



# Installing ONS 15454 SDH FMEC-E3/DS3 Cards

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Product Name: 15454E-E3DS3-FMEC=

This document contains a description of FMEC-E3/DS3 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-E3/DS3 cards.

This document contains the following sections:

- “FMEC-E3/DS3 Front Mount Electrical Connection Card Description” section on page 2
- “FMEC-E3/DS3 Card Specifications” section on page 3
- “Installation Procedures” section on page 4
- “Removal Procedures” section on page 6
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This document contains the following procedures:

- “Installation Procedures” procedure on page 4
- “Card Turn Up” procedure on page 5
- “Verify Successful Turn Up of the FMEC-E3/DS3 Card” procedure on page 5
- “Removal Procedures” procedure on page 6



**Note**

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

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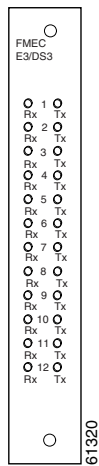
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# FMEC-E3/DS3 Front Mount Electrical Connection Card Description

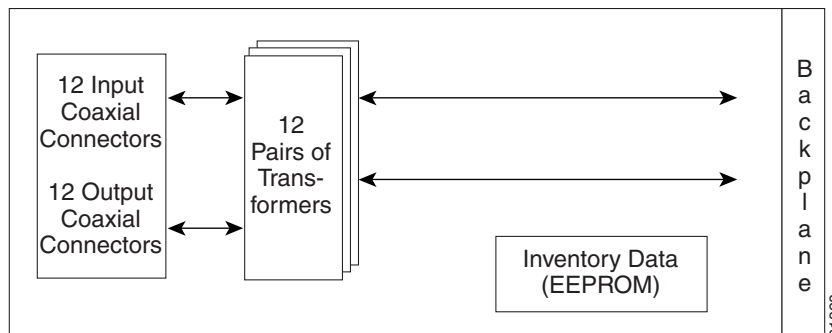
The ONS 15454 SDH FMEC-T54-E1 card provides front mount electrical connection for twelve ITU-compliant, G.703 E-3 or DS-3 ports. With FMEC-E3/DS3, each interface of an E3-12 card operates at 34.368 MBits/s (Mbps), resp. each interface of a DS3I-N-12 card operates at 44.736 MBits/s (Mbps) over a 75 ohms unbalanced 1.0/2.3 miniature coax connector. Figure 1 shows the FMEC-E3/DS3 faceplate and Figure 2 shows a block diagram of the card.

**Figure 1** FMEC-E3/DS3 faceplate



You can install the FMEC-E3/DS3 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-E3/DS3 card interface features E3-level or DS3-level inputs and outputs supporting cable losses of up to 12 dB @ 17184 kHz for E3 signals, up to 137 m (450 ft.) 734A, RG59, 728A / 24 m (79 ft.) RG179 for DS3 signals .

**Figure 2** FMEC-E3/DS3 block diagram



## FMEC-E3/DS3 Card-Level Indicators

The FMEC-E3/DS3 faceplate has no card-level LEDs.

## FMEC-E3/DS3 Card Specifications

- FMEC-E3/DS3 Input (for E3 signals)
  - Bit Rate: 34.368 MBits/s (Mbps)  $\pm$  20 ppm
  - Line Code: HDB-3
  - Termination: Unbalanced coaxial cable
  - Input Impedance: 75 ohms  $\pm$  5%
  - Cable Loss: up to 12 dB @ 17184 kHz
- FMEC-E3/DS3 Output (for E3 signals)
  - Bit Rate: 34.368 MBits/s (Mbps)  $\pm$  20 ppm
  - Line Code: HDB-3
  - Termination: Unbalanced coaxial cable
  - Output Impedance: 75 ohms  $\pm$  5%
  - Pulse Shape: ITU-T G.703 Figure 17
  - Pulse Amplitude: ITU-T G.703 Figure 17 / Table 9
- FMEC-E3/DS3 Input (for DS3 signals)
  - Bit Rate: 44.736 MBits/s (Mbps)  $\pm$  20 ppm
  - Line Code: B3ZS
  - Termination: Unbalanced coaxial cable
  - Input Impedance: 75 ohms  $\pm$  5%
  - Cable Loss: Max 137 m (450 ft.) 734A, RG59, 728A / Max 24 m (79 ft.) RG179
- FMEC-E3/DS3 Output (for DS3 signals)
  - Bit Rate: 44.736 MBits/s (Mbps)  $\pm$  20 ppm
  - Line Code: B3ZS
  - Termination: Unbalanced coaxial cable
  - Output Impedance: 75 ohms  $\pm$  5%
  - AIS: TR-TSY-000191-compliant
  - Power Level: ITU-T G.703, Table 6; -1.8 - +5.7 dBm
  - Pulse Shape: ITU-T G.703, Table 6 / Figure 14; ANSI T1.102-1988 Figure 8
  - Pulse Amplitude: ITU-T G.703, Table 6; 0.36 - 0.85 V peak-to-peak
  - Line Build Out: 0-225 ft.; 226-450 ft.
- FMEC-E3/DS3 Electrical Interface
  - Connectors: 1.0/2.3 miniature coax 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 (0.7 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-E3/DS3 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.



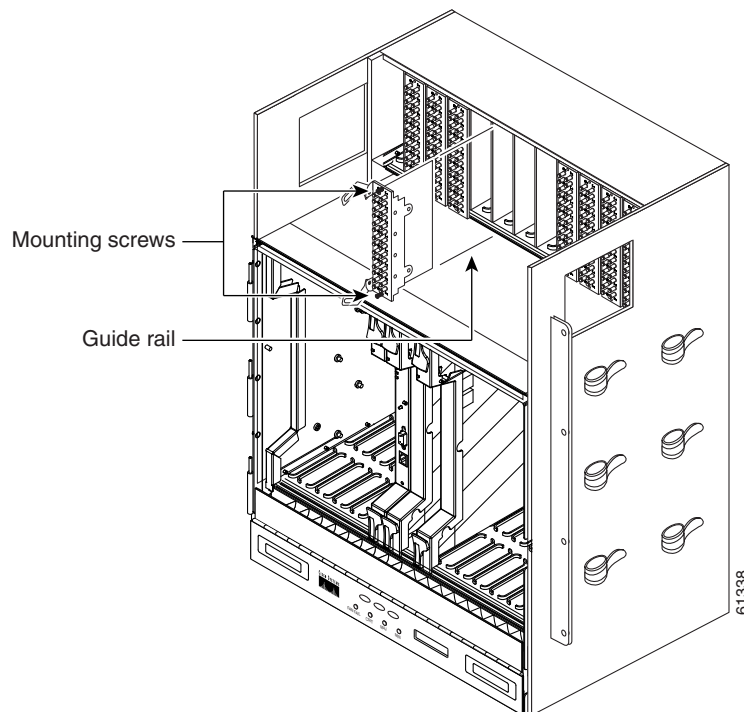
### Caution

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

- Step 1** 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-E3/DS3 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-E3/DS3 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-E3/DS3 Card

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- Step 1** Verify that power is applied to the shelf assembly.
  - Step 2** Verify that the FMEC-E3/DS3 card has been installed in the correct slot (Slot 18 to 22 or 25 to 29, for the E3-12 or DS3I-N-12 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-E3/DS3 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 all the coaxial cables with 1.0/2.3 miniature coax connectors from the FMEC card to be removed. Do not forget to mark all the connectors or cables for correct reinstallation afterwards.


**Note**

To disconnect the cable from the FMEC, first pull the outer ring of the connector, then pull the connector. Pulling the cable without first having pulled the outer ring of the connector to release its locking can result in damage to the cable or the connector or both.

**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 and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

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

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