

METRIC

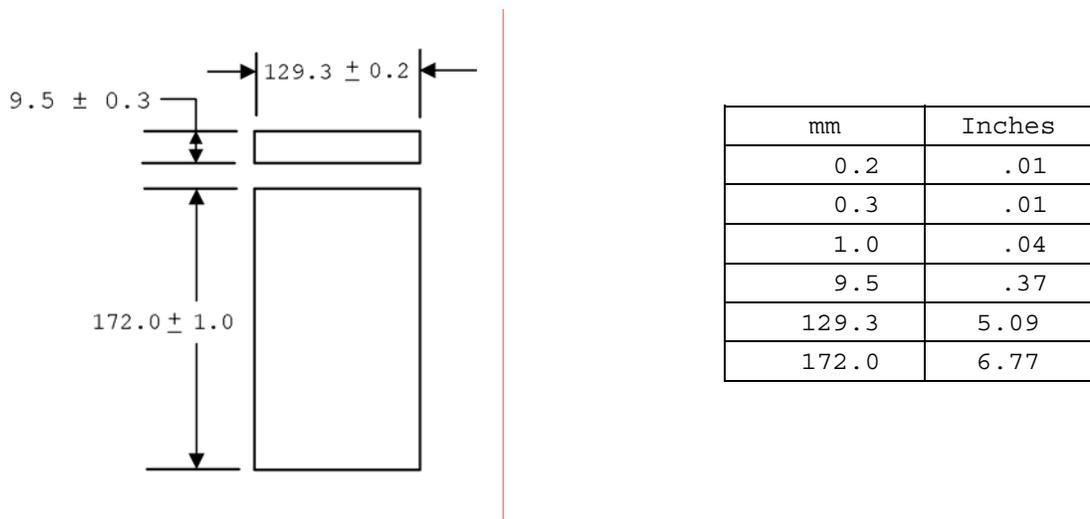
MIL-DTL-24728/8  
28 June 2007

DETAIL SPECIFICATION SHEET

INTERCONNECTING BOX, FIBER OPTIC,  
FUSION SPLICE TRAY AND TRAY HOLDER MODULE

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-I-24728.



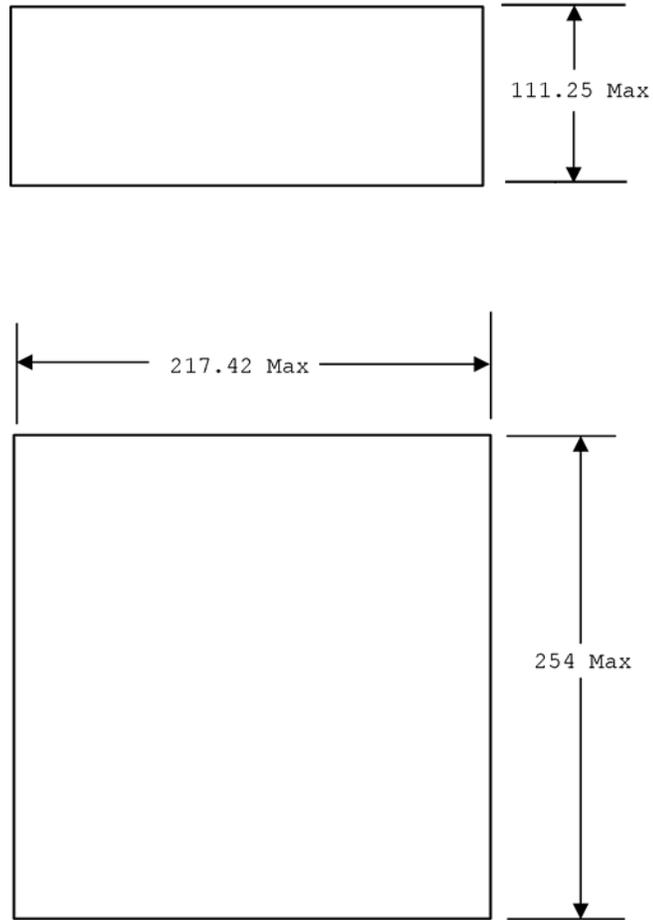
NOTES:

1. Dimensions are in millimeters.
2. Inch equivalents are given for general information only.
3. Values provided are envelope dimensions.

FIGURE 1. Splice tray envelope (including cover).

AMSC N/A

FSC 6099



mm	Inches
111.25	4.38
217.42	8.56
254	10

NOTES:

1. Dimensions are in millimeters.
2. Inch equivalents are given for general information only.
3. The 254 mm dimension is only permitted in the axis perpendicular to the MCT (multiple cable penetrators).
4. Values provided are envelope dimensions.

FIGURE 2. Splice tray holder module envelope.



Stress relief: If manufacturing induces stress in the material, then splice tray holder shall be stress relieved in accordance with MIL-E-24142.

Finish, interior and exterior surfaces: The surfaces shall be finished by one of the following methods, coated with epoxy powder in accordance with MIL-PRF-24712 or coated by chemical conversion materials in accordance with MIL-DTL-5541 (aluminum or aluminum alloys only). As guidance for painted surfaces reference MIL-HDBK-2036.

Part identification: The splice tray and tray holder shall be identified individually with markings that are permanent, clearly visible and legible. Identification marking shall include the PIN and either the manufacturer's CAGE code, name, or logo.

Enclosure: Splice trays and tray holders shall be designed such that all cables, cable components, fibers, connectors, splices, couplers, and mounting and stability supports for the above components entering, enclosed in, or exiting the components are not damaged during servicing of the components or during installation of additional components. Covers of splice tray holder may be either hinged or removable. When hinged covers are used, they shall be capable of being fixed in the open position for servicing of the enclosed components.

Mounting provisions: The splice tray holder shall install into the mounting holes as shown in figure 3 of MIL-I-24728/1.

Cable interconnection interface: Cable feed shall not degrade the optical performance of fiber optic cables.

Interconnect organization: Splice tray holders and splice trays shall have provisions for organizing fiber splices and fiber optic connectors, as specified herein, such that fiber splice organizers may be moved into serviceable positions without damage to any component, and their operational position shall minimize micro bends or macro bends in any cable, optical fiber cable component (OFCC), or fiber. All buffered fibers, OFCC's, or fiber ribbons located between the input cables and the fiber organizers shall be routed along the side of the interconnecting box.

Fiber and splice organizers: Splice organizers shall be universal or replaceable to accommodate and protect all types of fiber optic splices, both mechanical and fusion. The design shall allow the physical rearrangement of splices. The number and arrangement of splices shall be as specified herein. Splice and fiber organizers shall be designed in removable units to provide additional storage capacity for fiber and splices.

Accessibility: Regardless of the method used for mounting a splice organizer, all parts of the organizer for fiber interconnecting, splicing, maintenance, mounting, and cable additions shall be from the front. Splices, fiber organizers, and individual connectors shall be accessed with the removal of, or damage to, other splices, fibers and connectors. Hinged covers shall be designed to remain in an open position. This position shall not restrict access to the box.

**Splice tray compatibility:** The splice tray shall meet the requirements of figure 1 of this specification and shall pass requirements specified herein when used with a qualified splice tray holder as shown in figure 2.

**Splice tray density:** The splice tray shall have the capability of holding at least 12 splices that are in accordance with MIL-PRF-24623/6.

**Splice tray holder compatibility:** The splice tray holder shall meet the requirements of figure 2 of this specification and shall pass the requirements specified herein when used with qualified splice tray as shown in figure 1.

**Splice tray holder organization:** The splice tray holder shall hold 4 splice trays in accordance with figure 1 of this specification.

**Environmental/mechanical:** The splice tray and splice tray holder shall be tested to the following MIL-I-24728 environmental and mechanical requirements:

**Cable retention:** Applicable for splice tray only. Splice trays shall be tested in accordance with TIA-455-6. The test shall be performed with trays mounted in tray holders qualified to this specification and containing optical fiber splices qualified to MIL-PRF-24623/6. The minimum fiber to fiber splice tray pullout strength shall be 14.0 N (3.1 lbf). The fiber shall meet the optical requirements specified herein during and after the test. The fiber pull out force shall be tested by applying the axial tensile load specified between the fiber and the splice tray housing for a duration of one minute minimum. The change in optical transmittance shall be monitored during and after the test. The fiber and splices shall show no evidence of jacket damage, clamp failure, distortion from bending of splice parts or cable disengagement from the clamp.

**Vibration:** Applicable with the following modification. Vibration test shall be performed with optical fiber splices in accordance with MIL-PRF-24623/6 stored in the tray and tray holder and shall meet discontinuity during the test and change in optical transmittance requirements after the test. Test shall be in accordance with test condition II and test condition VII (test condition letter C) of TIA/EIA-455-11. The test duration for test condition VII shall be 30 minutes for each axis. The frequency range of test for test condition II shall be extended to a low frequency of 4 Hz.

**Shock:** Applicable. Optical fiber splices in accordance with MIL-PRF-24623/6 stored in the tray and tray holder shall meet discontinuity during the test and change in optical transmittance requirements after the test.

**Temperature/humidity cycling:** Applicable with the following modification, optical fiber splices in accordance with MIL-PRF-24623/6 stored in the tray and tray holder shall meet the change in optical transmittance requirements during and after the test. Testing shall be done in accordance with TIA/EIA-455-5, method B.

**Salt spray:** Not applicable.

**Temperature-life (life aging):** Applicable with the following modification, optical fiber splices in accordance with MIL-PRF-24623/6

stored in the tray and tray holder shall meet the change in optical transmittance requirements.

Thermal shock: Applicable with the following modification, optical fiber splices in accordance with MIL-PRF-24623/6 stored in the tray and tray holder shall meet the change in optical transmittance requirements. Testing shall be done in accordance with TIA/EIA-455-71 using test condition C-0.

Operating temperature (temperature cycling): Applicable with the following modifications. Optical fiber splices in accordance with MIL-PRF-24623/6 stored in the tray and tray holder shall meet the change in optical transmittance requirements. Testing shall be performed in accordance with EIA/TIA-455-3 using the test condition schedule and soak times in accordance with table II. The change in optical transmittance shall be measured during and after the test. A post test visual examination of the test specimens shall reveal no leakage of waterproofing compounds or other apparent loss of sealing capability, no surface or identification marking impairment, nor any damage detrimental to the operation of the test specimens. The operating temperature range shall be as specified herein.

Flame spread: Not applicable.

Twist: Applicable.

Cable seal flexing: Not applicable.

Compression resistance: Not applicable.

Impact: Not applicable.

TABLE II. Temperature cycling steps.

Step	Action	Temperature °C (°F)	Duration
1	Maintain	Room ambient	4 hours (minimum)
2	Ramp to	Low operating temp +0/-3 (+0/-5)	2 hours
3	Maintain	Low operating temp +0/-3 (+0/-5)	2 Hours (minimum)
4	Ramp to	25 ± 2 (77 ± 4)	2 hours
5	Maintain	25 ± 2 (77 ± 4)	2 hours (minimum)
6	Ramp to	High operating temp +3/-0 (+5/-0)	1 hour
7	Maintain	High operating temp +3/-0 (+5/-0)	2 hours (minimum)
8	Ramp to	25 ± 2 (77 ± 4)	1 hour
9	Maintain	25 ± 2 (77 ± 4)	2 hours (minimum)
10	Repeat steps 2 through 9, four additional times, for a total of five (5) cycles.		

Chemical: The splice tray and splice tray holder shall be tested to the following MIL-I-24728 chemical requirements:

Flammability: Not Applicable.

Fungus: Applicable with the following modification. Splice tray materials composed of materials not listed as fungus inert in guideline 4 of MIL-HDBK-454 shall be tested in accordance with TIA/EIA-455-56. The polymeric materials of the splice trays shall show sparse or very restricted microbial growth and reproduction with minor or inhibited substrate utilization. There shall be little or no chemical, physical, or structural change detectable.

Change in optical transmittance: Applicable with the following modification. The change in optical transmittance during or after any specified environmental or mechanical requirement shall be not greater than 0.30 dB.

Discontinuity: No discontinuity shall occur when tested in accordance with TIA/EIA-455-32 using equipment having a time resolution sufficient to resolve discontinuities of duration not less than 50 microseconds. A discontinuity is considered to be a reduction of signal strength of 0.30 dB or more for a duration of 50 microseconds or more.

Intended use: Splice trays and splice tray holders are intended for use in all applications inside protective enclosures.

Referenced documents. In addition to MIL-I-24728, this specification sheet references the following documents

MIL-DTL-5541	MIL-HDBK-454	TIA/EIA-455-11
MIL-E-24142	MIL-HDBK-2036	TIA/EIA-455-32
MIL-PRF-24623/6	EIA/TIA-455-3	TIA/EIA-455-56
MIL-PRF-24712	EIA/TIA-455-5	TIA/EIA-455-71
MIL-I-24728/1	TIA-455-6	

Custodians:

Army - CR  
Navy - SH  
Air Force - 11  
DLA - CC  
NASA - NA

Preparing activity:

Navy - SH

Agent:

DLA - CC

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Review activities:

Army - AR, MI  
Navy - AS, CG, EC, MC  
Air Force - 19, 93, 99

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