

METRIC

MIL-DTL-24728/8A

10 December 2009

SUPERSEDING

MIL-DTL-24728/8

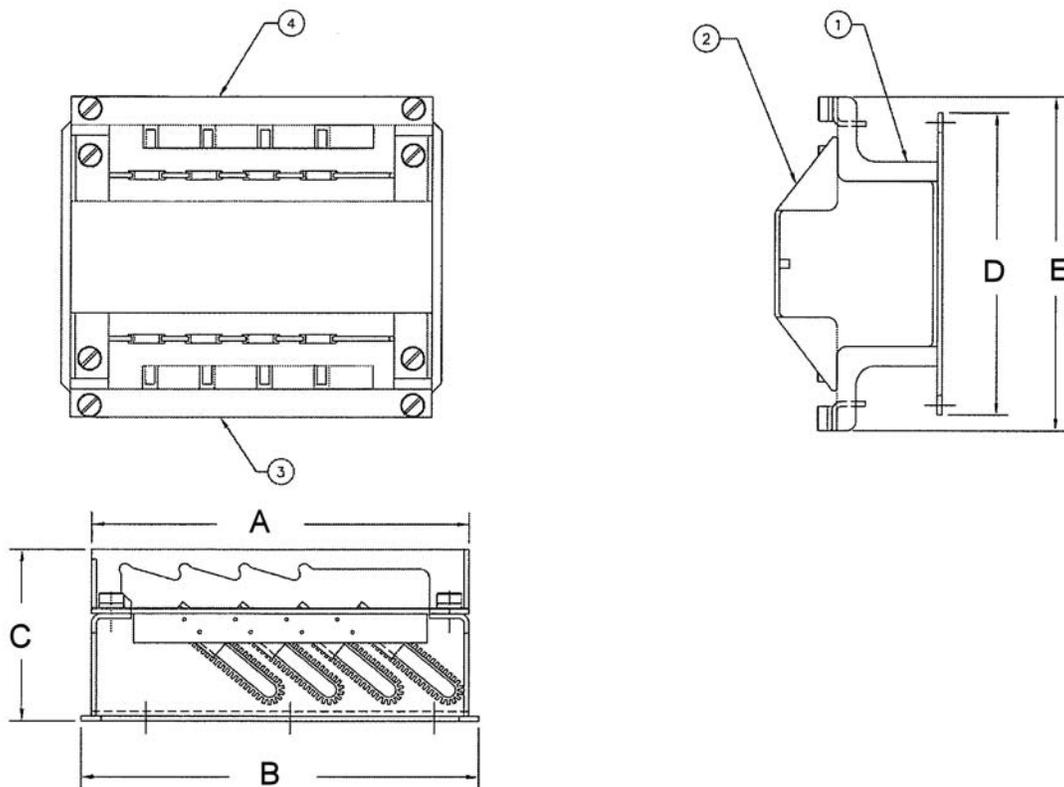
28 June 2007

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.



Item #	Part name
1	Base assembly
2	Cover assembly
3	Support angle assembly, right
4	Support angle assembly, left

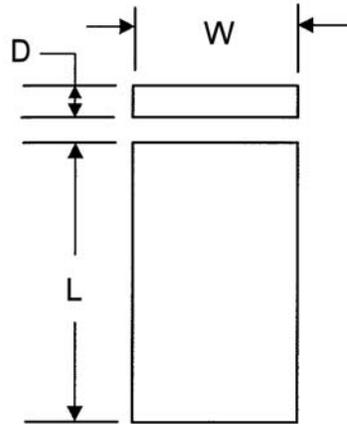
FIGURE 1. Splice tray holder module envelope.

NOTES:

1. See [table I](#) for dimensions.
2. [Table I](#) inch equivalents are given for general information only.
3. The B dimension is only permitted in the axis perpendicular to the multiple cable penetrators (MCT).
4. Values provided are envelope dimensions.
5. Base assembly slots (8 places), support angle assembly right slots (4 places), and support angle assembly left slots (4 places) shall be at an angle of 40 ± 1 degrees relative to the mounting plate.
6. Mounting hardware to include: (8) cross recessed pan head machine (PHM) screws, $\frac{1}{4}$ -20UNC-2A x $\frac{5}{8}$ " long, stainless steel; (8) flat washers, $\frac{1}{4}$ " stainless steel; (8) lock washers, split, $\frac{1}{4}$ " stainless steel.
7. Tray to tray centerline spacing shall be no less than 20.0 mm.

FIGURE 1. Splice tray holder module envelope – Continued.TABLE I. Splice tray holder module dimensions.

Letter	Characteristic	Millimeters	Inches
		Max.	Max.
A	Base assembly height	241.3	9.5
B	Base assembly height with mounting plate	254.0	10.00
C	Depth	112.0	4.41
D	Mounting plate width	196.8	7.75
E	Assembly width	218.8	8.61

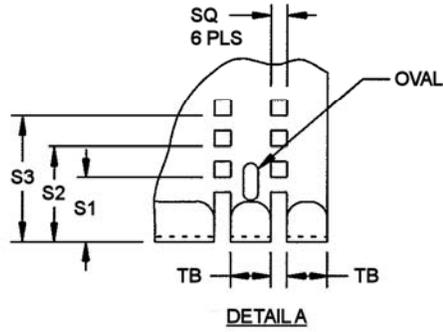
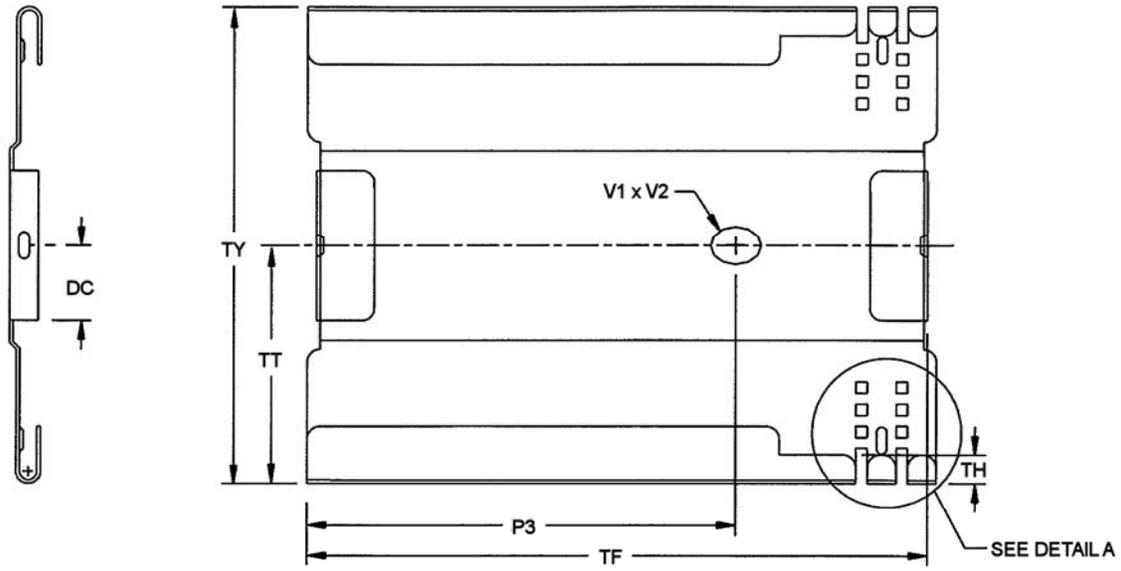


NOTES:

1. See [table II](#) for dimensions.
2. [Table II](#) inch equivalents are given for general information only.
3. Values provided are envelope dimensions.

FIGURE 2. Splice tray envelope (including cover).TABLE II. Tray envelope dimensions.

Letter	Characteristic	Millimeters		Inches	
		Min.	Max.	Min.	Max.
L	Overall length	178.94	179.20	7.04	7.06
W	Overall width	128.3	129.03	5.05	5.08
D	Overall depth	9.5	9.7	0.37	0.38



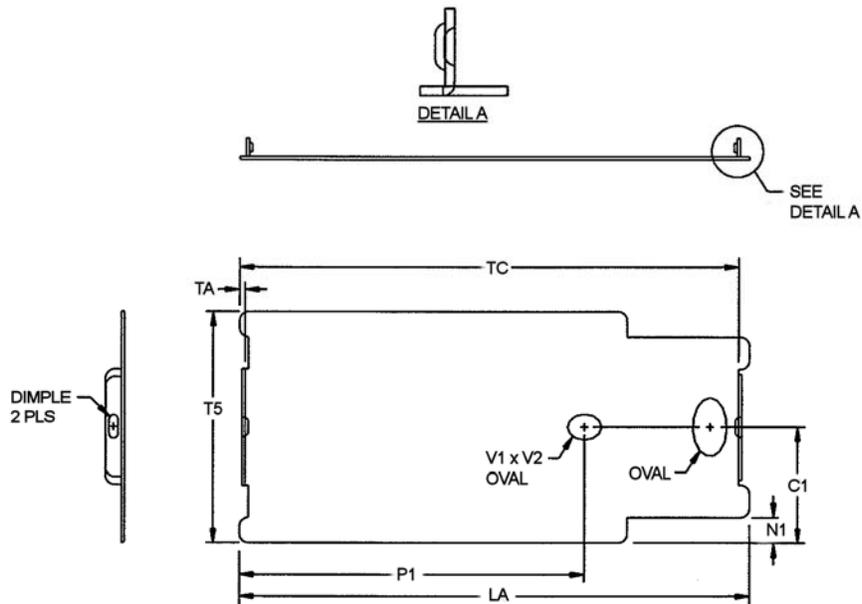
NOTES:

1. See [table III](#) for dimensions.
2. [Table III](#) inch equivalents are given for general information only.

FIGURE 3. Tray base.

TABLE III. Tray base dimensions.

Letter	Characteristic	Millimeters		Inches	
		Min.	Max.	Min.	Max.
DC	Dimple center line	19.90	20.85	0.78	0.82
P3	Length to oval	118.10	121.80	4.65	4.80
S1	Side to hole one	11.65	13.30	0.46	0.52
S2	Side to hole two	18.35	19.90	0.72	0.78
S3	Side to hole three	24.75	25.95	0.97	1.02
SQ	Hole width	3.05	3.23	0.12	0.13
TB	Tab width	7.49	8.04	0.29	0.32
TF	End to near lip	172.98	174.02	6.81	6.85
TH	Tab extension	7.38	8.08	0.29	0.32
TT	Side to oval center	63.35	64.59	2.49	2.54
TY	Splice tray width	128.30	129.03	5.05	5.08
V1	Oval length	9.39	9.65	0.37	0.38
V2	Oval width	12.48	12.83	0.49	0.51



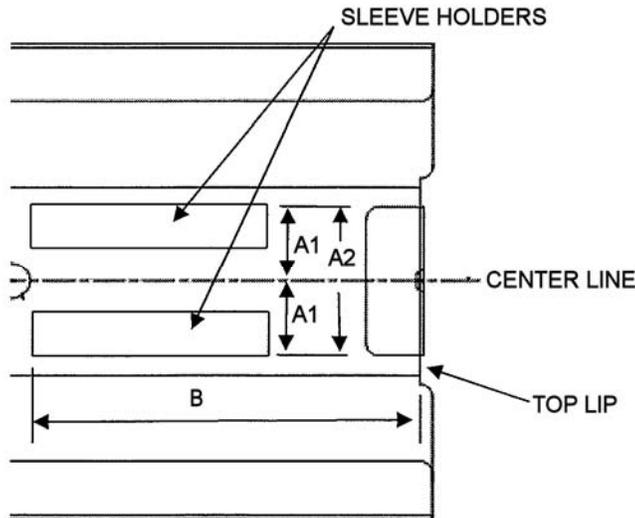
NOTES:

1. See [table IV](#) for dimensions.
2. [Table IV](#) inch equivalents are given for general information only.

FIGURE 4. Tray cover.

TABLE IV. Tray cover dimensions.

Letter	Characteristic	Millimeters		Inches	
		Min.	Max.	Min.	Max.
C1	Edge to oval center line	53.35	53.85	2.10	2.12
LA	Length overall	178.94	179.20	7.04	7.06
N1	Edge to near notch	13.30	14.30	0.52	0.56
P1	Edge to small oval	119.15	121.83	4.69	4.80
T5	Tray cover overall width	106.43	107.19	4.19	4.22
TA	Tab set back	2.41	3.94	0.09	0.16
TC	Tab to notch	173.95	175.39	6.85	6.91
V1	Small oval length	9.39	9.65	0.37	0.38
V2	Small oval width	12.57	12.83	0.49	0.51



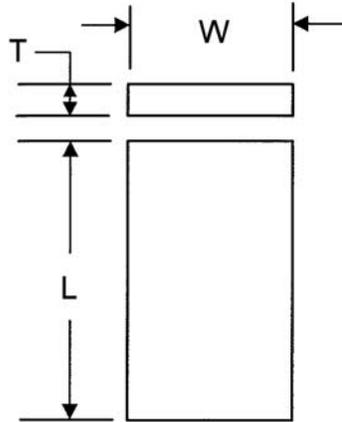
NOTES:

1. See [table V](#) for dimensions.
2. [Table V](#) inch equivalents are given for general information only.
3. Sleeve holders shall be installed such that A1 min./max. and A2 dimensions are met.

FIGURE 5. Splice sleeve holder positioning.

TABLE V. Splice sleeve holder position dimensions.

Letter	Characteristic	Millimeters		Inches	
		Min.	Max.	Min.	Max.
A1	Center to edge	16.15	24.60	0.64	0.97
A2	Sleeve holders outer edge to outer edge	39.0	40.0	1.54	1.57
B	Top edge to bottom of holder	98.40	110.00	3.87	4.33



NOTES:

1. See [table VI](#) for dimensions.
2. [Table VI](#) inch equivalents are given for general information only.

FIGURE 6. Non-metallic barrier installed inside tray.

TABLE VI. Barrier dimensions.

Letter	Characteristic	Millimeters		Inches	
		Min.	Max.	Min.	Max.
L	Length	151.50	162.56	5.96	6.40
W	Width	118.75	120.00	4.68	4.72
T	Thickness	0.10	0.29	0.004	0.011

SCOPE: The detail requirements specified herein cover fusion splice trays and tray holder suitable for military use.

Part or identifying number (PIN): See sample below and [table VII](#).

<u>M</u>	<u>24728</u>	/	<u>8</u>	<u>XX</u>
Military designator	Basic specification		Specification sheet	PIN code (see table VII)

TABLE VII. PIN numbers.

PIN code	Description	Figures
50	Splice tray holder with mounting hardware, for use with 129-mm (5-inch) width trays	1
51	Splice tray, 129-mm (5-inch) width	2-6

REQUIREMENTS:

Temperature: Operating: -28 °C to +65 °C (-18.4 °F to +149 °F)

Non-operating: -40 °C to +70 °C (-40 °F to +158 °F)

Storage: -40 °C to +70 °C (-40 °F to +158 °F)

Design and construction: The physical characteristics of the splice tray holder shall be as shown on [figure 1](#) and shall be such that it installs into the mounting holes as shown on figure 3 of MIL-I-24728/1 and does not affect the performance of MIL-I-24728 boxes including the ability to properly install the cover.

Mass: Splice tray: 150 grams (0.33 pounds) maximum

Splice tray holder: 1,530 grams (3.37 pounds) maximum

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: (1) coated with epoxy powder in accordance with MIL-PRF-24712 or (2) coated by chemical conversion materials in accordance with MIL-DTL-5541 (aluminum or aluminum alloys only). As guidance for painted surfaces, refer to 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 on 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, OFCCs, 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 figures 2-6 of this specification and shall pass requirements specified herein when used with a qualified splice tray holder as shown on [figure 1](#).

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 1](#) of this specification and shall pass the requirements specified herein when used with qualified splice tray as shown on [figure 2](#).

Splice tray holder organization: The splice tray holder shall hold 4 splice trays in accordance with [figure 2](#) 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 pull out strength shall be 14.0 Newtons (3.1 pounds-force). 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 Hertz.

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-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 TIA-455-3 using the test condition schedule and soak times in accordance with [table VIII](#). 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.

Fluid immersion: Not applicable.

Water pressure: Not applicable.

Flame spread: Not applicable.

Twist: Not applicable.

Cable seal flexing: Not applicable.

Compression resistance: Not applicable.

Impact: Not applicable.

TABLE VIII. Temperature cycling steps.

Step	Action	Temperature °C (°F)	Duration
1	Maintain	Room ambient	4 hours (min.)
2	Ramp to	Low operating temp +0/-3 (+0/-5)	2 hours
3	Maintain	Low operating temp +0/-3 (+0/-5)	2 hours (min.)
4	Ramp to	25±2 (77±4)	2 hours
5	Maintain	25±2 (77±4)	2 hours (min.)
6	Ramp to	High operating temp +3/-0 (+5/-0)	1 hour
7	Maintain	High operating temp +3/-0 (+5/-0)	2 hours (min.)
8	Ramp to	25±2 (77±4)	1 hour
9	Maintain	25±2 (77±4)	2 hours (min.)
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, Fungus-Inert Materials, of MIL-HDBK-454 shall be tested in accordance with TIA-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 decibels.

Discontinuity: No discontinuity shall occur when tested in accordance with TIA-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 decibels 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.

Qualification sample: Two samples shall be subjected to Group I tests. Sample shall be divided, one shall be subjected to the tests in Group II and the other shall be subjected to the tests in Group III (cable retention).

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-455-32
MIL-PRF-24623/6	TIA-455-3	TIA-455-56
MIL-PRF-24712	TIA/EIA-455-5	TIA-455-71
MIL-I-24728/1	TIA-455-6	

CHANGES FROM PREVIOUS ISSUE: Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians:

Army – CR
Navy – SH
Air Force – 85
DLA – CC
NASA – NA

Preparing Activity:

Navy – SH
(Project 6099-2008-001)

Review Activities:

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

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 <http://assist.daps.dla.mil>.