

FD-2240A

6.3MB OPTICAL LINE TERMINATING MULTIPLEXER
GENERAL MAINTENANCE INFORMATION

1. GENERAL

- 1.01 This section is a cover sheet for the NEC America, Inc., FD-2240A 6.3MB Optical Line Terminating Multiplexer General Maintenance Information. This section is reproduced with permission of NEC America, Inc., and is equivalent to NEC practice NECA 365-407-500, Issue 3.
- 1.02 Whenever this section is reissued the reason(s) for reissue will be listed in this paragraph.
- 1.02 This section provides maintenance concepts, safety considerations, precautions, general maintenance information, and guidelines for using other maintenance practices for the FD-2240A 6.3MB Optical Line Terminating Multiplexer (6.3MB O-LTM).
- 1.04 If corrections are required in the attached document, use Form-3973 as described in Section 000-010-015.
- 1.05 If equipment design and/or manufacturing problems should occur, refer to Section SW 010-522-906 for procedures on filing an Engineering complaint.

2. ORDERING PROCEDURE

- 2.01 To order additional copies of this practice, use NECA 365-407-823SW as the section number.

3. REPAIR/RETURN

- 3.01 Malfunctioning units may be returned to NEC America, Inc., for repair.

Attachment: NEC America, Inc.
FD-2240A 6.3MB Optical Line
Terminating Multiplexer
General Maintenance Information

PROPRIETARY

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**FD-2240A 6.3MB OPTICAL LINE TERMINATING MULTIPLEXER
GENERAL MAINTENANCE INFORMATION**

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CONTENTS		Page
1. INTRODUCTION		2
2. MAINTENANCE CONCEPTS		3
3. SAFETY CONSIDERATIONS		4
4. PRECAUTIONS		5
5. PREVENTIVE MAINTENANCE		7
6. CORRECTIVE MAINTENANCE		7
7. SPARE UNITS AND COMPONENTS		7
8. TEST EQUIPMENT AND ACCESSORIES		7
9. MAINTENANCE TEST		7

ILLUSTRATION

Figure	Title	Page
4-1	Installing Protective Dust Caps	6

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TABLE

Table	Title	Page
1-1	FD-2240A Maintenance Practices	3

1. INTRODUCTION

1.01 Information and instructions required for maintaining the FD-2240A 6.3MB Optical Line Terminating Multiplexer (6.3MB O-LTM) are described in separate NEC practices. Each practice covers a specific area of maintenance. This practice provides maintenance concepts, safety considerations, precautions, general maintenance information, and guidelines for using other maintenance practices.

1.02 Issue 3 of this practice supersedes Issue 2 of NECA 365-407-500. The practice provides expanded coverage and corrects errors and omissions in the superseded document.

1.03 Whenever this practice is reissued, the reason for reissue will be listed in this paragraph.

1.04 Maintenance tasks should be performed in the following order in accordance with practices shown in Table 1-1:

- (1) Preventive maintenance
- (2) Corrective maintenance
- (3) Maintenance test

Table 1-1
FD-2240A Maintenance Practices

PRACTICE NUMBER	TITLE
NECA 365-407-500	FD-2240A 6.3MB Optical Line Terminating Multiplexer General Maintenance Information
NECA 365-407-501	FD-2240A 6.3MB Optical Line Terminating Multiplexer Preventive Maintenance
NECA 365-407-502	FD-2240A 6.3MB Optical Line Terminating Multiplexer Corrective Maintenance
NECA 365-407-503	FD-2240A 6.3MB Optical Line Terminating Multiplexer Spare Units and Components
NECA 365-407-504	FD-2240A 6.3MB Optical Line Terminating Multiplexer Test Equipment and Accessories
NECA 365-407-505	FD-2240A 6.3MB Optical Line Terminating Multiplexer Maintenance Test

2. MAINTENANCE CONCEPTS

2.01 Most FD-2240A maintenance is carried out using the controls, indicators, and test point jacks on the units. Periodic preventive maintenance is performed without interrupting service. Redundant configuration equipment provides one-for-one protection, thereby minimizing outages due to unit failure. If a working system fails, the system is replaced by the redundant standby system and an alarm is issued. Maintenance personnel can usually isolate the trouble to a single faulty unit by observing the red FAIL indicators on the front of units.

2.02 In redundant configuration, system 2 is standby for system 1 (in this case, ♦SYS 1♦ is on line) and system 4 is standby for system 3 (in this case, ♦SYS 3♦ is on line). The nonredundant configuration equipment is out of service when a unit (except PWR units) fails. Normally, the PWR units operate in parallel to duplicate the power supplies.

2.03 In most cases, faulty units can be replaced without interrupting service. All units except the power supply units can be removed and replaced with power on. Because no priority is assigned to the protected systems, an on-line system will remain on-line after the faulty unit is replaced.

3. SAFETY CONSIDERATIONS

3.01 The FD-2240A 6.3MB O-LTM 6M OPT INF units utilize Laser Diode (LD) and Light Emitting Diode (LED) as transmitters. The LED and LD emit 1,310 nm lightwaves into optical fiber cable. The emitted light is near the end of the visible spectrum and is officially classified as invisible.

DANGER

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. The warning sign shown below will appear on the equipment in areas where direct exposure to the laser beam is possible.

DANGER Invisible laser radiation when open
AVOID DIRECT EXPOSURE TO BEAM

To avoid laser radiation, never look in the optical connectors on the 6M OPT INF unit or fiber cords.

3.02 The FD-2240A O-LTM conforms to the provisions of 21 CFR 1040.10 and is classified as a class 1 laser product. The label shown below is attached to the rear cover of the shelf.



4. PRECAUTIONS

4.01 Certain precautions should be taken during maintenance operations to reduce the possibility of equipment damage or service interruption. It is recommended that maintenance personnel read maintenance instructions carefully before performing maintenance. The following is a list of precautions to be taken with regard to the various FD-2240A plug-in units.

- (1) PWR unit: Before removing a PWR unit (-24 vdc, -48 vdc, or 117 vac), measure the output voltages of redundant unit. After verifying that the redundant unit output voltages are correct, set ON/OFF switch on the unit to be removed to OFF position.
- (2) MUX and 6M OPT INF units: Before installing the MUX or 6M OPT INF unit, set the unit RLB switch to OFF position.
- (3) Protected system units: Before removing the protected units (MUX, DMUX, 6M OPT INF unit), check the ON LINE indicator on the redundant unit to ensure it is online.
- (4) CTRL unit: Before installing the CTRL unit, set the SEL switch to middle position.

4.02 Due to the delicate nature of optical fiber, care should always be taken when connecting and disconnecting the optical fiber cables or when installing and removing any unit located near the optical fiber cables. If cables are to remain disconnected for any length of time, install dust caps on the optical fiber cable connectors and unit optical adapters as shown in Figure 4-1.

4.03 Refer to NECA Practice NECA 365-407-202 for detailed procedures for cleaning optical fiber cable connectors and performing optical patch (or pigtail) fiber cord connections. In addition, the following precautions should be observed:

- (1) Do not stress fiber cords. Do not apply more than 5 kg (11 lb), or the cord may break.
- (2) Do not twist fiber cords.
- (3) Do not bend fiber cords. A radius smaller than 38 mm (1.5 in.) may break or distort fiber cords.
- (4) Make sure your hands are clean when handling fiber cords and making connections.

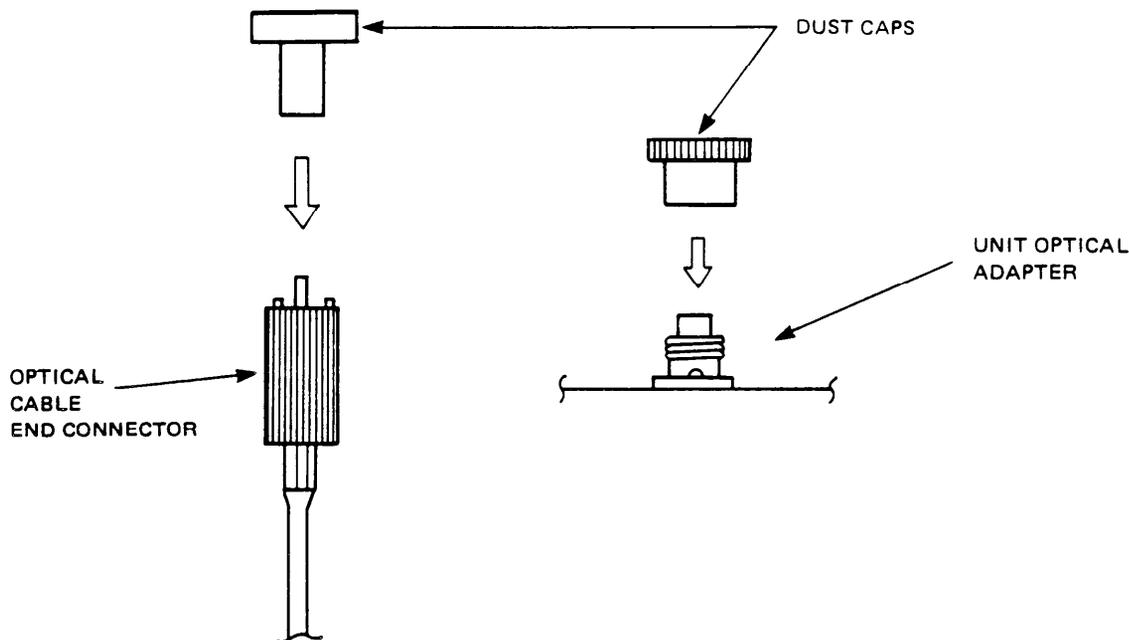


Figure 4-1 Installing Protective Dust Caps

5. PREVENTIVE MAINTENANCE

5.01 To maintain high quality communications, several items should be periodically checked. The required periodical maintenance tasks are, (1) PWR unit output voltage check, (2) removal of dust and dirt and (3) alarm LED indication check. The preventive maintenance procedures are provided in NEC practice NECA 365-407-501.

6. CORRECTIVE MAINTENANCE

6.01 Corrective maintenance consists of alarm indication, troubleshooting to the unit level, and replacing the faulty unit. The corrective maintenance procedures are provided in NEC practice NECA 365-407-502.

7. SPARE UNITS AND COMPONENTS

7.01 Spare units and components are described in NEC practice NECA 365-407-503.

8. TEST EQUIPMENT AND ACCESSORIES

8.01 The test equipment and accessories recommended by NEC to perform preventive and corrective maintenance are listed in NEC practice NECA 365-407-504.

9. MAINTENANCE TEST

9.01 The tests used for trouble location and maintenance checks are provided in NEC practice NECA 365-407-505.