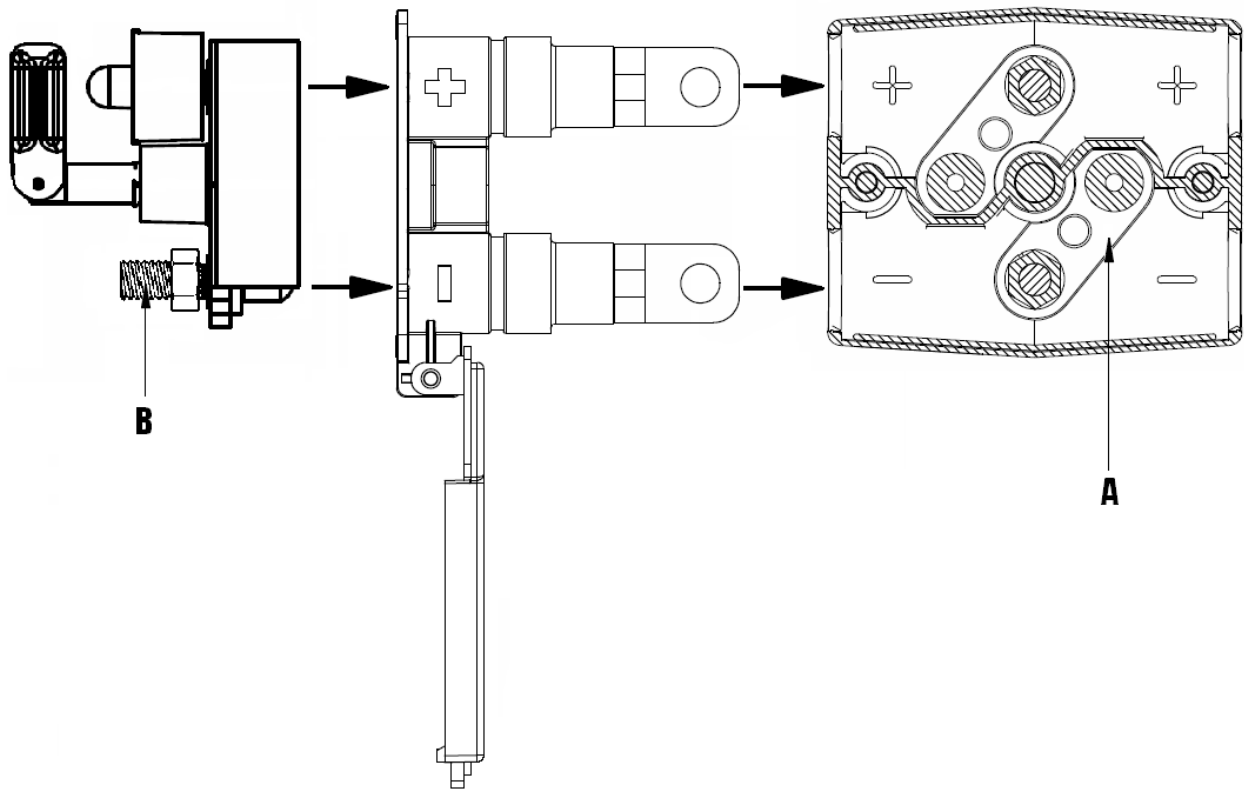


FIGURE 3. Assembly for M18148/4-1 receptacle contact resistance test.

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CONCLUDING MATERIAL

Custodians:

Army - AV
Navy - AS
Air Force - 85
DLA - CC

Preparing activity:

Navy - AS

Agent:

Navy - SH

Review activities:

Army - CR, MI
Air Force - 99
DLA - GS

(Project 5935-2011-015)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.daps.dla.mil>.