



Installing ONS 15454 SDH FMEC-DS1/E1 Cards

Product Name: 15454E-120E1-FMEC=

This document contains a description of FMEC-DS1/E1 card features, installation procedures, removal instructions, and technical specifications. Use this document in conjunction with the *Cisco ONS 15454 SDH Installation and Operations Guide* and the *Cisco ONS 15454 SDH Troubleshooting and Reference Guide* when working with FMEC-DS1/E1 cards.

This document contains the following sections:

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Note

For information about circuits and card capacities, see the *Cisco ONS 15454 SDH Installation and Operations Guide*.

FMEC-DS1/E1 Front Mount Electrical Connection Card Description

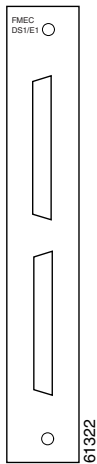
The ONS 15454 SDH FMEC-DS1/E1 card (Figure 1) provides front mount electrical connection for fourteen ITU-compliant, G.703 E-1 ports. With FMEC-DS1/E1, each E1-N-14 port operates at 2.048 Mbits/s (Mbps) over a 120 ohms balanced cable via two 37-pin DB connectors.



Caution These E1 ports on the FMEC-DS1/E1 interface card are only capable to be connected to SELV circuits. The E1 interface is not intended for connection to any Australian Telecommunications networks without written consent of the network manager.

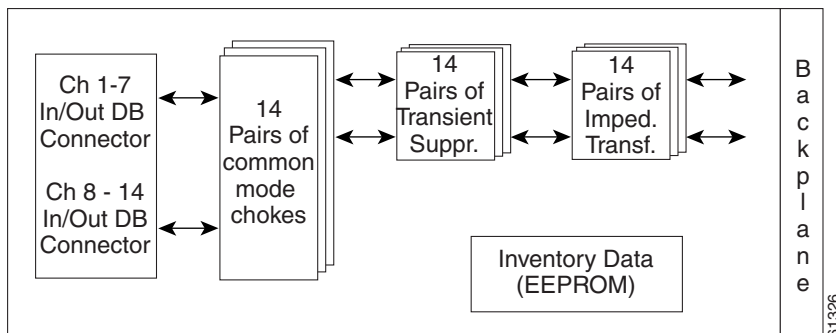
Figure 1 shows the FMEC-DS1/E1 faceplate. Figure 2 shows the block diagram.

Figure 1 FMEC-DS1/E1 faceplate



You can install the FMEC-DS1/E1 card in any EFCA (Electrical Facility Connector Assy) slot from slot 18 to 22 or slot 25 to 29 on the ONS 15454 SDH. Each FMEC-DS1/E1 card port features E1-level inputs and outputs supporting cable losses of up to 6 dB @ 1024 kHz.

Figure 2 FMEC-DS1/E1 block diagram



FMEC-DS1/E1 Card-Level Indicators

The FMEC-DS1/E1 faceplate has no card-level LEDs.

FMEC-DS1/E1 Card Specifications

- FMEC-DS1/E1 Input
 - Bit Rate: 2.048 Mbits/s (Mbps) \pm 50 ppm
 - Line Code: HDB-3
 - Termination: Balanced twisted pair cable
 - Input Impedance: 120 ohms \pm 5%
 - Cable Loss: up to 6 dB @ 1024 kHz
- FMEC-DS1/E1 Output
 - Bit Rate: 2.048 Mbits/s (Mbps) \pm 50 ppm
 - Line Code: HDB-3
 - Termination: Balanced twisted pair cable
 - Output Impedance: 120 ohms \pm 5%
 - Pulse Shape: ITU-T G.703 Figure 15 / Table 7
 - Pulse Amplitude: ITU-T G.703 Figure 15 / Table 7
- FMEC-DS1/E1 Electrical Interface
 - Connectors: 37-pin DB connectors
- Environmental
 - Operating Temperature: -5 to +45 degrees Celsius
 - Operating Humidity: 5 - 95%, non-condensing
 - Power Consumption: 0.00 W, 0.00 A (AMPS) @ -48V, 0.0 BTU/Hr.
- Dimensions
 - Height: 182 mm, (7.165 in.)
 - Width: 32 mm, (1.25 in.)
 - Depth: 92 mm, (3.62 in.)
 - Depth with backplane connector: 98 mm, (3.87 in.)
 - Weight not including clam shell: 0.3 kg (0.6 lbs.)
- Compliance

ONS 15454 SDH cards, when installed in a system, comply with these standards:

- Safety: IEC 60950, EN 60950, UL 60950, CSA C22.2 No. 60950, TS 001, AS/NZS 3260

Installation Procedures

Use this section if you are installing or removing the FMEC-DS1/E1 card for the first time. After you become familiar with ONS 15454 SDH card installation and boot up, use this section as a reference.

**Caution**

Always use the supplied electrostatic discharge (ESD) wristband when working with an ONS 15454 SDH. Plug the wristband cable into the ESD jack located on the lower right outside edge of the shelf assembly and ensure the shelf assembly is properly grounded.

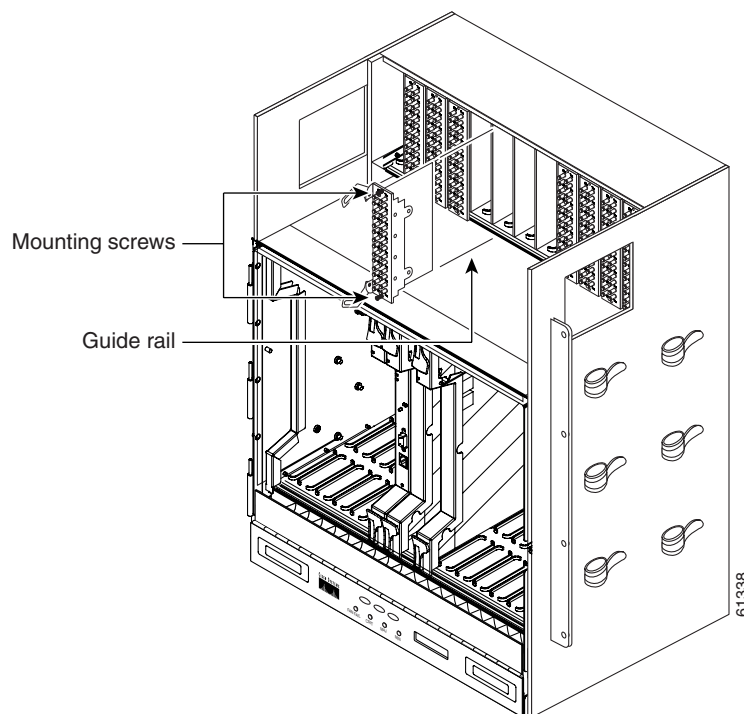
**Caution**

Hazardous voltage or energy may be present on the backplane when the system is operating. Use caution when servicing.

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- Step 1** Carefully insert the card into the rails of the desired slot ([Figure 3 on page 5](#)).
 - Step 2** Move the upper ejector down and the lower ejector up to enable the card being inserted into the backplane connectors.
 - Step 3** Gently push the card into the connector on the back plane.
 - Step 4** Tighten the front mounting screws with a Phillips or slot screwdriver.
-

FMEC-DS1/E1 cards have electrical plugs that plug into electrical connectors on the shelf assembly backplane. When the ejectors are fully closed and the mounting screws are tightened, the card plugs into the shelf assembly backplane. [Figure 3 on page 5](#) shows general card installation.

Figure 3 Installing an FMEC card in an ONS 15454 SDH



Card Turn Up

Follow the steps in this section to verify card turn up. If one or more of the Cisco Transport Controller (CTC) software screen conditions according to [“Verify Successful Turn Up of the FMEC-DS1/E1 Card” section on page 5](#) are not met, re-install the card. Replace the unit if the faulty state persists.

Verify Successful Turn Up of the FMEC-DS1/E1 Card

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- Step 1** Verify that power is applied to the shelf assembly.
 - Step 2** Verify that the FMEC-DS1/E1 card has been installed in the correct slot (Slot 18 to 22 or 25 to 29, for the E1-N-14 card in slot 1 to 5 or 13 to 17, respectively).
 - Step 3** Verify that the card appears in the correct slot on the CTC software screen.
 - Step 4** Verify that the card is white on the CTC software screen.
 - Step 5** Verify that the card is shown in Inventory on the CTC software screen.
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Removal Procedures

Use this section if you are installing or removing the FMEC-DS1/E1 card for the first time. After you become familiar with ONS 15454 SDH card installation and boot up, use this section as a reference.

**Caution**

Always use the supplied electrostatic discharge (ESD) wristband when working with an ONS 15454 SDH. Plug the wristband cable into the ESD jack located on the lower right outside edge of the shelf assembly and ensure the shelf assembly is properly grounded.

**Caution**

Hazardous voltage or energy may be present on the backplane when the system is operating. Use caution when servicing.

- Step 1** If there is traffic on the card, route this traffic to other interfaces.
- Step 2** Disconnect the cables with 37-pin DB connectors from the FMEC card to be removed. Do not forget to mark the connectors or cables for correct reinstallation afterwards.
- Step 3** Loosen the front mounting screws ([Figure 3 on page 5](#)).
- Step 4** Move the upper ejector up and the lower ejector down to extract the card from the backplane connectors.
- Step 5** Carefully remove the card from the shelf.

Related Documentation

- DOC-7813038= *Cisco ONS 15454 SDH Installation and Operations Guide*
- DOC-7813037= *Cisco ONS 15454 SDH Troubleshooting and Reference Guide*

Obtaining Documentation

The following sections explain how to obtain documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following URL:

<http://www.cisco.com>

Translated documentation is available at the following URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco product documentation from the Networking Products MarketPlace:
http://www.cisco.com/cgi-bin/order/order_root.pl
- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

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Cisco Systems
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170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

Cisco.com

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- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

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<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available through the Cisco TAC: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Inquiries to Cisco TAC are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Which Cisco TAC resource you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

The Cisco TAC Web Site allows you to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to the following URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco services contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to the following URL to register:

<http://www.cisco.com/register/>

If you cannot resolve your technical issues by using the Cisco TAC Web Site, and you are a Cisco.com registered user, you can open a case online by using the TAC Case Open tool at the following URL:

<http://www.cisco.com/tac/caseopen>

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; these classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer will automatically open a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled; for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). In addition, please have available your service agreement number and your product serial number.

This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section.

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