

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

Prepared in accordance with ASME Y14.100

PMIC N/A	PREPARED BY Mary McWilliams	DESIGN ACTIVITY DLA LAND and MARITIME COLUMBUS, OH	
Original date of drawing 16 August 2013	CHECKED BY Mary McWilliams	TITLE CONNECTOR PLUG, EXPANDED BEAM, HYBRID (2 SINGLE MODE & 2 MULTIMODE CHANNELS)	
	APPROVED BY Michael A. Radecki		
	SIZE A	CODE IDENT. NO. 037Z3	DWG NO. 10023
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1. SCOPE

1.1 Scope. This drawing describes the requirements for a hybrid fiber optic connector plug for ground tactical application. The hybrid fiber optic connector plug consists of two multimode channels and two single mode channels utilizing expanded beam technology.

1.2 Part or Identifying Number (PIN). The complete PIN shall be as follows:



TABLE I. Dash number.

Dash number	Fibers (MM and SM)	Channel marking	Figure
01	2 SM	S1, S2	1
02	2 MM	M1, M2	2
03	2 SM and 2 MM	S1, S2, M1, M2	3

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL STANDARDS

- [FED-STD-595/30051](#) - Brown, Flat or Lusterless
- [FED-STD-595/34094](#) - Green, Flat or Lusterless
- [FED-STD-595/37030](#) - Miscellaneous, Flat or Lusterless

DEPARTMENT OF DEFENSE SPECIFICATIONS

- [MIL-C-675](#) Coating of Glass Optical Elements (Anti-Reflection)
- [MIL-PRF-13830](#) Optical Components for Fire Control Instruments; General Specification Governing the Manufacture, Assembly, and Inspection of
- [MIL-PRF-85045/8](#) Cable, Fiber Optic, Radiation Hardened, Cable Configuration Type 1 (Buffered Fiber), Application E (Ground Tactical), Cable Class MM, (Metric)
- [MIL-PRF-83526/20](#) Connector, Fiber Optic Plug, Circular Hermaphroditic, In-Line Mount, 2 and 4 Positions, Expanded Beam.

DEPARTMENT OF DEFENSE STANDARD

- [MIL-STD-1285](#) - Marking of Electrical and Electronic Parts

(Copies of these documents are available online at <http://quicksearch.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

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2.4 Order of precedence. Unless otherwise noted herein, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

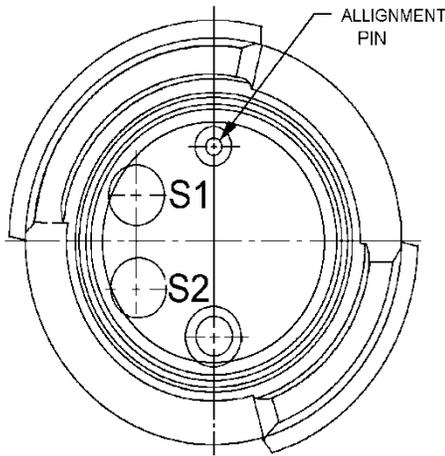


FIGURE 1. Single mode expanded beam connector plug channel marking requirements.

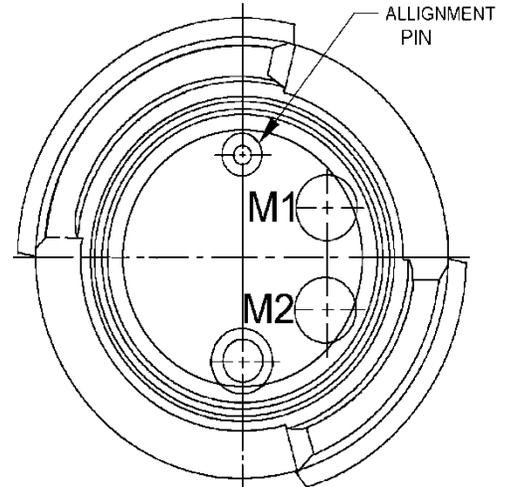


FIGURE 2. Multi-mode expanded beam connector plug channel marking requirements.

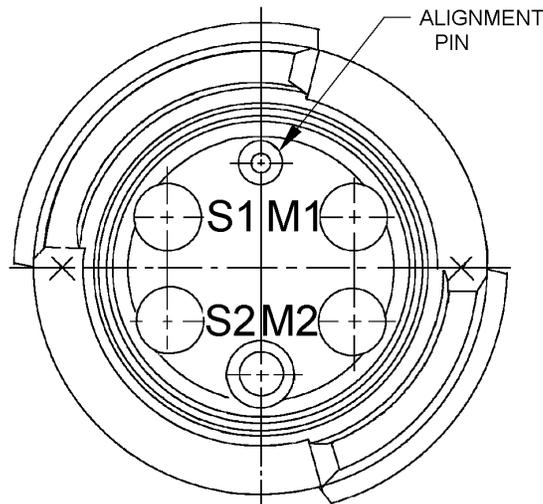


FIGURE 3. Mixed mode expanded beam connector plug channel marking requirements.

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3.1 General. The requirements for acquiring the product described herein shall consist of [MIL-DTL-83526/20](#) as modified by this drawing.

3.2 Interface and physical dimensions. Detailed dimensions shall be as specified in [MIL-DTL-83526/20](#) for the four channel configuration.

3.3 Materials. Materials shall be as specified in [MIL-DTL-83526/20](#) with the following exception. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4 Identification marking.

3.4.1 Item marking (PIN). Item marking shall be applied to the coupling nut in accordance with [MIL-STD-1285](#), except the (part name) shall be marked with the PIN as specified herein (see [1.2](#)), the manufacturer's name or Commercial and Government Entity (CAGE) code, and date lot codes.

3.4.2 Channel marking requirements. Channels shall be identified on both ends of the inserts. See [figure 1](#) for marking on lens end of the insert.

3.4.3 Additional markings. Additional markings shall be as specified in [MIL-DTL-83526/20](#), the colors of the protective cap, rubber grip and boot of the connector plug shall be in accordance with [FED-STD-595](#):

- 01: Green 383 camouflage chip number 34094
- 02: Black camouflage chip number 37030
- 03: Brown 383 camouflage chip number 30051

3.5 Protective cap. Connector plug shall be supplied with a protective cap as specified in [MIL-DTL-83526/20](#).

3.6 Optical requirements.

3.6.1 Insertion loss. Insertion loss is applicable as specified in [MIL-DTL-83526/20](#).

3.6.2 Crosstalk. Cross talk is applicable, as specified in [MIL-DTL-83526/20](#).

3.6.3 Return loss. Return loss is applicable as specified in [MIL-DTL-83526/20](#).

3.6.4 Lens anti-reflection (AR) coating performance.

3.6.4.1 Abrasion resistance: Shall meet the severe abrasion requirements as specified in 3.8.4.1 of [MIL-C-675](#).

3.6.3.2 Lens scratch and dig resistance. Lenses shall have a surface quality of 40/20 and shall pass the scratch and dig requirements in [MIL-PRF-13830](#).

3.7 Optical fiber/cable requirements. Optical fiber/cable requirements shall be in accordance with [MIL-PRF-85045/30](#) for two channel single mode or MIL-PRF-85045/8 for two channel multimode fibers or DLA LAND and MARITIME drawing 09001 for a mixed mode cable.

3.8 Manufacturer eligibility.

3.8.1 Qualified. To be eligible for listing as an approved source of supply on this drawing (see approved sources of supply [6.3](#) and [table IV](#)), a manufacturer shall be listed on the MIL-DTL-83526/20 Qualified Products Database.

3.8.2 Approval testing. To be eligible for listing as an approved source of supply on this drawing (see approved sources of supply [6.3](#) and [table IV](#)), a manufacturer shall perform tests specified in [table II](#).

3.8.3 Interoperability and intermateability. To be eligible for listing as an approved source of supply on this drawing (see approved sources of supply [6.3](#) and [table IV](#)), a manufacturer shall pass interoperability and intermateability testing.

3.9 Workmanship. The connector receptacle shall be uniform in quality and free from any defects that will affect life, serviceability, or appearance.

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4. VERIFICATION

4.1 Sampling and inspection. Unless otherwise specified, sampling and inspection procedures shall be performed in accordance with this drawing and [MIL-DTL-83526/20](#).

4.2 Approved source of supply (Manufacturer eligibility). To be an approved source of supply a manufacturer must complete the following;

4.2.1 Qualified. Manufacturer shall be listed on the MIL-DTL-83526/20 Qualified Products Database. Qualification by similarity requirements of [MIL-DTL-83526/20](#) shall apply.

4.2.2 Approval testing. Manufacturer shall submit results of tests specified in [table II](#) to: DLA Land and Maritime-VAT, P. O. Box 3990, Columbus, Ohio 43218-3990.

TABLE II. Approval testing. 1/

Requirement	Test
3.2	Interface and physical dimensions
3.3	Materials
3.4	Identification marking
3.5	Protective cap
3.6.1	Insertion loss
3.6.2	Cross talk
3.6.3	Return loss
3.9	Workmanship

1/ For approval, sample must pass these tests.

4.2.2 Interperability testing.

- a. Background. DLA Land and Maritime will partner with companies in an effort to verify interoperability of fiber optic connector plugs with other fiber optic connector plugs, (DLA Land and Maritime drawing 10023). This partnership allows the Government to verify the interoperability of manufacturer's connector with that of other participating manufacturers. Your continued participation with this partnering effort is appreciated.
- b. Company agreements. Your company is being requested to provide 2 (two) connector assemblies terminated to cable as specified in paragraph [3.7](#), each channel configured with the appropriate fiber optic leads terminated to ST connectors (see [MIL-DTL-83526/20](#) figure 8) referred to herein as interoperability standards so that the Government can perform interoperability testing. By providing these interoperability standards, your company agrees that these interoperability standards are to be retained by the Government. Also, your company agrees to replace or refurbish these interoperability standards at no cost to the Government as the need arises.
- c. Government agreements & control of interoperability standards. The Government agrees to retain the interoperability standards. Under this agreement, these interoperability standards are to be used only by Government, in-house personnel. Only personnel to be present during interoperability testing are Government, in-house personnel. At no time would other parties have access to or examination of the interoperability standards.
- d. Points of contact. Please inform us if you have any concerns or objections relating to this submittal of test samples. Direct your questions or comments to DLA Land and Maritime-VAT point of contact for fiber optic component testing by telephone: (614) 692-0571 or E-mail: FiberOpticGroup@dla.mil. Otherwise, direct your questions concerning submittal of test samples and vendor costs for interoperability testing to our test laboratory point of contact, Greg Vaughn. He can be contacted by telephone: (614) 692-9891 or E-mail: ElectronicsPTC.SiteManager.DSCC@dla.mil.

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4.3 Conformance inspection. Conformance inspection (inspection prior to delivery) shall consist of inspections specified in [table III](#).

TABLE III Conformance inspection.

Requirement	Inspection
3.2	Interface and physical dimensions
3.4	Identification marking
3.5	Protective cap
3.6.1	Insertion loss

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see [6.2](#)). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use.

6.2 Ordering data. The contract or purchase order should specify the following:

- a. Complete PIN (see [1.2](#)).
- b. Requirements for delivery of one copy of the conformance inspection data or certificate of compliance that parts have passed conformance inspection with each shipment of parts by the manufacturer.
- c. Requirements for packaging and packing.

6.3 Users of record. Coordination of this document for future revisions is coordinated only with the approved source(s) of supply and the users of record of this document. Requests to be added as a recorded user of this drawing may be achieved online at FiberOpticGroup@dla.mil or if in writing to: Defense Supply Center, Columbus, ATTN: DLA Land and Maritime/VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-0571 or DSN 850-0571.

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6.4 Approved source(s) of supply. Current approved source(s) of supply are listed in [table III](#). Additional sources will be added as they become available. Assistance in the use of this drawing may be obtained online at FiberOpticGroup@dla.mil, or by contacting Defense Supply Center, Columbus, ATTN: DLA Land and Maritime-VAT, Post Office Box 3990, Columbus, OH 43218-3990 or by telephone (614) 692-0571 or DSN 850-0571.

TABLE IV Approved source(s) of supply.

DLA Land and Maritime drawing PIN	Vendor similar designation or type number <u>1/</u> , <u>2/</u>	Vendor CAGE	Vendor name and address
10023-01			
10023-02			
10023-03			

1/ Parts must be purchased to the DLA Land and Maritime PIN to assure that all performance requirements and tests are met.

2/ At the time this drawing was developed, no approved sources were available.

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