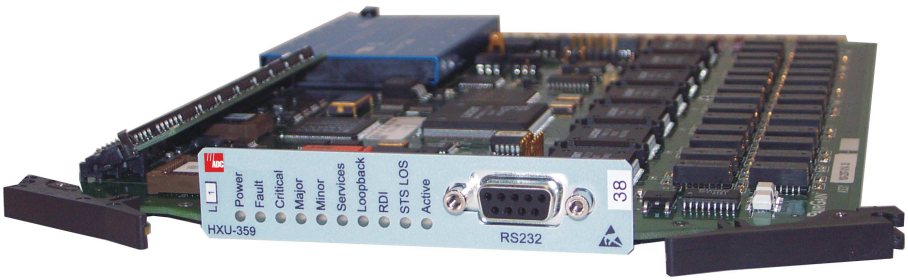
QUICK INSTALLATION



HXU-359 LIST 2
STS-1 MULTIPLEXER

THE HXU-359 LIST 2

The HiGain® HXU-359 Multiplexer Unit can operate as the multiplexing component of the Wideband 3190 system (HMS-358) or the standalone ThinMux multipler chassis (ACE-COM L1). The HXU-359 List 2 multiplexes 28 DS1 lines into a single Synchronous Transport Signal (STS-1) interface at a signal rate of 51.84 Mbps.

Wideband 3190 and ThinMux applications typically incorporate two HXU-359s, one board functioning as the active board, the other as a standby in the event of failure.

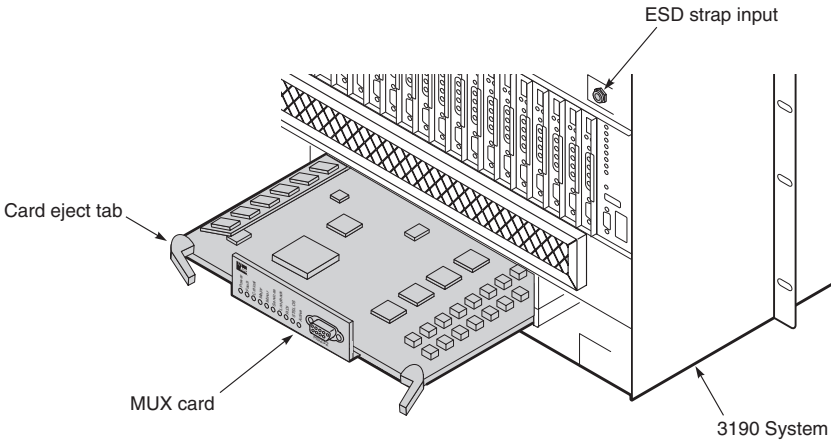
FEATURES

- Complete software provisioning
- In-service software upgrades
- Advanced management using Terminal Access Option (TAO) software
- Flexible Time Slot Assignment (TSA)
- Front-panel RS-232 craft port for direct connection to a maintenance terminal
- Primary and secondary timing sources with multiple synchronization options
- STS-1 and DS1 loopbacks
- Internal diagnostics testing
- Virtual Tributary (VT) allocation of 28 T1 interfaces
- Automatic and manual protection switching
- Front-panel status indicators, including office alarms

SPECIFICATIONS

Operating Temperature	-13°F to +149°F (-25°C to +65°C)
Operating Humidity	5% to 95%, non-condensing
Input Voltage Range	-40 Vdc to -57.5 Vdc
Output Voltage	+5 Vdc ±0.2
Power Input Source	Redundant Battery A/Battery B sources in the Wideband System 3190 shelf
STS-1/EC-1 Interface Line Rate	51.84 Mbps ±20 ppm
STS-1/EC-1 Interface Line Coding	Bipolar with 3 Zero Substitution (B3ZS)
DSX-1 Interface Line Rate	1.544 Mb/s ±32 ppm output, ±130 ppm input
DSX-1 Interface Line Coding	Alternate Mark Inversion (AMI) or Bipolar with 8 Zero Substitution (B8ZS)

1 INSTALLATION



Installing an HXU-359 in a Wideband 3190

Do not mix different models of HiGain multiplexers within the same chassis. If you wish to replace an existing HiGain multiplexer with a different model, contact Customer Service.

Take standard precautions to prevent component damage due to electrostatic discharge. Connect an ESD wrist strap to the ESD strap input on the chassis.

1 For an HMU-managed Wideband 3190, set all switches to the OFF position on SW2 switch block (located on the printed circuit board, behind the front panel). These are the default settings. See the HXU-359 illustration inside for details.

2 For a standalone ThinMux chassis or to enable the HXU craft port, set switches 3 and 5 to the ON position. To activate the craft port on the chassis backplane, set switch 5 to the OFF position. Switches 1, 2, 4, and 6 should also be OFF.

3 Align the edges of the replacement card with the slot guides in the multiplexer tray. Grasping the card-eject tabs, gently push the card into the bay.

Continued

Name	Function	Color
Power	Power On	Green
Fault	HXU Controller Malfunction*	Yellow
Critical	Critical Alarm	Red
Major	Major Alarm	Red
Minor	Minor Alarm	Yellow
Services	DS1 Services Alarm	Red
Loopback	Loopback Operation	Green
RDI	Remote Diagnostic Indication	Red
STS LOS	STS-1 Loss of Signal	Red
Active	Active Normal Indication	Green

** It is normal for the Fault LED to flash during powerup.*

Status LEDs

Craft port

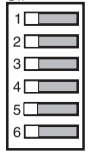
Connect a standard 9-pin terminal cable between the serial port on a PC and the HXU craft port. If SW2 switch block is configured for a ThinMux chassis, use the craft port on the backplane of the ThinMux chassis.

Card-eject tab

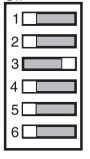
HXU connector

SW2 Switch Block
(behind front panel)

Configuration for **Wideband 3190**

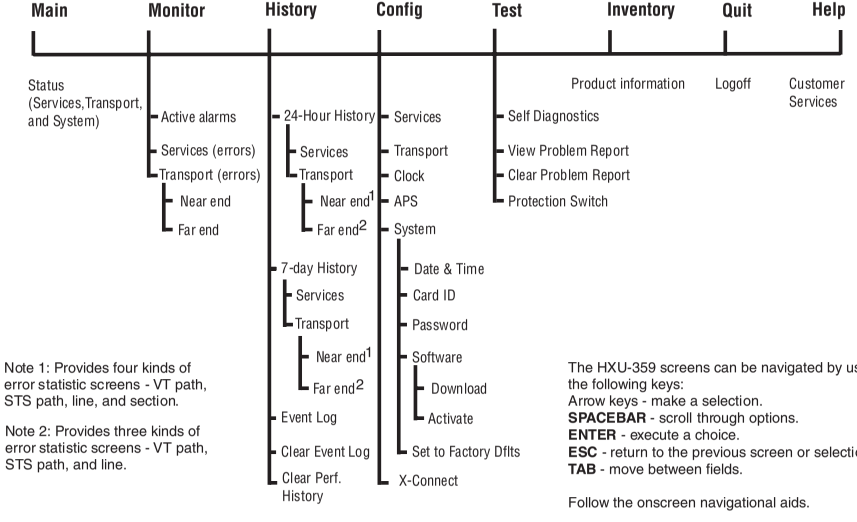


Configuration for **ThinMux Chassis**



(Slide towards HXU faceplate)

Menu Tree for HXU-359 Interface



Note 1: Provides four kinds of error statistic screens - VT path, STS path, line, and section.

Note 2: Provides three kinds of error statistic screens - VT path, STS path, and line.

The HXU-359 screens can be navigated by using the following keys:
Arrow keys - make a selection.
SPACEBAR - scroll through options.
ENTER - execute a choice.
ESC - return to the previous screen or selection.
TAB - move between fields.

Follow the onscreen navigational aids.

Switches 1 - 2	Switch 1	Switch 2	Firmware selection (factory use only):
	ON	ON	Boot PROM: specify software to activate
	ON	OFF	FLASH 1 only
	OFF	ON	FLASH 2 only
	OFF	OFF	Active bank per user
	OFF	**ON**	
Switch 3	OSTS	VT100	Select communications protocol for backplane
Switch 4	Menu	Command line	User interface mode
Switch 5	Chassis backplane connector	HXU front panel	Active serial port
Switch 6			Not used

ON = slide switch towards HXU faceplate
OFF = slide switch towards HXU card-edge connector

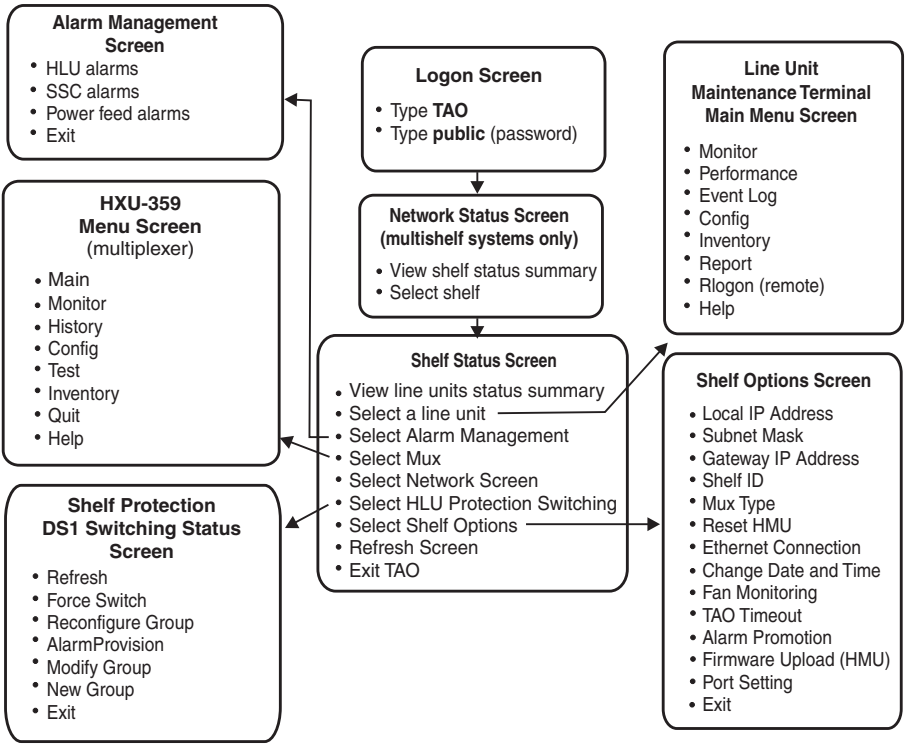
4 Firmly press in on the tabs until the card snaps into place.

The LEDs flash momentarily when the multiplexer card is installed. The power LED and activity LED on the active multiplexer remain illuminated. The LEDs on the inactive (standby) multiplexer should be off, except for the PWR LED.

When installed in a working system that already has an HXU-359, the second HXU is automatically configured for that system by the active HXU in the shelf.

2 ACCESSING THE MANAGEMENT INTERFACE

Wideband 3190 System Installations: These instructions assume you have configured switches 3 and 5 on SW2 to the OFF position (see SW2 switch block in the illustration above) to select the HMU craft port (factory default setting). Connect a maintenance terminal to the craft port of the HMU. The modem settings are 9600 baud, 8 data bits, no parity, 1 stop bit, and VT100 terminal emulation. Refer to the HMU-319 and the Wideband 3190 documentation for more information.



To log on to the HXU screens through the HMU interface:

1 Upon connecting to the HMU-319, the TL1 prompt (<) appears. Type TAO, then press ENTER to invoke TAO. The following password prompt appears.

```
Please enter password for Terminal Access Option:
Password:
```

2 Type `public` (default password), then press ENTER.

3 Type TAO at the prompt, then press ENTER. This opens the Terminal Access Option (TAO) interface.

4 From the Network Status screen (for multishelf configurations), type the number of the desired shelf ID (1 through 32), then press ENTER.

5 From the Shelf Status screen, select the **Shelf Options**, then select **Mux Type** and the type of multiplexer (**HXU-359**).

The logon screen can also be accessed by a TELNET session or through connection to the OS port. See the HMU user manual for more information.

ThinMux Chassis Installations: These instructions assume you have configured switch 3 on SW2 to the ON position (see SW2 switch block in the illustration above). All other switches are in the OFF position. This configures the chassis for VT100 operation and enables the chassis backplane craft port. HXU craft screens are accessed by connecting a management terminal to the craft port on the backplane of the ThinMux chassis. The craft port can access both HXUs.

1 The ADC banner appears on the screen along with a prompt to enter a password:

```
Password:
```

2 Type `public` (default password), then press **ENTER**. The HXU-359 main menu appears.

3 PROVISIONING

The HXU menus can be navigated by using the onscreen navigational aids and the keys shown in the illustration above:

1 Select the **Config** menu, choose **System**, and then perform the following setup tasks:

- **a** Choose **Date & Time** and enter the correct information.
- **b** Choose **Card ID** and type a name for the card (network element name). Press **ENTER**.

2 Select the **Config** menu, choose **Clock**, and then perform the following tasks:

- **a** Select the **Primary Reference** for clock synchronization: Bits A (DS1 Speed), Bits B (DS1 Speed), Internal, Transport, Service # (1 through 28). This selection determines the primary source for clock synchronization.
- **b** Select the **Secondary Reference** for clock synchronization. If the primary reference clock fails, the HXU automatically switches to the secondary one.
- **c** Set the **Timing Reference Switching** (revertive or non revertive). By setting the timing reference to revertive, the clock reverts to the primary clock if the clock is good.
- **d** To manually force the clock synchronization mode, set **Force** to the desired mode (normal, primary, secondary, internal, holdover). The default setting is **normal**.

3 Select the **Config** menu, choose **Services**, and then perform the following tasks:

- **a** Use the arrow keys to select a DS1 service port, then press **ENTER**.
- **b** To configure a DS1 service port, set it to **OOS-A** using the **SPACEBAR** and tab through the configuration fields. (Do not configure a service as OOS-A or OOS-M if it is selected as the primary clock source.)
- **c** Choose the type of service (DS1). At this time only DS1 service is supported.
- **d** Choose the type of line code (B8ZS or AMI).
- **e** Chose the line buildout for DS1 ports (131, 262, 393, 524, or 655 ft.)
- **f** Select the Virtual Tributary Group (VTG) 1 through 7.
- **g** Select the Virtual Tributary Slot (VTS) 1 through 4 and press **ENTER**.
- **h** When finished configuring, reset the port to **IS** to place it in service, then press **ENTER**. You can now configure another service, if you wish.

4 Select the **Config** menu, choose **Transport**, and then perform the following tasks.

- **a** Set **Primary State** to **OOS-A** using the **SPACEBAR**, then press **ENTER** and tab through the configuration fields. (Do not configure a transport as OOS-A or OOS-M if it is selected as the primary clock source.)
- **b** Enter the transmit path trace strings (SONET path names).
- **c** Set the Data Communications Channel (**DCC**) to **ON**.
- **d** **Loopback** should be set to **NONE** for initial setup. Press **ENTER**.
- **e** Configure the line buildout to less than 250 feet or more than 255 feet.
- **f** When finished, set **Primary State** to **IS** and press **ENTER**.

For more detailed information about the HXU software screens, refer to the HXU-359 List 2 user manual, document number LTPH-UM-1127-xx.

FCC Class A Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Limited Warranty

Product warranty is determined by your service agreement. Contact your sales representative or Customer Service for details.

Modifications

Any changes or modifications made to this device that are not expressly approved by ADC DSL Systems, Inc. voids the user's warranty.

All wiring external to the products should follow the provisions of the current edition of the National Electrical Code.

Standards Compliance

This equipment has been tested and verified to comply with the applicable sections of the following safety standards:

- GR 63-CORE - Network Equipment-Building System (NEBS) Requirements
- GR 1089-CORE - Electromagnetic Compatibility and Electrical Safety
- Binational standard, UL-1950/CSA-C22.2 No. 950-95: Safety of Information Technology Equipment

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DNV Certification, Inc.
REGISTERED FIRM

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