

Product Overview

This chapter describes the Cisco 6705 integrated access device chassis, and the service modules and line interface modules supported by the Cisco 6705 integrated access device. This chapter includes the following sections:

- Overview
- Components and Features:
 - Chassis
 - Service Modules
 - Line Interface Modules

Overview

The Cisco 6705 integrated access device is a high-density, scalable platform supporting up to 56 POTS circuits, 32 DS1s or 8 T1s. Designed for customer premise and multi-dwelling unit (MDU) applications, it simultaneously manages voice and data circuit-switched and packet-based voice and data traffic. The unit supports fully utilized narrowband and wideband line interface modules, and up to four subutilized broadband line interface modules.

Multiport-per-slot architecture supports fundamental time division multiplexing (TDM) and asynchronous transfer mode (ATM) technologies. The unit is compliant with relevant NEBS, ANSI, and Telcordia network element standards and provides the following functionality for customer premises equipment (CPE) and remote terminal (RT) applications:

- Digital loop carrier (DLC)
- Integrated access

Components and Features

Chassis

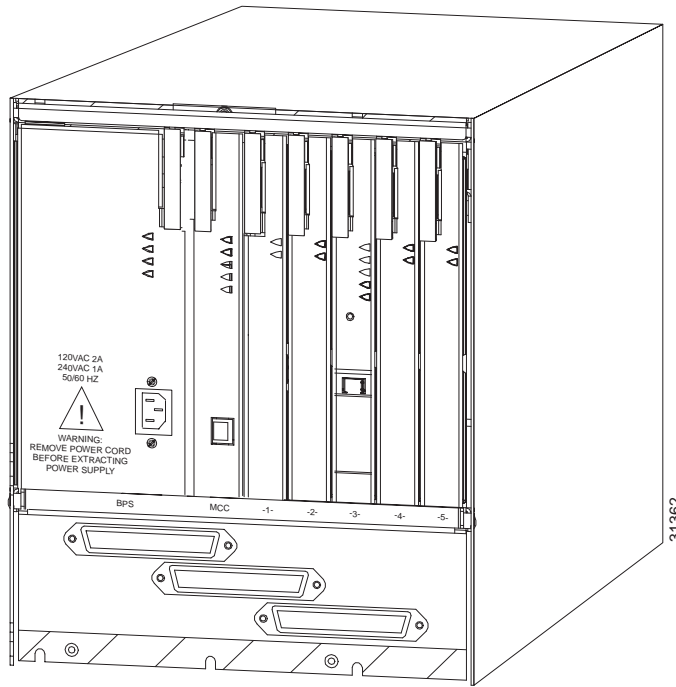
The Cisco 6705 integrated access device contains a single shelf chassis that holds the following:

- Designated-Purpose Slots
- General-Purpose Slots

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- Backplane

Figure 1-1 Cisco 6705 Integrated Access Device Chassis



Designated-Purpose Slots

The first two slots at the left of the Cisco 6705 chassis are exclusively designed to support the following service modules:

- The slot labeled BPS exclusively supports the bank power supply (BPS-AC) module, which provides power to the MCC-INT module and passes -48 VDC to the line interface modules.
- The slot labeled MCC exclusively supports the main control card (MCC-INT) module, which provides centralized processing, synchronization, and some switching functions. The MCC module provides Ethernet 10BaseT connectivity.

General-Purpose Slots

The Cisco 6705 chassis provides five numbered general-purpose slots designed to support the following line interface service modules:

- General-purpose slot number 1, to the immediate right of the MCC slot, supports only the RPOTS/16, FXS/16, and RUVG/8 line interface modules, and the BRG service modules.
- Slots 2 through 5 support all line interface modules and the BRG service module.

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Backplane

The backplane provides the basic architecture and interconnectivity of the Cisco 6705 integrated access device. The backplane also offers three connectors for subscriber cabling. For more information about cabling, see Chapter , “Cabling and Wiring.”

Service Modules

Service modules for the Cisco 6705 integrated access device are hot swappable. They can be inserted into (or removed from) the Cisco 6705 chassis with or without power applied to the system without incurring damage.

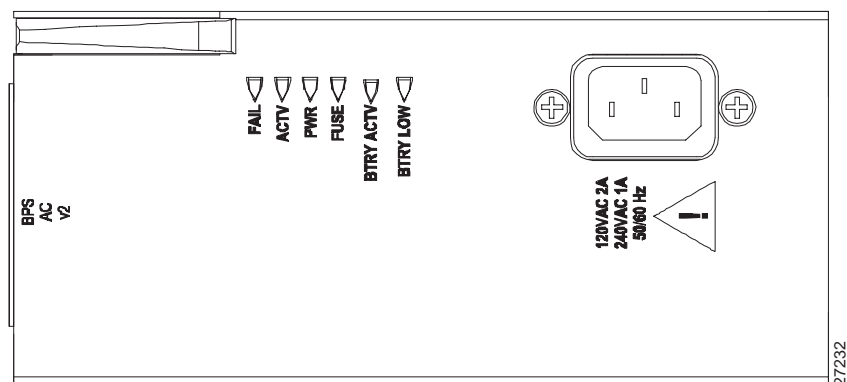
The following service modules are available for the Cisco 6705 integrated access device:

- Bank Power Supply, Alternating Current
- Main Control Card, Integrated
- Bank Ring Generator

Bank Power Supply, Alternating Current

The bank power supply, alternating current (BPS-AC) module supplies power to the MCC-INT module and passes -48 VDC to the line interface modules. The BPS-AC derives the -48 VDC from an internal AC/DC converter that accepts 120 VAC and converts it to the -48 VDC needed for the telephony equipment. In cases where the local AC source fails, the BPS-AC passes the -48 VDC from an optional battery backup to the chassis. The BPS-AC provides trickle-charging for the optional battery backup box and overcurrent protection for the Cisco 6705 chassis.

Figure 1-2 BPS-AC Front Panel



Available Slots

The BPS-AC module must be placed in designated-purpose slot BPS.

LEDs

The LEDs on the BPS-AC module indicate chassis and module status. (See Table 1-1.)

ALPHA DRAFT - CISCO CONFIDENTIAL**Table 1-1 BPS-HP LED Indicators**

LED	Status	Condition
FAIL	Red	BPS has failed.
	Off	BPS has not failed.
ACTV	Green	BPS is powering the MCC.
	Off	BPS is not powering an MCC.
PWR	Green	BPS is supplying bus voltage above the minimum threshold of -42.5 VDC.
	Off	BPS is not supplying voltage.
FUSE	Red	A non-replaceable fuse has blown.
	Off	No fuses have blown.
BTRY ACTV	Green	The chassis is running on the battery backup box.
	Off	The chassis is running on AC power.
BTRY LOW	Yellow	The battery backup box is providing between -45 VDC and -42.5 VDC to the chassis.
	Off	The battery backup box is providing sufficient power to the chassis, or the chassis is running on AC power.

Connectors

The BPS-AC module provides a three-prong AC connector for use with a standard AC power cord.

**Caution**

During battery backup operation, when the battery voltage drops below -42.5 VDC, the Cisco 6705 will shut down.

Main Control Card, Integrated

The main control card–integrated (MCC-INT) module with stratum 4 clock performs centralized processing, synchronization, and switching functions for the Cisco 6705. The MCC-INT can also derive timing from an inbound DS3-CHNL module.

Figure 1-3 MCC-INT Front Panel

The MCC-INT module supports the following functions:

- TDM and ATM interfaces with the line interface modules
- Alarm processing and management
- TDM and ATM centralized switching functions

ALPHA DRAFT - CISCO CONFIDENTIAL**Available Slots**

The MCC-INT module must be placed in the designated-purpose slot labeled MCC.

LEDs

The LEDs on the MCC-INT module indicate module and embedded software status. (See Table 1-2.)

Table 1-2 MCC-INT LED Indicators

LED	Status	Condition
FAIL	Red	MCC has failed.
	Off	MCC has not failed.
ACTV	Green	MCC is active.
	Off	MCC is not active.
STBY	Off	This LED is not used.
BKUP	Steady yellow	Embedded software backup is in progress.
	Off	No backup is in progress.
SYNC	Steady green	MCC is synchronized off a reference.
	Blinking green	MCC is in holdover mode.
	Off	MCC is not synchronized (freerun mode).

Connectors

The MCC-INT module provides a 10BaseT Ethernet interface for system management.

Bank Ring Generator

The bank ring generator (BRG) module provides the appropriate ring voltage and synchronization signal to the chassis backplane for use by the RPOTS/16 and RUVG/8 analog line interface modules. The BRG uses sine wave ringing and ring cadence following. The ring capacity is 20 REN (20 Watts), operating at 85 Vrms ring voltage and 20 Hz ringing frequency.

The REN number indicates the quantity of ringers which may be connected to a single telephone line and still ring. The total of all RENs of the telephones connected to the one line must not exceed the value 5, or some or all of the ringers may not operate.

Figure 1-4 BRG Front Panel

**Available Slots**

The BRG module can be placed in general-purpose slots 1 through 5.

*ALPHA DRAFT - CISCO CONFIDENTIAL***LEDs**

The LEDs on the BRG module indicate module status. (See Table 1-3.)

Table 1-3 BRG LED Indicators

LED	Status	Condition
FAIL	Red	BRG has failed.
	Off	BRG has not failed.
ACTV	Green	BRG is in service, and proper ring voltage is applied.
	Off	BRG is not in service.

Alternately blinking FAIL and ACTV LEDs indicate that a slot has been provisioned in EMS for another type of module.

Connectors

The BRG module does not have any external connectors or interfaces.

**Note**

For information on cabling requirements for all line interface modules, refer to Chapter , “Cabling and Wiring.”

Line Interface Modules

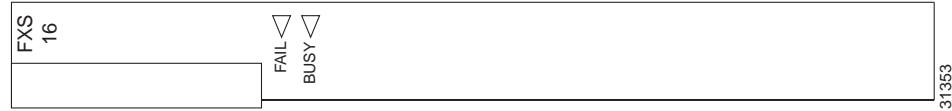
Line interface modules for the Cisco 6705 integrated access device are hot swappable. They can be inserted into (or removed from) the Cisco 6705 chassis with or without power applied to the system without incurring damage. Line interface modules can be inserted in any order.

The following line interface modules are available for the Cisco 6700 series:

- FXS/16
- RPOTS/16
- RUVG/8
- ISDN-BRI/8
- DSX1/8
- T1-2-V35
- DSX3/CHNL
- OC3c-UNI
- STSX1/CHNL
- MSDSL-2W

FXS/16

Each FXS/16 line interface module provides 16 ports of FXS or short-drop POTS/FXS service. The module also provides integrated ring generation and line test functionality.

*ALPHA DRAFT - CISCO CONFIDENTIAL***Figure 1-5 FXS/16 Front Panel****Available Slots**

The FXS/16 module can be placed in general-purpose slots 1 through 5.

LEDs

The LEDs on the FXS/16 module indicate module status. (See Table 1-4.)

Table 1-4 FXS/16 LED Indicators

LED	Status	Condition
FAIL	Red	FXS/16 has failed.
	Off	FXS/16 has not failed.
BUSY	Green	FXS/16 is in service, and at least one line is in service.
	Off	FXS/16 in not in service, or no lines are in service.

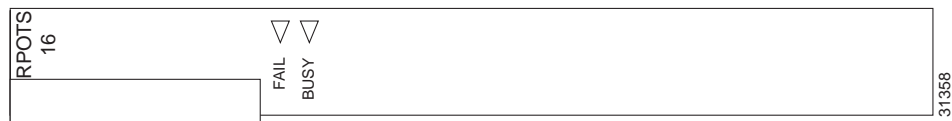
Alternately blinking FAIL and BUSY LEDs indicate that a slot has been provisioned in EMS for another type of module.

Connectors

Use the backplane connectors to connect the FXS/16 module. See Chapter , “Cabling and Wiring,” for subscriber cabling information.

RPOTS/16

Each RPOTS/16 line interface module provides 16 circuits of remote POTS service.

Figure 1-6 RPOTS/16 Front Panel**Available Slots**

The RPOTS/16 module can be placed in general-purpose slots 1 through 5.

LEDs

The LEDs on the RPOTS/16 module indicate module status. (See Table 1-5.)

*ALPHA DRAFT - CISCO CONFIDENTIAL***Table 1-5 RPOTS/16 LED Indicators**

LED	Status	Condition
FAIL	Red	RPOTS/16 has failed.
	Off	RPOTS/16 has not failed.
BUSY	Green	RPOTS/16 is in service, and at least one line is in service.
	Off	RPOTS/16 in not in service, or no lines are in service.

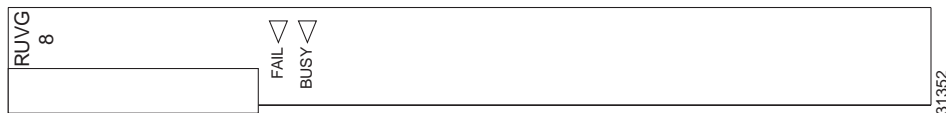
Alternately blinking FAIL and BUSY LEDs indicate that a slot has been provisioned in EMS for another type of module.

Connectors

Use the backplane connectors to connect the RPOTS/16 module. See Chapter , “Cabling and Wiring,” for subscriber cabling information.

RUVG/8

Each RUVG/8 line interface module provides eight circuits of remote UVG service. Each circuit can be provisioned for POTS, E/UVG, and FXS.

Figure 1-7 RUVG/8 Front Panel**Available Slots**

The RUVG/8 module can be placed in general-purpose slots 1 through 5.

LEDs

The LEDs on the RUVG/8 module indicate module status. (See Table 1-6.)

Table 1-6 RUVG/8 LED Indicators

LED	Status	Condition
FAIL	Red	RUVG/8 has failed.
	Off	RUVG/8 has not failed.
BUSY	Green	RUVG/8 is in service, and at least one line is in service.
	Off	RUVG/8 in not in service, or no lines are in service.

Alternately blinking FAIL and BUSY LEDs indicate that a slot has been provisioned in EMS for another type of module.

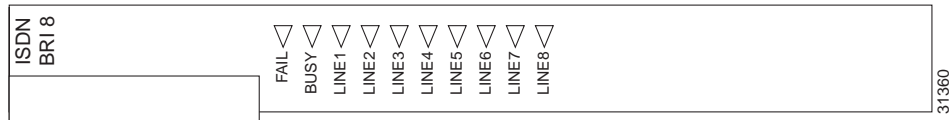
*ALPHA DRAFT - CISCO CONFIDENTIAL***Connectors**

Use the backplane connectors to connect the RUVG/8 module. See Chapter , “Cabling and Wiring,” for subscriber cabling information.

ISDN-BRI/8

Each ISDN-BRI/8 line interface module provides eight U-interface ports of basic rate ISDN service at 144 kbps.

Figure 1-8 ISDN-BRI/8 Front Panel

**Available Slots**

The ISDN-BRI/8 module can be placed in general-purpose slots 1 through 5.

LEDs

The LEDs on the ISDN-BRI/8 module indicate module and line status. (See Table 1-7.)

Table 1-7 ISDN-BRI/8 LED Indicators

LED	Status	Condition
FAIL	Red	ISDN-BRI/8 has failed.
	Off	ISDN-BRI/8 has not failed.
BUSY	Green	ISDN-BRI/8 is in service, and at least one line is in service.
	Off	ISDN-BRI/8 in not in service, or no lines are in service.
LINE (1-8)	Green	Line is in service and has no errors.
	Red	Line is in near end or far end failure.
	Off	Line is not in service.

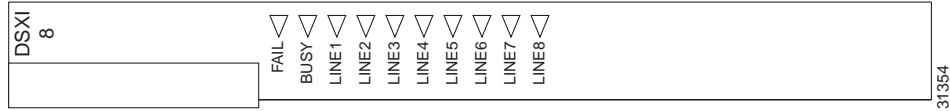
Alternately blinking FAIL and BUSY LEDs indicate a slot that has been provisioned in EMS for another type of module.

Connectors

Use the backplane connectors to connect the ISDN-BRI/8 module. See Chapter , “Cabling and Wiring,” for subscriber cabling information.

DSX1/8

The DSX1/8 is a DSX1 interface with eight ports.

ALPHA DRAFT - CISCO CONFIDENTIAL**Figure 1-9 DSX1/8 Front Panel**

The DSX1/8 module supports the following functions and features:

- DS1 cross-connects
- ISDN-PRI
- Frame Relay and IP service
- Channelized 1:0 cross-connects

Available Slots

The DSX1/8 module can be placed in general-purpose slots 2 through 5.

LEDs

The LEDs on the DSX1/8 module indicate module and line status. (See Table 1-8.)

Table 1-8 DSX1/8 LED Indicators

LED	Status	Condition
FAIL	Red	MSDSL-2W has failed.
	Off	MSDSL-2W has not failed.
BUSY	Green	MSDSL-2W is in service, and at least one line is in service.
	Off	MSDSL-2W is not in service, or no lines are in service.
LINE 1-4	Steady green	Line is synchronized, in service, and has no errors.
	Blinking green	Line is in loopback mode.
	Red	Line is in Loss of Signal or Loss of Frame alarm state.
	Yellow	Line is in far end failure, AIS, yellow alarm, or idle alarm state.
	Off	Line is not synchronized or not in service.

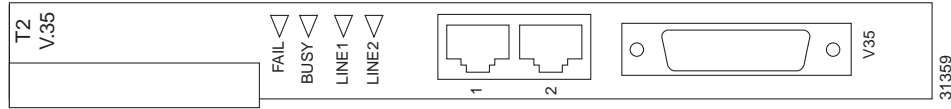
Alternately blinking FAIL and BUSY LEDs indicate that a slot has been provisioned in EMS for another type of module.

Connectors

Use the backplane connectors to connect the DSX1/8 module. See Chapter , “Cabling and Wiring,” for subscriber cabling information.

T1-2-V35

Each T1-2-V35 line interface module provides two ports that can each be provisioned for DSX1 or T1 line buildouts (LBO). The card also features a 26-pin V.35 port on the face plate of the module.

ALPHA DRAFT - CISCO CONFIDENTIAL**Figure 1-10 T1-2-V35 Front Panel****Available Slots**

The T1-2-V35 module can be placed in general-purpose slots 2 through 5.

LEDs

The LEDs on the T1-2-V35 module indicate module and line status. (See Table 1-9.)

Table 1-9 T1-2-V35 LED Indicators

LED	Status	Condition
FAIL	Red	MSDSL-2W has failed.
	Off	MSDSL-2W has not failed.
BUSY	Green	MSDSL-2W is in service, and at least one line is in service.
	Off	MSDSL-2W is not in service, or no lines are in service.
LINE 1-4	Steady green	Line is synchronized, in service, and has no errors.
	Blinking green	Line is in loopback mode.
	Red	Line is in Loss of Signal or Loss of Frame alarm state.
	Yellow	Line is in far end failure, AIS, yellow alarm, or idle alarm state.
	Off	Line is not synchronized or not in service.

Alternately blinking FAIL and BUSY LEDs indicate that a slot has been provisioned in EMS for another type of module.

Connectors

The T1-2-V35 module provides three interfaces for user traffic:

- Two T1 interfaces using RJ-45 connectors
- One V.35 connector

DSX3/CHNL

Each DSX3/CHNL line interface module provides DS3 service through a coaxial interface. Channelized 3:1:0 cross-connects are supported.

**Note**

A DSX3/CHNL module installed in a Cisco 6705 can only support 10 DS1s.

ALPHA DRAFT - CISCO CONFIDENTIAL**Figure 1-11 DSX3/CHNL Front Panel****Available Slots**

The DSX3/CHNL module can be placed in slots 2 through 5.

LEDs

The LEDs on the DSX3/CHNL module indicate module and line status. (See Table 1-10.)

Table 1-10 DSX3/CHNL LED Indicators

LED	Status	Condition
FAIL	Red	DSX3/CHNL has failed.
	Off	DSX3/CHNL has not failed.
BUSY	Green	DSX3/CHNL is in service, and at least one line is in service.
	Off	DSX3/CHNL in not in service, or no lines are in service.
LINE 1	Green	Line is in service and has no errors.
	Red	Line is in near-end or far-end failure.
	Off	Line is not in service.

Alternately blinking FAIL and BUSY LEDs indicate that a slot has been provisioned in EMS for another type of module.

Connectors

The DSX3/CHNL module provides three interfaces for user traffic:

- Transmit (Tx)
- Receive (Rx)
- Monitor

Each interface uses a BNC connector designed for use with a 75-ohm coaxial cable.

OC3c-UNI

The OC3c-UNI line interface module provides an interface for point-to-point OC3c-UNI data transfer at 30 Mbps.

**Note**

An OC3c-UNI module installed in a Cisco 6705 integrated access device chassis has a maximum throughput of 30 Mbps. When creating a cross-connect to an OC3c-UNI module installed in a Cisco 6732, maximum throughput must be restricted to 30 Mbps to avoid data loss.

ALPHA DRAFT - CISCO CONFIDENTIAL**Figure 1-12 OC3c-UNI Front Panel****Available Slots**

The OC3c-UNI module can be placed in slots 2 through 5.

**Note**

A maximum of two OC3c-UNI modules can be placed in the Cisco 6705 chassis.

LEDs

The LEDs on the OC3c-UNI module indicate module and line status. (See Table 1-11.)

Table 1-11 OC3c-UNI LED Indicators

LED	Status	Condition
FAIL	Red	OC3c-UNI has failed.
	Off	OC3c-UNI has not failed.
TX	Green	Far end of connection is receiving data.
	Off	Far end of connection is not receiving data.
RX	Green	Near end of connection is receiving data.
	Off	Near end of connection is not receiving data.
LINE	Green	Line is in service and has no errors.
	Red	Line is in near-end or far-end failure.
	Off	Line is not in service.

Connectors

The OC3c-UNI module provides two user traffic interfaces using a female duplex SC connector. These bidirectional optical ports accommodate single-mode intermediate reach fiber cable.

STXS1/CHNL

Each STXS1/CHNL line interface module provides an STS-1 interface supporting channelized DS1/DS0 service. Channelized 3:1:0 cross-connects are supported.

**Note**

A DSX3/CHNL module installed in a Cisco 6705 can only support 10 DS1s.

ALPHA DRAFT - CISCO CONFIDENTIAL**Figure 1-13 STSX1/CHNL Front Panel****Available Slots**

The STSX1/CHNL module can be placed in slots 2 through 5.

LEDs

The LEDs on the STSX1/CHNL module indicate module and line status. (See Table 1-12.)

Table 1-12 STSX1/CHNL LED Indicators

LED	Status	Condition
FAIL	Red	STSX1/CHNL has failed.
	Off	STSX1/CHNL has not failed.
BUSY	Green	STSX1/CHNL is in service, and at least one line is in service.
	Off	STSX1/CHNL in not in service, or no lines are in service.
LINE 1	Green	Line is in service and has no errors.
	Red	Line is in near-end or far-end failure.
	Off	Line is not in service.

Connectors

The DSX3/CHNL module provides three interfaces for user traffic:

- Transmit (Tx)
- Receive (Rx)
- Monitor

Each interface uses a BNC connector designed for use with a 75-ohm coaxial cable.

MSDSL-2W

Each MSDSL-2W provides 2-wire MSDSL service to four subscriber ports at transfer rates up to 2.3 Mbps.

Figure 1-14 MSDSL-2 Front Panel

ALPHA DRAFT - CISCO CONFIDENTIAL**Available Slots**

The MSDSL-2W module can be placed in general-purpose slots 2 through 5.

LEDs

The LEDs on the MSDSL-2W module indicate module and line status. (See Table 1-13.)

Table 1-13 MSDSL-2W LED Indicators

LED	Status	Condition
FAIL	Red	MSDSL-2W has failed.
	Off	MSDSL-2W has not failed.
BUSY	Green	MSDSL-2W is in service, and at least one line is in service.
	Off	MSDSL-2W is not in service, or no lines are in service.
LINE 1-4	Green	Line is synchronized, in service, and has no errors.
	Red	Line is in alarm state.
	Off	Line is not synchronized or not in service.

Connectors

Use the backplane connectors to connect the MSDSL-2W module. See Chapter , “Cabling and Wiring,” for subscriber cabling information.

DS3 ATM

The DS3 ATM module supports a single DS3 line. It enables support for ATM layer switching, cell processing, and network traffic management for broadband ATM traffic and ATM-based subscriber linecards at the DS3 rate (44.736 mbps).

Figure 1-15 DS3 ATM Front Panel

Available Slots

The MSDSL-2W module can be placed in general-purpose slots 2 through 5.

LEDs

The LEDs on the MSDSL-2W module indicate module and line status. (See Table 1-13.)

*ALPHA DRAFT - CISCO CONFIDENTIAL***Table 1-14** *MSDSL-2W LED Indicators*

LED	Status	Condition
FAIL	Red	MSDSL-2W has failed.
	Off	MSDSL-2W has not failed.
BUSY	Green	MSDSL-2W is in service, and at least one line is in service.
	Off	MSDSL-2W is not in service, or no lines are in service.
LINE 1-4	Green	Line is synchronized, in service, and has no errors.
	Red	Line is in alarm state.
	Off	Line is not synchronized or not in service.

Connectors

Use the backplane connectors to connect the MSDSL-2W module. See Chapter , “Cabling and Wiring,” for subscriber cabling information.