

GIGAswitch/FDDI System

Installation and Service Guide

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This document provides instructions for installing the GIGAswitch/FDDI System.

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Preface

This document provides instructions for installing and servicing GIGAswitch/FDDI System.

Intended Audience

This document is intended for customers and service personnel who are experienced in installing and servicing network hardware.

Document Structure

This document is structured as follows:

- **Chapter 1** describes the procedures for installing the GIGAswitch/FDDI System. These procedures include verifying the site preparation, unpacking the system, preparing the rack, installing the system chassis in the rack, setting up electrostatic discharge (ESD) protection, and installing the system module.
- **Chapter 2** describes the procedures for installing FDDI daughter cards into the GIGAswitch/FDDI System.
- **Chapter 3** describes the procedures for replacing modules in the GIGAswitch/FDDI System. These procedures include replacing the following modulus: logic, modules, daughter cards, fan tray assembly, ac power interface unit, PSA, and the PSC card.
- **Chapter 4** describes the procedures for removing the GIGAswitch/FDDI System from the rack. These procedures include removing the upper plenum, detaching the empty GIGAswitch/FDDI System from the rack, and lowering the empty system.
- **Chapter 5** describes the procedures for replacing the GIGAswitch/FDDI System backplanes. These procedures include accessing the backplanes, replacing the power backplane, replacing the logic backplane, and restoring the system.
- **Appendix A** describes the procedures for initiating the module self-tests (MSTs) and provides instructions for evaluating the results of the MSTs.
- **Appendix B** describes the function of each LED located on the power, logic, and cooling modules.
- **Appendix C** provides the physical, electrical, and environmental specifications for the GIGAswitch/FDDI System.

Additional Documentation

The following is a list of additional documentation:

Document	Part Number
<i>GIGAswitch/FDDI System Manager's Guide</i>	EK-GGMGA-MG
<i>GIGAswitch/FDDI System OBM Guide</i>	EK-GOBMG-MG
<i>GIGAswitch/FDDI System SNMP Guide</i>	EK-GSNMP-MG
<i>GIGAswitch/FDDI System Special Features</i>	EK-GGGSF-UM
<i>GIGAswitch/FDDI System Release Notes</i>	AA-PZT9D-TE

Related Documentation

Additional information is available in the following documents:

Document	Part Number
<i>FDDI Single-mode Fiber (SMF) modPMD</i>	AV-QK1PA-TE
<i>DECconnect System Requirements Evaluation Workbook</i>	EK-DECSY-EG

Conventions

The following conventions are used in this document:

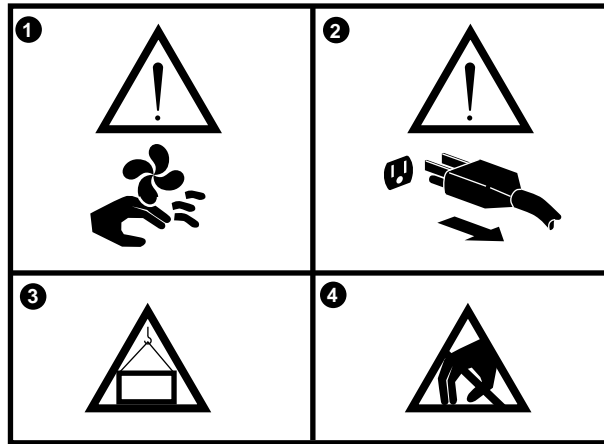
Bold typeface A word or phrase is being emphasized to the reader.

Italic typeface The complete titles of manuals.

Return You press the return key on the keyboard.

Ctrl/O You must hold down the key labeled Ctrl while you press another key or a pointing device button.

Safety Symbols



mkv-0281-13

Number/Symbol	Description
❶/ Caution—Rotating fans	Allow the fans to run down before removing the fan tray from the unit.
❷/ Caution	Remove system power before removing or installing the system module.
❸/ Warning	The weight of this unit when empty is 31.75 Kg (70 lb). Use two people to lift the unit.
❹/ Caution—Electrostatic sensitive device	Take precautions to protect against equipment damage due to electrostatic discharge (ESD).

System Installation Procedure

Installation

The GIGAswitch/FDDI System installation consists of the following steps:

1. Unpacking the system
2. Performing the system test
3. Preparing the rack
4. Installing the system chassis in the rack
5. Installing the system modules
6. Connecting the out-of-band management (OBM) terminal

The following sections in this chapter describe these steps. Chapter 3 describes module replacement procedures.

Unpacking the System

Time Required 15 minutes

Tools Required Band cutter

Procedures

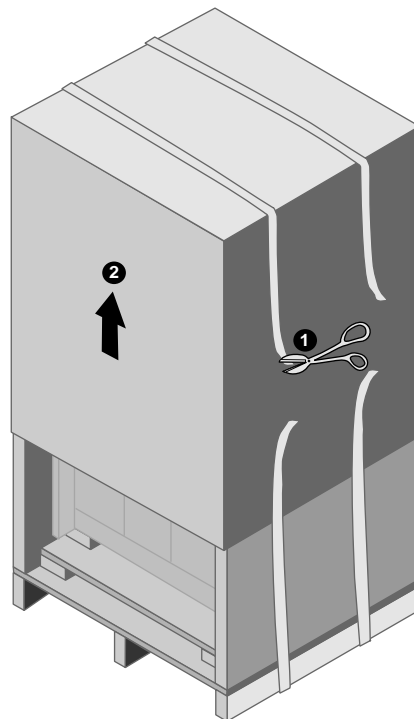
- Remove the packing material.
- Identify the contents of the shipping container.

Remove the Packing Material

Note

DO NOT remove the GIGAswitch/FDDI System from the pallet. The pallet will serve as a temporary operational platform during system module testing.

Step	Action
1	Locate the banding ❶ and the shipping container ❷.



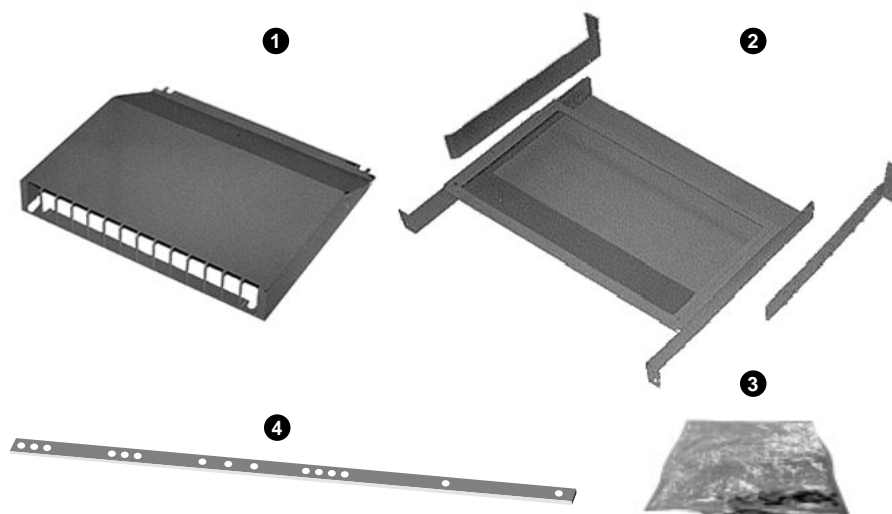
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Step	Action
2	Using a band cutter, cut the banding ❶ from the shipping container and pallet.
3	Use two people to slide the shipping container ❷ up and off the GIGAswitch/FDDI System.
4	Remove the packing material, the rackmount kit, and the accessory kit.
5	Remove the shipping bag from the GIGAswitch/FDDI System.

Shipping Container

Description	Part Number
Rackmount kit	70-30580-01
GIGAswitch/FDDI System chassis	DEFGA-CA

Rackmount Kit



mk28156

Number/Name	Part Number	Function
❶/Upper plenum	74-45687-01	Directs air from the front of the rack into the top of the GIGAswitch /FDDI System and down through the GIGAswitch /FDDI System.

Number/Name	Part Number	Function
②/Lower plenum (with brackets)	70-30586-01	Supports the GIGAswitch/FDDI System and directs the air exhausting from the fans in the GIGAswitch/FDDI System to the rear of the rack.
③/Hardware container	N/A	Contains the 18 clip nuts and 23 screws used to install the lower plenum, the GIGAswitch/FDDI System, and the upper plenum.
④/Template	36-40161-01	Used to determine the location on the rack for the clip nuts.

System Chassis

The GIGAswitch/FDDI System chassis has the following configuration:

- Logic cage
 - Slot 3—empty
 - Slot 4—empty
 - Slot 7—CLK card
 - Slot 8—CBS card
 - All others covered
- Power/cooling
 - Left power slot—empty
 - Right power slot—covered
 - Left fan tray—present
 - Right fan tray—present
 - PSA—present

See Chapter 1 of the *GIGAswitch/FDDI System Manager's Guide* for a description of the logic and power/cooling modules.

Performing System Test

It is recommended that an initial power-on be performed prior to mounting the GIGAswitch/FDDI System chassis into a rack. This requires a power supply to be inserted into the left power supply slot. See instructions for installing a power supply and for applying power later in this chapter.

When power is applied, module self test (MST) is automatically performed on all modules present.

Evaluating the Results of the MST

Observe the operational status of the GIGAswitch/FDDI System after the power-on MST completes. If one or more of the following conditions exists on any system module see Appendix A.

- One or more of the LEDs on the GIGAswitch/FDDI System remains solid amber or solid red.
- None of the LEDs light.

Refer to Appendix B for more information and the location of each LED on the power, logic, and cooling modules.

After the initial power test the GIGAswitch/FDDI System is ready to load into a rack. Before doing so, remove all power and cooling modules from the chassis. The following modules should be removed:

- Power supply
- 2 fan trays
- PSA

Refer to Chapter 3 for removal instructions.

Preparing the Rack

Time Required 30 minutes

Tools Required Number 2 cross-point screwdriver, and a pencil

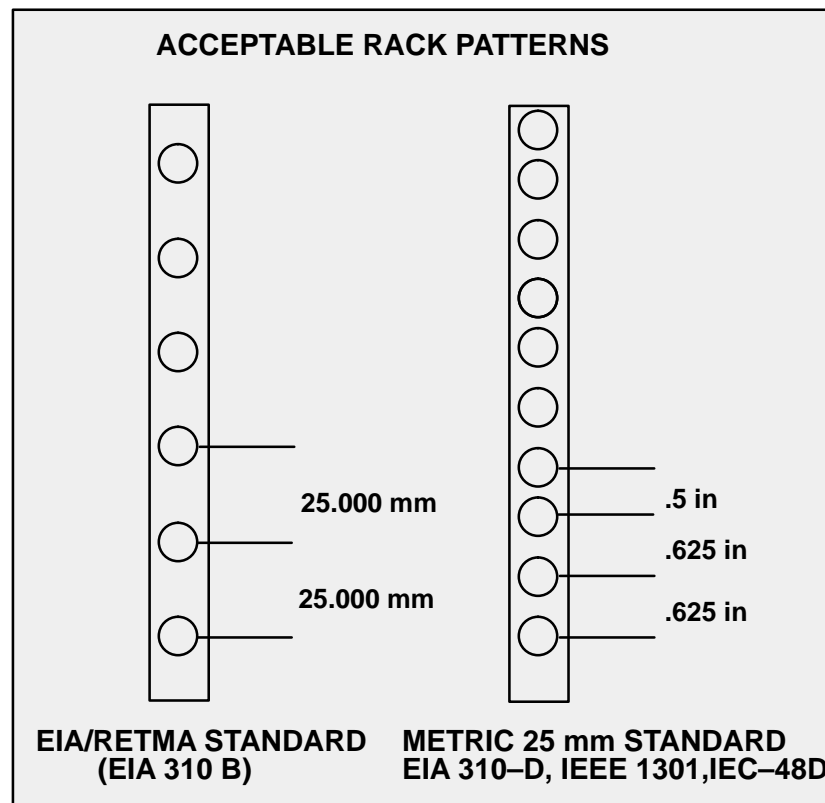
Procedures

- Install the clip nuts
- Install the lower plenum

Rack Space

A grounded rack 47.5 cm (19 in) wide with 90.0 cm (35.4 in) contiguous vertical space is required for the installation of the GIGAswitch/FDDI System, the lower plenum, and the upper plenum. The template provided in the rackmount kit is 90.0 cm (35.4 in) long and can be used to verify the contiguous space.

The spacing between the holes of the rack should comply with EIA/RETMA standard EIA 310B or one of the metric 25 mm standards (EIA 310-D, IEEE 1301, or IEC-48D). See the following figure.



Install the Clip Nuts

- Mark the position for the clip nuts
- Attach the clip nuts

Mark the position of the clips using Figure 1–1 and Table 1–1.

Figure 1–1 Clip Positions

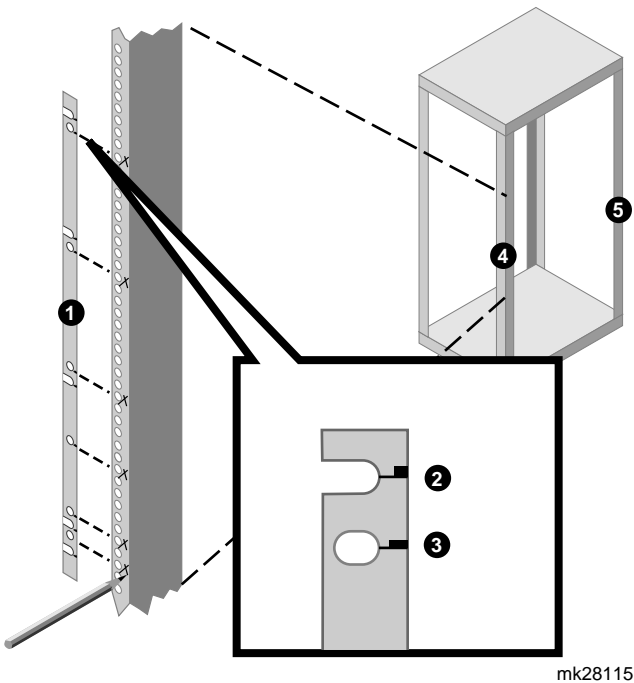


Table 1–1 Clip Positions

Step	Action
1	Locate the template ❶ and distinguish between the metric markings ❷, and the RETMA ¹ markings ❸.
2	Locate the front rails ❹, and the rear rails ❺.
3	Identify the area in the rack designated for the GIGAswitch/FDDI System.

¹RETMA—Radio Electronics Television Manufacturer’s Association

(continued on next page)

Table 1–1 (Cont.) Clip Positions

Step	Action
4	<p>Position the template ❶ behind one of the front rails ❷. Match the markings on the template ❶ to the holes in the rail, using one of the following:</p> <ul style="list-style-type: none"> • Metric markings ❷ (open slot) for metric racks. • RETMA markings ❸ (closed slot) for RETMA racks. <p>If the whole template does not fit in the spaced reserved, move equipment, as necessary, to reserve the additional space.</p>
5	Mark the position on the front rail ❹ for the two clip nuts associated with the lower plenum and the six clip nuts associated with the GIGAswitch/FDDI System.
6	Repeat steps 4 through 5 for the other front rail ❹.
7	Repeat step 4 for a rear rail ❺.
8	Mark the position on the inside of the rear rail ❺ for the clip nut associated with the lower plenum bracket.
9	Repeat steps 7 and 8 for the other rear rail ❺.

Attach Clip Nuts

Complete the following steps to attach the clip nuts to the front and rear rails of the rack using Figure 1–2 and Table 1–2:

Figure 1–2 Attach Clips

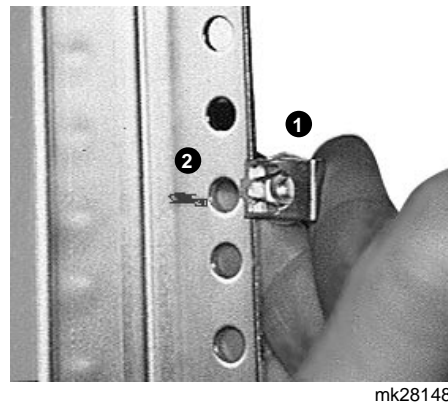


Table 1–2 Attach Clips

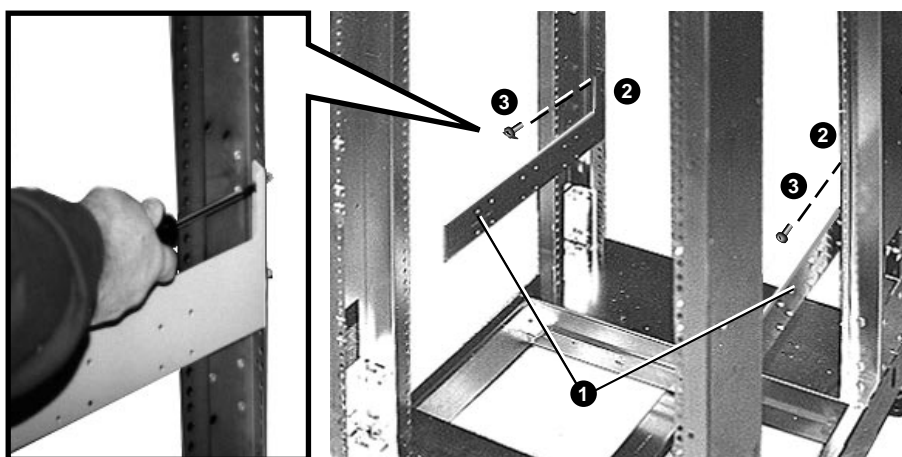
Step	Action
1	Locate the clip nuts ❶, and the marked holes ❷ on the rack.
2	Place eight clip nuts over the marked holes on the right front rail of the rack. Orient each clip nut ❶ so the screw can be installed from the front of the rack, and press each clip nut onto the marked hole ❷.
3	Repeat step 2 for the left front rail.
4	Place one clip nut over the marked holes on the right rear rail of the rack. Orient the clip nut ❶ so the screw can be installed from the front of the rack, and press each clip nut onto the marked hole ❷.
5	Repeat step 4 for the left rear rail.

Install the Lower Plenum

- Attach the lower plenum brackets.
- Attach the lower plenum.

Complete the following steps to attach the lower plenum bracket to the rear rails of the rack using Figure 1–3 and Table 1–3:

Figure 1–3 Lower Plenum Bracket



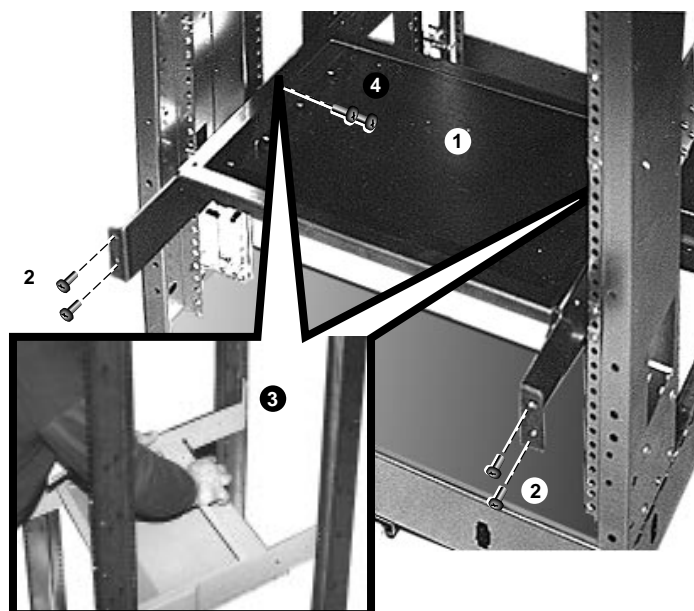
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Table 1–3 Lower Plenum Bracket

Step	Action
1	Locate the hole and the attached pin on the rear of the lower plenum brackets ❶, rear rails ❷, two screws ❸ used to attach the lower plenum brackets to the rear rails of the rack, and the clip nuts (not shown) on the rear rails of the rack.
2	Align the hole and the attached pin of the right lower plenum bracket ❶ with the corresponding clip nut and hole on the inside of the rear rail ❷, and insert the pin of the right lower plenum bracket ❶ into the corresponding hole in the rack.
3	Attach the right lower plenum bracket to the right rear rail ❷. Using a number 2 cross-point screwdriver, install one screw ❸.
4	Repeat steps 2 and 3 for the left lower plenum bracket ❶.

Complete the following steps to attach the lower plenum to the rack and to the lower plenum brackets using Figure 1–4 and Table 1–4:

Figure 1–4 Lower Plenum



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Table 1–4 Lower Plenum

Step	Action
1	Locate the lower plenum ❶, the four clip nuts and associated screws ❷, the right and left lower plenum bracket ❸, and the two screws ❹ used to connect the right and left lower plenum brackets to the lower plenum.
2	Align the holes in the brackets on the lower plenum ❶ with the clip nuts on the front rails of the rack designated for the lower plenum ❶.
3	Attach the lower plenum ❶ to the front rails of the rack. Using a number 2 cross-point screwdriver, install the four screws ❷.
4	Attach the lower plenum ❶ to the right plenum bracket ❸. Using a number 2 cross-point screwdriver, install the two screws ❹.
5	Repeat step 4 for the left plenum bracket.

Installing System Chassis in the Rack

Time Required 45 minutes

Tools Required Adjustable wrench, number 2 cross-point screwdriver, and ESD equipment

Procedures

- Remove the power and cooling modules.
- Remove the GIGAswitch/FDDI System from the pallet.
- Place the GIGAswitch/FDDI System on the lower plenum.
- Attach the GIGAswitch/FDDI System to the rack.
- Attach the GIGAswitch/FDDI System to the upper plenum.

Remove Power and Cooling Modules

Before installing the GIGAswitch/FDDI System in the rack, remove all power and cooling modules. The following modules should be removed:

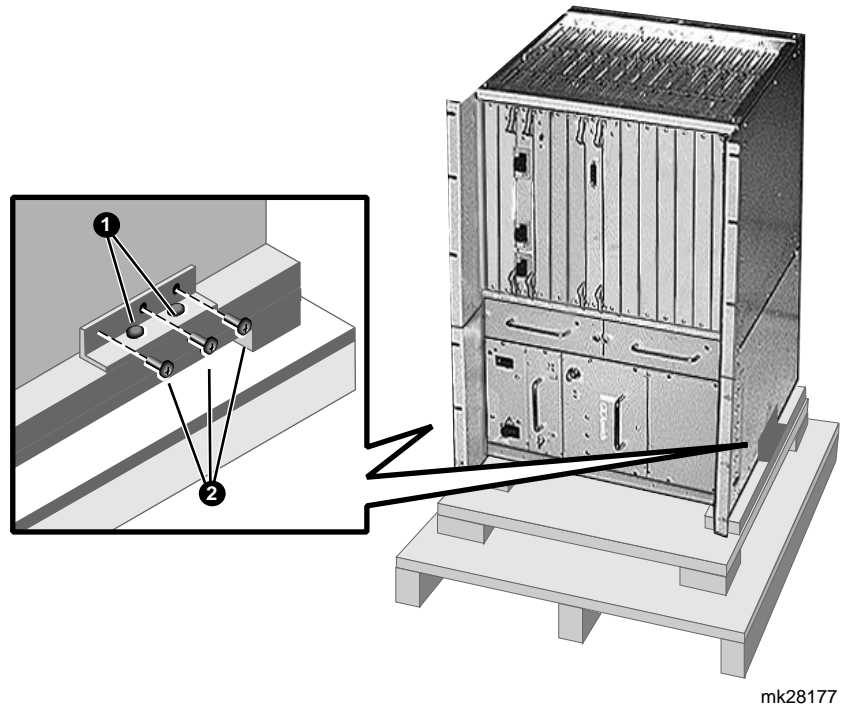
- Power supply
- 2 Fan trays
- PSA

See Chapter 3 for replacement instructions.

Remove System from Pallet

Complete the following steps to remove the GIGAswitch/FDDI System using Figure 1–5 and Table 1–5:

Figure 1–5 Pallet



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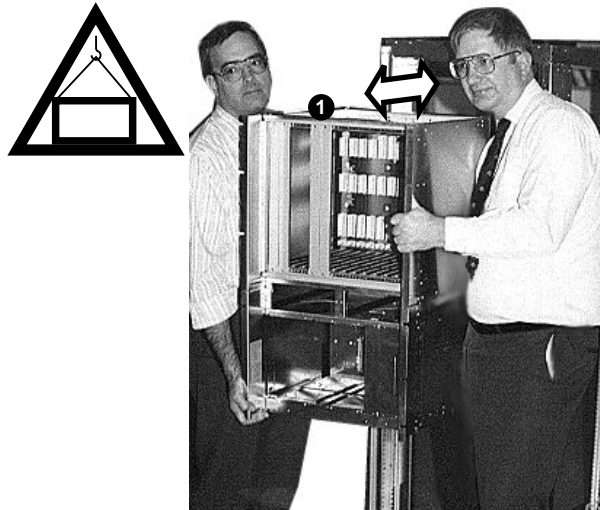
Table 1–5 Pallet

Step	Action
1	Locate the four screws ❶ attaching the brackets to the pallet and the six screws ❷ attaching the brackets to the GIGAswitch/FDDI System.
2	Using the adjustable wrench, loosen the four screws ❶ attaching the brackets to the pallet.
3	Using the adjustable wrench, remove the six screws ❷ attaching the brackets to the GIGAswitch/FDDI System.

**Place the
System on
Lower Plenum**

Warning

The empty GIGAswitch/FDDI System weighs 31.75 kg (70 lbs). Use two people to lift the unit.



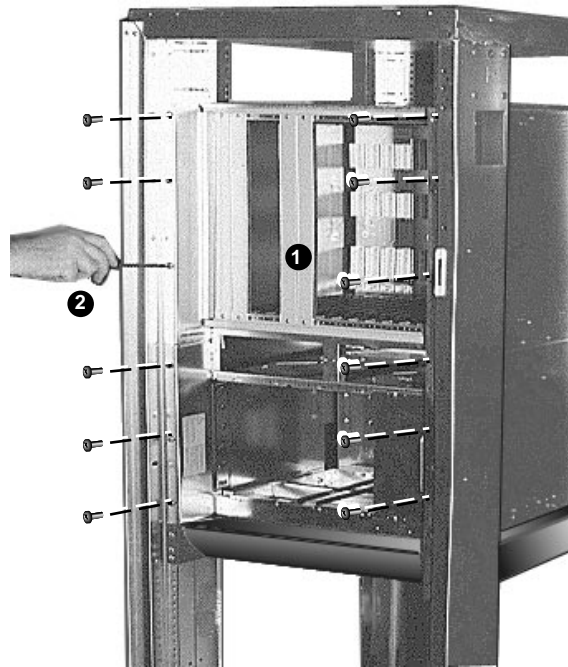
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Step	Action
1	Use two people to lift the empty GIGAswitch/FDDI System ❶ to the height of the lower plenum in the rack.
2	Gently slide the empty GIGAswitch/FDDI System ❶ into the rack, placing it onto the lower plenum.

Attach System to Rack

Complete the following steps to attach the GIGAswitch/FDDI System to the rack using Figure 1–6 and Table 1–6:

Figure 1–6 System Rack



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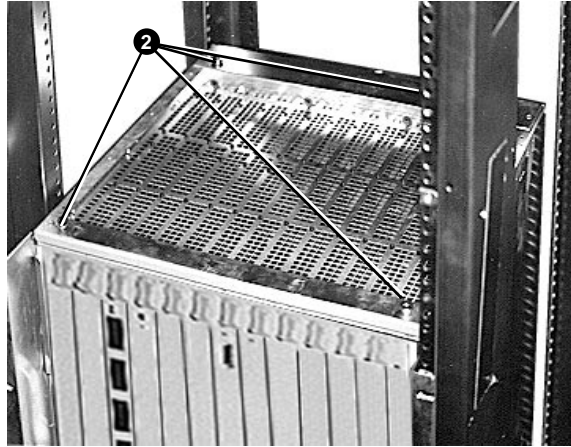
Table 1–6 System Rack

Step	Action
1	Locate the GIGAswitch/FDDI System ❶, the 12 clip nuts (not shown) designated for the GIGAswitch/FDDI System, and the 12 screws ❷.
2	Align the holes in the GIGAswitch/FDDI System ❶ with the corresponding clip nuts on the rack.
3	Using a number 2 cross-point screwdriver partially start the 12 screws ❷ beginning with the bottom screws.
4	Using a number 2 cross-point screwdriver finish tightening the 12 screws ❷.

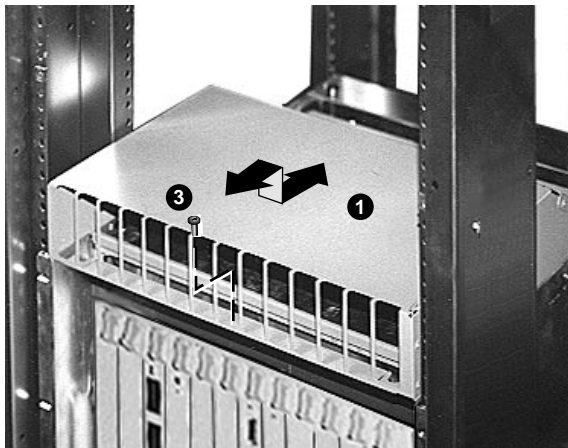
Attach Upper Plenum

Complete the following steps to attach the upper plenum using Figure 1-7 and Table 1-7:

Figure 1-7 Upper Plenum



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mkv-0281-65

Table 1–7 Upper Plenum

Step	Action
1	Locate the upper plenum ❶, the four shoulder screws ❷, and the mounting screw ❸.
2	Place the upper plenum ❶ on the GIGAswitch/FDDI System. Slide the upper plenum in until it catches under the four shoulder screws ❷.
3	Using a number 2 cross-point screwdriver install the mounting screw ❸ to attach the upper plenum ❶ to the GIGAswitch/FDDI System.

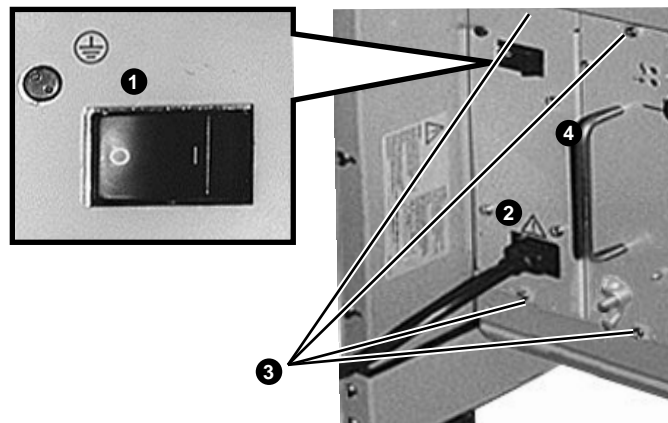
Installing System Modules

Once the system is securely mounted in the rack the system modules can be installed. These modules should be installed in the following order:

1. Power interface unit(s)
2. PSA
3. Fan trays
4. Logic modules

Install Power Interface Unit(s)

Step	Action
1	Locate the power switch ❶, the power cord ❷, the four screws ❸ that fasten the selected module to the GIGAswitch/FDDI System, and the handle ❹ of the selected module.



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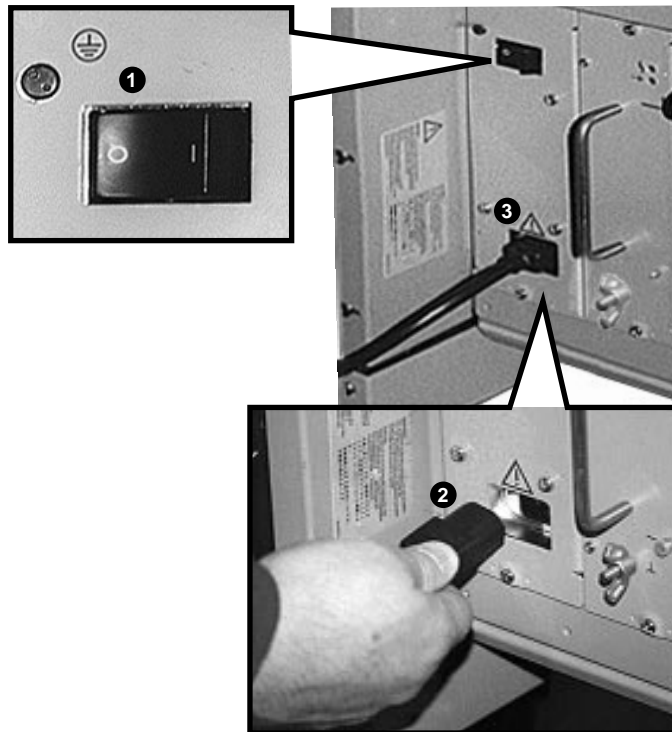
Step	Action
2	Align the selected module with the module guides of the slot designated for the module.
3	Grasp the handle ❹ and slide the module into the unit.
4	Using a number 2 cross-point screwdriver tighten the four screws ❸.
5	Place the power switch ❶ in the 0 (OFF) position.
6	Plug the power cord ❷ into the power connector and then into the connector for the primary power source.

Apply Power

Complete the following steps to apply power to the GIGAswitch/FDDI System:

Step	Action
1	Locate the power switch, ❶, the power cord ¹ ❷ and the power connector ❸.

¹Some power cords are shipped separately in country kits.



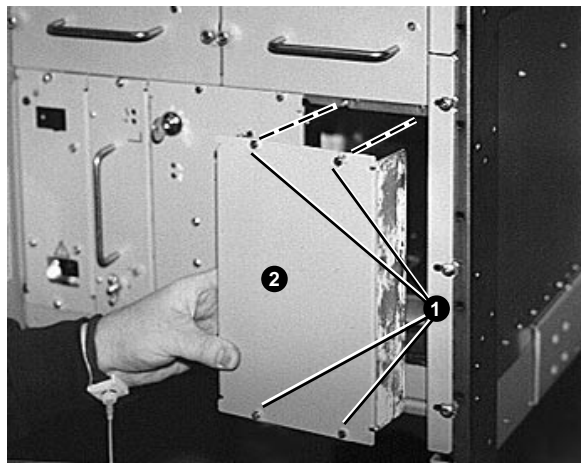
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Step	Action
2	Place the power switch ❶ in the 0 (OFF) position.
3	Plug the power cord ❷ into the power connector ❸ and then into the connector for the primary power source.
4	Place the power switch ❶ in the 1 (ON) position.

Install a Power Supply Filler Panel

Complete the following steps to install a power supply filler panel:

Step	Action
1	Locate the screws ❶ that fasten the power supply filler panel ❷ to the GIGAswitch/FDDI System.



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Step	Action
3	Align the power supply filler panel with the associated holes in the system.
4	Tighten the 2 upper and 2 lower screws ❸ using a number 2 cross-point screwdriver.

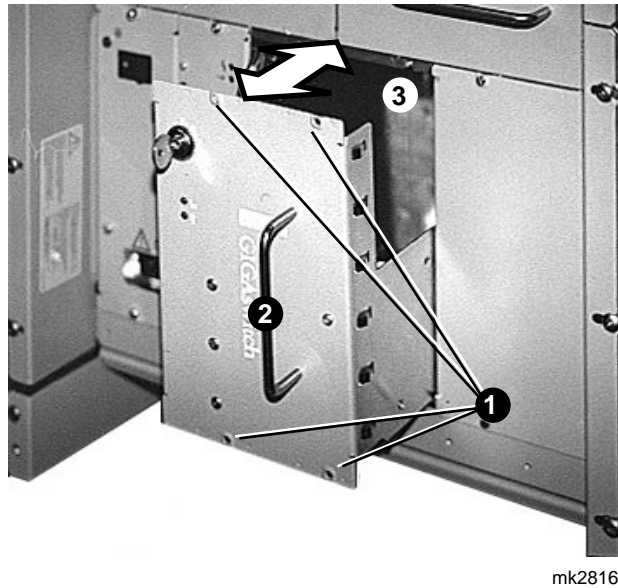
Removing a Power Supply Filler Panel

Complete the following steps to remove a power supply filler panel:

Step	Action
1	Locate the screws ❶ that fasten the power supply filler panel ❷ to the GIGAswitch/FDDI System.
2	Remove the two upper and the two lower screws ❸ using a number 2 cross-point screwdriver.
3	Lift the power supply filler panel ❷ away from the GIGAswitch/FDDI System.

Install PSA

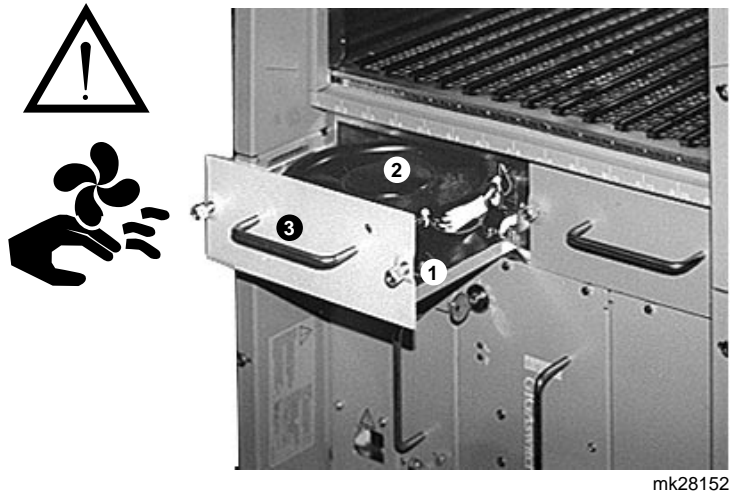
Step	Action
1	Locate the four screws ❶ that fasten the module to the GIGAswitch/FDDI System, the handle ❷ of the module, and the slot ❸ designated for the module.



Step	Action
2	Align the module with the module guides of the slot ❸ designated for the module. Lower the rear of the module slightly to allow the lip on the upper rear edge of the module to clear the upper edge of the slot ❸ designated for the module.
3	Slide the module into the unit. Grasp the handle ❷ with one hand and support the bottom of the module with your other hand.
4	Using a number 2 cross-point screwdriver tighten the four screws ❶ .

Install Fan Trays

Step	Action
1	Locate the two fasteners ❶ that attach the selected fan tray assembly ❷ to the GIGAswitch/FDDI System, and the handle ❸ of the selected fan tray assembly.



Step	Action
2	Align the fan tray assembly (LED to the upper right of the handle) ❷ with the module guides of the slot designated for the fan tray assembly.
3	Slide the fan tray assembly ❷ into the GIGAswitch/FDDI System.
4	Tighten the two fasteners ❶.
5	Repeat steps 1 through 4 to install the other fan tray assembly.

Logic Modules

Before any logic modules are installed ESD protection needs to be set up.

Set up ESD Protection

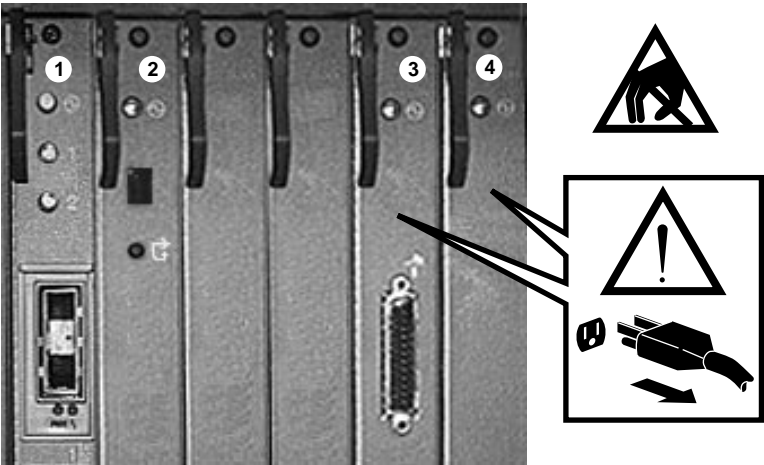
Protect the logic modules against damage from electrostatic discharge (ESD) by using:

- Static-free containers for long-term storage
- Grounded ESD wristband while installing and removing modules
- Grounded ESD mat for tempory storage

The Portable Static-Dissipative Field Service Kit (Part No. 29-26246) is used to protect ESD-sensitive modules against damage. Complete the following steps to set up and maintain a static-free area:

Step	Action
1	Ground the unit. The unit is grounded through the power cord when it is connected between the unit and the primary power source.
2	Lay out the static-dissipative work surface (ESD mat) on a flat surface.
3	Connect the ground cord assembly to the ESD mat and to an unpainted surface on the unit.
4	Wear the ESD wristband and attach it to the ground cord assembly.

Description of the Logic Modules



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Logic Slot Usage

Module	Module
❶ LINECARD	❸ Clock card
❷ SCP card	❹ CBS card

There are several factors to be considered in deciding which modules should occupy which slots. The slots are numbered 1 through 14, starting at the left. The CLK and CBS modules must always be in slots 7 and 8 respectively. Linecards and SCP modules can occupy any of the other slots. Slots 1 through 4, 13, and 14 are 2-port slots. 4-port linecards should not be in these slots. Slots 5, 6, and 9 through 12 are 4-port slots. 2-port and 4-ports linecards will operate properly in these slots. It is recommended that logic modules be placed in slots according to the following table to maximize crossbar port availability and cooling efficiency.

Modules	Order of Slot Utilization	Comment
CLK	7	Must occupy this slot
CBS	8	Must occupy this slot
SCP	4, 13	SCP should occupy a 2-port slot
FGL-2, AGL-2	3, 2, 14, 1, 13 (unless 2nd SCP is present), 10, 12, 11, 6, 9, 5	Use 2-port slots first
FGL-4	5, 9, 6, 11, 12, 10	Only use 4-port slots

While this is a recommended configuration, the user is free to place modules in any slot designated for its function.

Note

For certain revisions of the crossbar (CBS) module, slot 10 acts as a 2-port slot. If it is required to place a FGL-4 in slot 10, the proper CBS card must be present.

Linecards

Note

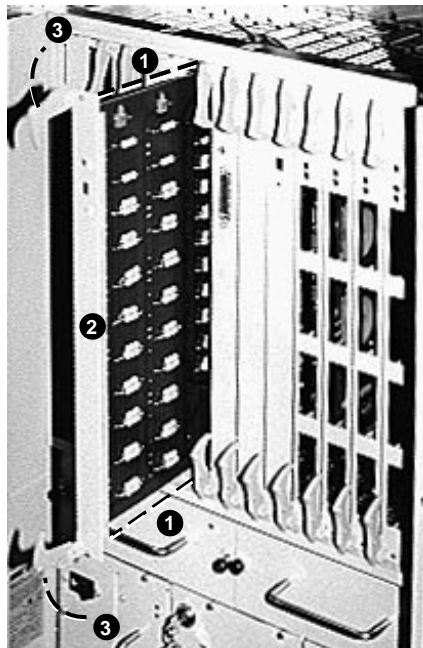
After the power supply is installed be sure the power cord is connected to a grounded power source before installing any logic modules.

Before installing a linecard in the chassis be certain that the desired linecard PMDs are present on the linecard. Linecards can be ordered with PMDs preinstalled, or with no PMDs. See Chapter 2 for information on how to install FDDI PMDs. For information on how to install MOD-PHY daughter cards in AGL-2 modules, see the GIGAswitch/FDDI AGL-2 Manager's Reference Guide.

The following table list the steps required to insert a linecard in the GIGAswitch/FDDI System:

Table 1–8 Linecard

Step	Action
1	Locate the screws 1 that fasten the selected module 2 to the GIGAswitch/FDDI System and the ejectors 3 used to seat the module.



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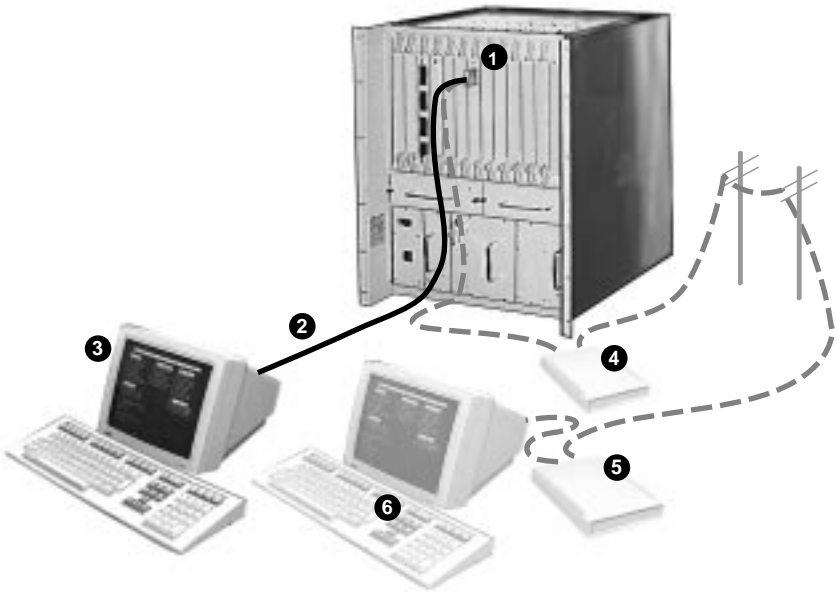
Step	Action
2	Set up the ESD equipment.
3	Wear the ESD wristband.
4	Align the module (component side facing right) with the upper and lower guides, and gently slide the module ❷ into the unit.
5	Move the ejectors ❸ inward to seat the module ❷ in the unit.
6	Using a number 2 cross-point screwdriver tighten the upper and lower screws ❶.

Connecting the OBM

An out-of-band management (OBM) port provides a limited set of functions for initialization, security, and diagnostics of the GIGAswitch/FDDI System.

OBM Terminal The OBM terminal connects directly, or through a modem, to the OBM port on the CLK card. A terminal, with modems meeting CCITT V.24, V.28, or V.32 standards, and associated cables are required. Figure 1–8 shows how to connect the OBM terminal.

Figure 1–8 Connecting the OBM Terminal



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Number	Function
①	OBM port
②	Cable, part number BC22D-xx ¹ (xx = cable length in feet) (EIA RS232 connector)
③	OBM terminal—9600 baud
④	Modem—9600 baud
⑤	Remote modem
⑥	Remote OBM terminal

¹BC22D cable meets Class A FCC requirments.

Table 1–9 list the steps required to connect the OBM terminal and start the OBM session:

Table 1–9 Start OBM

Step	Action
1	Locate the OBM port, the cables, and the OBM terminal (or the modem, remote modem, and remote OBM terminal).
2	Connect the RS232 cable from the terminal (or modem) to the OBM port.
3	Install the remote modem and the remote OBM terminal, if needed.
4	Set up the terminal as follows: 9600 baud rate 8 bits, no parity 1 stop bit
5	Set the security switch to allow OBM access (position 2, 3, or 4).
6	Press Ctrl/D to get the CLK> prompt.
7	Press Ctrl/O to start the OBM session.

LAT Connectivity

The OBM port may also be connected to a LAT port for remote OBM access. The LATserver must pass escape sequences.

When connecting to a terminal server with remote LAT access, set LATserver port autobaud (disable) and access (remote).

Note the following restrictions:

- Cannot use the DECserver 90L or 90L+
- Cannot use the DECserver 90TL or 90M

OBM Password

Set the OBM password by using the OBM terminal.

1. Select the **Set OBM Password** option from the main menu.
2. The password must be between 8 and 16 characters long.

A password is not required. The default setting is no password. If you forgot the OBM password, turn the security keyswitch to position 4 for easy access mode to bypass the OBM password.

For detailed information on the OBM Menus refer to the *GIGAswitch/FDDI Out-of-Band Management (OBM) Guide*

Installing Daughter Cards

Introduction

This chapter describes the installation procedures for FDDI daughter cards. FDDI linecards can be configured with three types of physical medium device (PMD):

- Multimode fiber (MMF)
- Single-mode fiber (SMF)
- Unshielded twisted pair (UTP)

The following section describes the installation of each PMD.

Multimode Fiber (MMF) PMD

Note

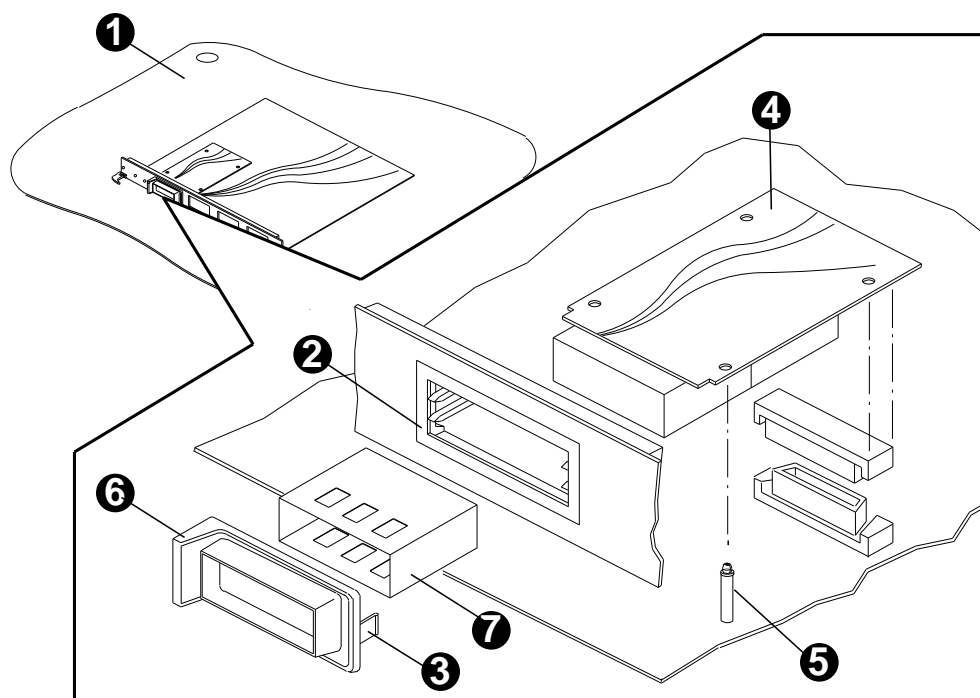
The extra posts and the PHY M key provided in the package are not used in this installation. The PHY A and PHY B keys are used in the DAS configuration of the ANSI Multimode Fiber FDDI PMD only.

Step	Action
1	Set up the ESD equipment.
2	Slip on the ESD wristband.
3	Unpack the PMD and check the contents against the packing slip.

Mount MMF PMD

Complete the following steps to install multimode fiber (MMF) ANSI MIC PMD: daughter cards.

Step	Action
1	Identify the ESD mat ❶, port slot ❷, the two retaining clips ❸, the daughter card ❹, the brass standoffs ❺, the bezel ❻, and the collar shroud ❼.



Step	Action
2	Slip on the ESD wristband and place the line card on the ESD mat ❶ with the components of the linecard facing up and the top of the linecard facing left.

Note

Remove the top blank bezel for a SAS configuration. Remove both the top and the bottom blank bezel for a DAS configuration.

Step	Action
3	Remove the blank bezel. Release the locking tabs on both sides of the bezel using a screwdriver.
4	Insert the collar shroud ⑦ into the port slot ② in the handle of the linecard. Orient the open portion of the U-shaped collar shroud ⑦ in the up position and insert the collar shroud into the port slot ② in the handle of the linecard. Slide the collar shroud into the port slot ② in the handle of the linecard until the fingers of the collar shroud rest against the handle of the linecard.
5	Mount the daughter card ④ containing the PHY S key or the PHY A key in the upper slot of the selected port. Orient the daughter card with the connector facing down and away from the handle of the linecard and position the daughter card over the linecard. Place the collar shroud ⑦ around the front of the daughter card. Snap the daughter card onto the two brass standoffs ⑤ mounted on the linecard, and then mate the connector by pressing down on the back of the daughter card.

Note

Ensure the bezel completely surrounds the collar shroud before snapping the bezel onto the front of the handle of the linecard.

6	Snap the bezel ⑥ onto the front of the handle of the linecard. Orient the bezel ⑥ with the label area facing the top of the linecard.
7	This step is for DAS configuration only. Repeat steps 4 through 6 to install the daughter card containing the PHY B key in the lower slot of the selected port.
8	Place the LINECARD in a static proof bag.
9	Place the bagged module on a flat surface or on another bagged module. The modules can be stacked four high.

Single-mode Fiber (SMF) PMD

Note

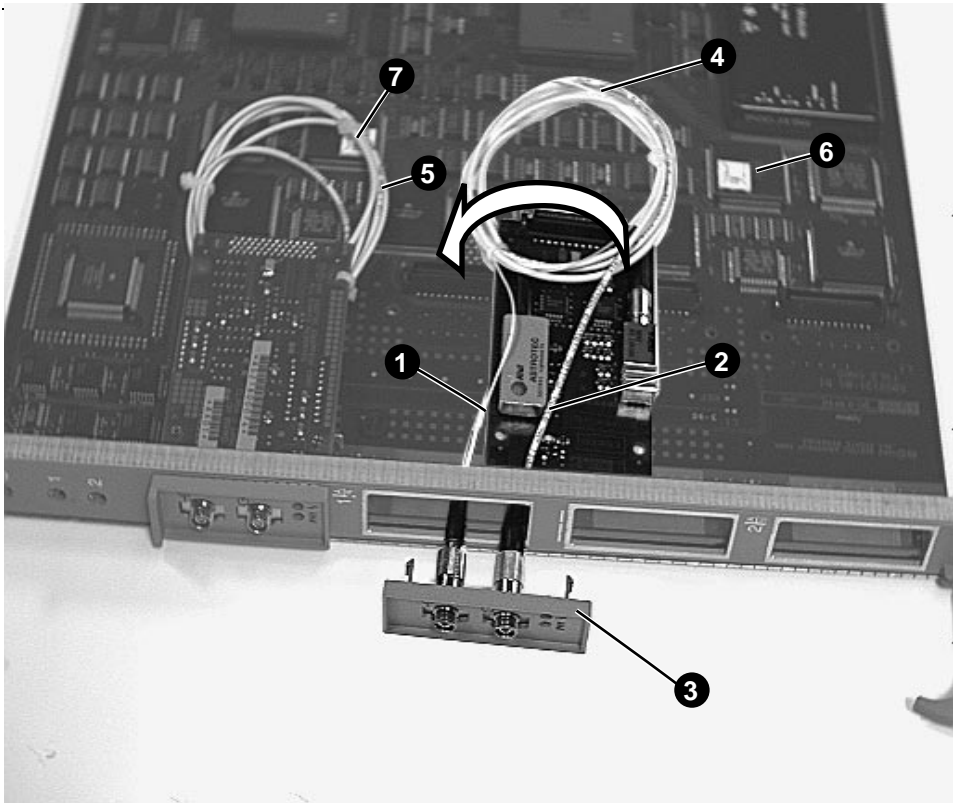
The extra posts are not used in this installation.

Step	Action
1	Set up the ESD equipment.
2	Slip on the ESD wristband.
3	Unpack the PMD and check the contents against the packing slip.
4	Remove the cable-ties from the coiled cable bundle.

Prepare SMF PMD

Complete the following steps to prepare single-mode fiber (SMF) PMD (DEFXS-AA) daughter cards:

Step	Action
1	Identify the receiver cable ❶, the transceiver cable ❷, the bezel ❸, the coiled cable bundle ❹, the coiled cable-tie point ❺, the lower port cable-tie anchor mounting location ❻, and the upper port cable-tie anchor mounting location ❼.



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Step	Action
2	Slip on the ESD wristband and place the linecard on the ESD mat with the components of the linecard facing up and the top of the linecard facing left.

_____ **Note** _____

Remove the top blank bezel for a SAS configuration. Remove both the top and the bottom blank bezel for a DAS configuration.

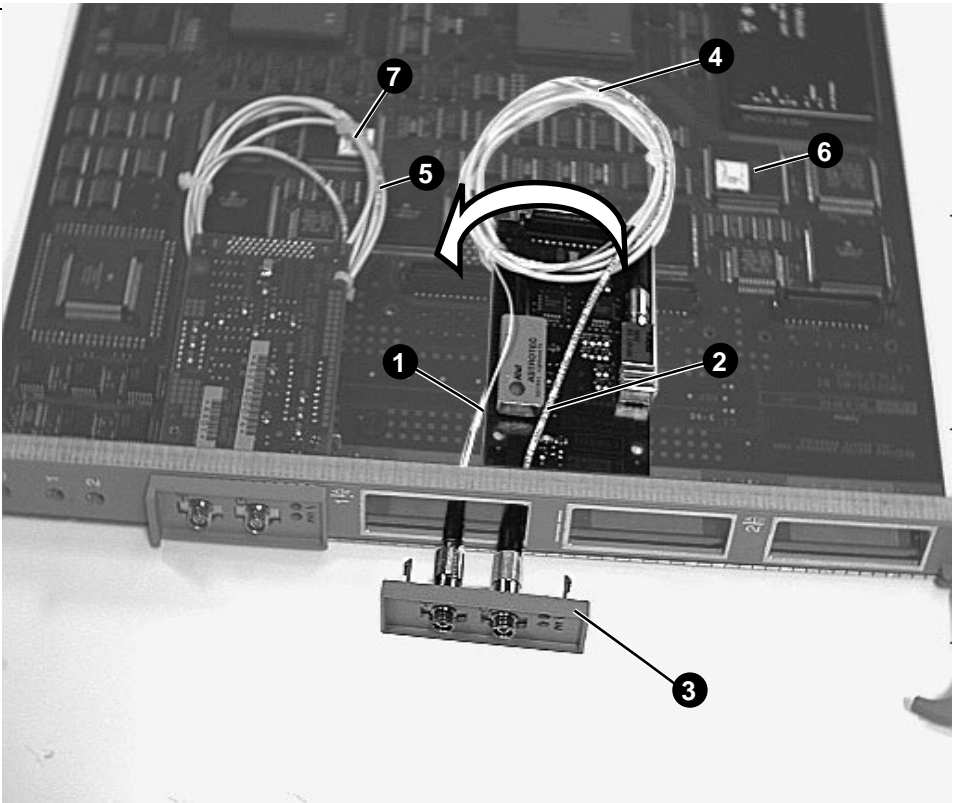
3	Remove the blank bezel. Release the locking tabs on both sides of the bezel using a screwdriver.
---	---

Step	Action
<hr/> <p style="text-align: center;">Note</p> <hr/> <p>The receiver cable is the thin white cable. The transceiver cable is the thick yellow cable</p> <hr/>	
4	<p>Mate the connectors of the receiver cable ❶ and the transceiver cable ❷ to the respective connectors on the bezel ❸. Orient the bezel ❸ with the label area facing the top of the linecard. Extend the loose ends of the receiver cable ❶ and the transceiver cable ❷ through the hole in the linecard. The receiver cable ❶ will be to the left and the transceiver cable ❷ will be to the right.</p>
<hr/> <p style="text-align: center;">Caution</p> <hr/> <p>Do not exceed the 3 inch minimum bend diameter when adjusting coils.</p> <hr/>	
5	<p>Roughly dress the coiled cable bundle ❹. Equalize the cables in the coiled cable bundle and dress the coiled cable bundle to the rear of the daughter card as shown in the figure.</p>
<hr/> <p style="text-align: center;">Note</p> <hr/> <p>Loosely install the cable-ties to allow for final dressing of the loops.</p> <hr/>	
6	<p>Install the cable-ties. Wrap one cable-tie around all the cables in the coiled cable bundle ❹ and attach it to the daughter card using the after post hole on the TX side of the daughter card. Wrap the other cable-tie around all the cables in the coiled cable bundle ❹ and position it near the RX connector.</p> <hr/>

Mount SMF PMD

Complete the following steps to mount the single-mode fiber (SMF) PMD (DEFXS-AA) daughter cards:

Step	Action
1	Identify the receiver cable ❶, the transceiver cable ❷, the bezel ❸, the coiled cable bundle ❹, the coiled cable-tie point ❺, the lower port cable-tie anchor mounting location ❻, and the upper port cable-tie anchor mounting location ❼.



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Step	Action
2	Mount the daughter card. Turn the daughter card over. Orient the daughter card with the connector facing down and away from the handle of the linecard and position the daughter card over the linecard. Snap the daughter card onto the two brass standoffs mounted on the linecard.

_____ **Note** _____

Ensure the coiled cable bundle ❹ is clear of the connector before mating the connector.

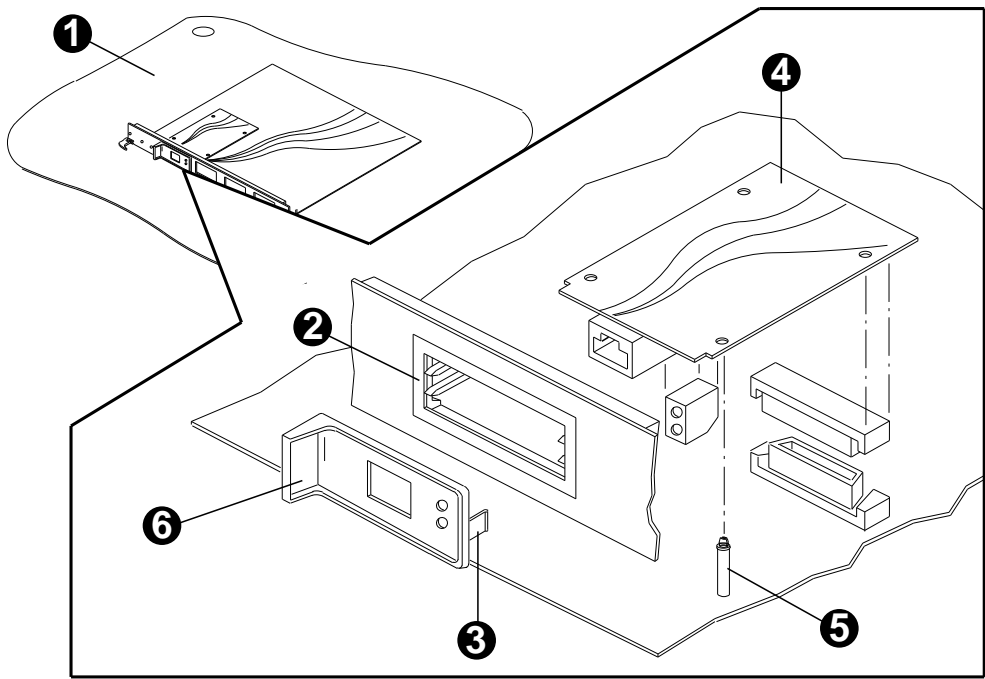
- 3 **Mate the connector** by pressing down on the back of the daughter card.
 - 4 **Snap the bezel ③ onto the front of the handle** of the linecard. Orient the bezel ③ with the label area facing the top of the linecard.
 - 5 **Dress the cables in the coiled cable bundle and tighten the cable-ties.**
 - 6 **Install the final cable-tie.** If a SMF daughter card is already installed in the port, attach the two coiled cable bundles together at the tie point ⑤ shown using a cable-tie. If this is the first SMF daughter card to be installed, mount the cable-tie anchor in the appropriate position (the position for the upper port ⑦ or the position for the lower port ⑥), and attach the coiled cable bundle ④ to the appropriate cable-tie anchor.
 - 7 **This step is for DAS configuration only.** Repeat steps 4 through 6 to install the other daughter card.
 - 8 **Place the LINECARD in a static proof bag.**
 - 9 **Place the bagged module on a flat surface or on another bagged module.** The modules can be stacked four high.
-

Unshielded Twisted Pair (UTP) PMD

Note

The posts provided in the package are not used in this installation.

Step	Action
1	Set up the ESD equipment.
2	Slip on the ESD wristband.
3	Unpack the PMD. The package contains the PMD, the bezel, and four posts.



Mount UTP PMD

Complete the following steps to install the UTP daughter cards.

Step	Action
1	Slip on the ESD wristband and place the linecard on the ESD mat with the components of the linecard facing up and the top of the linecard facing left.

Step	Action
<hr/>	
<p style="text-align: center;">Note</p> <hr/>	
<p>Remove the top blank bezel for a SAS configuration. Remove both the top and the bottom blank bezel for a DAS or M-port configuration.</p> <hr/>	
2	Remove the blank bezel. Release the locking tabs on both sides of the bezel using a screwdriver.
3	Mount the daughter card in the upper slot of the selected port. Orient the daughter card with the connector facing down and away from the handle of the linecard and position the daughter card over the linecard. Snap the daughter card onto the two brass standoffs mounted on the linecard, and then mate the connector by pressing down on the back of the daughter card.
4	Install the linecard in the selected slot.

Replacing System Modules

Chapter Contents

This chapter describes the replacement procedures for the following:

- Logic modules
- Daughter cards
- Blank handle
- Fan tray assembly
- Power interface unit
- Power supply filter panel
- PSA
- PSC card

Prerequisites for Replacing GIGAswitch/FDDI System Modules

GIGAswitch/FDDI System modules include the following:

- Logic modules
- Cooling and power modules

Before removing (or installing) any logic modules, precautions **must** be taken to avoid damage from electrostatic discharge (ESD).

Setting Up ESD Protection

Protect the logic module against damage from ESD by using:

- A Static-free container for long-term storage.
- A grounded ESD wristband while installing and removing modules.
- A grounded ESD mat for temporary storage.

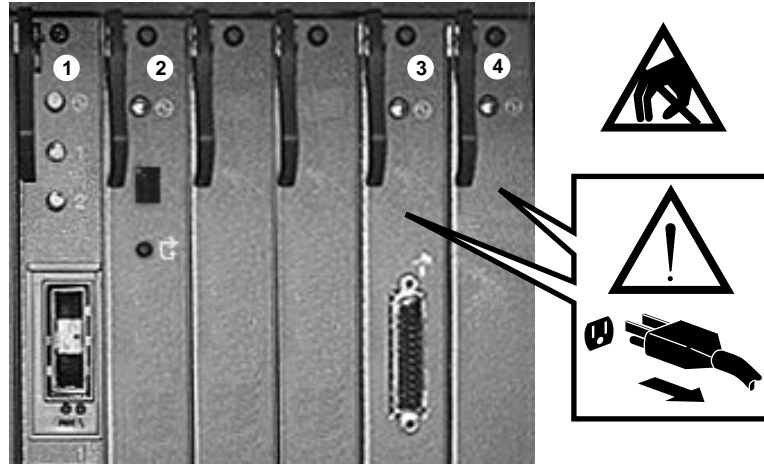
Using ESD Equipment

The Portable Static-Dissipative Field Service Kit (Part No. 29-26246) is used to protect ESD sensitive modules against damage. Complete the following steps to set up and maintain a static-free area.

Step	Action
1	Ground the unit. The unit is grounded through the power cord when it is connected between the unit and the primary power source.
2	Lay out the static-dissipative work surface (ESD mat) on a flat surface.
3	Connect the ground cord assembly to the ESD mat and to an unpainted surface on the unit.
4	Wear the ESD wristband and attach it to the ground cord assembly.

Logic Modules

Description of the Logic Modules



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Module	Module
❶ Linecard	❸ CLK card
❷ SCP card	❹ CBS card

Linecards and SCP cards can be replaced while power is still applied to the GIGAswitch/FDDI System. Before replacing the CLK and CBS cards power **must be removed**. See the section on replacing the power supply for information on how to remove power.

Replace the Logic Modules

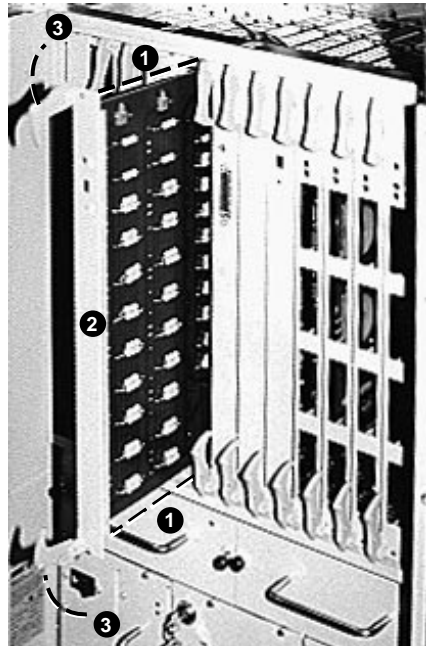
Complete the following steps to replace a logic module:

1. Set up the ESD equipment.
2. Wear the grounded ESD wristband.
3. Unpack the replacement module. Leave the module in the ESD bag.
4. Place the ESD bagged replacement module on a flat surface.
5. Place the empty container on the ESD mat.
6. Remove the module to be replaced from the chassis (see next section).
7. Place the module to be replaced in the empty container.
8. Remove the replacement module from the ESD bag.
9. Install the replacement module in the chassis. (See Chapter 1 for installation procedures.)

10. Remove the module to be replaced from the container and place it in the ESD bag.
11. Place the ESD bagged module in the container.
12. Remove the ESD wristband.

Remove the Logic Module

The following procedure describes how to remove the logic module.



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Step	Action
1	Locate the two screws ❶ that fasten the selected module ❷ to the GIGAswitch/FDDI System and the ejectors ❸ used to seat the module.
2	Set up the ESD equipment.
3	Slip on the ESD wristband.
4	Loosen the upper and lower screws ❶.
5	Move the ejectors outward to unseat the logic module ❷ from the unit.
6	GENTLY slide the module ❷ out of the unit.

Daughter cards

This section describes the replacement and removal of the Multimode fiber (MMF), single-mode fiber (SMF), and the unshielded twisted pair (UTP) daughter cards.

The following table provides the part numbers for the possible daughter cards:

Physical Media	PMD Part Number
ANSI multimode fiber FDDI	DEFXM-AA
Single-mode fiber FDDI	DEFXS-AA

Replace the MMF PMD

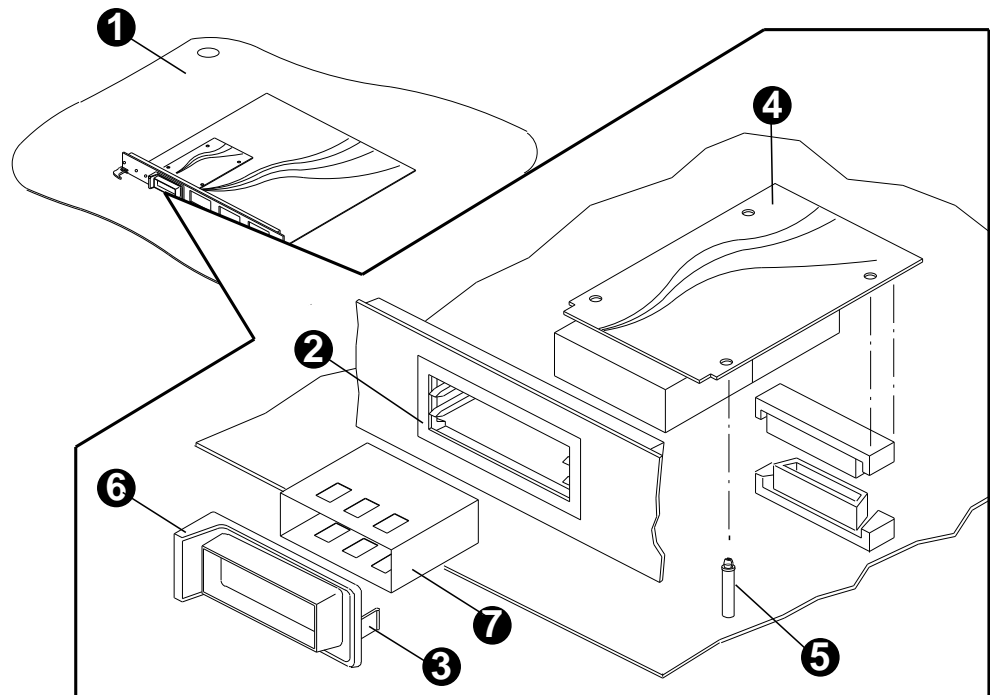
Complete the following steps to replace the MMF PMD daughter card:

1. Wear the grounded ESD wristband.
2. Unpack the replacement module. Leave the module in the ESD bag.
3. Place the ESD bagged replacement module on a flat surface.
4. Place the empty container on the ESD mat.
5. Remove the module to be replaced from the chassis (see next section).
6. Place the module to be replaced in the empty container.
7. Remove the replacement module from the ESD bag.
8. Install the replacement daughter card on the linecard. (See Chapter 2 for installation procedures.)
9. Remove the module to be replaced from the container and place it in the ESD bag.
10. Place the ESD bagged module in the container.
11. Remove the ESD wristband.

Remove the MMF PMD

Complete the following steps to remove the multimode fiber (MMF) PMD:

Step	Action
1	Identify the ESD mat ❶, port slot ❷, the two retaining clips ❸, the daughter card ❹, the brass standoffs ❺, the bezel ❻, and the collar shroud ❼.



Step	Action
2	Remove the LINECARD that will contain the new daughter card from the unit.
3	Place the LINECARD on the ESD mat ① with the components of the LINECARD facing up and the top of the LINECARD facing left.
4	Unsnap the bezel ⑥ from the front of the handle of the LINECARD. Access the retaining clips from the back of the LINECARD handle, release the retaining clips ③, and separate the PMD blank cover from the LINECARD.
5	Remove the collar shroud ⑦ from the port slot ② in the handle of the LINECARD.
6	Remove the daughter card ④ from the LINECARD. Mate the connector by lifting up on the back of the daughter card, and then unsnap the daughter card from the two brass standoffs ⑤ mounted on the LINECARD.
7	Install the new daughter card or the blank PMD cover. To install a blank PMD cover snap the PMD cover into the selected port slot. To install a new daughter card see the appropriate installation procedure.
8	Install the LINECARD in the unit. See Chapter 2.

Replace the SMF PMD

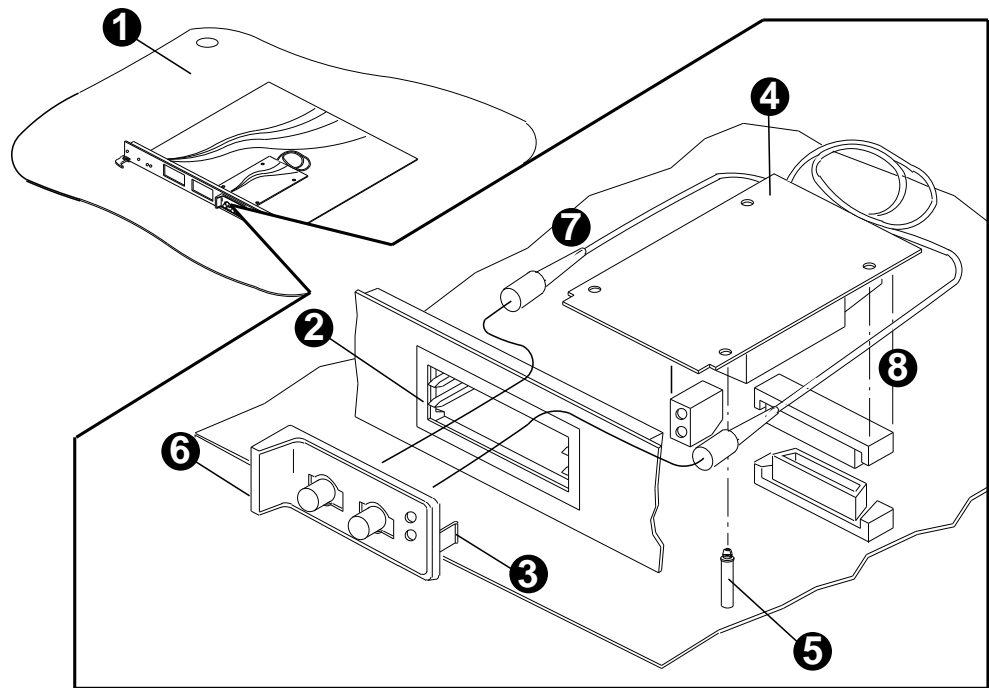
Complete the following steps to replace the SMF PMD daughter card:

- 1. Wear the grounded ESD wristband.
- 2. Unpack the replacement module. Leave the module in the ESD bag.
- 3. Place the ESD bagged replacement module on a flat surface.
- 4. Place the empty container on the ESD mat.
- 5. Remove the module to be replaced from the chassis (see next section).
- 6. Place the module to be replaced in the empty container.
- 7. Remove the replacement module from the ESD bag.
- 8. Install the replacement module on the linecard. (See Chapter 2 for installation procedures.)
- 9. Remove the module to be replaced from the container and place it in the ESD bag.
- 10. Place the ESD bagged module in the container.
- 11. Remove the ESD wristband.

Remove the SMF PMD

Complete the following steps to remove the single-mode fiber (SMF) PMD (DEFXS-AA) daughter card:

Step	Action
1	Identify the ESD mat ❶, port slot ❷, the two retaining clips ❸, the daughter card ❹, the brass standoffs ❺, the bezel ❻, the receiver cable ❼ and the transceiver cable ❽.



Step	Action
2	Remove the LINECARD that will contain the new daughter card from the unit.
3	Place the LINECARD on the ESD mat ❶ with the components of the LINECARD facing up and the top of the LINECARD facing left.
4	Cut the cable-tie that connects the coiled cable bundles to the cable-tie anchor or to another PMD.
5	Unsnap the bezel ❷ from the front of the handle of the LINECARD. Access the retaining clips from the back of the LINECARD handle, release the retaining clips ❸, and separate the PMD blank cover from the LINECARD.
6	Disconnect the connectors of the receiver cable ❹ and the transceiver cable ❺ from the respective connectors on the bezel.
7	Remove the daughter card ❻ from the LINECARD. Break the connection by lifting up on the back of the daughter card, and then unsnap the daughter card from the two brass standoffs ❼ mounted on the LINECARD.
8	Install the new daughter card or the blank PMD cover. To install a blank PMD cover snap the PMD cover into the selected port slot. To install a new daughter card see the appropriate installation procedure.
9	Install the linecard in the unit. See Chapter 2.

Replace the UTP PMD

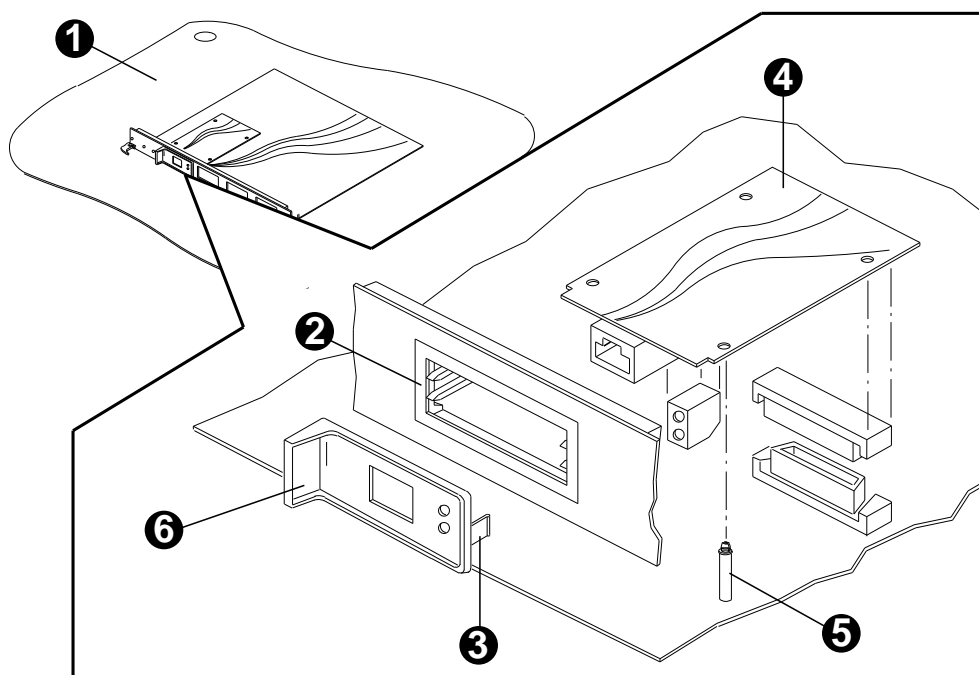
Complete the following steps to replace the SMF PMD daughter card:

1. Wear the grounded ESD wristband.
2. Unpack the replacement module. Leave the module in the ESD bag.
3. Place the ESD bagged replacement module on a flat surface.
4. Place the empty container on the ESD mat.
5. Remove the module to be replaced from the chassis (see next section).
6. Place the module to be replaced in the empty container.
7. Remove the replacement module from the ESD bag.
8. Install the replacement module on the linecard. (See Chapter 2 for installation procedures.)
9. Remove the module to be replaced from the container and place it in the ESD bag.
10. Place the ESD bagged module in the container.
11. Remove the ESD wristband.

Remove the UTP PMD

Complete the following steps to remove the unshielded twisted pair (UTP) PMD daughter card:

Step	Action
1	Identify the ESD mat ❶, port slot ❷, the two retaining clips ❸, the daughter card ❹, the brass standoffs ❺, and the bezel ❻

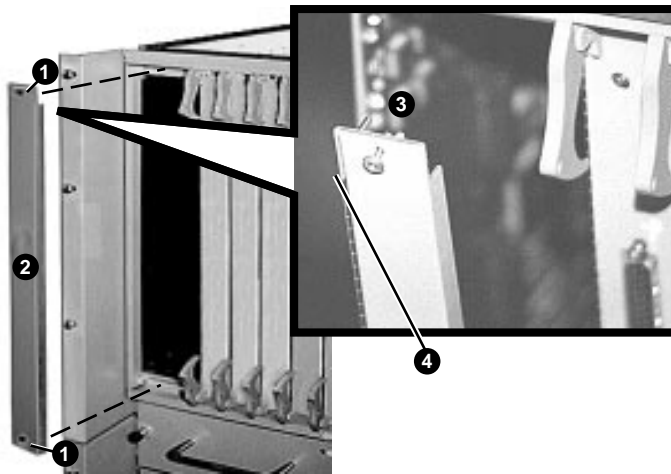


Step	Action
2	Remove the LINECARD that will contain the new daughter card from the unit.
3	Place the LINECARD on the ESD mat ❶ with the components of the LINECARD facing up and the top of the LINECARD facing left.
5	Unsnap the bezel ❷ from the front of the handle of the LINECARD. Access the retaining clips from the back of the LINECARD handle, release the retaining clips ❸, and separate the PMD blank cover from the LINECARD.
6	Remove the daughter card ❹ from the LINECARD. Break the connection by lifting up on the back of the daughter card, and then unsnap the daughter card from the two brass standoffs ❺ mounted on the LINECARD.
7	Install the new daughter card or the blank PMD cover. To install a blank PMD cover snap the PMD cover into the selected port slot. To install a new daughter card see the appropriate installation procedure.
8	Install the linecard in the unit. See Chapter 2.

Blank Handle

Complete the following steps to remove a blank handle from the GIGAswitch/FDDI System:

Step	Action
1	Locate the screws 1 that fasten the selected blank handle 2 to the GIGAswitch/FDDI System, the 3 guide pins, and the EMI shield 4 .



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Caution

Be careful not to damage the EMI shield.

Step	Action
2	Loosen the upper and lower screws that fasten the selected blank handle to the system 1 using a number 2 cross-point screwdriver.
3	Lift the blank handle 2 away from the GIGAswitch /FDDI System.

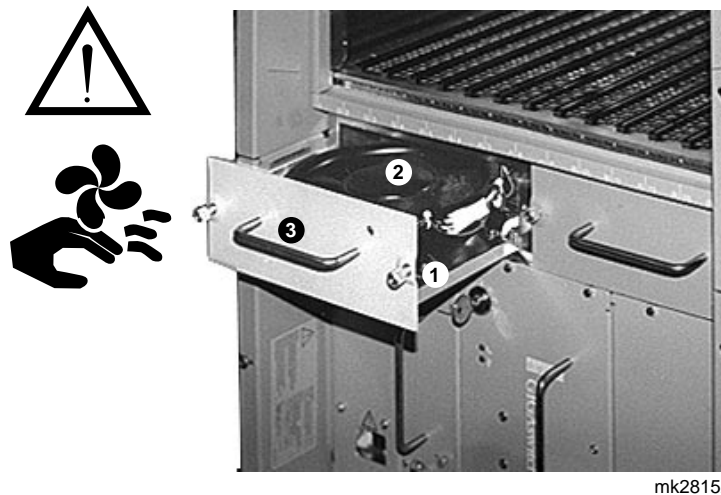
Fan Tray Assemblies

Warning

Remove all system modules from the unit to make it light enough for two people to lift the unit.

Complete the following steps to remove the fan tray assemblies from the GIGAswitch/FDDI System:

Step	Action
1	Locate the two fasteners ❶ that attach the selected fan tray assembly ❷ to the GIGAswitch/FDDI System and the handle ❸.

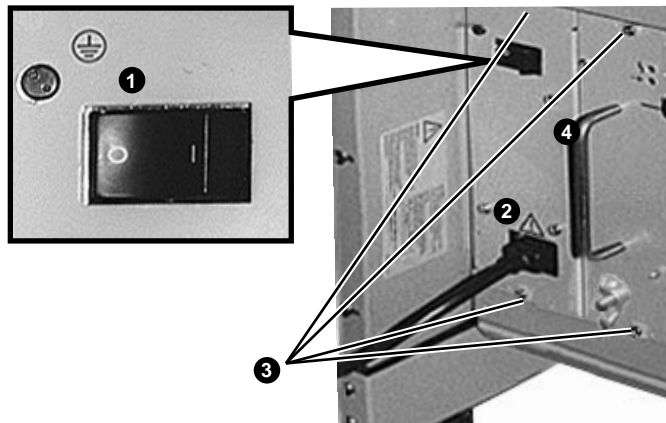


Step	Action
2	Release the two fasteners ❶ that attach the selected fan tray assembly to the GIGAswitch/FDDI System.
3	Grasp the handle ❸ and slide the fan tray assembly ❷ out of the unit enough to see if the fan is rotating.
4	Wait for the fan to stop rotating.
5	Slide the fan tray assembly out of the unit. Grasp the handle ❸ with one hand and support the bottom of the fan tray assembly with your other hand.
6	Repeat steps 1 through 5 to remove the other fan tray assembly.

AC Power Interface Unit (acFEU)

Complete these steps to remove a front end unit (FEU).

Step	Action
1	Locate the power switch ❶, the power cord ❷, the four screws ❸ that fasten the selected module to the GIGAswitch/FDDI System, and the handle ❹ of the selected module.



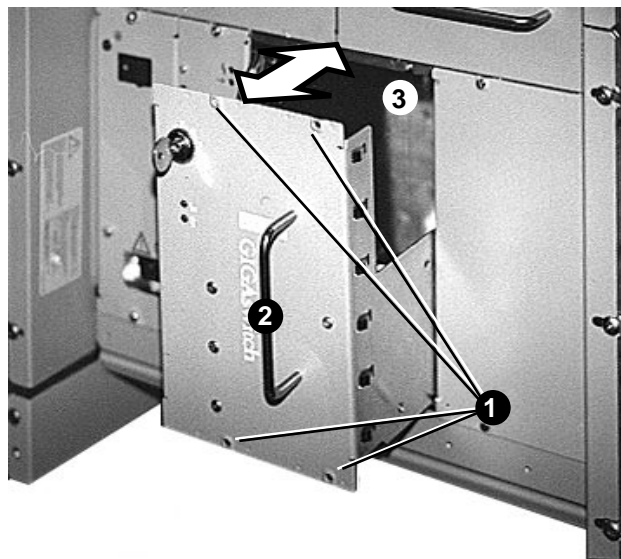
mk28175d

Step	Action
2	Place the power switch ❶ in the O (OFF) position and remove the power cord ❷ from the primary power outlet and the power connector.
3	Remove the four screws ❸ on the module using a number 2 cross-point screwdriver.
4	Slide the module out of the unit. Grasp the handle ❹ with one hand and support the bottom of the module with your other hand.

Power Status Assembly (PSA)

Complete the following steps to remove the power status assembly (PSA).

Step	Action
1	Locate the four screws ❶ that fasten the module to the GIGAswitch/FDDI System, the handle ❷ of the module, and the slot ❸ designated for the module.



mk28169

Step	Action
2	Remove the four screws ❶ on the module using a number 2 cross-point screwdriver.
3	Slide the module out of the unit. Grasp the handle ❷ with one hand and support the bottom of the module with your other hand. When the module comes to a stop, lift up to allow it to clear the upper edge of the chassis and continue removal.

Power System Controller (PSC) Card

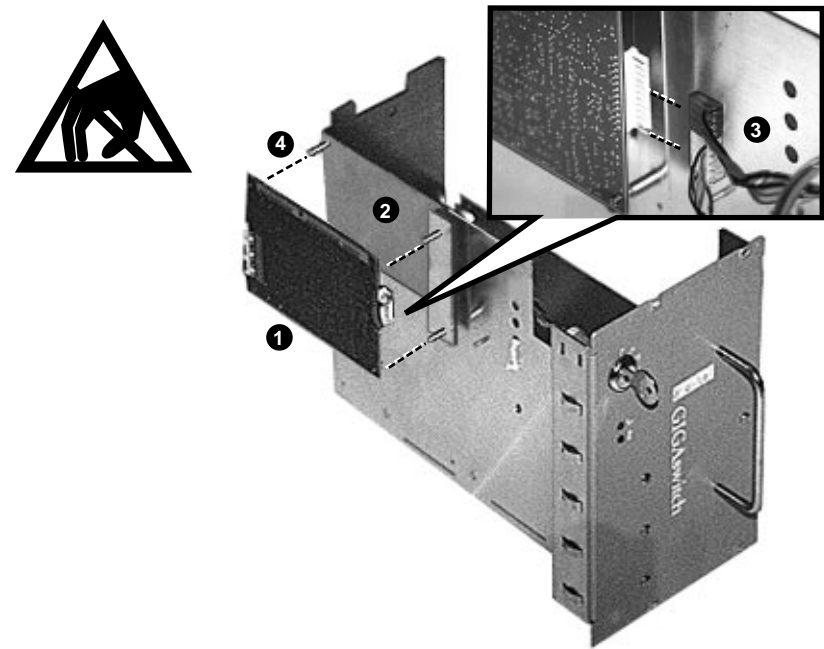
Complete the following procedures to replace a power system controller (PSC) card:

- 1. Remove the PSA (see previous section).
- 2. Remove the PSC card.
- 3. Install the PSC card.
- 4. Install the PSA (see Chapter 1).

Remove the PSC Card

Once the power status assembly (PSA) has been removed, complete the following steps to remove the PSC:

Step	Action
1	Locate the PSC card ❶, the PSA ❷, and the two cables ❸ connecting the PSC card ❶ to the PSA ❷, and the standoffs ❹.



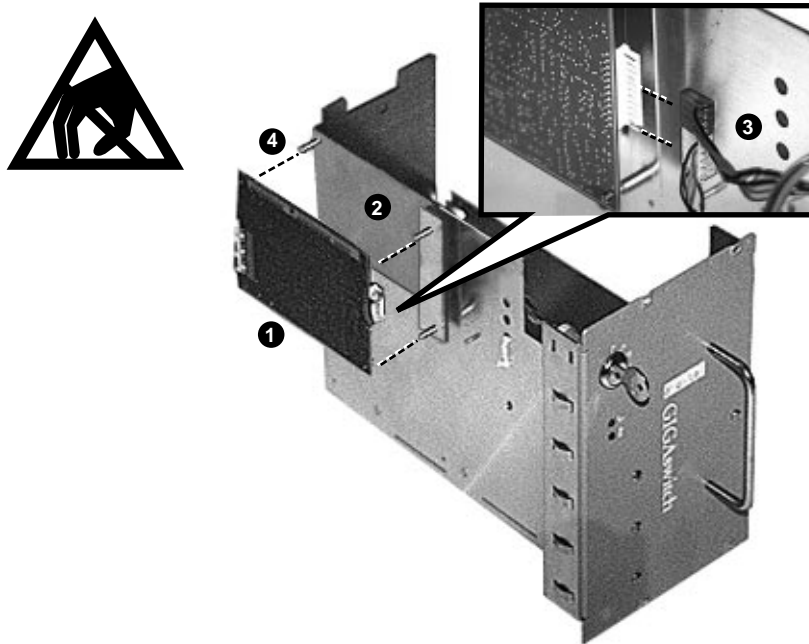
mk28155

Step	Action
2	Unplug the two cables ❸ from the PSC card ❶.
3	Unsnap the PSC card ❶ from the standoffs ❹ on the PSA ❷, and pull the PSC card ❶ away from the PSA.

Install the PSC Card

Complete the following steps to install a PSC card:

Step	Action
1	Locate the PSC card ❶, the PSA ❷, and the two cables ❸ connecting the PSC card ❶ to the PSA ❷, and the standoffs ❹.



mk28155

Step	Action
2	Align the holes in the PSC card ❶ with the standoffs on the PSA ❷ and snap the PSC card ❶ onto the standoffs ❹.

Note

The bottom connector has five wires, the top connector has four wires and the top three pins remain disconnected.

3	Starting from the bottom pin on the connector, plug the two cables ❸ from the PSA ❷ onto the PSC card ❶ as shown in the figure.
---	---

Removing the System from the Rack

Chapter Contents

Warning

Remove all system modules from the unit to make it light enough for two people to lift. See Chapter 3 for removal procedures.

This chapter describes the following procedures that should be completed to remove the GIGAswitch/FDDI System from the rack.

1. Removing the upper plenum
2. Detaching the empty GIGAswitch/FDDI System from the rack

Time Required

45 minutes

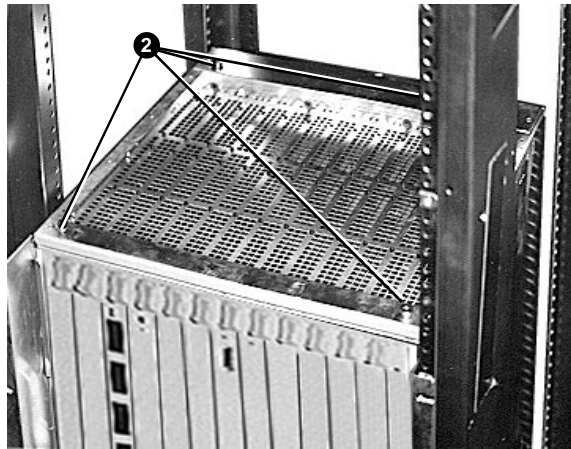
Tools Required

Number 2 cross-point screwdriver, ESD equipment and static proof containers for the modules.

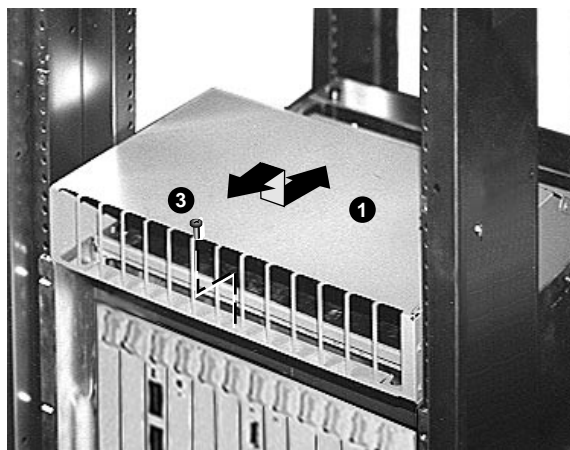
Removing the Upper Plenum

Complete the following steps to remove the upper plenum:

Step	Action
1	Locate the upper plenum ❶, the four shoulder screws ❷, and the mounting screw ❸.



mkv-0281-66



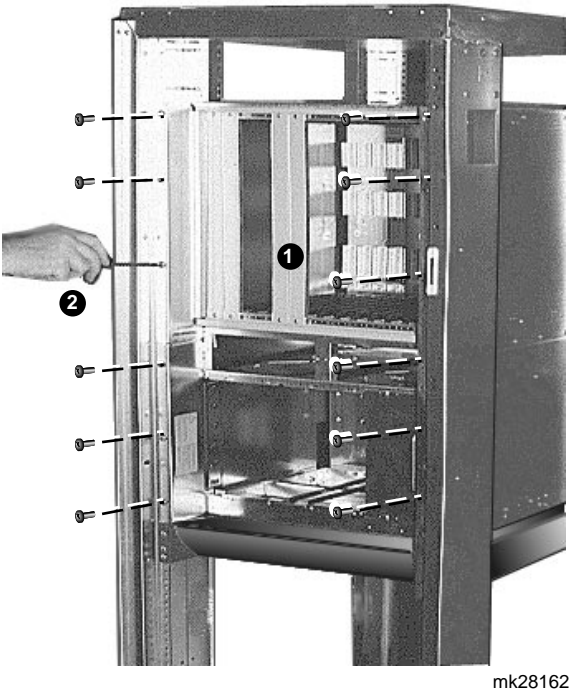
mkv-0281-65

Step	Action
2	Remove the mounting screw ❸ that attaches the upper plenum ❶ to the GIGAswitch/FDDI System using a number 2 cross-point screwdriver.
3	Pull the upper plenum away from the rack.

Detaching the Empty GIGAswitch/FDDI System from the Rack

Complete the following steps to detach the GIGAswitch/FDDI System from the rack:

Step	Action
1	Locate the GIGAswitch/FDDI System ❶ and the twelve screws ❷.



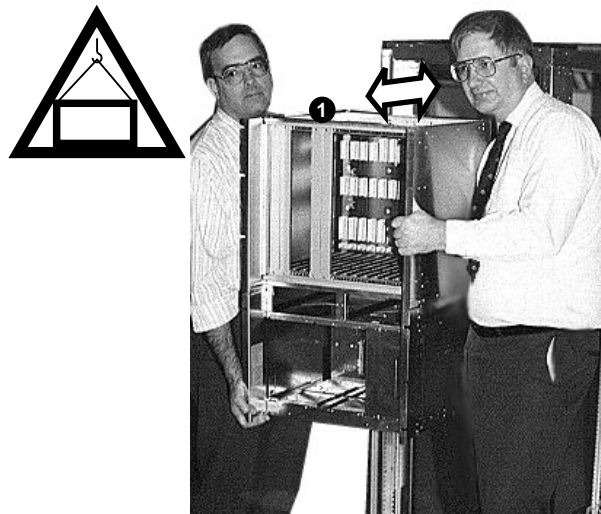
Step	Action
2	Remove 12 screws ❷ using a number 2 cross-point screwdriver.

Lowering the Empty GIGAswitch/FDDI System

Warning

The empty GIGAswitch/FDDI System weighs 31.75 kg. Use two people to lift the unit.

Complete the following procedure to lower the GIGAswitch/FDDI System:



mkv-0281-50

Step	Action
1	Pull the empty GIGAswitch/FDDI System away from the rack.
2	Lower the empty GIGAswitch/FDDI System and place it on a flat surface.

Replacing Backplanes

**Chapter
Contents**

This chapter describes the procedures for replacing the logic and power backplanes.

Before removing the backplane make sure all the modules have been removed from the selected backplane. Refer to Chapter 3 for removal procedures.

Time Required

60 minutes

Tools Required

Number 2 cross-point screwdriver and a thin flat blade (4.41 mm (3/16 in)) screwdriver

Procedures

- Accessing the backplanes
- Replacing the logic backplane
- Replacing the power backplane
- Restoring the system

Accessing the Backplanes

This section contains the following procedures:

- Removing the back door
- Installing the back door

Remove the Back Door

Complete the following steps to remove the back door from the GIGAswitch/FDDI System:

Figure 5–1 Back Door

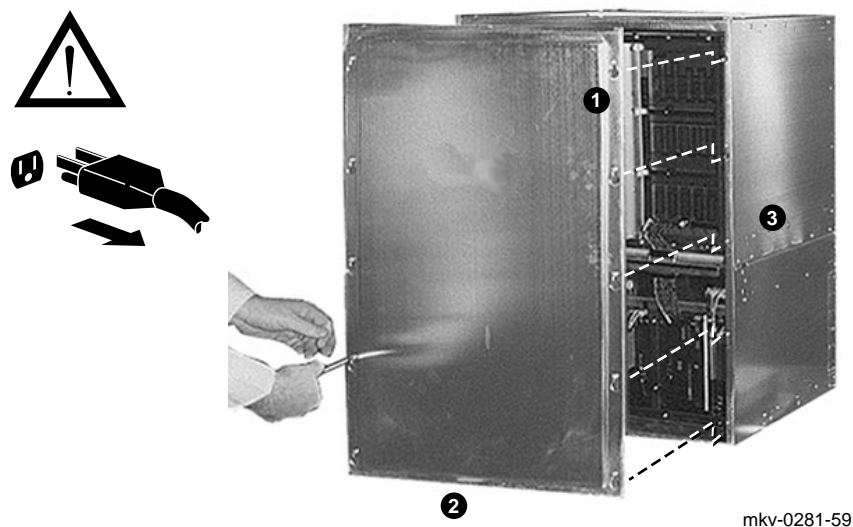


Table 5–1

Step	Action
1	Locate the 10 screws ❶ that fasten the back door to the GIGAswitch/FDDI System ❸ and the lower lip ❷ used to remove the back door.
2	Loosen the 10 screws ❶ several turns using a number 2 cross-point screwdriver.
3	Grasp the lower lip ❷ and pull the back door up far enough to clear the keyhole slots in the back door.
4	Pull the back door away from the GIGAswitch/FDDI System ❸.

Install the Back Door

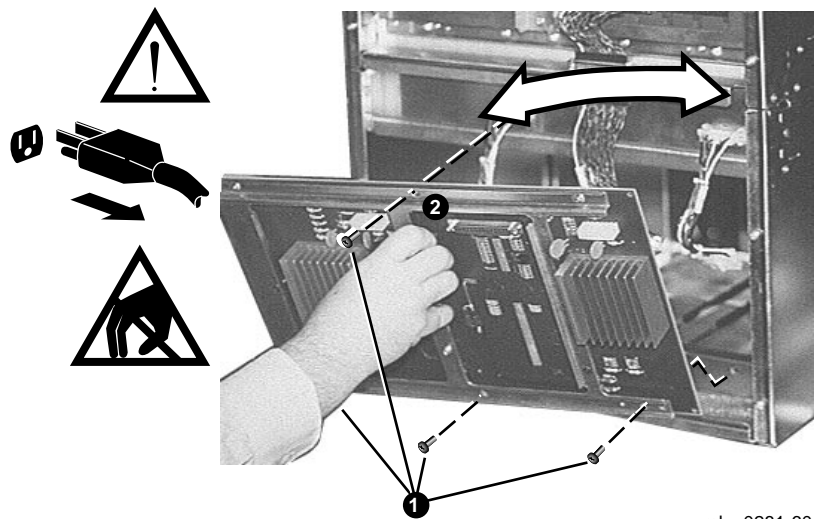
Step	Action
1	Align the keyslots on the back door ❷ with the 10 screws on the GIGAswitch/FDDI System ❸ and press down.
2	Tighten the 10 screws ❶ using a number 2 cross-point screwdriver.

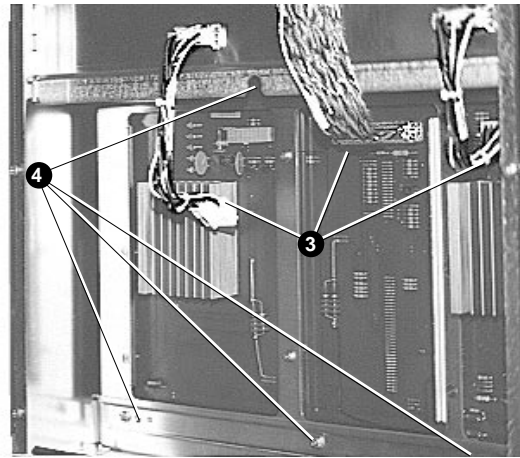
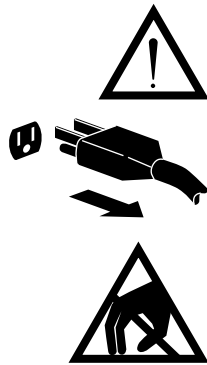
Replacing the Power Backplane

Remove the Power Backplane

Complete the following steps to remove the power backplane from the GIGAswitch/FDDI System.

Step	Action
1	Remove the back door (see accessing the backplanes section).
2	Locate the four screws ❶ that fasten the power backplane ❷ to the GIGAswitch/FDDI System, and the three cables ❸ used to connect the power backplane ❷ with the logic backplane ❹ and with the fan tray assemblies.





mk28161

Step	Action
3	Unplug the three cables ❸. Remove the two fan tray assembly cables with the Molex type connectors (squeeze tab) and remove the backplane end. Remove the D connector on the power backplane to backplane bulkhead by loosening the two screws and pulling away from the backplane using a thin flat blade (4.41 mm (3/16 in)) screwdriver.
4	Remove the four screws ❶ using a number 2 cross-point screwdriver. Remove the three bottom screws first and then remove the top screw.
5	Drop the top back and lift the power backplane away from the GIGAswitch/FDDI System.

Install the Power Backplane

Complete the following steps to install the power backplane onto the GIGAswitch/FDDI System:

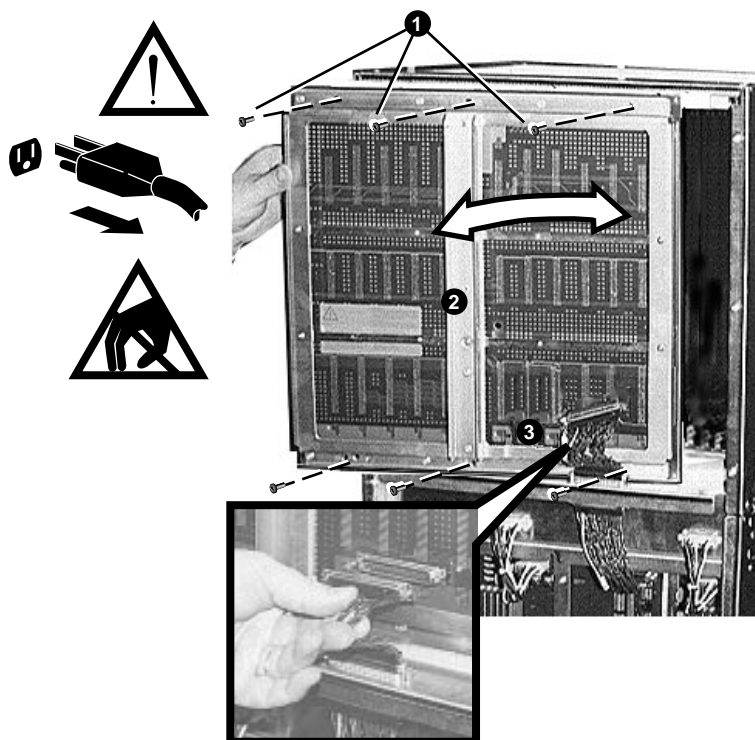
Step	Action
1	Insert the bottom of the power backplane (lift the cables out of the way) and place the power backplane on the upper and lower alignment pins.
2	Install the four screws ❶ using a number 2 cross-tip screwdriver. Install the top screw first, then install the bottom three screws.
3	Install the three cables ❸. Install the two fan tray assembly cables. Install the power backplane to the bulkhead cable and tighten the two screws.
4	Install the back door (see accessing the backplanes section).
5	Install the power and cooling modules (see Chapter 1).

Replacing the Logic Backplane

Remove the Logic Backplane

Complete the following steps to remove the logic backplane from the GIGAswitch/FDDI System:

Step	Action
1	Remove the back door (see accessing the backplanes section).
2	Locate the six screws 1 that fasten the logic backplane 2 to the GIGAswitch/FDDI System, and the cable 3 used to interconnect the logic backplane with the power backplane.



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Caution

Hold the backplane in place while removing the screws.

Step	Action
3	Disconnect, unplug, and remove the cable assembly ❸. Loosen the two screws on each connector (backplane and chassis sides) using a thin flat blade (4.41 mm (3/16 in)) screwdriver.
4	Remove the six screws ❶ using a number 2 cross-point screwdriver. Remove the three lower screws first, then remove the three upper screws.
5	Lift the logic backplane away from the GIGAswitch /FDDI System. Rotate the backplane slightly (right side turning inward and the left side turning outward during removal).

Install the Logic Backplane

Step	Action
1	Insert the lower edge of the backplane behind the power connector and into the lower-right corner of the unit.
2	Install the six screws (three upper and three lower) ❶ using a number 2 cross-point screwdriver. Install the three upper screws first, then install the three lower screws.
3	Install the cable assembly ❸. Plug in the connector and tighten the two screws using a thin flat blade (4.41 mm (3/16 in)) screwdriver.
4	Install the back door (see accessing the backplanes section).

Testing the System

Chapter Contents

This appendix describes the various screens associated with diagnostics mode and the following procedures:

1. Initiating the MST
2. Evaluating the results of the MST

Diagnostic Mode Screens

Use the OBM Reboot Menu to access the diagnostic mode. See the *Out-of-Band Management (OBM) Guide*, for information on how to use the OBM screens.

Help Screens

The following figures describe the commands available in the diagnostic dispatcher and the terminal protocol modes.

TERMINAL PROTOCOL MODE

```
MCCLI>Help

CH[annel]n          Make connection to Module n, n=1 to 6, 9 to 14
CL[ear]             Clears the terminal screen
DI[ag_Dispat]       Return to the Diagnostic Dispatcher
DO[wnline_load]     Update of non-bootblock firmware
Help               This help message
O[per_Firmware]     Call the Operational Firmware (does not return)
PS[C]              Transparant access to PSC
PO[werup_rslts]     Powerup execution results
R[eset_Clock]       Reset the Clock Module
T[ime]              Read/Update the Clock Module's Real Time Clock
V[ersions]          Bootblock and Hardware Versions

MCCLI>
```

FGL (OR SCP) DIAGNOSTIC DISPATCHER

```
Diag_v2.1>Help

Clear               Clear the Non-Volatile error log
DEfault             Set default switches and update header
DUmp                Dump the Non-Volatile error log
Exit                Exit to Terminal Protocol Mode
Help               Display this help screen
Llst [start_id][end_id][seq_mask] Run range of tests with sequence mask
Run [start_id][end_id][sesq_mask] Run range of tests bybe,sord or longwords
Sequence [seq_mask] Run all tests with sequence mask
XDs                Jump to XDS application
SWITCHES:/Bell/NOBel/NB Bell or no bell on error
SWITCHES:/Continue/Halt L0op Continue, halt, or loop error
SWITCHES:/INHIBIT_A/IA Inhibit all output except summaries
SWITCHES:/NOInhibit/NI Don't inhibit any output
SWITCHES:/Pass=n    Repeat length for run, Seq
SWITCHES:/Ski/NOSkip/NS Skip or don't skip over tests on error

Diag_v2.1>
```

Initiating the MST

The following methods are used to initiate the module self-test (MST).

- Applying power to the GIGAswitch/FDDI System (see Chapter 1).
- Rebooting the GIGAswitch/FDDI System
- Running MST in diagnostic mode

Rebooting

The following contains the displays and selections required to reboot the GIGAswitch/FDDI System from the OBM terminal. To initiate an OBM session apply power to the OBM terminal or press `ctrl-O`.¹

```
CLK>[Control-O}
***GIGAswitch Out-of-Band Management***
  Copyright (c) 1993 Digital Equipment Corporation
  Contros-D will abort OBM session at any time
Main Menu -
  2 Show/Modify GIGAswitch Configuration
Choice 2
Configuration Menu-
  6 Reset Management Memory/Reboot the GIGAswitch
Choice: 6
Reset/Reboot Menu-
  2 Reboot the GIGAswitch
Choice: 2
WARNING: This will terminate your OBM session and REBOOT the GIGAswitch.
Do you really want to do this? (yes/no): yes
  Reboot Menu-
    1 Reboot the GIGAswitch
  Choice: 1
CLK>
```

¹ If power has already been applied the Main Menu will be present.

Action	Results
Look for the operational firmware prompt CLK>	CLK>
Type Ctrl/O	Main Menu appears ¹
Type 2 to select Show/Modify GIGAswitch Configuration	Configuration Menu appears
Type 6 to select Reset Management/Reboot the GIGAswitch	Reset/Reboot Menu appears
Type 2 to select Reboot the GIGAswitch	WARNING: . . . (yes/no) appears
Type yes	Reboot Menu appears
Type 1 to select Normal Reboot	CLK> appears
¹ If an error message appears, set the security switch to position 4 and try again.	

Running the MST in Diagnostic Mode

Rebooting into Diagnostic Mode

The following methods are used to enter diagnostic mode:

- Rebooting into diagnostic mode - preferred
- Installing the maintenance jumper - alternate

The following contains the displays and selections required to reboot the GIGAswitch/FDDI System from the OBM terminal into diagnostic mode. To initiate an OBM session apply power to the OBM terminal or press **[ctrl-O]**.¹

```
CLK>[Control-O}
***GIGAswitch Out-of-Band Management***
  Copyright (c) 1993 Digital Equipment Corporation
  Contros-D will abort OBM session at any time
Main Menu -
  2 Show/Modify GIGAswitch Configuration
Choice 2
Configuration Menu-
  6 Reset Management Memory/Reboot the GIGAswitch
Choice: 6
Reset/Reboot Menu-
  2 Reboot the GIGAswitch
Choice: 2
WARNING: This will terminate your OBM session and REBOOT the GIGAswitch.
Do you really want to do this? (yes/no): yes
Reboot Menu-
  2 Reboot into diagnostic mode
Choice: 2
Sonoma Clk Crd BIST V1.2 Defaults:/BEll/Halt/Pass=1/Skip
Valid Commands:CLrDefaultDUmpExitHelpListPEekPOkeRunSeqXDs
Diag_v2.1>
```

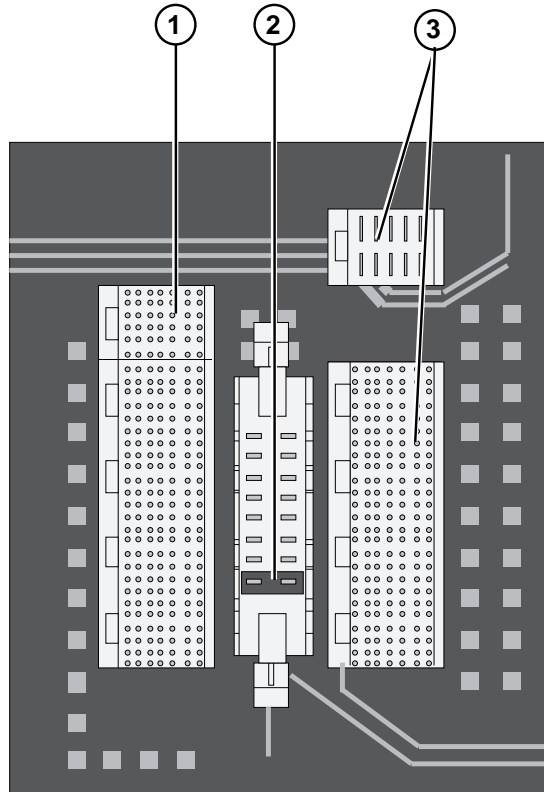
Action	Results
Look for the operational firmware prompt CLK)	CLK) appears
Type Ctrl/O	Main Menu appears
Type 2 to select Show /Modify GIGAswitch Configuration	Configuration Menu appears
Type 6 to select Reset Management/ Reboot the GIGAswitch	Reset/Reboot Menu appears
Type 2 to select Reboot the GIGAswitch	WARNING: . . . (yes/no) appears
Type yes	Reboot Menu appears
Type 2 to select Reboot into diagnostic mode	CLK diagnostic dispatcher menu and prompt appears

¹ If power has already been applied the Main Menu will be present.

Installing the Maintenance Jumper

An SCP card must be operational to enter an OBM mode of operation. Using a maintenance jumper allows entry into the OBM maintenance mode without an operational SCP.

The following figure and table describe how to enter the OBM maintenance mode using a maintenance jumper.



Number	Description
❶	Slot 6
❷	Maintenance jumper
❸	Slot 7

Action	Results
Primary power switch placed in O position	Power removed from unit
Access the maintenance connector	Cards removed from slots 6 and 7
Install maintenance jumper	Jumper installed as shown
Install cards in slots 6 and 7	Cards reinstalled
Primary power switch placed in the (1)(ON) position	CLK diagnostic dispatcher menu and prompt appears

Testing Procedures

Module self-tests (MSTs) are initiated when power is applied or when the system is rebooted. See Appendix B for LED location and meaning.

Diagnostic mode can be used to run selected tests multiple times to isolate intermittent faults. (See the example on the next page). When the fault is identified, repeat the MSTs to ensure that all faults have been corrected.

Example of Using Diagnostic Mode

The following figure is an example of using the diagnostic mode to isolate an intermittent fault in the clock module. Complete navigational information for the diagnostic mode is also provided. For a list of available tests for a given module type "li" at the Diagnostic Dispatcher prompt.

Description of Example

After rebooting into diagnostic mode and entering the CLK Diagnostic Dispatcher mode the following line was entered to set the number of passes from 1 to 10 and to inhibit all outputs except the summaries. Since the module will be replaced if any test fails, it is not necessary to see the other displays.

After setting the default switches, test 101 was run 10 times. The summary indicates the results of the test.

A LINECARD or an SCP card can be tested using the same commands once the Diagnostic Dispatcher mode for that card is entered.

```

                                OBM
RESET/REBOOT MENU
  2 Reboot the GIGAswitch

REBOOT MENU
  2 Reboot into diagnostic mode

CLK DIAGNOSTIC DISPATCHER

Sonoma Clk Crd BIST V1.2 Defaults:/Bell/Halt/Pass=1/Skip
Valid Commands:CLrDEfaultDUmpExitHelpListPEekPOkeRunSeqXDs
.....
Diag_v2.1>DE/pass=10/IA
Diag_v2.1>r101

.....Sequence Summary Repot.....
Runs:      10
Passes:    10
Failures:  0
%Pass:     100

```

LEDs of Logic and Power Modules

This appendix describes the LEDs of the logic and power modules:

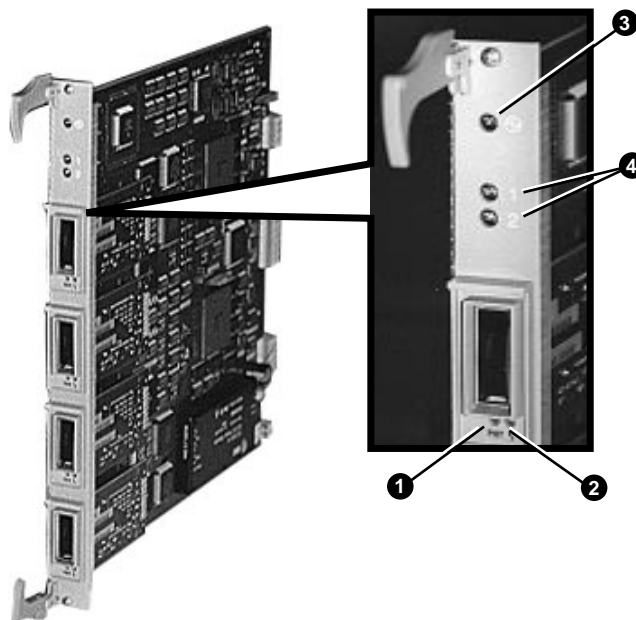
- Logic modules
 - Linecards
 - SCP card
 - Clock card
 - CBS card
- Power modules
 - Fan tray
 - ACFEU
 - DCFEU
 - PSA (security switch)

Linecard LEDs

All GIGAswitch/FDDI System linecards have a module LED and two or four port LEDs. The following figure identifies the location of each LED. Table B-1 and Table B-2 describe the functions of each LED.

Table B-1 Meaning of Module LEDs

State	Module ③ LED	Port ④ LED
Off	No power	No power
Green Steady	Module self-test (MST) passed	Port active in forwarding state
Green Flashing	Firmware downline load in progress	Port not in forwarding state
Amber Steady	MST failed or fatal firmware error	MST failure on this port
Amber Flashing	MST in progress	MST in progress
Alternate Green/Amber	<u>Nonfatal</u> error logged within last 10 minutes	–



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PMD LEDs Each PMD on the FGL-2 and FGL-4 FDDI linecards has two LEDs. Table B-2 describes the functions of PMD LEDs.

Table B-2 Meaning of PMD LEDs

State	PHY ① Status LED ¹ (Left)	Port ② Type LED ² (Right)
Off	Ready to connect	M-Type
Green Steady	Connection accepted	S-Type
Green Flashing	Broken or disabled	A/B Type
Amber Steady	Link confidence test failure	PMD loop test failed
Amber Flashing	Topology reject	–
Alternate Green/Amber	Dual homing standby	–

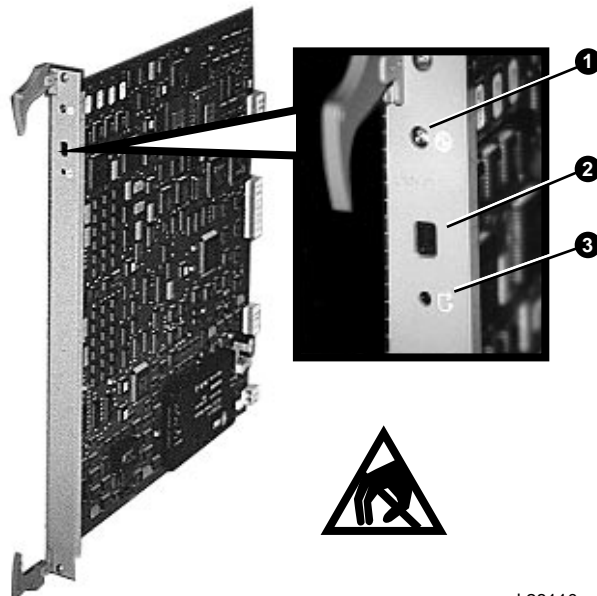
¹Formerly called PMD PHY LED

²Formerly called PMD FRU LED

AGL-2 LEDs The LEDs on the AGL-2 MOD PHY ports are described in the GIGAswitch/FDDI System AGL-2 Manager's Reference Guide.

SCP Card LEDs

The switch control processor (SCP) has a single module LED near the top of the module and a HEX display below it. There is also a Reset push button on the SCP. Pressing it causes the SCP to reinitialize. In the case of the elected SCP it also causes all linecards to be reinitialized in turn.



mk28110

Number/Item	Function
❶ Module LED (Amber /green)	Indicates power available and MST status
❷ Diagnostic Readout (Hexadecimal LED)	Indicates coded diagnostic results and operational state
❸ Reset (push button)	Resets the SCP

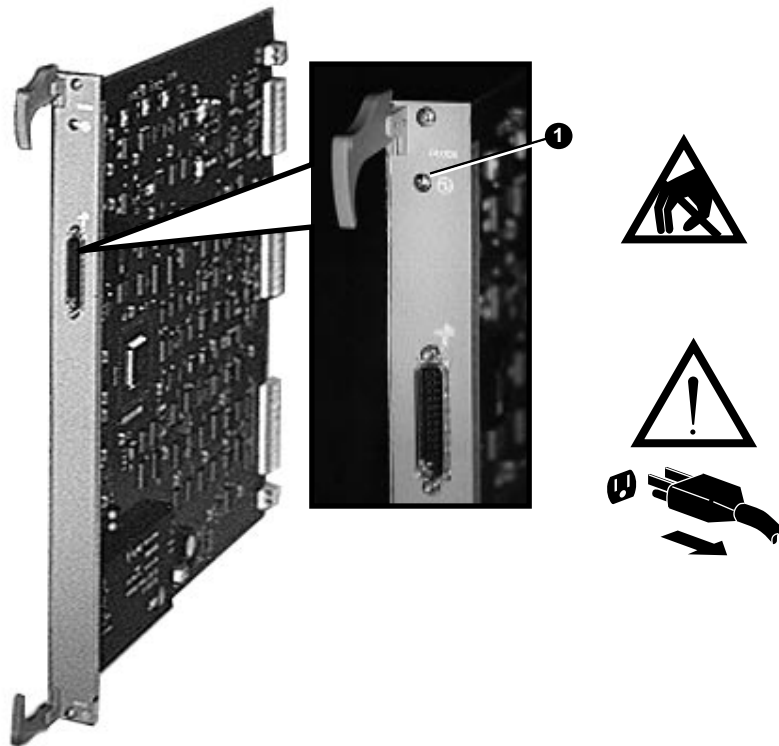
Table B–3 further identifies the purpose of the SCP LEDs and the HEX display.

Table B–3 Meaning of SCP Indicators

SCP LED ❶ State	HEX ❷ Display	Meaning
Green	E	Elected SCP—operational
	B	Backup SCP—operational
	D	Firmware copy in progress
	D/E (alternating)	Corrupted image found; performing emergency download, if possible
Amber	Out	Module self-test failed
	F	Startup complete
Amber Flashing		Module self-test in progress; HEX display indicates test in progress

CLK Card LED

The clock card (CLK) has a single LED near the top of the module. It reflects the state of the module as described in the Table B-4.



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Table B-4 Meaning of CLK LED

CLK LED ① State	Meaning
Amber	Running bootblock diagnostics
Amber Patterned Flashing	Bootblock diagnostic or unexpected interrupt failure—identified by pattern of flashes
Amber Flashing	Module diagnostic failure
Green	Bootblock diagnostics passed; diagnostic or operational code is running

CBS Card LED

The crossbar switch (CBS) has a single LED. Table B-5 describes this LED.

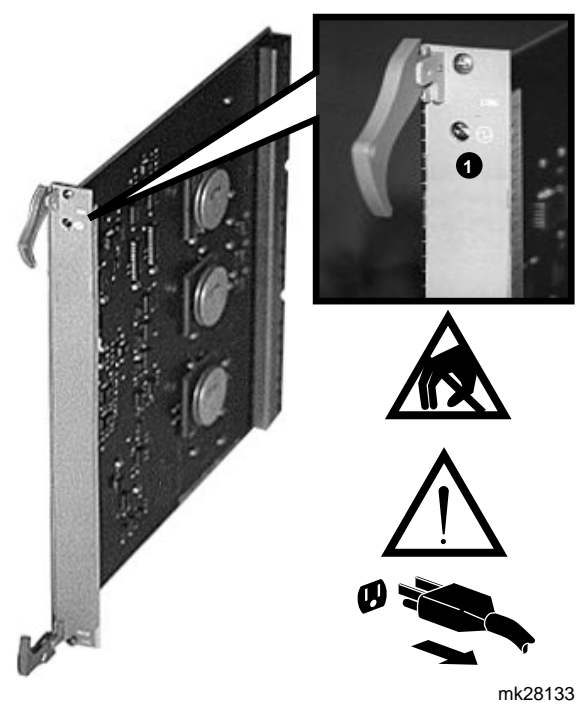


Table B-5 Meaning of CBS LED

CBS LED ❶ State	Meaning
Green	Test passed
Amber	Test failed

Fan Tray Assembly LED

The fan tray assembly has a single LED. Table B-6 describes this LED.

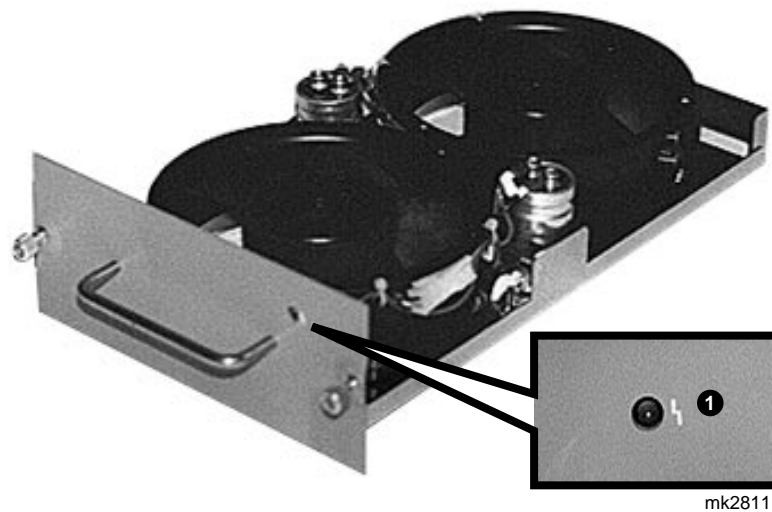
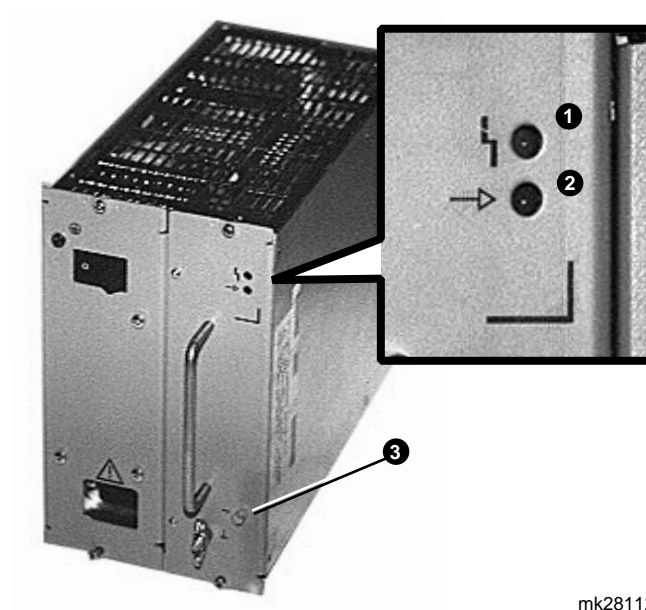


Table B-6 Meaning of Fan Tray Assembly LED

Fan Tray Fault ❶	
State	Meaning
Off	MST passed
Amber	MST failure

ACFEU LEDs

The ACFEU has three LEDs. Table B-7 describes these LEDs.



mk28112

Table B-7 Meaning of ACFEU LEDs

Number/Name	Condition
❶/ACFEU	Amber Steady—MST failure
❷/ACFEU OK	Green On—MST passed
❸/AC Power	Off—Power is NOT available for FEU circuit breaker
	On—Power is available for ACFEU circuit breaker

48V DCFEU LEDs

The 48 V dc power interface unit has three LEDs which are located in the same place as in the ACFEU above. Table B-8 describes each LED.

Table B-8 Meaning of 48 Vdc LEDs

Number/Name	Condition
❶/DCFEU	Amber Steady—MST failure
❷/DCFEU OK	Green On—MST passed
❸/DC Power	Off—Power is NOT available for DCFEU circuit breaker
	On—Power is available for DCFEU circuit breaker

PSA LEDs

The PSA has a keyswitch and two LEDs. Table B-9 describes these LEDs.

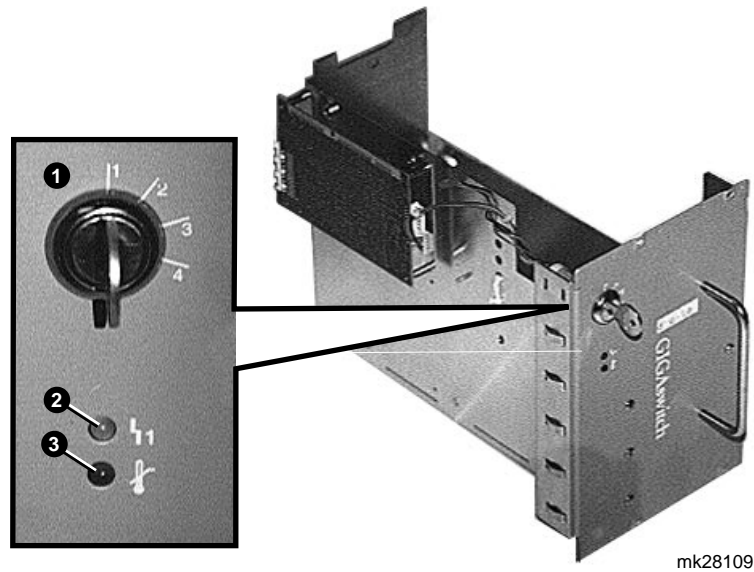


Table B-9 Meaning of Security Keyswitch LEDs

Number/Name	Condition
②/PSC card Fault	Off—MST passed Amber Steady—MST failure
③/System temperature fault	Red Steady—System temperature fault Off—System temperature normal

Refer to the *GIGAswitch/FDDI System Manager's guide* for more information on security keyswitch settings.

GIGAswitch/FDDI System Specifications

This appendix provides the specifications for the GIGAswitch/FDDI System. These specifications include:

- Physical specifications for the GIGAswitch/FDDI System.
- Electrical specifications for the GIGAswitch/FDDI System.
- Environmental specifications for the GIGAswitch/FDDI System.

Physical Dimensions of the GIGAswitch/FDDI System

The following table shows the physical specifications for the GIGAswitch/FDDI System. Allow 90.0 cm (35.4 in) contiguous vertical space for the installation of the GIGAswitch/FDDI System, the lower plenum, and the upper plenum.

Table C–1 Physical Specifications

Parameter	Min	Typ	Max	Units	Symbol
Mounting type		Rack mounted		–	–
Height	–	896.2	–	millimeters	mm
	–	35.25	–	inches	in
Width	–	507	–	millimeters	mm
	–	19.95	–	inches	in
Depth	–	495	–	millimeters	mm
	–	19.50	–	inches	in
Weight	–	87.1	–	kilograms	kg
	–	192	–	pounds	lb
Operation clearance (front)	51	–	–	millimeters	mm
	2.0	–	–	inches	in
Operation clearance (rear)	76	–	–	millimeters	mm
	3.0	–	–	inches	in
Operation clearance (side)	0	–	–	millimeters	mm
	0	–	–	inches	in
Service clearance (front)	914	–	–	millimeters	mm
	36.0	–	–	inches	in
Service clearance (rear)	914	–	–	millimeters	mm
	36.0	–	–	inches	in
Service clearance (side)	0	–	–	millimeters	mm
	0	–	–	inches	in
Service clearance (top)	0	–	–	millimeters	mm
	0	–	–	inches	in
Shipping height ¹	–	1283	–	millimeters	mm
	–	50.5	–	inches	in
Shipping width ¹	–	–	–	millimeters	mm
	–	26.0	–	inches	in
Shipping depth ¹	–	–	–	millimeters	mm
	–	32.0	–	inches	in
Shipping weight ¹	–	99.8	120	kilograms	kg
	–	220	264	pounds	lbs

¹Shipping for standard shipping container

Electrical Information

AC Input Power Requirements

The following table shows the ac input power requirements for the GIGAswitch/FDDI System.

Parameter	Min	Typ	Max	Units	Symbol
Nominal Voltage	–	120	–	volts	V
Operational Voltage Range	93	–	264	volts	V
Nominal Frequency	–	50/60	–	hertz	Hz
Frequency Range	47	–	63	hertz	Hz
Number of Phases	–	1	–	none	NA
120 V Single Phase Input Current (Steady State)	–	8.0	15	amperes	A
120 V Single Phase Input Current (Neutral N)	–	4.0	7.5	amperes	A
120 V Single Phase Input Current (Ground G)	–	1.0	–	milliamperes	mA
240 V Single Phase Input Current (Steady State)	–	4.0	7.5	amperes	A
240 V Single Phase Input Current (Neutral N)	–	4.0	7.5	amperes	A
240 V Single Phase Input Current (Ground G)	–	1.0	–	milliamperes	mA
Ride-Through Time	100	–	–	milliseconds	ms
Inrush Current	–	–	n/a	amperes peak	A
Start-Up Current	–	–	n/a	rms amperes	A
Start-Up Current Duration	–	–	n/a	seconds	s
Power Consumption	–	800	1250	watts	W
Apparent Power	–	1052	1316	volt amperes	VA
Power Factor	–	.95	–	none	PF
Crest Factor	–	1.37	–	none	CF

Power Cord Types

The following table lists the power cords used in the various country kits available with the GIGAswitch/FDDI System.

Country	Part Number	Country	Part Number
Denmark	BN16A-2E	Israel	BN18W-2E
UK/Ireland	BN12A-2E	Central Europe	BN13A-2E
Italy	BN17A-2E	Australia	BN22C-2E
Switzerland	BN14A-2E	New Zealand	BN22C-2E

Line cords are 2.5 meters in length. Use different outlets and services breakers for redundant power supplies).

The following table shows the dc power requirements for the GIGAswitch/FDDI System.

Parameter	Min	Typ	Max	Units	Symbol
Power Consumption	–	640	1000	watts	W
Current at 48 V dc	–	12	20	amperes	A
Current at 12-26 V dc	—	3.6	5.0	amperes	A
DC voltage range (48 V dc)	46.32	–	49.68	volts	V dc
DC voltage range (12 V dc - 26 Vdc)	11.0	–	27.1	volts	V dc
Output Watts Available	–	–	1000	watts	W
Current available at 48 V dc	–	–	22.	amperes	A
Current available at 11-27.1 V dc	—	–	1.5-5.0	amperes	A

Environmental Information

Parameter	Min	Typ	Max	Units	Symbol
Temperature (Operating)	10	–	35	degrees Celsius	°C
	50	–	95	degrees Fahrenheit	°F
Altitude derating	–	1.8	–	degrees Celsius per kilometer	°C/km
	–	1.0	–	degrees Fahrenheit per 1000 feet	°F/1000 ft
Temperature (Nonoperating)	-40	–	66	degrees Celsius	°C
	-40	–	151	degrees Fahrenheit	°F
Temperature (Storage)	-40	–	66	degrees Celsius	°C
	-40	–	151	degrees Fahrenheit	°F
Relative Humidity (Operating)	10	–	90	percent relative humidity (noncondensing)	%RH
Relative Humidity (Nonoperating)	<50	–	95	percent relative humidity (noncondensing)	%RH
Relative Humidity (Storage)	<50	–	95	percent relative humidity (noncondensing)	%RH
Maximum Wet Bulb Temperature (Operating)	–	–	25	degrees Celsius	°C
Maximum Wet Bulb Temperature (Storage)	–	–	77	degrees Fahrenheit	°F
	–	–	146	degrees Celsius	°C
Minimum Dew Point Temperature (Operating)	–	–	115	degrees Fahrenheit	°F
	2	–	–	degrees Celsius	°C
Heat Dissipation	36	–	–	degrees Fahrenheit	°F
	–	800	1250	watts	W
Altitude (Operating)	–	2730	4265	Btu/hr	Btu/hr
	–	–	2400	meters above sea level	m
Altitude (Nonoperating)	–	–	8000	feet above sea level	ft
	–	–	4900	meters above sea level	m
Mechanical Shock (Operating)	–	–	16000	feet above sea level	ft
	–	–	10+3	milliseconds	ms
Vibration Freq Range (Operating)	Duration		10g	gravities	G
	Level		500	hertz	Hz
Vibration Level (Operating)	5	–	500	hertz	Hz
Vibration Level (Operating)	.010- in DB	.25g	peak		
Mechanical Shock (Nonoperating)	Duration		29.2	milliseconds	ms
Vibration Freq Range (Nonoperating)	Level		13.67	gravities	G
	10	–	300	hertz	Hz
Vibration Level (Nonoperating)	1.40g	–	.029		
Acoustic Emission (Operating)	–	–	gz/hz	Bels	B

Parameter	Min	Typ	Max	Units	Symbol
Acoustic Emission (LNPE)	–	5.9	–	decibels	dBA
Acoustic Emission (LPA)	–	46	–	decibels	dBA
Acoustic Emission (Idle /Standby)	–		–	Bels	B
Acoustic Emission (LNPE)	–	5.9	–	decibels	dBA
Acoustic Emission (LPA)	–	46	–	decibels	dBA
Airflow Intake Location		Top-Front			
Airflow Exhaust Location		Bottom Rear			

Ventilation

The GIGAswitch/FDDI System cooling system is designed to be tolerant of various rack installation configurations. However, to provide adequate ventilation:

- Do not block off the inlet air vents (upper grilles).
- Do not block off the outlet air vents (lower grilles).
- Do not allow the cooling air entering the GIGAswitch/FDDI System to rise above 32°C (90°F).

EMI Susceptibility

The following table shows the electromagnetic interference (EMI) susceptibility for the GIGAswitch System.

Parameter		Maximum	Units	Symbol
Broadband Conducted EMI	Class A	Composite (FCC/VDE)	Volts dbuv	dbuv
Narrowband Conducted Transients	Frequency Range V rms into 50 ohms	-3db 10KHZ to 30MHZ 3VRMS	kilohertz, megahertz Volts	kHz, MHz V
Narrowband Radiated Susceptibility	Frequency Range Level	.01MHZ-1GHZ 5 Volts/M	kilohertz, megahertz Volts per Meter	kHz, MHz V/m
ESD Control		15KV	kilovolts	kV

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