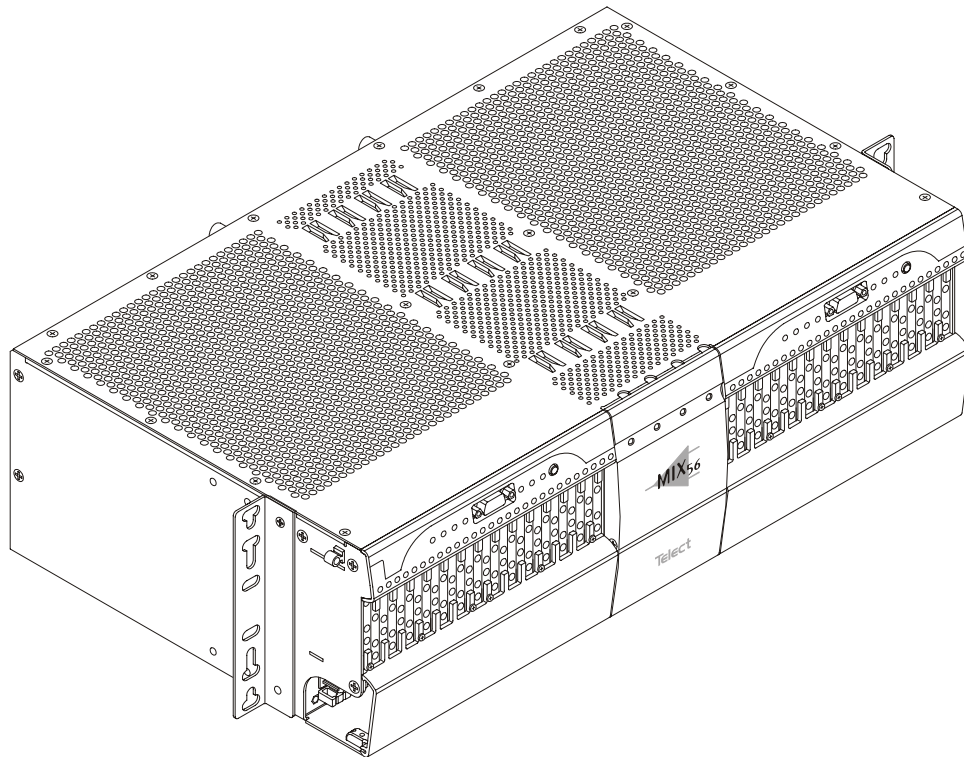


Telect[®]
CONNECTING THE FUTURE[®]



**MIX 56
USER MANUAL**

122188-10 A0

MIX 56 User Manual
Document Number 122188-10 A0
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Contents

1 Descriptions

MIX 56.....	1-1
Features	1-2
Part Numbers	1-2
Main Assemblies.....	1-3
Front Panel	1-3
LEDS	1-4
Rear Panel	1-6
M13 Card	1-7
DSX Jack	1-9
Specifications.....	1-10
Electrical	1-10
Chassis Dimensions	1-11
Chassis Floor Weight (Fully Loaded).....	1-12
Environmental.....	1-12

2 Installation

Installation Considerations	2-1
Location and Space	2-2
Tools and Equipment	2-3
Power	2-4
Technical Support (USA)	2-4
Inspection.....	2-4
Installing MIX 56.....	2-5
Attaching the Mounting Brackets	2-5
Rack-Mounting the Chassis	2-6
Cabling a System	2-8
Cross-Connecting Circuits	2-12
Installing M13 Cards	2-13
Supplying Power.....	2-14

Installing The Optional RJ Connector Retrofit.....	2-15
Specifications.....	2-15
Schematic	2-16
Installation Procedure	2-16
Connecting A Modem.....	2-19
Disconnecting a Modem	2-20

3 User Functions

The Alarm Cutoff/Lamp Button	3-1
Disabling Alarms	3-1
Testing LEDs and Resetting the ACO	3-1
DSX Operation	3-2
Patching Signals.....	3-2
Monitoring Signals	3-3
Modem Operation	3-4

4 Software Operation

Managing A System.....	4-1
Interfaces.....	4-2
Ports	4-2
To Connect With a Craft Interface Over the Craft Port.....	4-3
Craft Interface Basics.....	4-4
Navigating Between Screens	4-4
Navigating Within Screens	4-5
Adding and Selecting Field Information	4-5
Getting Help.....	4-5
Default Software Configuration.....	4-6
Security Screen	4-6
Save Configuration and Restore Configuration Screens	4-7
System Settings Screen	4-7
High-Speed Configuration Screen	4-7
Low-Speed Configuration Screen	4-8
Alarm Thresholds Screen.....	4-8
System Interfaces Screen	4-8
Accessing The Craft Interface	4-9
Setting Security.....	4-9
Managing Users	4-10
Logging In.....	4-12
Logging Out.....	4-13
Configuring MIX 56	4-14
Specifying System Settings & M13 Card Functions	4-14
Specifying System Interface Settings	4-17
Configuring the High-Speed Signal.....	4-19

Configuring the Low-Speed Channels.....	4-21
Saving a Configuration	4-26
Restoring a Configuration.....	4-28
Viewing Errors	4-32
Viewing High-Speed Errors.....	4-32
Viewing Low-Speed Errors	4-35
Managing Alarms And Events.....	4-39
Viewing Alarms	4-40
Setting Alarm Thresholds	4-42
Viewing Events.....	4-44
Performing Diagnostics	4-46
Running Loopbacks	4-46
BER Testing	4-50
To Specify a BER Test	4-51

5 Owner Maintenance

Replacing DSX Jack Tracer Lamps	5-2
Replacing DSX Jacks.....	5-3
Replacing M13 Cards	5-6
Replacing Alarm Cards.....	5-8
Updating the Software	5-9
TFTP Update.....	5-10
Craft Port Update	5-12
Transferring Software Versions Between Cards	5-14

6 Service

In Case Of Difficulty	6-1
In-Warranty Service	6-1
Out-Of-Warranty Service.....	6-1
Repacking For Shipment	6-2

Appendix A: Connector Pinouts

64-Pin Connector	A-1
DS1 In	A-1
DS1 Out	A-2
RJ Connector Circuit Assignments.....	A-2
Ethernet Connector	A-3
External Alarm Connector	A-3
Power Connector.....	A-4
Craft Port.....	A-4
Ground Switch	A-4

1

Descriptions

MIX 56

Telect's Multiplexer with Integrated Cross-Connect, 56 Circuit (MIX 56) chassis houses two fully independent systems, each with 28 DSX jacks and up to two M13 multiplexer cards. Each system can be used as a DSX only, as a nonredundant multiplexer, or as a redundant multiplexer.

When used as a DSX only, a system can be cabled quickly using the rear 64-pin connectors and provides full DSX functionality, including patching and monitoring, using the DSX jacks on the chassis front.

When a single M13 card is added, a system becomes a nonredundant multiplexer/demultiplexer, which combines 28 DS1 or 21 E1 signals into a single industry standard DS3 signal and separates a DS3 signal into 28 DS1 or 21 E1 signals.

Adding a second card provides 1:1 redundancy for all M13 functionality. The 28 DS1 low-speed channels and the DS3 high-speed interfaces reside on one M13 card occupying one card slot, while the protection card occupies the second card slot. The two cards are in constant communication, and all configuration changes made to the active card are also automatically made to the standby card.

Redundant and nonredundant multiplexer applications include full DSX functionality when DS1 wiring is connected to the wire-wrap pins on the front of the chassis, rather than to the rear 64-pin connectors.

Configuration, diagnostics, and performance monitoring are performed using SNMP through the Ethernet port, or using the Craft interface either remotely with Telnet through the Ethernet port or locally through the RS-232 Craft port.

Features

- DSX and M13 in one chassis
- Two fully independent systems per chassis, each with 28 DSX jacks and up to two M13 cards, in a 5.25 inch (3 RU) rack space
- Mounts in 19 inch (48.3 cm) or 23 inch (58.4 cm) WECCO-spaced or EIA-spaced racks
- Multiplexes 28 DS1 or 21 E1 signals into one DS3 signal and demultiplexes a DS3 signal into 28 DS1 or 21 E1 signals
- 1:1 redundancy with second M13 card
- Processor switching occurs in less than 50 ms
- LED status indicators and tracer lamps on front panel
- DSX jacks, tracer lamps, and alarm boards are field replaceable and M13 cards are hot-swappable, all from the front of the chassis
- Form-C critical, major, and minor external alarm contacts
- Remote provisioning and monitoring through SNMP or two concurrent Telnet sessions
- Separate alarm and event logs are rotating logs of up to 99 entries each
- Selectable alarm thresholds
- DS1 and DS3 loopback capabilities
- BER Testing
- DS3 signal format selectable between C-bit or M13 mode
- C-Bit Remote Control to the MIX 56 at the other end of the DS3 link
- DS1 line coding individually selectable between AMI or B8ZS for T1 and AMI or HDB3 for E1
- Adjustable DS1 transmit line build out (LBO) for each channel
- Automatic DS3 LBO
- DS3 transmit clock source either recovered from DS3 receive signal or by internal oscillator
- Universal voltages: 20Vdc to 60Vdc
- Three levels of user login security

Part Numbers

Part No.	Configuration
747-0000-2448	56 DSX Jacks, No M13 Cards
747-1103-2801	56 DSX Jacks, Two M13 Cards
747-1103-5601	56 DSX Jacks, Four M13 Cards

MAIN ASSEMBLIES

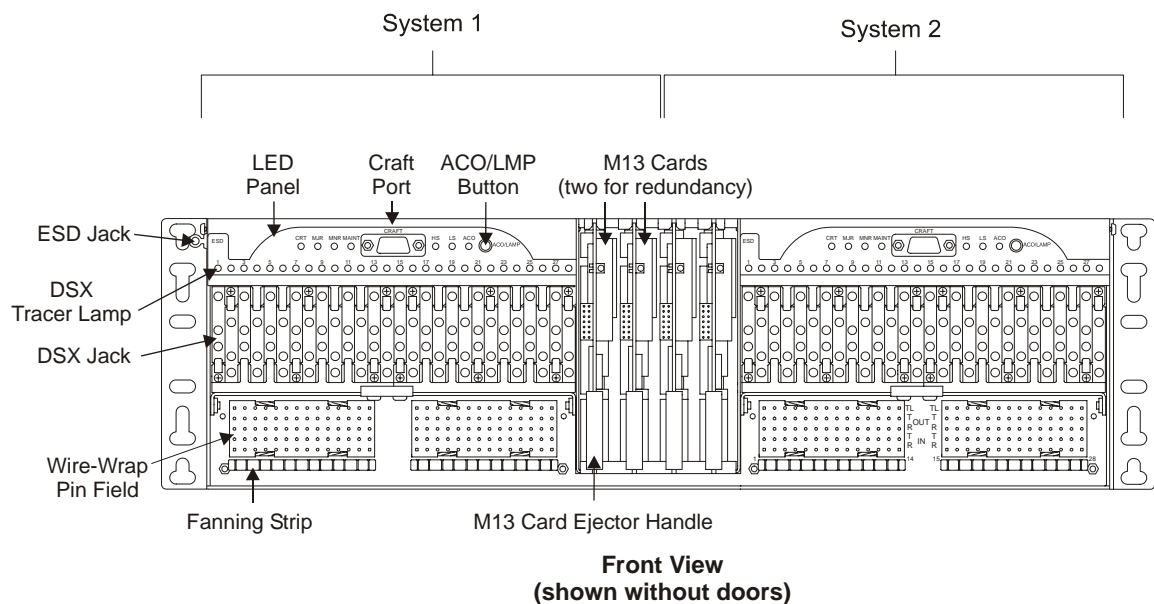


! ALERT

ALERT! To avoid electrostatic discharge, always wear a grounding strap plugged into the ESD jack when handling any MIX 56 components.

Front Panel

Each MIX 56 chassis houses two independent systems, System 1 and System 2. The front of each system is equipped identically (with the exception of one electrostatic discharge (ESD) jack per chassis), and either system can be used as a DSX only, as a nonredundant multiplexer, or as a redundant multiplexer.



Front Panel Definitions

ACO/LMP Button: One per system. When pressed and released, it turns off external alarms for a time period specified in the system settings screen of the Craft interface or through SNMP. When pressed and held for three seconds, it tests the LEDs on the LED panel and the M13 cards by changing the panel LEDs to yellow (except Critical and Major, which turn to red) and changing the card LEDs to orange. Testing the LEDs also resets the ACO timer.

DSX Jack: 28 per system. Used for patching and monitoring DS1 signals.

DSX Tracer Lamp: One per DSX jack; used to locate cross-connects.

ESD Jack: One per chassis. Used when performing maintenance to prevent harmful electrostatic discharge to electronic components.

Fanning Strip: One row per wire-wrap pin field. Used to properly dress cross-connect wires.

M13 Cards: One or two per system. Houses the active circuitry for multiplexing functions. One card for nonredundant systems, two cards for redundant systems.

M13 Card Ejector Handle: One per M13 card. Used to remove and replace cards in the chassis.

Craft Port: One per system. Female DB-9, RS-232 serial connector used to access the craft interface locally.

Wire-Wrap Pinfield: 28 DS1 pin fields per system. Used for routing and cross-connecting DS1 signals. When using as a mux, Telect recommends using these DS1 wire-wrap connections. This method of connecting the low speed signals does not provide signal patching capabilities.

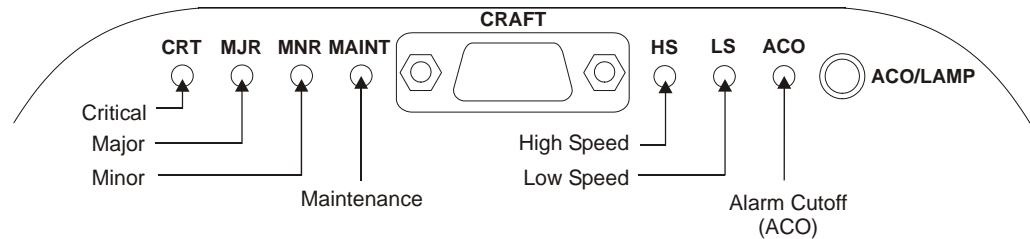
NOTE

To use a system as a multiplexer with full DSX capabilities, connect incoming and outgoing DS1 signals to the front wire-wrap pins.

LEDS

The LED status indicators on the MIX 56 front panel are grouped into the following categories:

- **DSX Tracer Lamps:** When the tracer lamp (TL) pins of the cross-connected modules are connected, the lamp lights when a plug is inserted in the monitor port of one of the modules.
- **M13 Card Status LED:** One per card.
 - ◇ Lights green for the active card.
 - ◇ Lights orange for a standby card with no critical alarms.
 - ◇ Solid red on the standby card indicates the card has detected a critical alarm condition or is otherwise nonoperational.
 - ◇ Flashing red indicates a card cannot resolve an alarm condition.
 - ◇ Unlit means the card is not receiving power, or has a failure in the processor circuitry.
- **LED Panel Indicators:** See the next subsection.

LED Panel

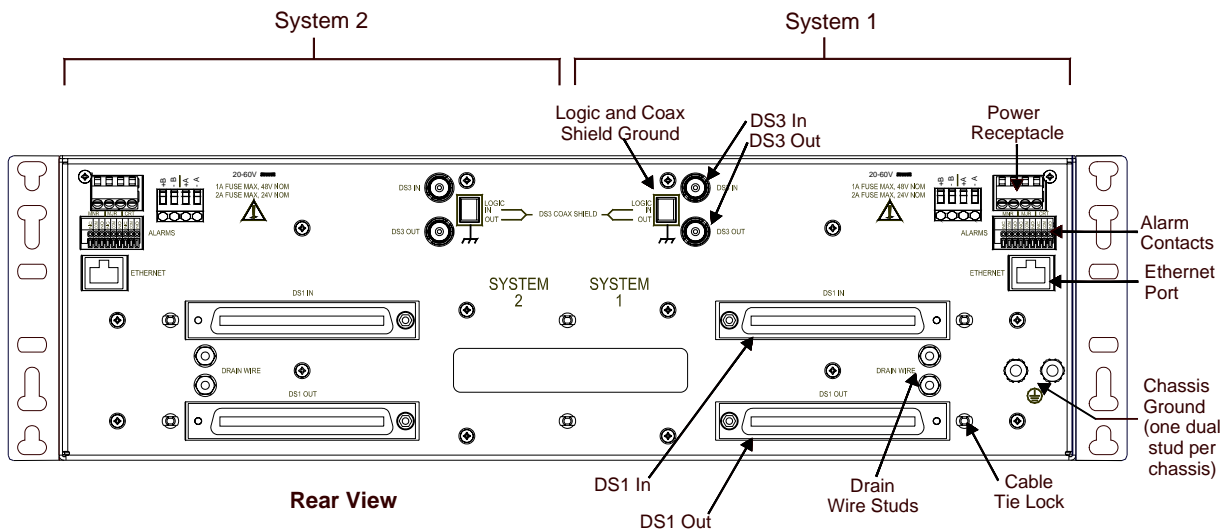
LED	Status	Definition
Critical	Red	One or more critical alarms. (Two or more DSIs and/or DS3 service affecting conditions.)
	Unlit	No critical alarms
Major	Red	One or more major alarms. (DS1 or DS3 service impacting condition.)
	Unlit	No major alarms
Minor	Yellow	One or more minor alarms. Service processing and traffic unaffected.
	Unlit	No minor alarms
Maintenance	Yellow	Diagnostic tests are being performed; at least one circuit is out of service
	Unlit	No diagnostic tests are being performed
High Speed	Red	Receiving alarm indication signal (AIS) or experiencing loss of signal (LOS) or out of frame (OOF) signal
	Yellow	Receiving remote alarm indication (RAI)
	Green	Operating normally
	Unlit	Out of service or no power
Low Speed	Red	Receiving AIS or experiencing LOS
	Green	Operating normally
	Unlit	Out of service or no power
Alarm Cutoff (ACO)	Yellow	ACO is engaged
	Unlit	ACO is not engaged

NOTE

When a MIX 56 system used as a multiplexer is operating normally, the High Speed and Low Speed LEDs on the LED panel and the active M13 card LED are all green. If the system is redundant, the standby card LED is orange. Any LED configuration other than this indicates the system is not operating normally.

Rear Panel

The rear of each system is equipped identically (with the exception of one dual ground stud per chassis), and the connectors for each system are on the opposite side of the chassis when facing the rear because the chassis is divided into two independent systems.



Rear Panel Definitions

Alarm Contacts: One set per system. Nine-contact, Phoenix-type connector. Form-C dry contacts used to extend critical, major, and minor alarms to alarm systems.

Cable Tie Locks: One per 64-pin connector, plus two in center of chassis, for cable management.

Chassis Ground: One #10-32 dual ground stud per chassis.

Drain Wire Studs: Two per system, one for each 64-pin connector. #6-32 ground stud for attaching cable drain wire.

DS1 In: One per system. 64-pin female connector for incoming low-speed signals when using system as a DSX.

DS1 Out: One per system. 64-pin female connector for outgoing low-speed signals when using system as a DSX.

DS3 In: One per system. 75-ohm female BNC connector for incoming high-speed signal.

DS3 Out: One per system. 75-ohm female BNC connector for outgoing high-speed signal.

Ethernet Port: One per system. RJ-45 10Base-T (half-duplex) connector with two LEDs. Interface for managing system remotely via either SNMP or Telnet. When lit, green LED means valid link pulse detected and flashing yellow LED means traffic in either direction.

NOTE

Before using the Ethernet port, you must connect to the local craft interface through the Craft port and set the system's IP and Subnet Mask addresses in the System Interfaces screen. See "Specifying System Interface Settings" on page 4-17.

Power Receptacle: One per system (20Vdc to 60Vdc). Four-position connector (14-22 AWG) used to supply redundant (A, B) power to the system.

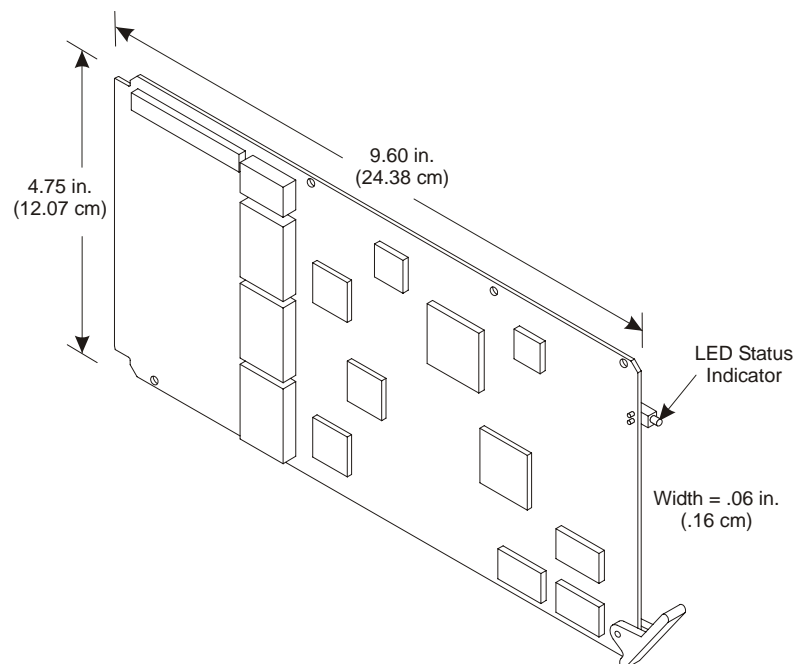
The power connector may be a wire-clamping, screw-type terminal or a two-piece mated connector.

Logic and Coaxial Shield Ground: One per system. Three-position DIP switch. Used to connect logic ground, DS3 shield TX ground, and DS3 shield RX ground to chassis ground:

- on = connected to chassis ground
- off = disconnected from chassis ground

M13 Card

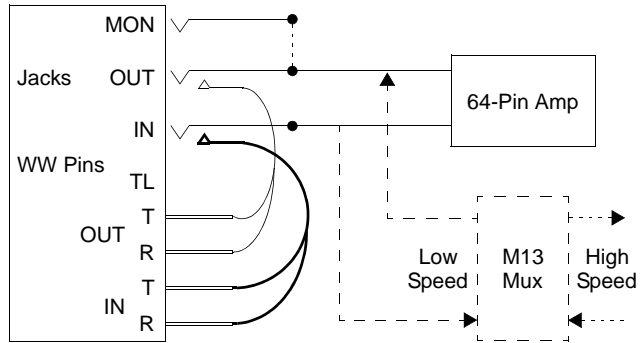
Dimensions



Signal Flow

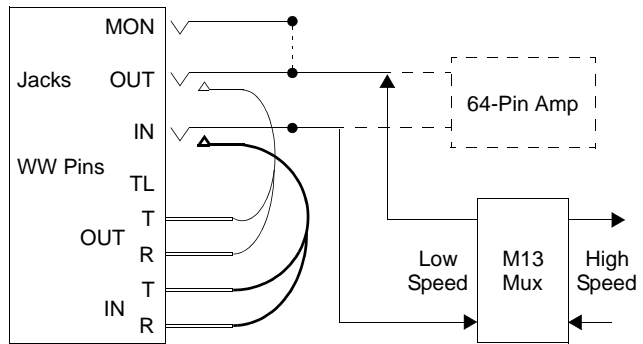
DSX Without M13

Amp connector cabled to equipment.
Patch cord or wire-wrap pins connect to another DSX panel.



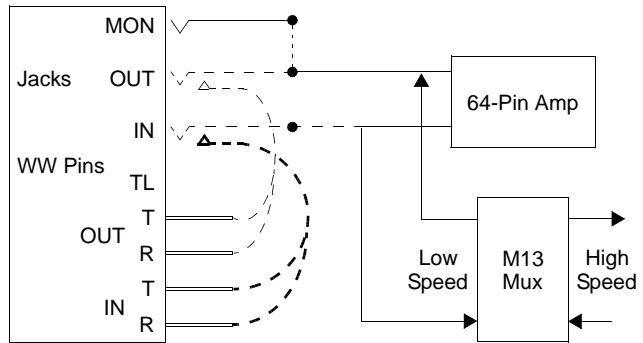
DSX With M13

Patch cord or wire-wrap pins connect to another DSX panel.
Low-speed signals are multiplexed into high-speed.



M13 With Amp*

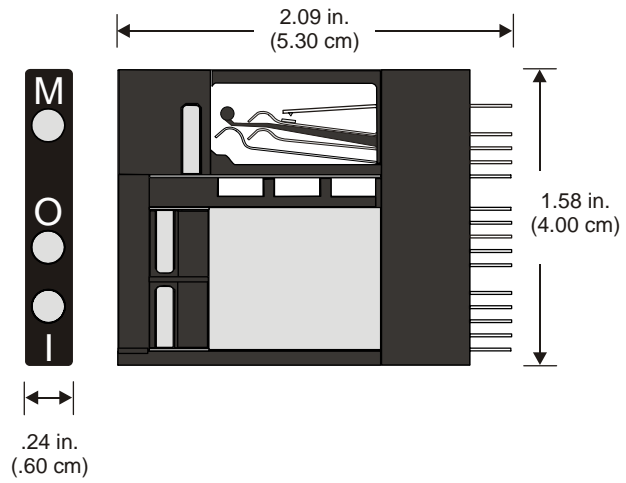
Amp connector cabled to equipment.
Low-speed signals are multiplexed into high-speed.



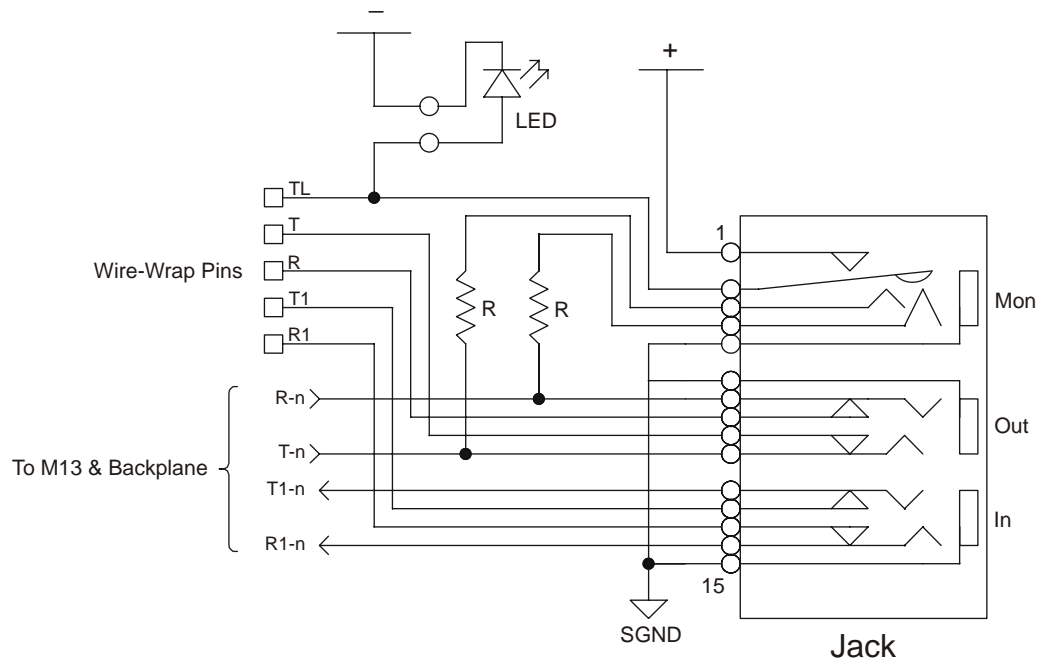
* This method of connecting the low speed signals does not provide signal patching capabilities.

DSX Jack

Dimensions



Schematic



SPECIFICATIONS

Electrical

DS1

Impedance: 100 ohms nominal, balanced

Line Rate: 1.544 Mb/s \pm 32 ppm

Line Coding: AMI or B8ZS (user selectable)

Jitter: Meets ANSI T1.403, T1.102, AT&T 62411

Pulse Amplitude and Shape: Per ANSI T1.102, T1.403, and GR-342-CORE

Return Loss: >26 dB

Short Haul DSX-1 (selectable)

Cable Length in feet (22 gauge ABAM or equivalent): 0–110, 110–220, 220–330, 330–440, 440–550, 550–660

Long Haul DS1 (selectable)

Cable Length (22 gauge ABAM or equivalent): 6000 ft (total cable length).

Line Build Out (LBO): 0 dB, –7.5 dB, –15 dB, –22.5 dB. These correspond to approximate cable lengths of 6000–4500 ft, 4500–3000 ft, 3000–1500 ft, and 1500–0 ft, respectively. Receive sensitivity down to –30 dB. Far-end equipment must have comparable long-haul receive sensitivity.

E1

Impedance: 120 ohms nominal, balanced

Line Rate: 2.048 Mb/s \pm 50 ppm

Line Coding: AMI or HDB3 (user selectable)

Jitter: Meets ITU-T G.703, G.823, and I.431

Pulse Amplitude and Shape: meets ITU-T G.703

Return Loss: >18 dB

DS3

Impedance: 75 ohms, unbalanced

Line Rate: 44.736 Mb/s \pm 20 ppm

Line Coding: B3ZS

Jitter: Meets ANSI T1.102 and GR-342-CORE

Pulse Amplitude and Shape: Meets ANSI T1.102 and GR-342-CORE

Cable Transmit Length: 450 ft. to DSX using 734 coaxial type cable

Line Build Out (LBO): Adjusted automatically by system

Power

DC Input Voltage Range: 20Vdc to 60Vdc

DC Input Current: .75 amp max. at nominal -48Vdc per system; 1.5 amp max. at nominal 24Vdc per systems

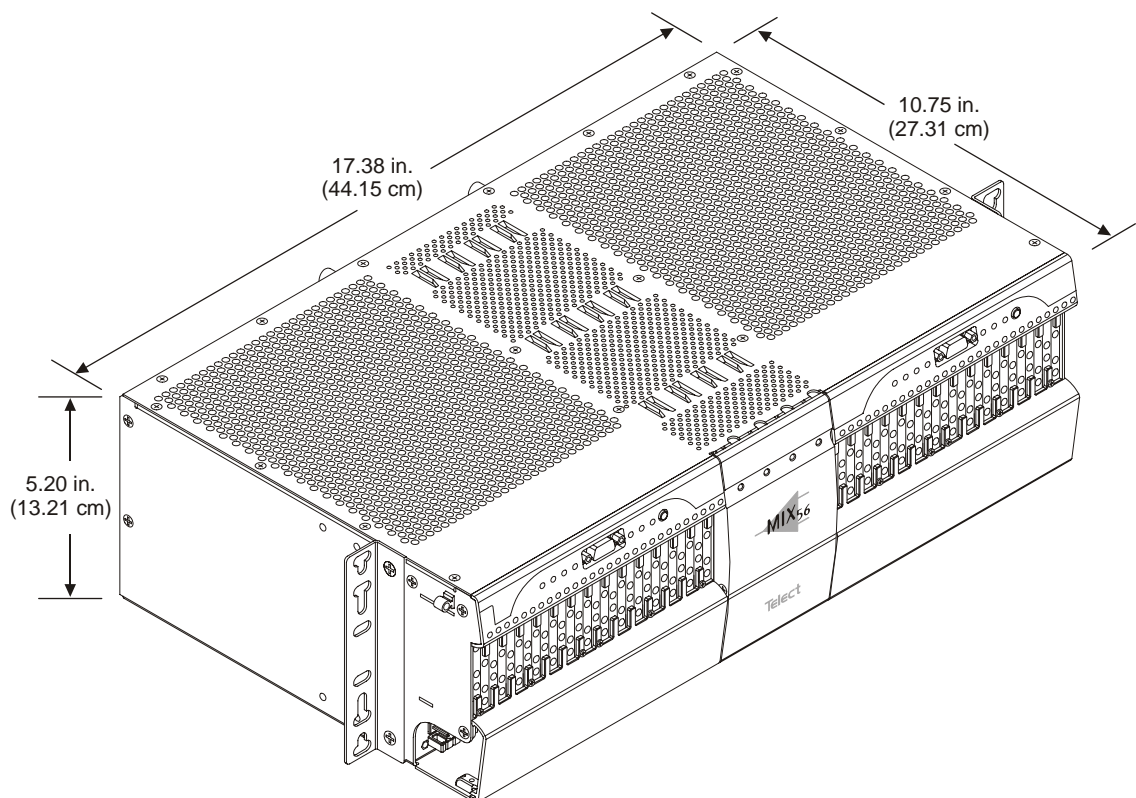
Wire Gauge: 18 AWG (recommended)

Fuse: 1A for nominal -48Vdc; 2A for nominal 24Vdc

Alarm Contacts

Form-C Contact Ratings: 400 mA at 125 Vac, 750 mA at 30 Vdc

Chassis Dimensions



Chassis Floor Weight (Fully Loaded)

19 lb (8.7 kg)

Environmental

Operating Temperature: 0°C to +50°C

Nonoperating Temperature: -40°C to +65°C

Humidity: 5% to 95% noncondensing

Altitude: 0–10,000 ft. operating

Shock: Meets Telcordia GR-63 and NEBS level 3 requirements

Vibration: Meets Telcordia GR-63 and NEBS level 3 requirements

Heat Dissipation: 100 BTUs/hour (chassis with four M13 cards)

2

Installation

INSTALLATION CONSIDERATIONS



CAUTION

CAUTION! This product must be installed and maintained only by qualified technicians.

VORSICHT! Nur von qualifizierten Technikern installiert werden und instand gehalten werden.

PRECAUCIÓN! Ser instalado y ser mantenido solamente por los técnicos autorizados.

ATTENTION! Ce produit doit être installé et entretenu uniquement par des techniciens qualifiés.



ALERT

ALERT! These instructions presume you have verified that this Telect equipment being installed is compatible with the rest of the system, including power, ground, circuit protection, signal characteristics, equipment from other vendors, and local codes or ordinances.



ALERT

ALERT! MIX 56 is not intended to be connected directly to outside plant (OSP) leads—install behind a listed NT1-type device.

Location and Space

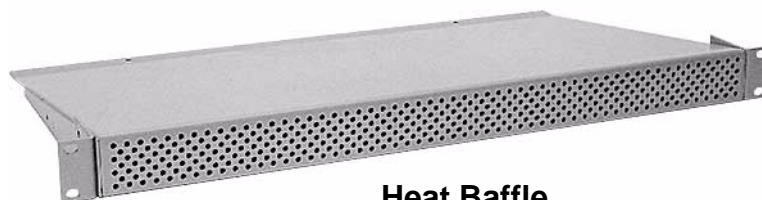
! ALERT

ALERT! This equipment is designed to permit connection of the earthed conductor of the dc supply circuit to the earthing conductor at the equipment. If this connect is made, all the following conditions must be met:

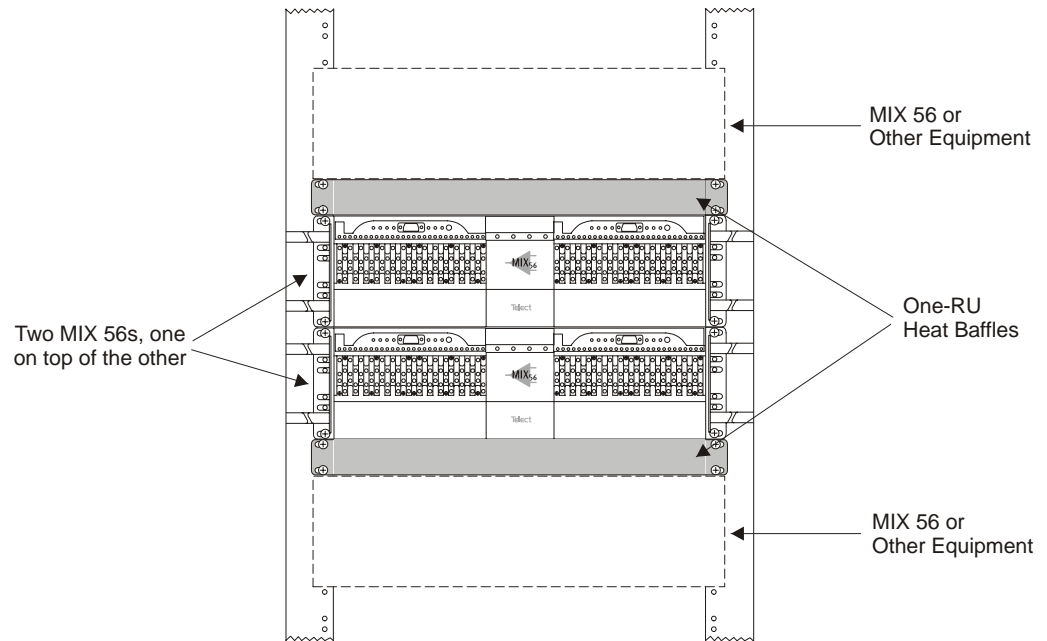
- This equipment shall be connected directly to the dc supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the dc supply system earthing electrode conductor is connected.
- This equipment shall be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same dc supply circuit and the earthing conductor, and also the point of earthing of the dc system. The dc system shall not be earthed elsewhere.
- The dc supply source is to be located within the same premises as this equipment.
- Switching or disconnecting devices shall not be in the earthed circuit conductor between the dc source and the point of connection of the earthing electrode conductor.

The MIX 56 chassis mounts into standard 19-inch (48.3 cm) or 23-inch (58.4 cm) WECCO and EIA racks. A 23-inch rack installation requires the extender bracket.

A single MIX 56 chassis requires 5.25 inches of vertical space (the height of the chassis). When installing one chassis on top of another, install a heat baffle of at least one rack unit above and below the pair, as shown in the illustration on the next page. Telect recommends heat baffles below each MIX 56: for a 19-in. rack, order part # 747-9999-0019; for a 23-in. rack, order part # 747-9999-0023.



Heat Baffle



You can set the chassis to project 3, 4, or 5 inches from the front of the rack, depending on which mounting bracket holes you choose. See “Attaching the Mounting Brackets” on page 2-5.

Computer Floor Issues

Each configuration varies in weight depending on the number and type of chassis' and cables used. If bay weight exceeds the floor support capacity, computer floor supports can be ordered from Telect (part # 071-6000-3001/3002 for one or two panels respectively).

Tools and Equipment

⚠ ALERT

ALERT! Only use crimping tools (such as Burndy Y8MRB-1 or equivalent) and components approved by agencies or certifying bodies recognized in your country or region, such as Underwriter's Laboratories (UL), CSA, or CE.

You need the following tools to install MIX 56:

- Flathead screwdrivers: 3/16 to connect low speed cables; 3/32 to wire power connector
- Phillips-head screwdrivers: #1 to remove M13 door, LED panel face-plates, and wire-wrap doors; #2 to attach mounting brackets to chassis and attach chassis to rack

- 3/8 in. open-end or socket wrench to attach chassis ground wire to ground stud
- Wire-wrap tool to attach front cross-connects when used as DSX or to connect DS1 signals to M13 when used as multiplexer

Also, you must supply 14 AWG (minimum) insulated, stranded wire for grounding, and a groundable shielded cable for the ethernet port.

Power

CAUTION

CAUTION! Do not supply power until all connections are made in accordance with requirements specified in local electrical codes.

ALERT

ALERT! Protect this equipment with a listed/approved branch circuit breaker sufficiently rated to interrupt power at either –48 Vdc at 1 amp, or 24Vdc at 2 amp. The panel must be accessible when operating the unit.

The chassis must receive 20Vdc to 60Vdc. Since MIX 56 includes active components, Telect recommends using a dual feed panel to provide input power redundancy.

Technical Support (USA)

By e-mail: getinfo@telect.com

By phone: 888-821-4856 or 509-921-6161

INSPECTION

Compare the contents of the MIX 56 shipping container with the packing list. Call Telect if you are missing anything.

NOTE

Telect is not liable for shipping damage.

If the shipping container is damaged, keep it for the carrier's inspection. Notify the carrier and call Telect's Customer Service Department:

1-800-551-4567 or 1-509-926-6000

Keep the container until you have checked equipment operation. If you experience any kind of problem, call Telect's Customer Service Department. Use the original, undamaged container if you are instructed to return the MIX 56 to Telect.

INSTALLING MIX 56

These procedures may be modified to agree with site practices or operating company procedures.

NOTE

If you are installing the optional MIX 56 Broadband Sidecar (PN 747-9999-2001), read the installation instructions included with the kit before installing the MIX 56 chassis.

Attaching the Mounting Brackets

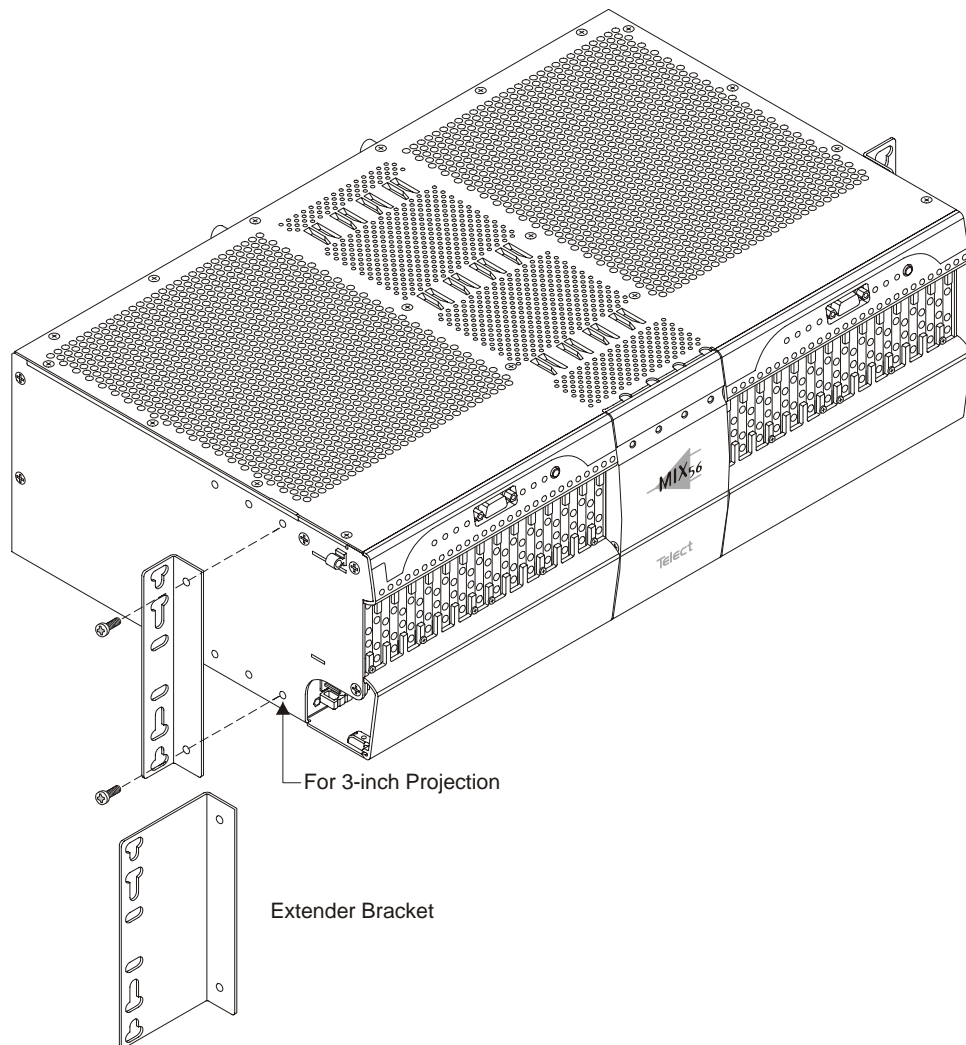
When attaching the mounting brackets, you can set the chassis to project 3, 4, or 5 inches from the front of the rack, depending on which set of holes on the chassis you choose. The following illustration shows the standard bracket being installed for 3-inch projection. To allow more front projection, use the middle set of holes for 4 inches or the last set of holes for 5 inches.

NOTE

If you are mounting the chassis in a 23-inch rack, use the included extender bracket shown in the illustration on the next page.

Step	Action
------	--------

1. Select the appropriate brackets (included) for the rack size, standard for 19 in. racks or extender for 23 in. racks.
2. On one side of the chassis, insert two of the included #8-32 screws through the bracket screw holes and into the bracket mounting holes on the chassis, as shown in the illustration on the next page. Choose holes that correspond to the desired front projection.



3. Tighten the screws until the bracket is securely attached.
4. Repeat steps 2 and 3 on the other side of the chassis.

Rack-Mounting the Chassis

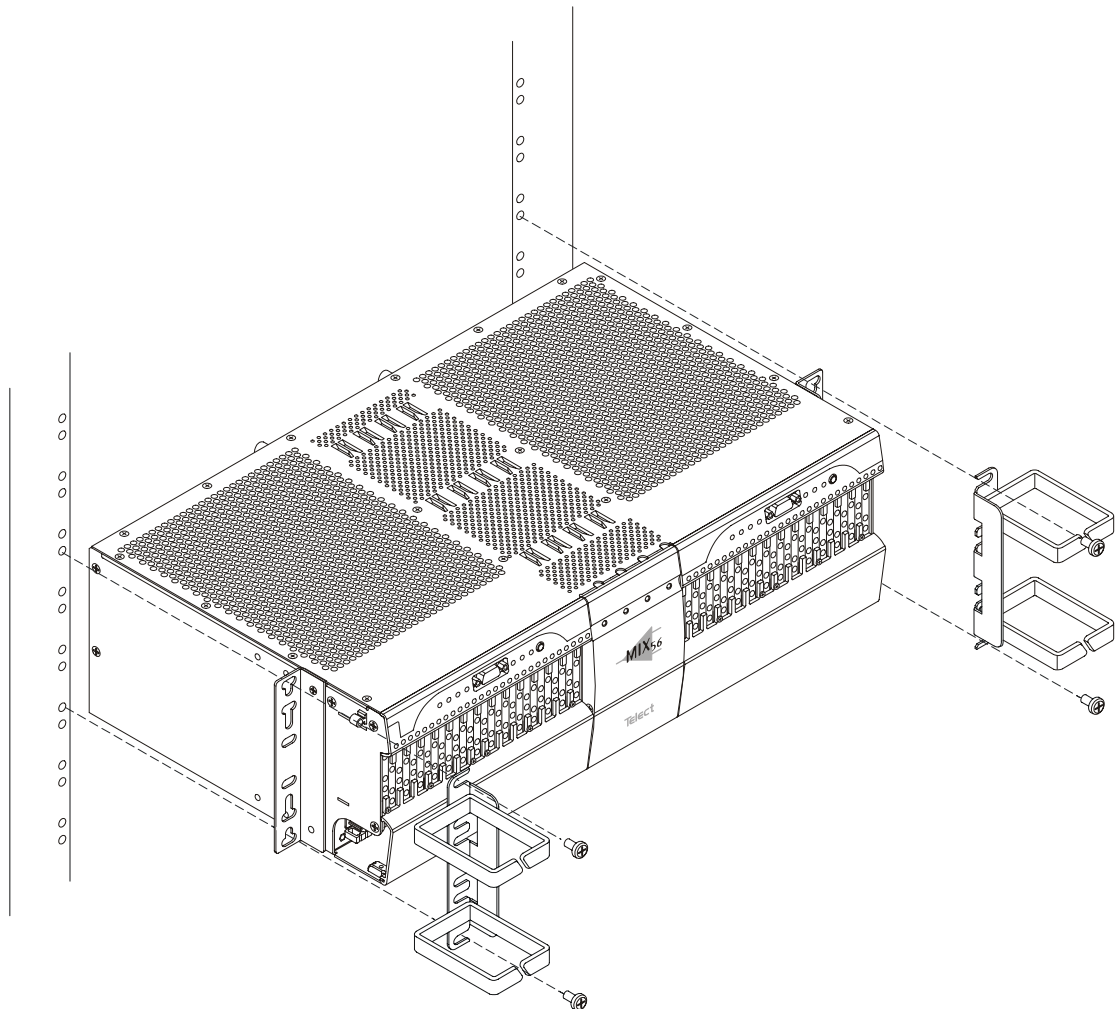
A single MIX 56 chassis requires 5.25 in. of vertical space (the height of the chassis). When installing one chassis on top of another, install a heat baffle of at least one rack unit above and below the pair. See “Location and Space” on page 2-2 for an illustration.

NOTE

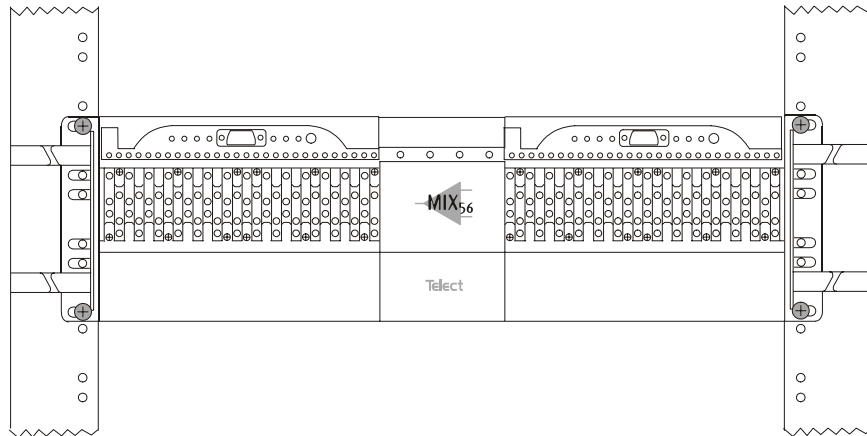
Be sure the mounting brackets attached to the chassis are appropriate for the size of the rack. See “Attaching the Mounting Brackets” on page 2-5.

Step Action

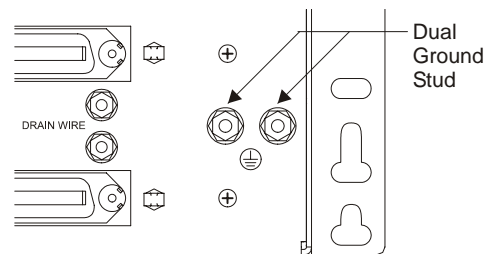
1. Loosely mount the chassis to the rack using the four #12-24 screws (included).
2. On one side of the chassis, insert a wire management ring (included) between the chassis mounting bracket and the head of the screw, as shown below, and tighten the screws tight enough to hold the ring in place.
3. Repeat step 2 on the other side of the chassis.



4. Tighten all four screws until the chassis and rings are securely attached to the rack



5. Ground the rear of the chassis to the rack by attaching the supplied two-hole lug using 14 AWG (minimum) insulated, stranded wire to the dual ground stud shown below.



Cabling a System

The MIX 56 chassis contains two independent systems that each require cabling. Telect recommends routing cables to the side of the chassis the system is on, not crossing the cables to the other side of the chassis.

The following instructions describe cabling one system. To cable the other system, repeat these steps, but route cables so as to create a mirror effect from the first system. If using as a DSX only, this requires using 64-pin connectors on the other system that are the reverse orientation of those used on the first system.

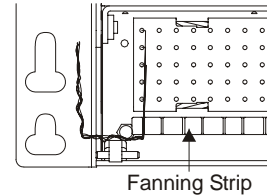
If you are using the system as a DSX only, route the DS1 signals to the rear 64-pin connectors. This method provides full DSX functionality, including patching and monitoring, using the DSX jacks on the chassis front.

If you are using the system as a redundant or nonredundant multiplexer, full DSX functionality is available when you route the DS1 signals through the wire-wrap pinfields on the front of the chassis, rather than through the rear 64-pin connectors. You can still use the system as a multiplexer when DS1 signals are routed through the rear 64-pin connectors, but you will not have patch-jack functionality.

To Cable a System as a Multiplexer

Step	Action
------	--------

1. Connect the DS1 signals to the wire-wrap pins on the front of the chassis:
 - a. Connect 24 AWG cross-connect wire to the pins.
 - b. Route the wire down through the fanning strip and out.
 - c. Record designations on the label inside the wire-wrap door.



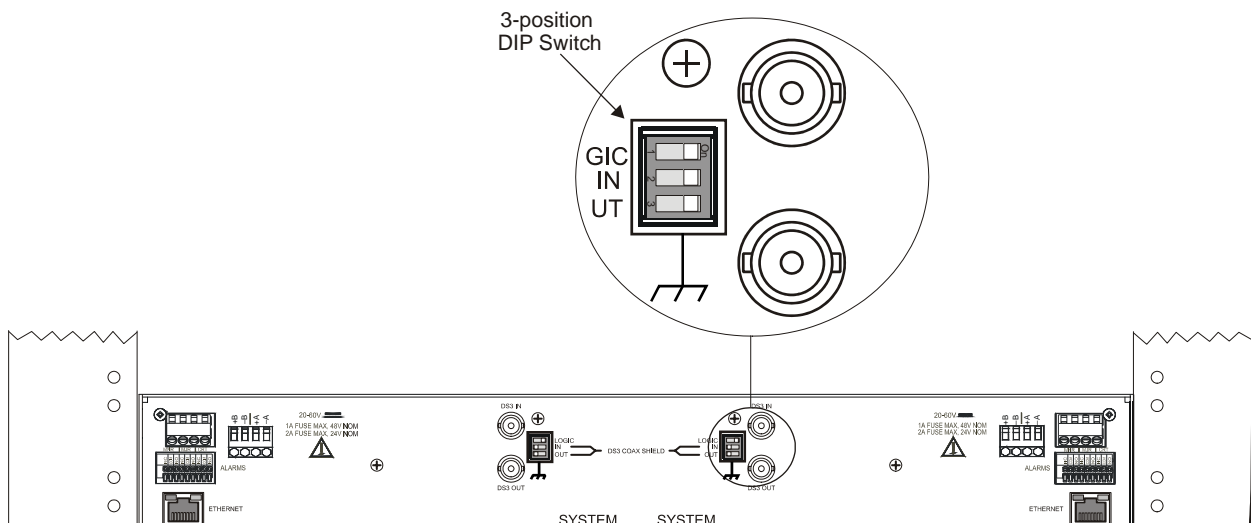
ALERT

ALERT! DO NOT connect the tracer lamp (TL) signal between systems that operate on different supply voltages, such as between a +24Vdc system and a -48Vdc system. Industry standard tracer lamp circuits are designed to operate with a single system-wide voltage.

NOTE

If you prefer to connect the DS1 signals to the rear 64-pin connectors, see "To Cable a System as a DSX" on page 2-9. This method of connecting the low speed signals does not provide signal patching capabilities.

2. If your application requires changing the default Logic ground, Coax Shield TX ground, and Coax Shield RX ground settings, move the three DIP switch toggles to the desired position before installing the DS3 BNC connectors. See the table on the next page for definitions of each toggle.



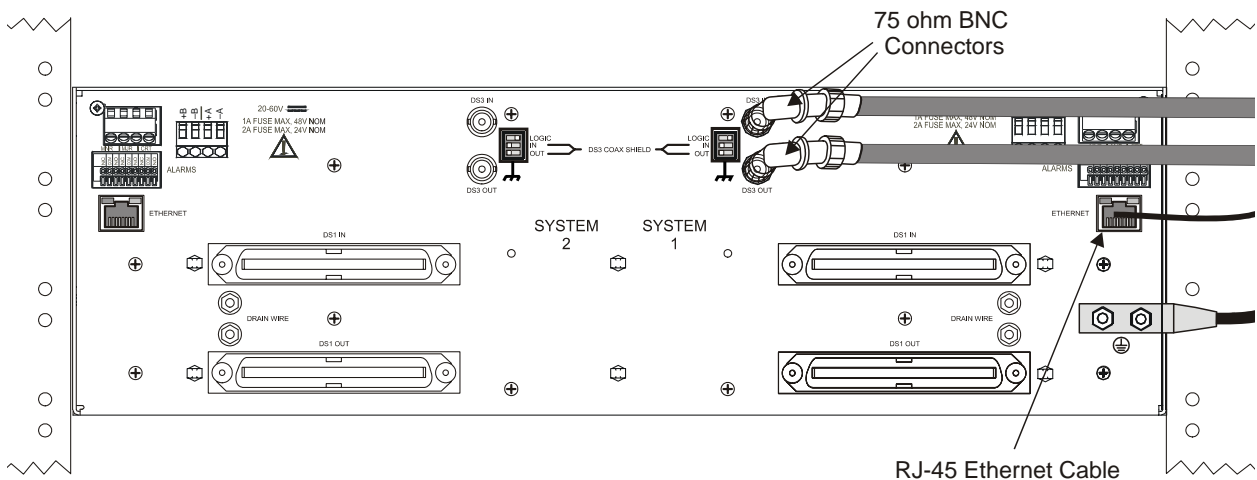
Type of Ground	Switch Position	Definition
Logic (M13 Card Circuitry)	On (Default)	Connected to chassis ground
	Off	Not connected to chassis ground
DS3 Coaxial Shield Tx	On (Default)	Connected to chassis ground
	Off	Not connected to chassis ground
DS3 Coaxial Shield Rx	On (Default)	Connected to chassis ground
	Off	Not connected to chassis ground

- Connect two 75 ohm BNC cables to the connectors marked DS3 In and DS3 Out, as shown below.
- Connect an RJ-45 cable to the Ethernet port, as shown below.

NOTE

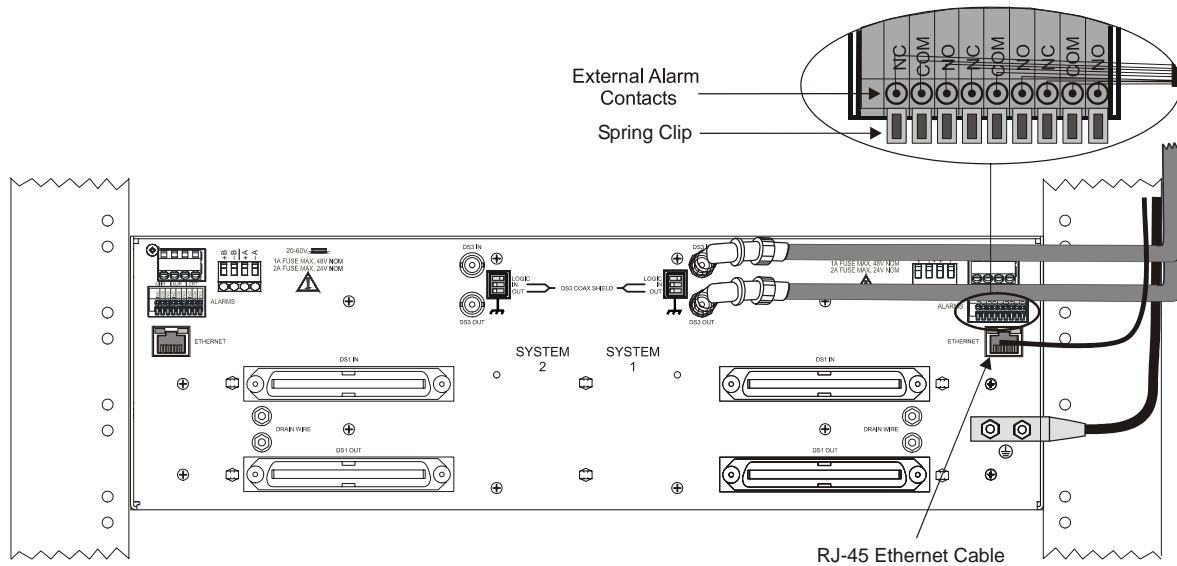
If you are connecting the MIX 56 to an Ethernet Hub, use a “straight” Ethernet cable. If you are connecting directly to a Network Management System (NMS) PC, use a “crossover” Ethernet cable.

Configure the network port as half duplex to match the MIX 56 Ethernet port.



- Connect external alarms to the Critical, Major, and Minor alarm contacts by pressing and holding the spring clip, inserting the wire, and then releasing the spring clip.

See the illustration on the next page.



Cross-Connecting Circuits

Step	Action
------	--------

1. Connect T and R (OUT) of first jack to T and R (IN) of second jack.
2. Connect T and R (IN) of first jack to T and R (OUT) of second jack.
3. Connect TL to TL (tracer lamps).
4. Record the cross-connect on the supplied designation strip.

Wire-Wrap Cross-Connect Color Scheme	
Connect from 1st termination/wire color...	...To 2nd termination/wire color
TL / Green	TL / Green
T (Out) / Blue	T (Out) / Orange
R (Out) / Blue-White	R (Out) / Orange-White
T (In) / Orange	T (In) / Blue
R (In) / Orange-White	R (In) / Blue-White

ALERT

ALERT! DO NOT connect the tracer lamp (TL) signal between systems that operate on different supply voltages, such as between a +24Vdc system and a -48Vdc system. Industry standard tracer lamp circuits are designed to operate with a single system-wide voltage.

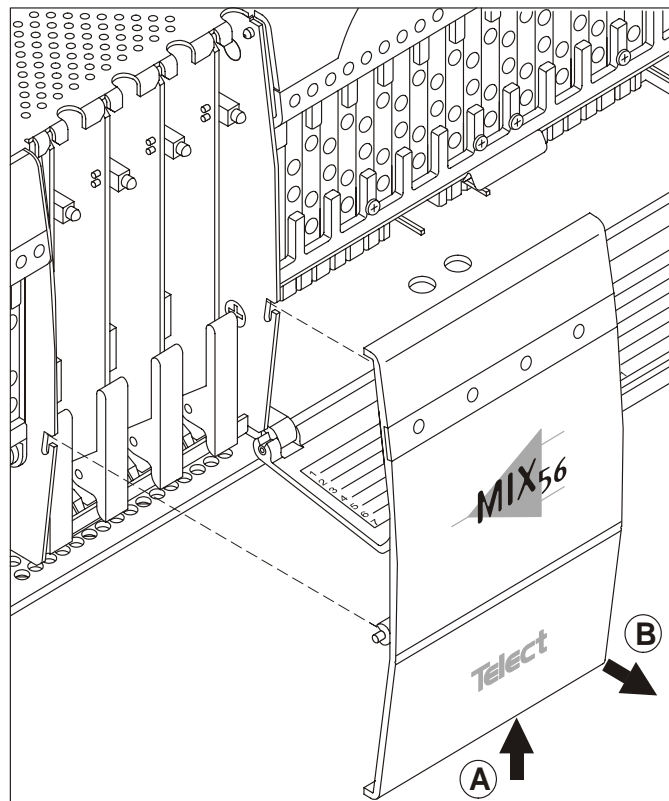
Installing M13 Cards



ALERT! To avoid electrostatic discharge, always wear a grounding strap plugged into the ESD jack when handling any MIX 56 components.

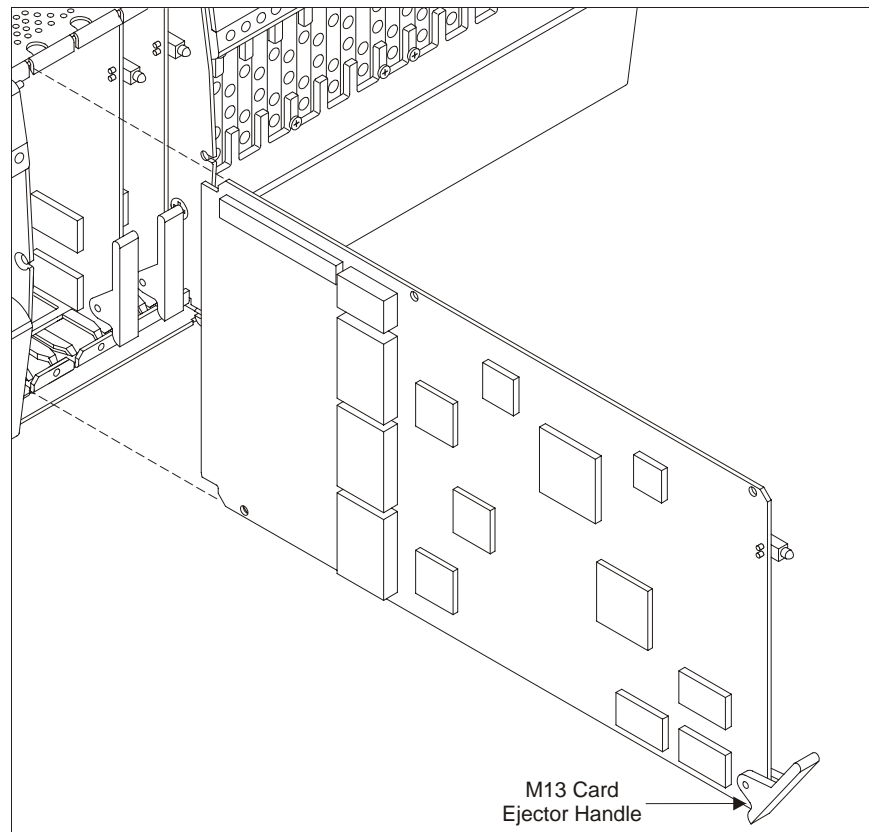
Step	Action
------	--------

1. Open the card door and loosen the two captive screws (one per side) holding the M13 card door in place. Remove the door:



2. Align the card with the card guides and gently insert it into the chassis by pressing the ejector handle against the card and pushing the card back.

See the illustration on the next page.



3. Replace the M13 card door by inserting the two screws into the slots on the chassis and tightening them until the door is securely attached to the chassis.

Supplying Power

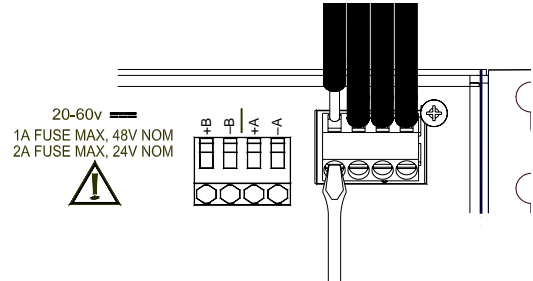
CAUTION

CAUTION! Do not supply power until all connections are made in accordance with requirements from local electrical codes.

Each system has its own power receptacle that accepts the included four-position, Phoenix-type connector to supply redundant power to the system. Telect recommends a minimum of 18 AWG wire and either a 1A fuse at nominal -48Vdc or a 2A fuse at nominal 24Vdc.

Step Action

1. Verify the power source is unfused.
2. As instructed in the following paragraph, connect office battery and return (20Vdc to 60Vdc) to the screw-down wire-binding connectors labelled “A” at either top-rear corners of the chassis.



For example, for a -48V dc plant, connect -48V to **-A** and RTN to **+A**; for a +24V plant, connect +24V to **+A** and RTN to **-A**.

Loosen the set screws for each, insert the wires, and tighten the screws.

3. To ensure power redundancy, repeat Step 2 for Side B using a separate power source. If you are not using a second source, connect Side B to the same source as Side A to avoid triggering an alarm.
4. If a mating connector is used, insert the connector into the receptacle and tighten the two screws until the connector is securely in place.
5. Fuse the power source to supply power to the chassis.

INSTALLING THE OPTIONAL RJ CONNECTOR RETROFIT

The optional RJ Connector Retrofit (part # 747-9999-2848) is a one piece unit that converts a system's wire-wrap pin blocks into 28 RJ-48 connectors. To install the unit, you must remove the wire-wrap door and its retainer clip, and install a mounting post on each side of the pin blocks, as described on the following pages.

Specifications

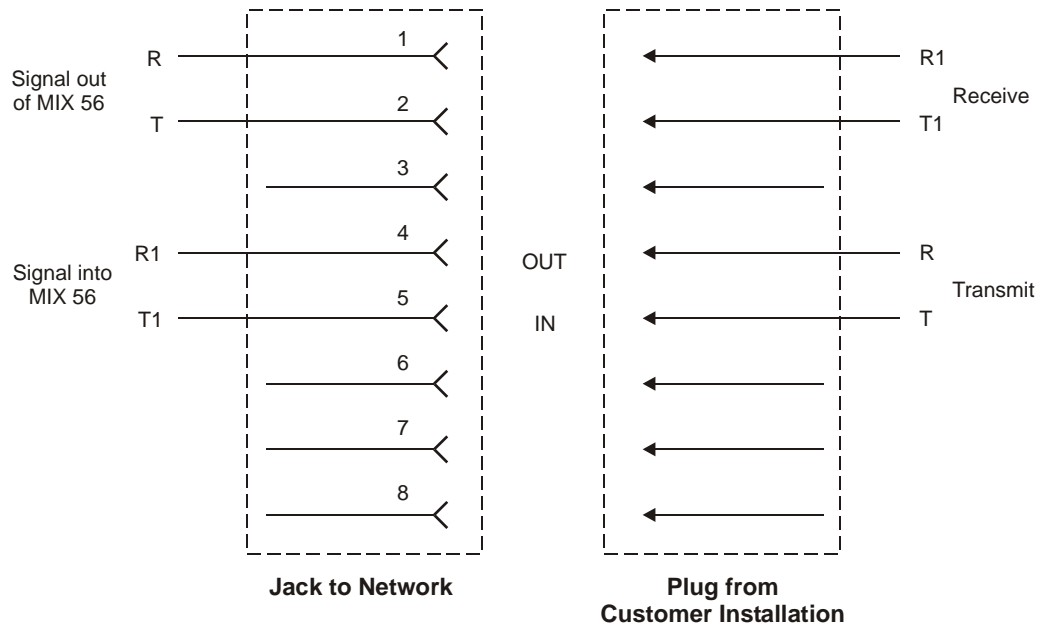
Universal Service Order Code (USOC): RJ-48C

Electrical Network Connection: Tip/Ring and Tip1/Ring 1

Mechanical Arrangement: 8-position miniature modular jack

Usage: 1.544 Mb/s digital access lines

Schematic



Installation Procedure

  **! ALERT**

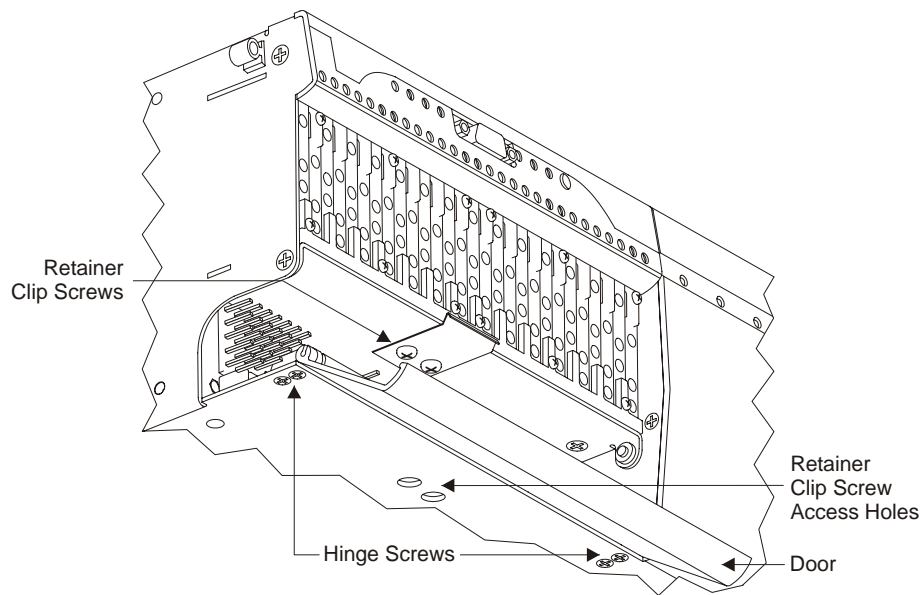
ALERT! To avoid electrostatic discharge, always wear a grounding strap plugged into the ESD jack when handling any MIX 56 components.

Step	Action
------	--------

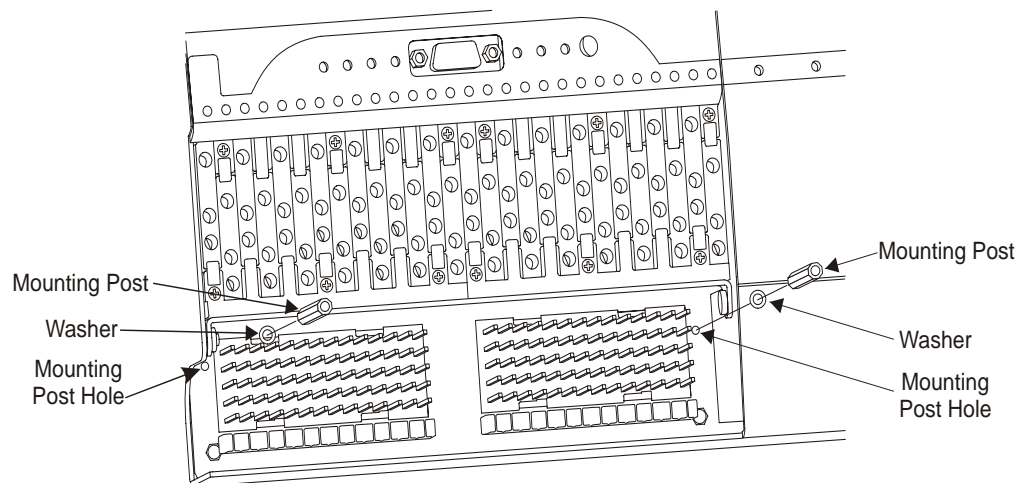
- | | |
|----|---|
| 1. | Uninstall the wire-wrap door by removing the four hinge screws shown below from the underside of the chassis. |
| 2. | Uninstall the door's retainer clip by removing the two screws shown in the illustration on the next page. |

NOTE

If necessary, insert the screwdriver through the access holes from beneath the chassis to remove the retainer clip screws.

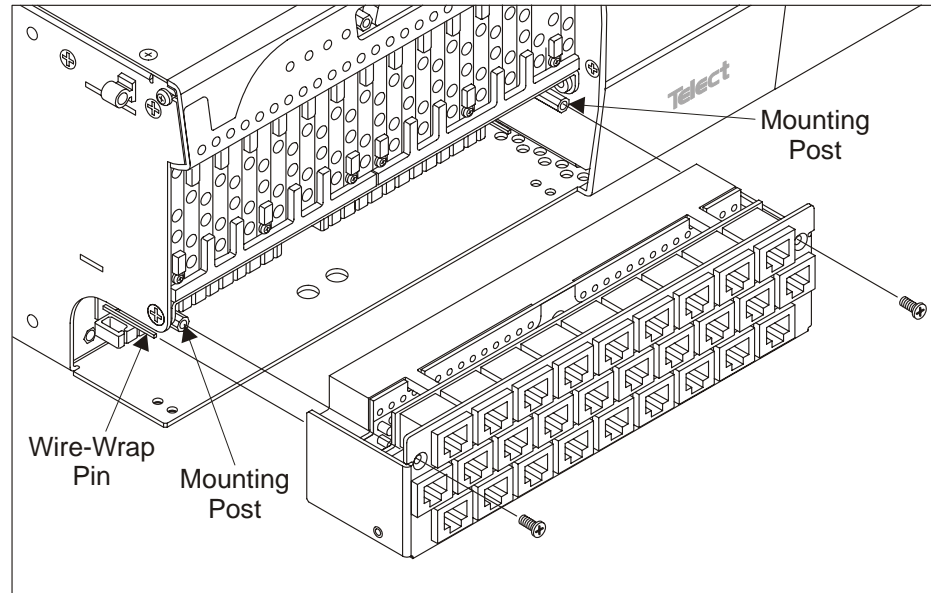


3. Insert a mounting post through a washer and into a mounting post hole on either side of the pin blocks, as shown below.
4. Using a 3/16 nut driver or a wrench, tighten the mounting post until it is securely attached to the chassis.
5. Repeat Steps 3 and 4 on the other side of the pin blocks.

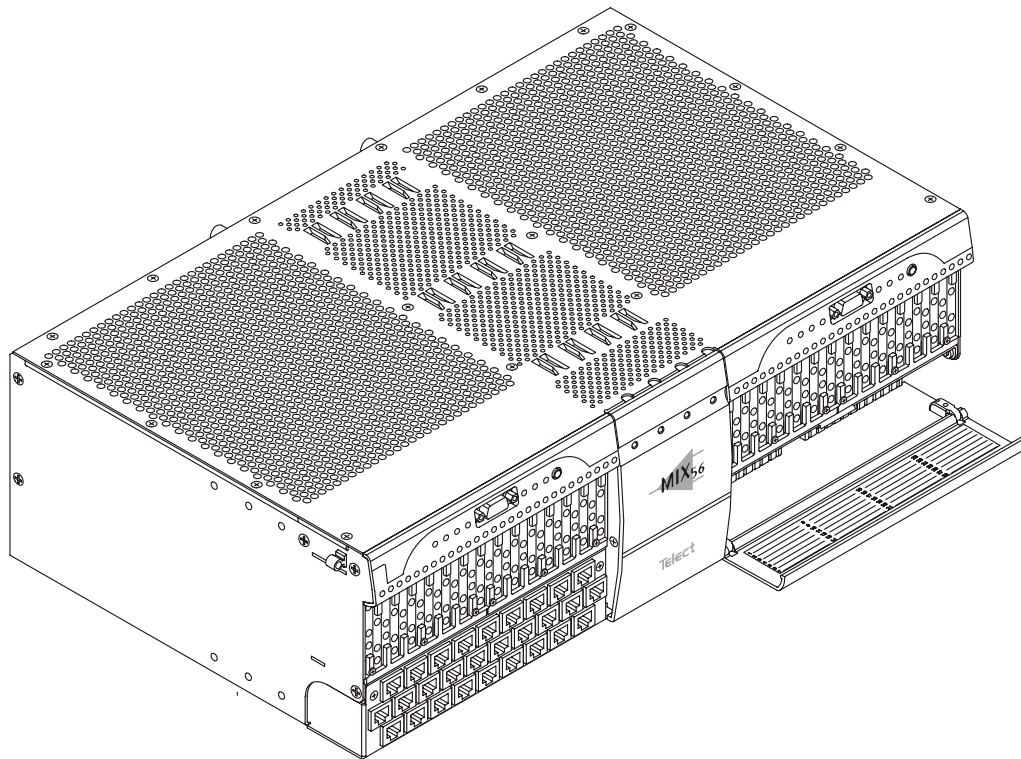


6. Gently place the holes on the back of the RJ Connector Retrofit over the wire-wrap pins and carefully push the unit into place, as

shown below. Be sure each hole has a pin inserted in it. You may need to gently wiggle the unit as you push it into place.



7. Insert the two included screws through the RJ Connector Retrofit and into the mounting posts, as shown in the previous illustration, and tighten them until the unit is securely in place, as shown below.



CONNECTING A MODEM

NOTE

Connecting a modem has the effect of disconnecting the local serial CID interface. Serial CID control comes from a remote site through the modem connection.

A modem will not work with the MIX 56 until the “Modem Detect” field on the System Interfaces screen has been set to “Enabled.” See “To Set Modem Detect” in the subsection, “Specifying System Interface Settings” in Chapter 4 before beginning this procedure.

The MIX 56 modem automatically detects the baud rate at the MIX 56 serial port; there is no need to set or change the rate.

Step	Action
------	--------

1. Log in to the MIX 56. (See Chapter 4, “Logging In”.)
2. Access the System Interfaces screen and set the “Modem Detect” field to “Enabled.”
3. Log out. (See Chapter 4, “Logging Out”.)
4. Set up the MIX 56 modem:
 - a. Connect the modem serial port to the MIX 56 serial port with a null modem cable.
 - b. Connect the modem to a phone line.
 - c. Power up the modem.
5. Press and hold the ACO switch until the LED test starts (all LEDs light), then release.

This causes an LED test and resets the ACO, as described on page 3-1.

The MIX 56 modem is ready to communicate with a remote-site modem when a remote modem calls in to establish a link. When the remote modem establishes communication with the MIX 56, the user at the remote end can log into the system. See Chapter 4, “Logging In.”

The login screen does not appear automatically at the remote site. Press the Enter key at the remote site to access the login screen.

Disconnecting a Modem

Step	Action
1.	Log out at the remote modem.
2.	Break the communication link by hanging up at the remote modem.
3.	Disconnect the MIX 56 modem from the serial port.
4.	Connect the MIX 56 serial port to the local PC.
5.	Press and hold the ACO switch until the LED test starts, then release. This causes an LED test and resets the ACO, as described on page 3-1.
6.	Login to the MIX 56.
7.	Access the System Interfaces screen and set the "Modem Detect" field to "Disabled."

3

User Functions

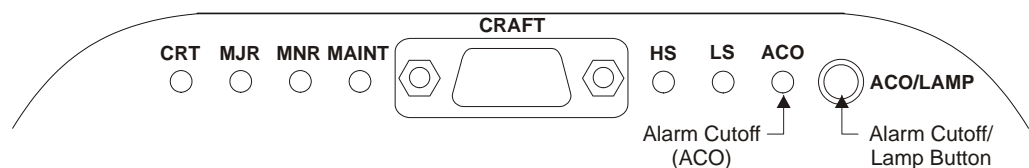
THE ALARM CUTOFF/LAMP BUTTON

Each system has an Alarm Cutoff (ACO)/Lamp Button located on the LED panel that disables the external alarm contacts and tests the LEDs.

Disabling Alarms

To disable the external alarm contacts, press and release the button marked ACO/LMP.

The ACO LED lights and the alarms are disabled for the length of time specified in the System Settings screen of the craft interface¹ or through SNMP.



Testing LEDs and Resetting the ACO

As part of the LED test, the ACO is reset (the alarms are enabled). If the alarms are disabled when you test the LEDs, you must disable them again (see above) when the test is complete to return them to their previous state.

1. See “Specifying System Settings & M13 Card Functions” on page 4-14.

Step	Action
1.	To test the LEDs, press and hold the button marked ACO/LMP for three seconds: <ul style="list-style-type: none">• All LEDs on panel, except for Crt and Maj, change to yellow;• Crt and Maj change to red;• Active M13 card LEDs cycle between green and yellow at one cycle per second; and• The ACO resets.
2.	To end the test and return the LEDs to their previous state, release ACO/LMP.
3.	If you need to disable the external alarms, press and release ACO/LMP.

DSX OPERATION

When a MIX 56 system is used as a DSX only, with DS1 signals connected to the rear 64-pin connectors, or as a multiplexer with DS1 signals connected to the front wire-wrap pins, you can perform all DSX functions including cross-connecting circuits with other network elements, rerouting traffic with patch cords, and nonintrusive monitoring signals.

NOTE

If the system is used as a multiplexer, but the DS1 signals are connected to the rear 64-pin connectors, you cannot reroute traffic with patch cords.

Patching Signals

ALERT

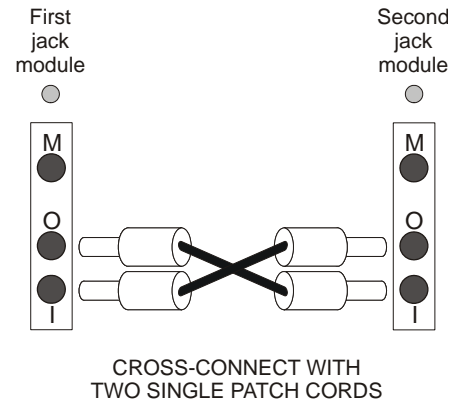
ALERT! When using a MIX 56 system as a multiplexer, you must route DS1 signals to the front wire-wrap pins to be able to patch signals.

If you need to perform network maintenance or emergency patch-arounds, you can reroute incoming and outgoing lines by making temporary connections using either two single patch cords or a dual patch cord. Patching is service-affecting, and the circuit is briefly interrupted while setting up and taking down the patch.

To Patch with Two Single Patch Cords

Step	Action
------	--------

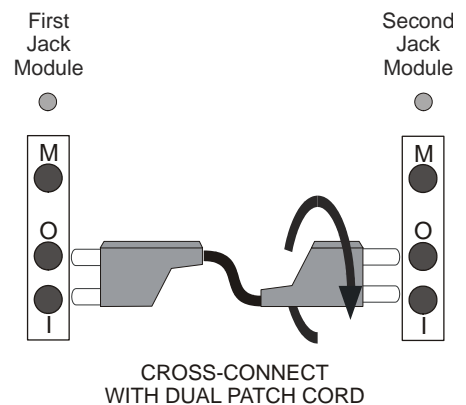
1. Insert a single patch cord into the IN jack of the first jack.
2. Insert the other end into the OUT jack of the second jack.
3. Insert another single patch cord into the OUT jack of the first jack.
4. Insert the other end of the patch cord into the IN jack of the second jack.



To Patch with a Dual Patch Cord

Step	Action
------	--------

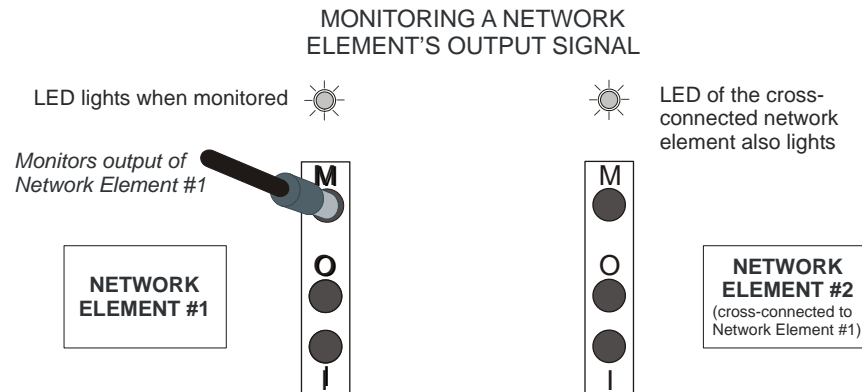
1. Insert a dual patch cord into the IN and OUT ports of the first jack module.
2. Rotate the plug on the other end of the cord 180 degrees (so that it is turned upside down from the first end) and insert it into the IN and OUT ports of the second jack module.



Monitoring Signals

You can perform nonintrusive signal monitoring by connecting your circuit monitoring device to the front monitor jack (labeled M) of the signal you wish to monitor.

When you insert a plug into the monitor jack, the jack's LED flashes for 30 seconds, and then lights steadily. If the circuit is cross-connected, the cross-connected network element's LED flashes and lights, as well.



MODEM OPERATION

You can connect a modem to the MIX 56 serial port to control the system remotely over an analog phone line. To do so, you must set the “Modem Detect” field on the System Interfaces screen to “Enabled” (Chapter 2) and install the modem according to the instructions in Chapter 2. When you have done so, activate the modem by pressing and holding the ACO switch until all LEDs light (LED test), then release the switch.

If you set Modem Detect to “Enabled,” but you have a PC rather than a modem connected to the MIX 56 serial port, the modem detect code “+++ATQ” appears on the screen at the current location of the cursor when you release the ACO switch. To clear the “+++ATQ,” switch to another MIX 56 screen.

The modem automatically detects baud rate at the MIX 56 serial port when the modem is off-line. Once the modem is on-line, it will not change its baud rate. If you change the MIX 56 baud rate (System Interfaces screen) while the modem is on-line, you create a baud mismatch between the MIX 56 and modem, which shuts down the connection. The only way to regain the connection is to “hang up” at the remote modem, press the ACO switch until the LED test starts, release the switch, and reestablish the link from the remote end.

To disconnect a modem, see the instructions in Chapter 2.

4 *Software Operation*

MANAGING A SYSTEM

You can configure, test, and monitor a system using these interfaces:

- Via Ethernet Port located on rear of chassis (one per system):
 - ◇ SNMP (Simple Network Management Protocol) Interface
 - ◇ Craft Interface over Telnet connection (up to two Telnet sessions)
 - ◇ TL1 Interface over Telnet connection (up to two Telnet sessions)
- Via Craft Port (serial port) on front of chassis (one per system):
 - ◇ Craft Interface over RS232 serial connection
 - ◇ TL1 Interface over RS232 serial connection
- Via Remote Control:

If the MIX 56 is connected over the DS3 link to another MIX 56 and they are both in C-bit mode on the DS3 link, then a remote control session can be run where the user is controlling the MIX 56 at the remote end of the DS3 link.

- ◇ Craft Interface over DS3 Link
- ◇ TL1 Interface over DS3 Link

ALERT

ALERT! It is possible to have multiple active sessions at the same time involved in configuring the same system. It is possible to have five active sessions at the same time: one via the serial port; two via Telnet connections; one SNMP; and one via Remote Control.

Interfaces

SNMP Interface

Telect provides a private enterprise MIB (management information base) with which you can perform all MIX 56 functions. Telect's private enterprise MIB also supports many features of the standard RFC 1213 MIB II. You can download the latest MIB at www.telect.com.

You can use any SNMP-compatible network management system such as SunConnect's SunNet Manager, HP Open View, or Castle Rock's SNMPc to manage a system.

SNMP is available only over the Ethernet port.

Craft Interface

The Craft interface is a menu-driven system that can be accessed either by the Craft (serial, RS232) port or Ethernet port. The Craft interface is covered in detail in this section of this manual.

TL1 Interface

The TL1 interface is a command line system that can be accessed either by the Craft (serial, RS232) port or the Ethernet port. The TL1 interface is covered in *TL1 Design*, Telect document 126055, included with the MIX 56 System Software.

Ports

Craft Port

The Craft port is a nine-pin (DB9) RS-232 serial port located on the front of the chassis that connects to an RS-232 terminal or a PC running terminal emulation software in VT-100 mode. The terminal or PC port must be set for 8 data bits, 1 stop bit, no parity; and its baud rate must match the Craft port's setting of the MIX 56. Craft port baud rate choices are 9600, 19200, 38400, 57600, or 115200. (The baud rate can be set from the Craft interface's System Interfaces screen or the TL1 command "set-baud".)

Use a shielded, straight wire RS-232 cable (not null modem cable) with a male DB9 connector to connect to the Craft port.

Ethernet Port

The Ethernet port is a 10Base-T port that is located on the rear of the chassis. Configure your network port as half duplex to match the MIX 56 Ethernet port.

NOTE

Before using the Ethernet port, you must connect over the Craft port and set the system's IP, Subnet Mask, and gateway addresses. This can be done from the Craft interface's System Interfaces screen or by the TL1 commands "set-ip-addr", "set-subnet-mask", and "set-gateway". Remember to set the Ethernet port to half-duplex. See "Specifying System Interface Settings" on page 4-17.

To Connect With a Craft Interface Over the Craft Port

Step	Action
------	--------

1. If you are connecting to a PC, run terminal emulation software in VT-100 mode.
2. Configure the terminal or PC port for 8 data bits, 1 stop bit, and no parity.
3. Configure the terminal for the same baud rate as the MIX 56 is set for in the System Interfaces screen. Choose between 9600 (default), 19200, 38400, 57600, or 115200 baud.
4. Connect the DB9 male end of the included cable to the DB9 female port labeled "Craft" of the system (1 or 2) to which you are connecting.
5. Connect the other end of the cable to the RS232 terminal (or a PC running terminal emulation software in VT-100 mode).
6. Press Enter.

The Directory screen, the Date and Time screen, or the Log In screen appears, depending on your security setting and whether the date and time has been entered since power up.

NOTE

The default security setting is Off.

CRAFT INTERFACE BASICS

Navigating Between Screens

You can move from the Directory screen to any other screen. The Directory screen lists every screen of the Craft interface, grouped by function. Just type the number of the screen you want to go to in the “Select Screen” field and press Enter.

Step Action

1. To return to the Directory screen, hold down the Ctrl key and press D.

The Directory screen appears.

```

MIX 56 by Select                MIX 56                Help (?)

                                Directory
                                -----

Select Screen: __

    Access
    -----
1 Log Out
2 Security

    Save and Restore
    -----
3 Save Configuration
4 Restore Configuration

    Configurations
    -----
5 System Settings
6 High Speed Configuration
7 Low Speed Configuration
8 Alarm Thresholds
9 System Interfaces
10 Update Flash

                                Errors
                                -----
11 High Speed Errors-15 min.
12 High Speed Errors-24 hr.
13 Low Speed Errors-15 min.
14 Low Speed Errors-24 hr.
15 Not Used (Reserved)

                                Alarms and Events
                                -----
16 Current Alarms
17 Alarm Log
18 Event Log

                                Diagnostics
                                -----
19 Loopbacks
20 BER Testing
  
```

2. In the “Select Screen” field, type the number of the screen you want to go to and press Enter.

The selected screen appears.

Navigating Within Screens

You can move between fields in the following ways:

- Press Tab or the Down Arrow to move forward through the fields on a screen
- Press the Up Arrow to move backward through the fields on a screen

Adding and Selecting Field Information

You can add or edit information in a field in one of the following ways:

- Type the information into the field.
- Press the spacebar to toggle between a limited number of choices.

In either case, after adding or editing the information, you must approve the entry for each field by pressing Enter. If you have added or edited the field incorrectly, you can return the field to its previous state by pressing Esc before pressing Enter.

On non-service-affecting screens, pressing Enter activates the entry automatically. On screens where changes could affect service, you must also tab to a “button” identified by surrounding brackets, such as [Apply]. At the button, press Enter to apply the changes. If you exit a screen on which you made changes without applying them, you are prompted one last time to apply the changes.

The instructions in this chapter identify those fields which you toggle to get acceptable values and those in which you must type information. You can also consult the context-sensitive Help screen for the screen you are on.

Getting Help

Every functional screen in the Craft interface has a context-sensitive Help screen associated with it. A context-sensitive Help screen contains information specific to its associated functional screen.

Each Help screen contains the phone numbers and e-mail address for Telect technical support, as well as one or more of the following:

- A brief description of how to perform the tasks available on the functional screen
- Definitions of any acronyms on the functional screen
- Definitions of some fields and their input choices on the functional screen

Step Action

1. From any screen, hold down the Shift key and press ?.

The context-sensitive Help screen appears.

```

MIX 56 by Telect                MIX 56                Technical Support:
                                888-821-4856
                                509-921-6161
                                getinfo@telect.com

                                High Speed Errors-15 min. Help
                                -----
                                Press Esc to exit

To View Errors in 15 Minute Totals:  To Clear the Current Span Totals:
-----
1. In the Time field, type a time     1. Tab to the [Clear] button, and
   in military time format.           press Enter.
   Type the hour and press Enter,    2. At the prompt, type y and
   then press Tab, type the minutes   press Enter.
   and press Enter again.

The Span field displays the 15       Definitions
minute span the time is within,     -----
and the error fields display        ES - Errored Seconds
totals for the span.                SES - Severely Errored Seconds
                                    CV - Coding Violations
                                    LOSS - Loss of Signal Seconds
                                    AISS - Alarm Indication Signal Seconds
                                    FC - Failure Count

```

2. To return to the functional screen, press Esc.

NOTE

If you do not find your answer on the Help screen, always check this manual before calling technical support.

DEFAULT SOFTWARE CONFIGURATION

This section shows the default software settings (first power-up).

Security Screen

Field	Default Setting
Security	"Off"
User ID	"TELECT"
Password (not shown)	"TELECT"

Save Configuration and Restore Configuration Screens

Field	Default Setting
#1, Name	"Working Config"
#2, Name	"Test 1"
#3, Name	"Test 2"
#4, Name	"Factory"

* "Factory" only appears on the Restore screen and not the Save screen.

System Settings Screen

Field	Default Setting
System Name	"MIX 56"
System Location	Blank
Contact Person	Blank
Date	Varies
Time	Varies
AIS Terminals LB	"Yes" (as per T1.403)
Low Speed Type	"T1"
LS Remote LB DIR	"DS3"
Active Card	Determined by system at power-up
Redundant M13 Cards	"Yes"
ACO Time	"15 min."
Inactivity Timeout	"15 min."
Loopback Permission	"No"
Reset	"Standby Card"
Control	"Local"
Telnet TL1	No
Chassis and Card Versions	Vary depending on release date

* Needs to be set on power up.

High-Speed Configuration Screen

Field	Default Setting
Name	"High Speed"
Clock Source	"DS3 Loop Timing"
Mode	"M13"
Optional C-bit LAPD Information	Blank

Low-Speed Configuration Screen

Field	Default Setting
Channel #	"1"
Name	"Low Speed 01"
Type	T1 *
Interface	NI
Line Code	"B8ZS"
Line Build Out	"0-110 ft"
State	"Disabled"

* Type is an inactive field when "Signal Type" is "T1." To active this field "Signal Type" must be changed to "Mixed, T1's and E1's."

Alarm Thresholds Screen

These setting values are specified in Telcordia GR-820-CORE.

Field	Default Setting (sec)
AIS, LOS, RAI, and OOF Alarm On	"002"
AIS, LOS, RAI, and OOF Alarm Off	"003"
Low Speed ES-15 min. Alarm On	"065"
Low Speed ES-24 hr. Alarm On	"648"
Low Speed SES-15 min. Alarm On	"010"
Low Speed SES-24 hr. Alarm On	"100"
High Speed ES-15 min. Alarm On	"025"
High Speed ES-24 hr. Alarm On	"250"
High Speed SES-15 min. Alarm On	"004"
High Speed SES-24 hr. Alarm On	"040"
Redundancy Switch Status	"Normal" *

* This is not an active field; it only displays whether redundancy switching is "Normal" (allowed to switch) or "Locked" (redundancy switching is not allowed).

System Interfaces Screen

Field	Default Setting
Baud Rate	"9600"
Modem Detect	Disabled
SNMP Read Name	"public"
SNMP Write Name	"private"
SNMP Trap Name	Blank
SNMP Event Traps	Enabled
Ping Address	"0.0.0.0"
IP Address	"0.0.0.0"
Subnet Mask	"0.0.0.0"
Gateway	"0.0.0.0"
Trap 1, 2, 3, 4, 5, 6	"0.0.0.0"
Duplex	"half"

ACCESSING THE CRAFT INTERFACE

Each MIX 56 chassis houses two independent systems. When you access the Craft interface, whether through an Ethernet port on the rear or a Craft port on the front, your actions affect only the system on the same side of the chassis as the port to which you connected. The system on the other side is completely unaffected.

Setting Security

You can restrict access to the MIX 56 by setting security to On. When security is on, the Log In screen is the first screen that appears when a Craft interface session is initiated. Users must type their user ID and password to access any other screens and perform any other functions. When security is set to Off, the Directory screen is the first screen that appears¹, and all screens are accessible to anyone.

There are three levels of security a user can be assigned:

- **Admin Rd/Wr** where the user has full access to the MIX 56.
- **Config/Test** where the user has access to Screens 6 and 7 to Configure the DS3 and DS1 lines. The user also has access to Screens 19 and 20 to conduct loopback and BER testing.
- **Read Only** where the user can read all screens but has no rights to change anything.

NOTE

The default user ID is "TELECT" and the default password is "TELECT." They are stored in slot 1 of the Security screen upon first power-up and can be overwritten.

ALERT

ALERT! Do not set the Security field to On without at least one valid user ID and password in the system. Once security is on, you cannot access the Craft interface without a user ID and password. See "Managing Users" on page 4-10.

1. If the date and time have never been entered since power on, then the date and time screen will be the first screen that appears.

Step Action

- From the Directory screen, press 2 to select Security, then Enter.

```

MIX 56 by Telect                System 1                Directory (Ctrl+D)
                                Security
                                -----
Security: Off
Slot #: 1
Level: Admin Rd/Wr
User ID: TELECT
Password:
[Delete]

# Lv User ID                # Lv User ID
-- -- -----                -- -- -----
1 ad TELECT                11
2 cf Config                12
3 ro Read Only            13
4                          14
5                          15
6                          16
7                          17
8                          18
9                          19
10                         20

```

- In the Security field, press the spacebar to toggle between On and Off, and then press Enter.

Managing Users

In the Security screen, you can add, edit, and delete user IDs and passwords. When security is on, users must be added to the system before they can access the Craft interface. User IDs and passwords are case-sensitive. This means that the user id “Telect” is considered different than “telect” or “TELECT.” Be sure users know the exact spelling of their user ID and password.

To Add or Edit a User in the System

Step Action

- From the Directory screen, press 2 to select Security, then Enter.
The Security screen appears.


```

MIX 56 by Telect                               System 1                               Directory (Ctrl+D)
                                                Help (?)

                                                Security
                                                -----

Security: Off

Slot #: 1                                       # Lv User ID                               # Lv User ID
Level: Admin Rd/Wr                             ---
User ID: TELECT                                1 ad TELECT                               11
Password:                                       2 cf Config                               12
[Delete]                                       3 ro Read Only                            13
                                                4                                         14
                                                5                                         15
                                                6                                         16
                                                7                                         17

```

2. Tab to the Slot # field, type the number of the slot you are adding to or editing, and then press Enter.

If the slot already contains a user, the user's ID appears in the corresponding field.

3. Tab to the Level field and press Space to toggle between "Admin Rd/Wr", "Config/Test", and "Read Only". Press Enter to select the displayed option.
4. Tab to the User ID field, type a unique ID from 6 to 16 characters, and then press Enter. (Each user ID must be unique.)
5. Tab to the Password field and type a password from 6 to 16 characters. Passwords do not need to be unique and are required to add a user to the system.

NOTE

Check the password's spelling. Once the password is added to the system, it does not display on any screen. If you have not spelled the password correctly, the user may not be able to log in.

6. Press Enter.
A prompt appears asking you to confirm overwriting the slot.
7. Type y and press Enter.
The user's ID appears in the selected slot.

To Delete a User

Step	Action
1.	From the Directory screen, type 2 to select Security and press Enter. The Security screen appears.
2.	Tab to the Slot # field, type the number of the slot with the user you are deleting, and then press Enter. The user's ID appears in the corresponding field.
3.	Tab to the [Delete] button and press Enter to delete the user. A prompt appears asking you to confirm the deletion.
4.	Type y and press Enter. The user's ID disappears from the selected slot.

Logging In

When security is set to On, you must log in to access the Craft interface and perform any functions. You can only log in after your user ID and password have been added to the system in the Security screen (see "To Add or Edit a User in the System" on page 4-10).

NOTE

User IDs and passwords are case-sensitive. Be sure to type them exactly as they were spelled when you were added to the system.

```

MIX 56 by Telect                                MIX 56                                Help (?)

                                     Log In 23/Jul/01
                                     -----
                                     User ID:
                                     Password:

SN: 0005C4000DEF

```

Step	Action
------	--------

1. In the User ID field, type your user ID and press Enter.
2. Tab to the Password field, type your password, then press Enter.
The Directory or Date and Time screen appears.

NOTE

The serial number in the bottom left corner of the Log In screen is for use by Telect Technical Support only. In some cases, when you call for assistance, you will be asked for this number.

Logging Out

Users are logged out in two ways. You are automatically logged out when the time period specified in the Inactivity Timeout field of the System Settings screen elapses without any activity within the Craft interface. See “Specifying System Settings & M13 Card Functions” on page 4-14 to set the inactivity timer. You can also manually log out at any time.

To Manually Log Out

Step	Action
------	--------

1. From the Directory screen, press 1 to select Log Out, then Enter.
The Log Out screen appears.

```

MIX 56 by Telect                MIX 56                Help (?)

                                Log Out 23/Jul/01
                                -----

                                Are you sure you want to log out? y/n

```

- To log out, type `y` and press Enter.

The screen displays your user ID (if security is on) and the time you logged out.

CONFIGURING MIX 56

Each MIX 56 chassis houses two independent systems. When you access the Craft interface, whether through an Ethernet port on the rear or a Craft port on the front, your settings and configurations pertain only to the system on the same side of the chassis as the port to which you connected. The system on the other side is completely unaffected.

Specifying System Settings & M13 Card Functions

In the System Settings screen, you can specify a system's general settings and reset either M13 card. General settings include the date and time, the active M13 card, and times for the Alarm Cutoff and inactivity timer. The System Settings screen also displays the system's chassis, alarm card, and software versions.

To Specify a System's Settings

Step	Action
------	--------

- From the Directory screen, press 5 to select System Settings, then Enter. The System Settings screen appears:

```

MIX 56 by Telect                MIX 56                Directory (Ctrl+D)
                                                               Help (?)

                                System Settings
                                -----

System Name: MIX 56                Active Card: 2
System Location:                Redundant M13 Cards: Yes
Contact Person:                ACO Time: 15 min.
(dd/mon/yy) Date: 08/Jul/02    Inactivity Timeout: 15 min.
(hh:mm:ss) Time: 10:56:03    Loopback Permission: No
AIS Terminates LB: Yes (as per T1.403)    Reset: Standby Card
Low Speed Type: T1                Control: Local
LS Remote LB Dir: DS3            Telnet TL1: No

                                Chassis Version: B0
                                Alarm Card Version: A1

                                Card 1                Card 2
                                -----                -----
M13 Board Version: 302950-A1    302950-A1
Firmware Version: 2.03          2.03
CPLD Version: A1                A1
Serial Number: 0005C40000AA    0005C40000E5

```

2. In the System Name field, type a name for the system (up to 16 characters) and press Enter. This name appears at the top of each screen in the Craft interface.
3. Tab to the System Location field, type the location of the system (up to 16 characters), and then press Enter.
4. Tab to the Contact Person field, type the name of the person users should contact about the system (up to 16 characters), and then press Enter.
5. Tab to the Date field and type the current date in the format dd/mon/yy where “dd” is the day of the month, “mon” is the first 3 characters of the month name, and “yy” is the year (00-99). Press Enter after typing in the date.

NOTE

The forward slash (/) must be used in entering the date. The colon (:) must be used in entering the time.

6. Tab to the Time field and type the current time in military time format. Press Enter after typing in the time (hh:mm:ss).
7. Tab to the AIS Terminates LB field, specify whether receiving an AIS signal will terminate any loopbacks that are set by pressing the space bar to toggle between Yes and No, and then press Enter.
8. Tab to the Low Speed Type field, specify the low-speed type by pressing the space bar to toggle between T1, E1 (lines 22-28 disabled), E1 (every 4th line disabled), and Mixed, then press Enter.
9. Tab to the LS Remote LB Dir field, specify which direction to receive and transmit low-speed loopback loop-up and loop-down codes by pressing the space bar to select between DS3 and DS1, then press Enter.
10. Tab to the Active Card field, specify which M13 card by pressing the spacebar to toggle between 1 and 2, then press Enter.

If you are switching active cards, a prompt appears asking you to confirm the change.

- a. Type y and press Enter. The current session is terminated.
- b. Press Enter to start a new session. If you are using Telnet, you must first reestablish the connection to the system.

NOTE

If the standby card is in critical alarm when you switch, the system switches back immediately to the original card, unless: the original card is also in critical alarm, or redundancy switching is locked.

11. Tab to the Redundant M13 Cards field, specify whether to sound an alarm when a second M13 card is not installed by pressing the spacebar to toggle between Yes and No, and then press Enter.

NOTE

- *If you select No when a second card is installed, minor alarm “provision mismatch” is reported.*
 - *If you select Yes when only one card is installed, minor alarm “provision mismatch” is reported*
12. Tab to the ACO Time field, type a number between 1 and 99 to specify the length of time, in minutes, external alarms are disabled when the ACO button is engaged, and then press Enter.
 13. Tab to the Inactivity Timeout field, type a number between 1 and 99 to specify the length of time, in minutes, without Craft interface activity after which users will be logged out automatically, and then press Enter.
 14. Tab to the Loopback Permission field, specify whether to respond to requests for loopbacks from other equipment by pressing the spacebar to toggle between Yes and No, and then press Enter.

! ALERT

ALERT! Resetting the active M13 card interrupts traffic *and* terminates your current Craft Session.

If you are using Telnet, you must first re-establish the connection to the system.

15. Tab to the Reset field, specify which card to reset by pressing the spacebar to toggle between “Standby Card” and “Active Card,” and then press Enter.
16. Tab to the Control field, specify which MIX 56 you want to control by pressing the space bar to toggle between Local and Remote, then press Enter.
17. Tab to the Telnet TL1 field, specify whether telnet sessions should go into TL1/SNMP mode (without first prompting for the T-key) by pressing the space bar to toggle between Yes and No, then press Enter.

NOTE

The remote setting is controlling the MIX 56 at the other end of the DS3 link. For this to work, the DS3 mode must be set to C-Bit and a MIX 56 must be at the other end of the DS3 link.

A remote control link will log the user out so the user will have to log into the remote MIX 56. [On a remote control link, the System Name at the center of the page heading will have a "(Remote)" after it.]

Specifying System Interface Settings

In the System Interfaces screen, you can specify the Craft port baud rate, SNMP community names, and Ethernet addresses. You can also ping other systems on the network.

NOTE

Before using the Ethernet port, you must connect to the local Craft interface through the Craft port and set the system's IP, Subnet Mask, and Gateway addresses in the System Interfaces screen.

From the Directory screen, type 9 to select System Interfaces and press Enter. The System Interfaces screen appears.

```

MIX 56 by Telect                               MIX 56                               Directory (Ctrl+D)
                                                Help (?)

                                System Interfaces
                                -----

                                Serial Port
                                -----
Baud Rate: 115200
Modem Detect: Disabled

                                SNMP Community Names
                                -----
Read: public
Write: private
Trap:

SNMP Event Traps: Enabled

Ping Address:  0.  0.  0.  0
               [Ping]

Ping Response:

                                Ethernet
                                -----
IP Address:  10. 60.125.250
Subnet Mask: 255.255.  0.  0
Gateway:    10. 60.254.254
Trap 1:    0.  0.  0.  0
Trap 2:    0.  0.  0.  0
Trap 3:    0.  0.  0.  0
Trap 4:    0.  0.  0.  0
rap 5:    0.  0.  0.  0
Trap 6:    0.  0.  0.  0

Duplex: Half

[Apply]

```

To Change the Baud Rate

Step	Action
------	--------

1. In the Baud Rate field, press the spacebar to toggle between baud rates, and then press Enter.

If you select a different baud rate, the screen becomes unreadable.

2. To make the screen readable again, change the baud rate setting for the terminal (or PC running terminal emulation software) connected to the system so that it matches the new baud rate.

To Set Modem Detect

Tab to Modem Detect, press the spacebar to toggle between “Disabled” and “Enabled,” and press Enter.

You must set this field to Yes if you intend to connect a modem to the MIX 56. If you set it to No, MIX 56 will not acknowledge modem hardware you connect later, even if you reset the system or press the ACO switch as described in Chapters 2 and 3.

To Specify SNMP Community Names

Step	Action
-------------	---------------

1. Tab to the Read field, type a name (up to 16 characters) which SNMP users will use for read privileges, and then press Enter.
2. Tab to the Write field and type a name (up to 16 characters) to which SNMP users will use for read privileges, and then press Enter.
3. Tab to the Trap field, type a Trap name (up to 16 characters), which SNMP users will use to receive traps, and then press Enter.

To Set SNMP Event Traps

Tab to SNMP Event Traps, press the spacebar to toggle between “Enabled” and “Disabled,” and then press Enter.

To Specify Ethernet Settings

Step	Action
-------------	---------------

1. Tab to the IP Address field and type the address. The IP address is divided into four sets of numbers from 0 to 255 each. Press Enter after typing in the four sets of numbers separated by a “.” (period).

NOTE

To turn off the Ethernet port, set the IP address to all zeros (0. 0. 0. 0).

2. Tab to the Subnet Mask, Gateway, and Trap fields and type the appropriate addresses as described in step 1.

3. Tab to the Duplex field, press the space bar to toggle between “Half” and “Full”, and then press Enter.
4. Tab to the [Apply] button and press Enter.
A prompt appears asking you to confirm the change.
5. Type *y* and press Enter.

To Ping Other Systems on the Network

Step	Action
1.	Tab to the Ping Address field and type the address of the system you want to ping. The address is divided into four sets of numbers from 0 to 255 each. Press Enter after typing in the four sets of numbers separated by a “.” (period).
2.	Tab to the [Ping] button and press Enter. The Ping Response field displays one of the following: <ul style="list-style-type: none"> ◇ Success—The ping was sent, and a response was received within 5 seconds. ◇ Time Out —The ping was sent, but a response was not received within 5 seconds. Occurs when the ping address cannot be found on the network. ◇ Unable to Send Ping—The ping could not be sent. Occurs when the MIX 56 system’s IP and Subnet Mask addresses have not been specified.

Configuring the High-Speed Signal

MIX 56 combines 28 DS1 or 21 E1 signals into a single industry standard DS3 signal and automatically adjusts the DS3 line build out (LBO) setting.

In the High-Speed Configuration screen, you can specify a name for the circuit, select a clock source, and select between C-bit and M13 mode. You can also specify the Local C-bit LAPD (Link Access Procedure on the D-channel) information that is sent when in C-bit mode. When this information is received from the far end, it is displayed under Remote. For more information, consult Telcordia GR-342-CORE, December, 1995; or GR-499-CORE, Issue 1, December 1995.

! ALERT

ALERT! This procedure is service-affecting.

Step Action

1. From the Directory screen, press 6 to select High Speed Configuration, then Enter.

The High Speed Configuration screen appears.

```

MIX 56 by Telect                                MIX 56                                Directory (Ctrl+D)
                                                Help (?)

                                High Speed Configuration
                                -----
                                Name: High Speed
                                Clock Source: DS3 Loop Timing
                                Mode: M13

                                Optional C-bit LAPD Information
                                -----
                                Local                                Remote
                                -----

Equipment ID:
Location ID:
Frame ID:
Unit ID:

Facility ID - Local:
Facility ID - Remote:

                                                [Apply]

```

2. In the Name field, type a name for the DS3 circuit (up to 16 characters) and press Enter.
3. Tab to the Clock Source field, select a clock source by pressing the spacebar to toggle between DS3 Loop Timing and Internal, and then press Enter.
 - ◇ DS3 Loop Timing—Timing is recovered from the incoming DS3 signal.
 - ◇ Internal—Timing is generated by the onboard Stratum 4 clock.

NOTE

In DS3 networks, one network element provides master timing, while the other one recovers timing from the incoming DS3 signal.

4. Tab to the Mode field, select a DS3 mode by pressing the spacebar to toggle between M13 and C-bit, and then press Enter.

5. Tab to the Local Optional C-bit LAPD Information fields, type the appropriate information in each field as described below, then press Enter and tab to the next field:
 - a. Equipment ID: type up to 10 characters that describe the specific piece of equipment.
 - b. Location ID: type up to 11 characters that describe the location of the equipment.
 - c. Frame ID: type up to 10 characters that describe the location of the equipment within the building.
 - d. Unit ID: type up to 6 characters that describe the location of the equipment within a bay.
 - e. Facility ID - Local: type up to 38 characters that describe the specific path of the DS3 signal.
6. Tab to the [Apply] button and press Enter.

A prompt appears telling you this is a service-affecting procedure and asks if you want to continue.
7. Type *y* and press Enter.

Configuring the Low-Speed Channels

ALERT

ALERT! This procedure is service-affecting.

In the System Configuration screen, you can specify whether the system's DS1 signal type is T1, one of two types of E1, or mixed T1's and E1's. When you select T1, all 28 channels become T1, and the Line Code choices are limited to AMI or B8ZS. The type of E1 signal you select determines the configuration:

- 21 channels become E1, channels 22 through 28 become unavailable, and the Line Code choices are limited to AMI or HDB3;
- 21 channels become E1 with every fourth line unavailable, and the Line Code choices are limited to AMI or HDB3.

When you select "Mixed, T1's and E1's" you can then specify in blocks of four DS1 lines whether the block is T1's or E1's. If a block is selected for E1, then the fourth line in the block becomes unavailable. Each block of four lines can be four T1's or three E1's.

Once you have selected the signal type from the System Settings screen, you can then specify the remaining configuration fields for each DS1 chan-

nel, or you can specify the settings for one channel and apply them to all remaining channels from the Low Speed Configuration screen..

To Select a Signal Type

Step	Action
1.	From the Directory screen, press 5 to select System Configuration, then Enter. The System Configuration screen appears.
2.	In the Low Speed Type field, select a signal type by pressing the spacebar to toggle between T1, either of the two E1 modes, or the mixed mode, and then press Enter. A prompt appears asking you to confirm the change.
3.	Type y and press Enter.

NOTE

The Low Speed Type is set from the System Settings screen and appears on the Low Speed Configuration screen as the Signal Type field.

The four possible Low Speed Configuration screens (Screen 7) are shown on the following pages.

This illustration shows the T1 signal type:

```

MIX 56 by Telect                               MIX 56                               Directory (CTRL+D)
                                                Low Speed Configuration                Help (?)
-----
Signal Type: T1
Channel Number: 1                               Name: Low Speed 01
Type: T1                                         Interface: CI      LBO: 000-110 ft.      [Apply]
State: Enabled                                   Code: B8ZS        [Apply All]
-----
#  Name                Configuration Alrm  #  Name                Configuration Alrm
-----
1  Low Speed 01        T1 N B8ZS 110 Ena  15 Low Speed 15        T1 -- Disabled --
2  Low Speed 02        T1 C AMI  220 Dis  16 Low Speed 16        T1 -- Disabled --
3  Low Speed 03        T1 N B8ZS 330 Ena  17 Low Speed 17        T1 -- Disabled --
4  Low Speed 04        T1 N B8ZS 440 Ena  18 Low Speed 18        T1 -- Disabled --
5  Low Speed 05        T1 N B8ZS 550 Ena  19 Low Speed 19        T1 -- Disabled --
6  Low Speed 06        T1 N B8ZS 660 Ena  20 Low Speed 20        T1 -- Disabled --
7  Low Speed 07        T1 N B8ZS 22d Ena  21 Low Speed 21        T1 -- Disabled --
8  Low Speed 08        T1 N B8ZS 15d Ena  22 Low Speed 22        T1 -- Disabled --
9  Low Speed 09        T1 N B8ZS  7d Ena  23 Low Speed 23        T1 -- Disabled --
10 Low Speed 10        T1 N B8ZS  0d Ena  24 Low Speed 24        T1 -- Disabled --
11 Low Speed 11        T1 -- Disabled --  25 Low Speed 25        T1 -- Disabled --
12 Low Speed 12        T1 -- Disabled --  26 Low Speed 26        T1 -- Disabled --
13 Low Speed 13        T1 -- Disabled --  27 Low Speed 27        T1 -- Disabled --
14 Low Speed 14        T1 -- Disabled --  28 Low Speed 28        T1 -- Disabled --
    
```

This illustration shows the E1 signal type (lines 22-28 unavailable):

```

MIX 56 by Telect                                MIX 56                                Directory (CTRL+D)
                                                Low Speed Configuration                Help (?)
-----
Signal Type: E1 (lines 22-28 disabled)
Channel Number: 1                               Name: Low Speed 01
Type: E1                                         InterFace: CI      LBO: Unavailable   [Apply]
State: Enabled                                  Code: HDB3         [Apply All]
=====
#  Name                Configuration Alm  #  Name                Configuration Alm
-----
1  Low Speed 01        E1 C HDB3 Una Ena  15 Low Speed 15        E1 -- Disabled --
2  Low Speed 02        E1 N AMI  Una Dis  16 Low Speed 16        E1 -- Disabled --
3  Low Speed 03        E1 -- Disabled --  17 Low Speed 17        E1 -- Disabled --
4  Low Speed 04        E1 -- Disabled --  18 Low Speed 18        E1 -- Disabled --
5  Low Speed 05        E1 -- Disabled --  19 Low Speed 19        E1 -- Disabled --
6  Low Speed 06        E1 -- Disabled --  20 Low Speed 20        E1 -- Disabled --
7  Low Speed 07        E1 -- Disabled --  21 Low Speed 21        E1 -- Disabled --
8  Low Speed 08        E1 -- Disabled --  22 ----- Unavailable -----
9  Low Speed 09        E1 -- Disabled --  23 ----- Unavailable -----
10 Low Speed 10        E1 -- Disabled --  24 ----- Unavailable -----
11 Low Speed 11        E1 -- Disabled --  25 ----- Unavailable -----
12 Low Speed 12        E1 -- Disabled --  26 ----- Unavailable -----
13 Low Speed 13        E1 -- Disabled --  27 ----- Unavailable -----
14 Low Speed 14        E1 -- Disabled --  28 ----- Unavailable -----
    
```

This illustration shows the E1 signal type (every fourth line unavailable):

```

MIX 56 by Telect                                MIX 56                                Directory (CTRL+D)
                                                Low Speed Configuration                Help (?)
-----
Signal Type: E1 (every 4th line disabled)
Channel Number: 1                               Name: Low Speed 01
Type: E1                                         InterFace: NI      LBO: Unavailable   [Apply]
State: Enabled No Alarms                        Code: AMI          [Apply All]
=====
#  Name                Configuration Alm  #  Name                Configuration Alm
-----
1  Low Speed 01        E1 C HDB3 Una Ena  15 Low Speed 15        E1 -- Disabled --
2  Low Speed 02        E1 N AMI  Una Dis  16 ----- Unavailable -----
3  Low Speed 03        E1 -- Disabled --  17 Low Speed 17        E1 -- Disabled --
4  ----- Unavailable -----                18 Low Speed 18        E1 -- Disabled --
5  Low Speed 05        E1 -- Disabled --  19 Low Speed 19        E1 -- Disabled --
6  Low Speed 06        E1 -- Disabled --  20 ----- Unavailable -----
7  Low Speed 07        E1 -- Disabled --  21 Low Speed 21        E1 -- Disabled --
8  ----- Unavailable -----                22 Low Speed 22        E1 -- Disabled --
9  Low Speed 09        E1 -- Disabled --  23 Low Speed 23        E1 -- Disabled --
10 Low Speed 10        E1 -- Disabled --  24 ----- Unavailable -----
11 Low Speed 11        E1 -- Disabled --  25 Low Speed 25        E1 -- Disabled --
12 ----- Unavailable -----                26 Low Speed 26        E1 -- Disabled --
13 Low Speed 13        E1 -- Disabled --  27 Low Speed 27        E1 -- Disabled --
14 Low Speed 14        E1 -- Disabled --  28 ----- Unavailable -----
    
```

This illustration shows mixed T1 and E1 signal types:

MIX 56 by Telect			MIX 56			Directory (CTRL+D)		
			Low Speed Configuration			Help (?)		

Signal Type: Mixed, T1's and E1's								
Channel Number: 1			Name: Low Speed 01					
Type: E1			InterFace: CI			LBO: Unavailable [Apply]		
State: Enabled			Code: HDB3			[Apply All]		
=====								
#	Name	Configuration	Alrm	#	Name	Configuration	Alrm	

1	Low Speed 01	E1 C HDB3	Una Ena	15	Low Speed 15	T1 C B8ZS 22d	Ena	
2	Low Speed 02	E1 C AMI	Una Ena	16	Low Speed 16	T1 C B8ZS 15d	Ena	
3	Low Speed 03	E1 N HDB3	Una Ena	17	Low Speed 17	T1 C B8ZS 7d	Ena	
4	-----	Unavailable	-----	18	Low Speed 18	T1 C B8ZS 0d	Ena	
5	Low Speed 05	E1 N AMI	Una Ena	19	Low Speed 19	T1 C B8ZS 110	Ena	
6	Low Speed 06	E1 C HDB3	Una Dis	20	Low Speed 20	T1 C B8ZS 110	Ena	
7	Low Speed 07	E1 --	Disabled --	21	Low Speed 21	T1 C B8ZS 110	Ena	
8	-----	Unavailable	-----	22	Low Speed 22	T1 C B8ZS 110	Ena	
9	Low Speed 09	T1 C B8ZS	110 Ena	23	Low Speed 23	T1 C B8ZS 110	Ena	
10	Low Speed 10	T1 N AMI	220 Ena	24	Low Speed 24	T1 C B8ZS 110	Ena	
11	Low Speed 11	T1 C B8ZS	330 Ena	25	Low Speed 25	T1 C B8ZS 110	Ena	
12	Low Speed 12	T1 C B8ZS	440 Ena	26	Low Speed 26	T1 C B8ZS 110	Ena	
13	Low Speed 13	T1 C B8ZS	550 Ena	27	Low Speed 27	T1 C B8ZS 110	Dis	
14	Low Speed 14	T1 C B8ZS	660 Ena	28	Low Speed 28	T1 --	Disabled --	

To Configure One or More Channels

Step	Action
------	--------

- From the Directory screen, type 7 to select Low Speed Configuration and press Enter.
The Low Speed Configuration screen appears.
- In the Channel # field, select a channel by typing the number of the desired channel, and then press Enter.
The remaining input fields display the current configuration information for the selected channel.
- Tab to the Name field, type a name for the channel (up to 16 characters), and then press Enter.
- Tab to the Type field, select a line type by pressing the spacebar to toggle between T1 or E1, and then press Enter. Tab to the Apply button and press Enter.

NOTE

The Type field is only enabled if Signal Type is set for Mixed T1's and E1's. This is set in the System Settings screen.

5. Tab to the State field, select whether the channel is active or inactive by pressing the spacebar to toggle between “Enabled,” “Enabled No Alarms,” and “Disabled,” and then press Enter.

NOTE

The “Enabled No Alarms” state means that the DSI line is active but not monitored for error conditions. No alarms will be reported.

6. Tab to the Interface field, select the interface by pressing the spacebar to toggle between NI (network interface), CI (customer interface), and TI (Telect or Through Interface). Then press Enter.

Changing the interface changes the loop-up and loop-down codes that get set for recognition on receiving and for transmitting when requesting a loopback at the other end. The loop-up and loop-down codes are what the MIX 56 will recognize as codes to go into and out of loop back on a low speed line.

The TI setting can be thought of as a through interface or pass through interface for the NI and CI loop back codes. The TI setting defines loop-up and loop-down codes that are different from the traditional NI and CI loop codes. This causes the MIX 56 to not recognize the NI and CI loop codes when the interface is set to TI. By not recognizing the NI and CI loop codes the MIX 56 just passes these loop codes through to the next piece of equipment.

The TI interface defines another set of loop-up and loop-down codes. This means that if two MIX 56’s are connected together and both are set to the TI interface on a low speed line, then the TI loop-up and loop-down codes will be recognized between these two MIX 56’s.

7. Tab to the Code field, select a line code by pressing the spacebar to toggle between AMI and B8ZS for T1, or AMI and HDB3 for E1, and then press Enter.
8. Tab to the LBO (Line Build Out) field (T1 only), select a line build out distance by pressing the spacebar to toggle between the following selections, and then press Enter:
 - 0 to 110
 - 110 to 220
 - 220 to 330
 - 330 to 440
 - 440 to 550
 - 550 to 660
 - –22.5 dB
 - –15 dB
 - –7.5 dB
 - 0 dB

The “dB” settings are “long haul;” the others are “short haul.”

NOTE

The LBO field is only active if Type is T1.

9. To apply the configuration to the selected channel, tab to the [Apply] button and press Enter.

To apply the configuration to all channels, tab to the [Apply All] button and press Enter.

NOTE

When you apply the configuration to all channels, the name is not applied to each channel. You must configure each channel name separately.

In either case, a prompt appears telling you this is a service-affecting procedure and asks if you want to continue.

10. Type y and press Enter.

After a brief delay, the lower frame displays the new configuration.

Saving a Configuration

In the Save Configuration screen you can save up to three system configurations in non-volatile ram, (NVRam), or you can save the entire NVRam configuration to a file.

A saved configuration in NVRam contains all the settings from the System Settings screen, High Speed Configuration screen, Low Speed Configuration screen, and Alarm Threshold screen.

The NVRam configuration saved to a file includes all three of the saved configurations plus all the settings of the Security screen, Alarm Threshold screen, System Interface screen, and Update Flash screen.

```

MIX 56 by Telect                               System 1                               Directory (CTRL+D)
                                                Help (?)

                                Save Configuration
                                -----

                                #   Name
                                --  -----
                                1   Working Config
                                2   Mixed
                                3   El skip
                                4
                                5   Save To a File
                                6   TFTP, Save To a File

                                Select Number: 1

                                Configuration Name: Working Config

```

Step Action

1. From the Directory screen, type 3 to select Save Configuration and press Enter.
2. In the Select Number field, type the number of the desired option. The first three options are the saved configurations in NVRam. Options 5 and 6 saves the entire NVRam's configurations to a file where option 5 sends the configuration data out the Craft port to be saved to a file and option 6 sends the configuration data out the Ethernet port via a TFTP file transfer.

When you select option 1, 2, or 3 the Configuration Name field will change to the corresponding name that appears on the screen. To save the selected configuration you have to tab to the Configuration Name field and enter the name you wish to store it under.

When you select option 5 or 6 "Save To a File" is displayed in the Configuration Name field. To save the NVRam's configuration follow the instructions that appear on the screen.

NOTE

Option 4 is not used. This was added so that Options 5 and 6 on this screen match Options 5 and 6 on the restore screen (Screen 4).

- **If you selected options 1, 2, or 3, then —**

- a. Tab to the Configuration Name field, type a name for the configuration, (up to 16 characters), and then press Enter.

A prompt appears asking you to confirm writing over the old configuration.

- b. Type y and press Enter. The new configuration name appears beside the number you specified.

- **If you selected option 5, "Save To a File", then —**

- a. A warning prompt appears. Read and understand the warning, then press y and Enter.

The warning prompt is —

```
This is designed around using ProComm Plus to Receive a file. ProComm
must be setup to receive a Raw Ascii file. To save a file select the
"Receive File..." option from the data pull down window. ProComm will
then open the "Receiving File using RAW ASCII" window. In this window
set the directory and filename and click the save button. On clicking
the Save button ProComm will send a Carriage Return to the Mix56
which will initiate the data transfer which ProComm saves in the
file. After the data transfer is complete, indicated by ProComm tim-
ing out and closing the Receiving file window, Press the Escape Key.
```

Note, this will overwrite any existing file with the same filename.

```
Are you sure you want to save the configuration? y/n n
```

ProComm is a registered trademark of Symantec Corporation.

b. On pressing y and Enter the prompt appears:

Ready to save the configuration to a file. Setup for receiving a raw ascii file and select the "Receive File..." data option.

If you decide not to save to a file press the Escape Key.

After the data transfer is complete, i.e. the file has been saved, Press the ESCAPE key to return to the "Save Configuration" screen.

- c. If you're using ProComm make sure the file transfer protocol is set to "RAW ASCII" and then open the "Data" window and select the "Receive File..." option.
- d. Enter the file name of your choice and click the "Save" button. ProComm will open the Receiving file window.
- e. When ProComm times out and closes the receiving file window, press the Escape key to return to the "Save Configuration" screen.

• **If you selected option 6, "TFTP, Save To a File", then —**

- a. A warning prompt appears, read and understand the warning, then press y and Enter.

The warning prompt is —

Saving Configuration to a file via TFTP file transfer:

Note: Screen 10's "Filename" and "TFTP Host IP Address" fields must be filled out with a filename and the IP address of your TFTP server. Screen 9's "IP Address" and "Subnet Mask" fields must be filled out.

The filename entered on screen 10 is the base filename of the file saved here. This file will have the base filename as specified on screen 10 with a filename extension of ".nvr".

Note, this will overwrite any existing file with the same filename.

Are you sure you want to save the configuration? y/n n

- b. If your network is up and running, i.e. screen 9's IP address and subnet mask is set. Also if you've set the filename and TFTP host IP address on screen 10. Then press y and Enter.
- c. On pressing y and Enter the file is saved to the TFTP file server with the base name as specified on screen 10 and with the extension of ".nvr".

Restoring a Configuration

In the Restore Configuration screen, you can load any saved configuration, as well as the original Factory configuration. You can also restore the entire non-volatile ram, (NVRam), from a file.

Restoring with a saved configuration in NVRam or to the Factory configuration resets all the settings in the System Settings screen, High Speed Configuration screen, Low Speed Configuration screen, Alarm Threshold screen, and Loopbacks screen.

Restoring to the Factory configuration also disables security and resets the System Interfaces screen. Restoring to the Factory configuration does not change any of the three NVRam saved configurations.

Restoring the entire NVRam configuration from a file restores all three of the saved configurations plus restoring all the settings of the Security screen, Alarm Threshold screen, System Interface screen, and Update Flash screen.

! ALERT

ALERT! Restoring the entire NVRam from a file or restoring to the Factory configuration resets the System Interfaces screen which includes the IP address, Subnet Mask address, and the Craft Port's baud rate. This has the possibility of killing your communications link.

The Factory configuration does not have an IP address or Subnet Mask address. If you restore this configuration remotely, you will not be able to reconnect to the system until the addresses are added through the local Craft Interface via the Craft port.

The Factory configuration resets the local Craft Port's baud rate to 9600.

```
MIX 56 by Telect                               Mix56                               Directory (CTRL+D)
                                                Help (?)

Restore Configuration
-----
#      Name
--      -----
1      Working Config
2      asdf
3      mine
4      Factory
5      Restore From a File
6      TFTP, Restore From a File

Select Number: 1
```

Step Action

1. From the Directory screen, type 4 to select Restore Configuration and press Enter.
2. In the Select Number field, type the number of the desired option. The first three options are the saved configurations in NVRam. Option 4 is the restore to Factory configuration. Options 5 and 6 restores the entire NVRam's configurations from a file where option 5 receives the configuration data from the Craft port and option 6 receives the configuration data from the Ethernet port via a TFTP file transfer.
 - **If you selected options 1, 2, or 3, then —**
A prompt appears asking you to confirm restoring the configuration. Type y and press Enter.
 - **If you selected option 4, "Factory", then —**
A prompt appears reminding you that this sets the baud rate to 9600, erases the Ethernet IP address and subnet mask address, and asks you to confirm restoring to the factory default configuration. Type y and press Enter.

NOTES

- *If the restored factory configuration has a different baud rate setting, the Craft Port screen becomes unreadable. To restore the screen, change the baud rate to 9600.*
- *If the Craft connection is a telnet session this will kill your session. The factory configuration clears out all the network addresses on the System Interfaces screen. To restore a telnet session the network addresses will have to be setup from a local craft session via the Craft port.*
- *Restoring to factory defaults reboots the Mix56 card.*
- **If you selected option 5, "Restore From a File", then —**
 - a. A warning prompt appears. Read and understand the warning, then press y and Enter.

The warning prompt is —

Restoring Configuration from a file:

This will result in a re-boot of the active card causing a momentary traffic interruption on the DS3 / DS1 lines.

This is designed around using ProComm Plus to Send a file. Setup ProComm to Send a Raw Ascii formatted file. From the "Data" pull down window select the "Send File..." option. ProComm will open the "Send File using RAW ASCII" window. Set the directory and filename and then

click the Open button. On clicking the Open button ProComm will send the file to the Mix56. NOTE, this file must have been previously saved with the save to a file options of screen 3.

WARNING: This sets up your baud rate and network settings which if are changed from your current settings will cause you to lose your connection.

Are you sure you want to restore from a file? y/n n

ProComm is a registered trademark of Symantec Corporation.

b. On pressing y and Enter the prompt appears:

Waiting for data, Send the file.

If you decide not to send the file press the Escape Key.

c. If you're using ProComm make sure the file transfer protocol is set to "RAW ASCII" and then open the "Data" window and select the "Send File..." option.

d. Select the file and click the "Open" button. ProComm will open the Sending file window and send the file.

NOTES

- The file must have been previously saved via one of the save file options of the Save Configuration screen.

- Restoring the NVRam from a file results in a reboot of the Mix56 card.

- **If you selected option 6, "TFTP, Restore From a File",**

a. A warning prompt appears, read and understand the warning, then press y and Enter.

The warning prompt is —

Restoring Configuration from a file:

This will result in a re-boot of the active card causing a momentary traffic interruption on the DS3 / DS1 lines. The re-boot will also cause this craft session to be terminated.

NOTE: This file must have been previously saved with one of the save to file options of screen 3. Screen 10's "Filename" and "TFTP Host IP Address" fields must be filled out with the filename and the TFTP server's IP address. The file retrieved from the TFTP server has a base filename as specified on screen 10 with a filename extension ".nvr" Screen 9's "IP Address" and "Subnet Mask" fields must be filled out.

WARNING: This sets up your baud rate and network settings which if are changed from your current settings will cause you to lose your connection.

Are you sure you want to restore from a file? y/n n

b. If your network is up and running, i.e. screen 9's IP address and subnet mask is set. Also if you've set the filename and TFTP host IP address on screen 10. Then press y and Enter.

- c. On pressing y and Enter the file with the base name as specified on screen 10 and with the extension of “.nvr” is retrieved from the TFTP file server.

NOTES

- *The file must have been previously saved via one of the save file options of the Save Configuration screen.*
- *Restoring the NVRam from a file results in a reboot of the Mix56 card.*

VIEWING ERRORS

Viewing High-Speed Errors

You can view DS3 error counts in either of the following ways:

- 15-Minute Histories—Error count totals are displayed for every 15-minute period in the last 24 hours (96 periods total), including the current period.
- 24-Hour Histories—Error count totals are displayed for two time periods: from Midnight the current day to the end of the last completed 15-minute period and from midnight the previous day to one second before Midnight of the current day.

Error Definitions

These definitions are per ANSI T1.231. You can view all of the following DS3 errors in either of the displays described above.

Errored Seconds (ES): A second with one or more bipolar violations (BPV), excessive zeros (EXZ), or loss of signal (LOS).

Severely Errored Seconds (SES): A second in which 45 or more BPVs, EXZs, or LOS' occur.

Coding Violations (CV): A cumulative count of BPVs and/or EXZs for the period of time displayed.

Loss of Signal Seconds (LOSS): A second containing one or more LOS detects.

Alarm Indication Signal Seconds (AISS): A second in which an Alarm Indication Signal (AIS) is received.

Failure Count (FC): A cumulative count of loss of frame (LOF) and/or AIS seconds (until the counts are cleared).

To View High-Speed Errors in 15-Minute Histories

The High Speed Errors-15 min. screen displays DS3 error counts in individual 15-minute increments for the last 24 hours (96 total increments).

When you specify a time for which you want to view errors, the High Speed Errors-15 min. screen displays the error counts for the 15-minute span that the time you specified is within. When you view the counts of the current span, the screen updates every 2 seconds.

When finished viewing error counts, you can clear all 96 periods at once.

Step Action

1. From the Directory screen, type 11 to select High Speed Errors-15 min. and press Enter.

The High Speed Errors-15 min. screen appears.

```

MIX 56 by Telect                                MIX 56                                Directory (Ctrl+D)
                                                Help (?)

                                High Speed Errors-15 min.
                                -----

Time: 23:31                                     ES: 00064
Span: 23:30:00-23:44:59                       SES: 00022
[Clear]                                        CV: 00004
                                                LOSS: 00015
                                                AISS: 00002
                                                FC: 00006

```

2. In the Time field, type a time in military time format within the last 24 hours for which you want to view error counts. Type hour and minute separated by a “:” (colon); then press Enter. (If you enter an invalid time, the display goes back to the previous valid time.)

The Span field displays the 15-minute span that the time you specified is within, and the error fields display counts of the errors that occurred during that 15-minute time span.

- To clear the error counts for all 96 periods, tab to the [Clear] button and press Enter. This also clears the High Speed 24-hour counts.

A prompt appears asking you to confirm the clear.

- Type **y** and press Enter.

To View High-Speed Errors in 24-Hour Histories

The High Speed Errors-24 hr. screen updates every 15 minutes, displaying DS3 error counts for two time periods: from Midnight the current day to the end of the last completed 15-minute period and from Midnight the previous day to one second before Midnight the current day. When finished viewing the error counts, you can clear both periods at once.

NOTE

During the first 15-minute period of the day (between 00:00:00 and 00:14:59) no error counts are shown in the 24-hour history screen. However, you still can see error counts during this first 15-minute period by going to the High Speed Errors-15 min. screen.

Step Action

- From the Directory screen, type 12 to select High Speed Errors-24 hr. and press Enter. The High Speed Errors-24 hr. screen appears:

```

MIX 56 by Telect                MIX 56                Directory (Ctrl+D)
                                                               Help (?)

                                High Speed Errors-24 hr.
                                -----
[Clear]

CURRENT                          PREVIOUS
Span: 00:00:00-23:29:59          Span: 00:00:00-23:59:59
-----                          -----
ES: 00001                        ES: 00001
SES: 00001                       SES: 00001
CV: 00000                        CV: 00000
LOSS: 00001                      LOSS: 00000
AISS: 00002                     AISS: 00000
FC: 00003                       FC: 00000

```

- To clear both periods, tab to the [Clear] button and press Enter. This also clears the High Speed 15-minute error counts.

A prompt appears asking you to confirm the clear.

3. Type *y* and press Enter.

The error counts clear.

Viewing Low-Speed Errors

You can view low-speed error counts in either of the following ways:

- 15-Minute Histories—Error-count totals are displayed for every 15-minute period in the last 24 hours (96 periods total), including current period.
- 24-Hour Histories—Error count totals are displayed for two time periods: from Midnight of the current day to the end of the last completed 15-minute period; and from Midnight of the previous day to one second before Midnight of the current day.

Error Definitions

These definitions are per ANSI T1.231 and/or ITU-T G.826. You can view all of the following DS1 errors in either of the displays described above.

Errored Seconds (ES): A second with one or more bipolar violations (BPV), excessive zeros (EXZ), or loss of signal (LOS).

Errored Seconds Ratio (ESR): Ratio of Errored Seconds to total seconds.

Severely Errored Seconds (SES): A second in which 1544 or more BPVs, EXZs, or LOS' occur.

Severely Errored Seconds Ratio (SESR): Ratio of Severely Errored Seconds to total seconds.

Coding Violations (CV): A cumulative count of BPVs and/or EXZs.

Loss of Signal Seconds (LOSS): A second containing one or more LOS detects.

AIS Seconds (AISS): A cumulative count of the seconds that Alarm Indication Signal (AIS) is received during the period of time.

To View Low-Speed Errors in 15-Minute Histories

The Low Speed Errors-15 min. screen displays error counts in individual 15-minute increments for the last 24 hours (96 total increments).

When you specify a time for which you want to view errors, the Low Speed Errors-15 min. screen displays the error counts for the 15-minute span that the time you specified is within. When you view the counts of the current span, the screen updates every 2 seconds.

The middle portion of the screen displays Errored Seconds (ES), Errored Seconds Ratio (ESR), Severely Errored Seconds (SES), and Severely Errored Seconds Ratio (SESR) for all channels. By typing a channel number in the Channel # field, you can view the CV, LOSS, and AISS error counts for each channel at the bottom of the screen.

When finished viewing the error counts, you can either clear the counts for just the channel you are viewing or clear the counts for all 28 channels.

Step Action

1. From the Directory screen, press 13 to select Low Speed T1 Errors-15 min., then Enter.

The Low Speed T1 Errors-15 min. screen appears.

```

MIX 56 by Telect                system 2                Directory (CTRL+D)
                                                Help (?)
                                Low Speed Errors-15 min.
                                -----
Time: 15:05
Channel:1          [Clear]          [Clear All]          Span: 15:00:00-15:14:59
-----
#  Name          ES    ESR    SES    SESR    #  Name          ES    ESR    SES    SESR
-----
 1 Low Speed      3 0.005  1 0.001  15 Low Speed      0 0.000  0 0.000
 2 Low Speed      0 0.000  0 0.000  16 Low Speed      0 0.000  0 0.000
 3 Low Speed      0 0.000  0 0.000  17 Low Speed      0 0.000  0 0.000
 4 Low Speed      0 0.000  0 0.000  18 Low Speed      0 0.000  0 0.000
 5 Low Speed      0 0.000  0 0.000  19 Low Speed      0 0.000  0 0.000
 6 Low Speed      0 0.000  0 0.000  20 Low Speed      0 0.000  0 0.000
 7 Low Speed      0 0.000  0 0.000  21 Low Speed      0 0.000  0 0.000
 8 Low Speed      0 0.000  0 0.000  22 Low Speed      0 0.000  0 0.000
 9 Low Speed      0 0.000  0 0.000  23 Low Speed      0 0.000  0 0.000
10 Low Speed      0 0.000  0 0.000  24 Low Speed      0 0.000  0 0.000
11 Low Speed      0 0.000  0 0.000  25 Low Speed      0 0.000  0 0.000
12 Low Speed      0 0.000  0 0.000  26 Low Speed      0 0.000  0 0.000
13 Low Speed      0 0.000  0 0.000  27 - No Data -
14 Low Speed      0 0.000  0 0.000  28 - No Data -
=====
Channel #: 1  CV: 0          LOSS: 0          AISS: 0
    
```

NOTE

If a Channel is unavailable, disabled, or enable with no alarms (either T1 or E1) then the middle portion of the screen will display "No data."

2. In the Time field, type a time in military time format within the last 24 hours for which you want to view error counts. Type the hour and minute separated by a ":" (colon), and then press Enter. (If you

enter an invalid time, the display will go back to the previous valid time.)

The Span field displays the 15-minute span that the time you specified is within, and the error fields display counts of the errors that occurred during that 15-minute time span.

3. To view counts for the errors listed in the bottom portion of the screen for a specific channel, tab to the Channel # field in the upper portion of the frame, type a channel number, and then press Enter.

The Channel # and error counts in the lower portion of the screen are updated for the channel number you specified.

4. To clear the counts for the channel you are viewing, tab to the [Clear] button and press Enter. This also clears the 24-hour counts for the channel.

To clear counts for all channels, tab to the [Clear All] button and press Enter. This also clears the 24-hour counts for all channels.

A prompt appears asking you to confirm the clear.

5. Type *y* and press Enter.

The error counts clear.

To View Low-Speed Errors in 24-Hour Histories

The Low Speed Errors-24 hr. screen updates every 15 minutes, displaying error counts for two time periods: from Midnight the current day to the end of the last completed 15-minute period (Current View) and from Midnight the previous day to one second before Midnight the current day (Previous View).

When you select either view in the View field, the upper portion of the screen displays Errored Seconds (ES), Errored Seconds Ratio (ESR), Severely Errored Seconds (SES), and Severely Errored Seconds Ratio (SESR) for all channels. By typing a channel number in the Channel # field, you can view the CV, LOSS, and AISS error counts for each channel in the lower portion of the screen. When finished viewing the error counts, you can either clear both periods for the channel you are viewing or clear them for all channels.

NOTE

During the first 15-minute period of the day (between 00:00:00 and 00:14:59) no Current counts are shown. However, you still can see error counts during this period by going to the Low Speed Errors-15 min. screen.

Step Action

- From the Directory screen, type 14 to select Low Speed Errors-24 hr. and press Enter. The Low Speed Errors-24 hr. screen appears:

```

MIX 56 by Telect                               system 2                               Directory (CTRL+D)
                                                Help (?)
                                Low Speed Errors-24 hr. Current
View:      Current
Channel:1   [Clear]           [Clear All]           Span: 00:00:00-15:14:59

#  Name      ES   ESR   SES   SESR   #  Name      ES   ESR   SES   SESR
-----
 1 Low Speed   3 0.005   1 0.001   15 Low Speed   0 0.000   0 0.000
 2 Low Speed   0 0.000   0 0.000   16 Low Speed   0 0.000   0 0.000
 3 Low Speed   0 0.000   0 0.000   17 Low Speed   0 0.000   0 0.000
 4 Low Speed   0 0.000   0 0.000   18 Low Speed   0 0.000   0 0.000
 5 Low Speed   0 0.000   0 0.000   19 Low Speed   0 0.000   0 0.000
 6 Low Speed   0 0.000   0 0.000   20 Low Speed   0 0.000   0 0.000
 7 Low Speed   0 0.000   0 0.000   21 Low Speed   0 0.000   0 0.000
 8 Low Speed   0 0.000   0 0.000   22 Low Speed   0 0.000   0 0.000
 9 Low Speed   0 0.000   0 0.000   23 Low Speed   0 0.000   0 0.000
10 Low Speed   0 0.000   0 0.000   24 Low Speed   0 0.000   0 0.000
11 Low Speed   0 0.000   0 0.000   25 Low Speed   0 0.000   0 0.000
12 Low Speed   0 0.000   0 0.000   26 Low Speed   0 0.000   0 0.000
13 Low Speed   0 0.000   0 0.000   27 - No Data -
14 Low Speed   0 0.000   0 0.000   28 - No Data -
=====
Channel #: 1   CV: 0           LOSS: 0           AISS: 0

```

NOTE

If a Channel is unavailable, disabled, or enable with no alarms (either T1 or E1) then the middle portion of the screen will display "No data."

- In the View field, select a time period by pressing the spacebar to toggle between Current and Previous, and then press Enter.
The Span field displays the time span of the view you specified and the error fields display counts of the errors that occurred during the span.
- To view counts for the errors listed in the bottom portion of the screen for a specific channel, tab to the Channel # field in the upper frame, type a channel number, and press Enter.
The Channel # and error counts in the lower portion of the screen is updated for the channel number you specified.

4. To clear Current and Previous periods for the channel you are viewing, tab to the [Clear] button and press Enter. This also clears the 15-minute counts for the channel.

To clear Current and Previous periods for all channels, tab to the [Clear All] button and press Enter. This also clears the 15-minute counts for all channels.

A prompt appears asking you to confirm the clear.

5. Type *y* and press Enter.
The error counts clear.

MANAGING ALARMS AND EVENTS

When you access the Craft interface, whether through an Ethernet port on the rear or a Craft port on the front, the information you view and the settings you specify are only for the system on the same side of the chassis as the port to which you connected. You must connect to the other system to manage its alarms and events.

When an alarm condition occurs within a system, MIX 56 alerts you in the following ways:

- The critical, major, or minor front panel LED lights.
- The critical, major, or minor alarm contact on the rear panel activates, sending the alarm to a separate alarm system.
- An SNMP trap is sent if the network IP address, Subnet Mask, and a Trap Address are set from the System Interfaces screen.
- An entry detailing the alarm condition is made in the Alarm Log and the Current Alarms screen.

When the alarm clears, the LED goes out, the alarm contact deactivates, a second SNMP trap is sent, the alarm is removed from the Current Alarms screen, and a second entry is made in the Alarm Log detailing the time the alarm cleared.

MIX 56 defines alarm levels as follows:

Critical: service-affecting conditions that cause the loss of two or more low speed line or the loss of the high-speed line.

Major: service-affecting conditions that cause the loss of a single low speed line or cause performance issues on the high-speed line.

Minor: conditions that do not affect service.

While some conditions trigger alarms automatically, you can set thresholds for other conditions in the Alarm Thresholds screen. The following table describes the Critical, Major, and Minor alarm conditions and identifies which have user-selectable thresholds:

Critical	Two or more low speed lines are in LOS
	DS3 receiving RAI.
	DS3 LOS.
Major	DS3 OOF.
	DS3 receiving AIS.
	DS3 SES and ES
	DS1 receiving AIS.
	DS1 LOS.
	DS1 SES and ES
Minor	System Settings configured for Redundant M13 Cards, but only 1, M13 Card installed.
	System Settings configured for No Redundant M13 Cards, but have 2, M13 Cards installed.
	Standby card failure
	Standby card in critical alarm
	Active and standby cards have different software versions
	Locked out of protection switching*
	Loss of back-up power
	Maintenance minor alarm (Loopback, BER testing, Programming Standby)
* Locked out for 10 min. after any automatic switch. Locked out for 12 hrs after third switch within one hour.	

Viewing Alarms

You can view alarms in two ways: Current Alarms or Alarm Log history. You can view the alarms for either the active card or the standby card.

To View Current Alarms

The Current Alarms screen displays the date and time the alarm started, details about the alarm, the time remaining on the Alarm Cutoff (ACO) timer (if it has been engaged), and where you can engage and disengage the ACO. Engaging the ACO closes the external alarm contacts, turning them off, while disengaging the ACO turns external alarms back on.

Step Action

1. From the Directory screen, press 16 to select Current Alarms, then Enter.

The Current Alarms screen appears:

```

MIX 56 by Telect                               system 2                               Directory (Ctrl+D)
                                                Help (?)

                                Current Alarms - Active
                                -----
Card Select: Active                               Alarm Cutoff: Disengaged
                                                Time Remaining: 00:00
                                                [Engage ACO]

Alarm Details                                     Start Date / Time
-----
Crt  multiple low speed failures                22/Oct/03 07:37:35
Mjr  LS-02(Low Speed 02),LOS                    22/Oct/03 07:37:35
Mjr  LS-03(Low Speed 03),LOS                    22/Oct/03 07:15:02
Mjr  LS-01(Low Speed 01),Rx AIS                 22/Oct/03 07:14:49
Mjr  15 min. ES LS threshold crossed            22/Oct/03 07:16:04
Mjr  15 min. SES LS threshold crossed           22/Oct/03 07:14:56
Mjr  24 hr. ES LS threshold crossed             22/Oct/03 07:29:59
Mjr  24 hr. SES LS threshold crossed            22/Oct/03 07:29:59
Mnr  backup power B failed                      22/Oct/03 07:13:00

                                                Page: 1                               [Next] [Previous]

```

2. Tab to “Card Select” and press the spacebar to toggle between “Active” and “Standby”. Press Enter.
3. To view the next 14 entries, tab to [Next] and press Enter.
4. To view the previous 14 entries, tab to [Previous] and press Enter.
5. To engage or disengage the ACO, tab to the button below the Time Remaining field and press Enter. If the ACO is engaged, the button that appears is [Disengage ACO]. If the ACO is disengaged, the button that appears is [Engage ACO].

To View the Alarm Log

You can view a history of alarms in the Alarm Log, a screen that displays the last 99 alarm entries. An entry is made in the Alarm Log when an alarm is triggered, and again when it is cleared.

Each page in the Alarm Log contains up to 11 entries that show the date and time each alarm started or ended, the type of alarm, and a detailed explanation of the alarm. You can move forward or backward through the pages, and when finished viewing alarms, you can clear the entire log.

Step Action

1. From the Directory screen, press 17 to select Alarm Log, then Enter.

The Alarm Log screen appears.

```

MIX 56 by Telect                system 2                Directory (Ctrl+D)
                                                Help (?)

                        Alarm Log - Active
                        -----

Card Select: Active

#   Date       Time       Alarm Details
-----
1  22/Oct/03  07:37:35  Mnr   System,multiple low speed failures,on
2  22/Oct/03  07:37:35  Crt   LS-02(Low Speed 02),Rx AIS,off
3  22/Oct/03  07:37:35  Mnr   LS-02(Low Speed 02),LOS,on
4  22/Oct/03  07:37:18  Crt   24 hr. SES HS threshold crossed,off
5  22/Oct/03  07:37:18  Mnr   24 hr. ES HS threshold crossed,off
6  22/Oct/03  07:37:18  Crt   15 min. SES HS threshold crossed,off
7  22/Oct/03  07:37:18  Crt   15 min. ES HS threshold crossed,off
8  22/Oct/03  07:36:52  Crt   System,standby card detected critical alarm,off
9  22/Oct/03  07:36:51  Crt   HS-01(High Speed),LOS,off
10 22/Oct/03  07:30:00  Mnr   24 hr. ES HS threshold crossed,on
11 22/Oct/03  07:29:59  Mnr   24 hr. SES LS threshold crossed,on

                                                [Next] [Previous] [Clear]

```

2. Tab to “Card Select” and press the space bar to toggle between “Active” and “Standby”. Press Enter.
3. To view the next 11 entries, tab to the [Next] button and press Enter.
4. To view the previous 11 entries, tab to the [Previous] button and press Enter.
5. To clear the entire log, tab to the [Clear] button and press Enter. A prompt appears asking you to confirm the clear. Type y and press Enter. The Alarm Log clears.

Setting Alarm Thresholds

In the Alarm Thresholds screen, you can specify some of the conditions that trigger and clear the system alarms. Each threshold is counted in one second increments, and for most alarms, you can set one threshold to trigger the alarm and another to clear it (ES and SES alarms do not need Alarm Off thresholds because they clear automatically when the time span on which they are based passes).

For example: to set an alarm to trigger when the High Speed circuit experiences more than 3 seconds of Loss of Signal (LOS), set the Alarm On threshold to 003. Then set the Alarm Off threshold to the amount of time the condition must be absent before the alarm clears (ex. 010 = 10 seconds of no LOS).

You can set thresholds for the following alarm conditions for both the high-speed and the low-speed signals:

Alarm Indication Signal (AIS). AIS indicates more serious impairments, such as upstream failures. The system is receiving AIS, a signal sent to indicate a transmission interruption located either at or downstream from the equipment sending the AIS. DS3 AIS is a framed signal containing alternating ones and zeros, whereas DS1 AIS is an unframed all-ones signal.

Loss of Signal (LOS). The absence of any detectable transmission pulses.

Errored Seconds-15 minutes. The number of errored seconds (ES) in a 15-minute span. An errored second is a second in which Loss of Signal or at least one Coding Violation (CV) occurs.

Errored Seconds-24 hours. The number of ES in a 24-hour span.

Severely Errored Seconds-15 minutes. The number of severely errored seconds (SES) in a 15-minute span. A severely errored second is a second in which 320 or more CV occur.

Severely Errored Seconds-24 hours. The number of SES in a 24-hour span.

Additionally, you can set thresholds for the following alarm conditions for the High Speed signal only:

Remote Alarm Indication (RAI). The system is receiving RAI, a signal sent to indicate the far-end equipment is not receiving a DS3 signal from the MIX 56.

Out of Frame (OOF). The signal does not meet the framing requirements of the Framing Mode (C-bit or M13) specified in the High Speed Configuration screen.

The Alarm Thresholds screen also displays the status of the system's redundancy switching capabilities. Locked means the system has automatically switched due to some error and the system is locked from automatically switching again. The system is locked for 10 minutes after any automatic switch or for 12 hours after the third automatic switch within a one hour time frame. You can enable switching again by tabbing to the [Clear Lock] button and pressing Enter.

Step Action

1. From the Directory screen, type 8 to select Alarm Thresholds and press Enter.

The Alarm Thresholds screen appears.

```

MIX 56 by Telect                                MIX 56                                Directory (Ctrl+D)
                                                Help (?)

                                Alarm Thresholds (in seconds)
                                -----
                                Low Speed                                High Speed
                                -----                                -----
                                Alarm On  Alarm Off                                Alarm On  Alarm Off
                                -----                                -----
AIS: 999      003                                AIS: 002      003
LOS: 002      003                                RAI: 002      003
                                                LOS: 002      003
                                                OOF: 002      003

                                Alarm On                                Alarm On
                                -----                                -----
ES-15 min: 065                                ES-15 min: 025
ES-24 hr: 648                                ES-24 hr: 250
SES-15 min: 010                                SES-15 min: 004
SES-24 hr: 100                                SES-24 hr: 040

                                Redundancy Switch Status: Normal
                                                [Clear Lock]

```

2. To set an alarm threshold, tab to the threshold field (ex. Low Speed AIS Alarm On), type the number of seconds the condition must exist before triggering an alarm (Alarm On) or the number of seconds the condition must be absent to turn off the alarm (Alarm Off), and then press Enter.
3. To enable redundancy switching, tab to the [Clear Lock] button and press Enter. You can tab to this button only when redundancy switching is locked.

The Redundancy Switch Status field displays “Normal” if not locked, or displays “Locked Out” if locked. The [Clear Lock] button is only enabled if Status is “Locked Out”.

Viewing Events

Any occurrence in the MIX 56 system, whether initiated by a user or by the system, is an event. You can view events in the Event Log, a screen that displays the last 99 events.

Each page in the Event Log contains up to 11 entries that show the date and time each event occurred, as well as a detailed explanation of the event. You can move forward or backward through the pages, and when finished viewing events, you can clear the entire log.

Step Action

1. From the Directory screen, press 18 to select Event Log, then Enter. The Event Log screen appears.

```

MIX 56 by Telect                                system 2                                Directory (Ctrl+D)
                                                Help (?)

                                Event Log - Active
                                -----

Card Select: Active

#   Date       Time       Details
--  -
1  22/Oct/03   07:37:18   Ser-CID,cleared high speed error counts
2  22/Oct/03   07:36:51   System,high speed RAI transmit off
3  22/Oct/03   07:15:02   Ser-CID,changed low speed cfg. on channel #03
4  22/Oct/03   07:14:55   Ser-CID,changed low speed cfg. on channel #02
5  22/Oct/03   07:14:47   Ser-CID,changed low speed cfg. on channel #01
6  22/Oct/03   07:13:47   System,high speed RAI transmit on
7  22/Oct/03   07:13:26   Ser-CID,changed low speed cfg. on all channels
8  22/Oct/03   07:13:04   Ser-CID,logged in
9  22/Oct/03   07:12:58   System,powered on
10
11

                                                [Next] [Previous] [Clear]

```

2. Tab to “Card Select” and press space bar to toggle between “Active” and “Standby”. Press Enter.
3. To view the next 11 entries, tab to the [Next] button and press Enter.
4. To view the previous 11 entries, tab to the [Previous] button and press Enter.
5. To clear the entire log, tab to the [Clear] button and press Enter. A prompt appears asking you to confirm the clear. Type *y* and press Enter. The Event Log clears.

NOTE

If security is on, then the user name will appear with the “logged in” message. This user name is coming from the security entry, and if that entry on the security screen is deleted then there no longer is a user name to display with the “logged in” message. The “logged in” message still exists; there just isn’t a user name to display with it.

PERFORMING DIAGNOSTICS

Running Loopbacks

! ALERT

ALERT! When a loopback is running, the low-speed channel or high-speed circuit on which it is running is out of service.

The following loopbacks can be set from the Loopbacks screen:

Low Speed “Line”: The signal is sent through the DS1 LIU (Line Interface Unit) and looped back before reaching the Encoder/Decoder. The DS1 Received signal is looped back out as the DS1 Transmitted signal.

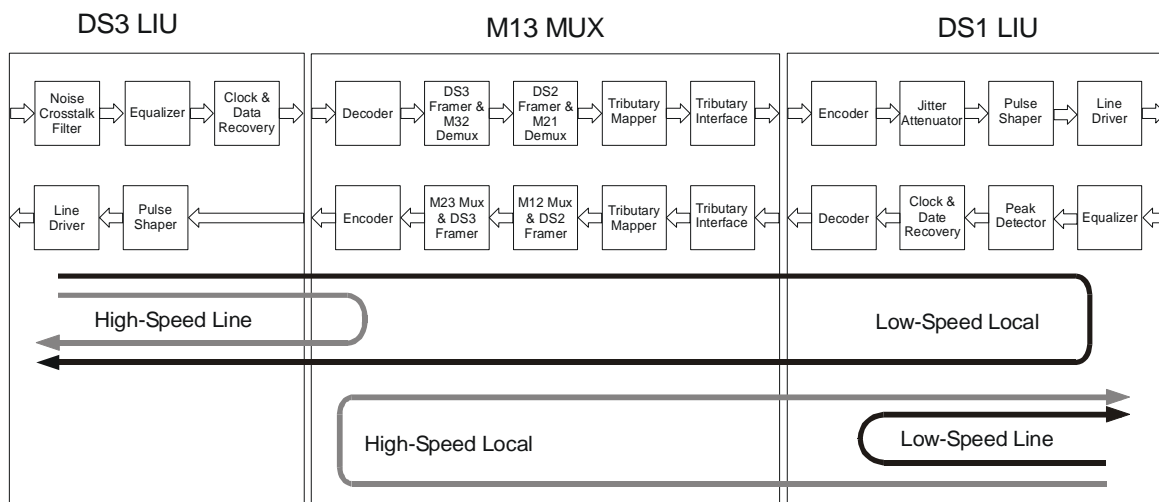
Low Speed “Local”: The demultiplexed DS1 signal from the M13 MUX is encoded and sent to the DS1 LIU Equalizer, where it is looped back through the DS1 LIU Decoder, and then multiplexed and added to the DS3 stream by the M13 MUX.

High Speed “Line DS3”: The received signal is sent through the DS3 LIU and through the M13 MUX Decoder, where it is looped back through the Encoder and put onto the DS3 stream. The DS3 Received signal is looped back out as the DS3 Transmitted signal.

High Speed “Local DS3”: The signal is sent through the DS1 LIUs, multiplexed, and looped back before reaching the M13 MUX Encoder.

High Speed “Line, DS1 Ch xx in DS3”: The signal path is the same as the “Line, DS3” loopback, but instead of the entire DS3 signal being looped back, an individual DS1 channel of the Muxed DS3 signal is looped back.

The illustration below shows the path of each loopback.



MIX 56 Loopback Options

The following remote loopbacks can be requested from the Loopbacks screen:

Low Speed “Remote Tx LpUp”: Transmits a DS1 Loop Up code for 6 seconds. The MIX 56 uses CSU loop codes.

Low Speed “Remote Tx LpDn”: Transmits a DS1 Loop Down code for 6 seconds. The MIX 56 uses CSU loop codes.

High Speed “Remote DS1 Ch xx in DS3”: Requests a loopback of the individual DS1 signal for Channel xx of the MUXed DS3 signal at the other end of the DS3 link.

High Speed “Remote All DS1’s in DS3”: Requests a loopback of all DS1 signals of the MUXed DS3 signal at the other end of the DS3 link. This remote loopback request is only available if the DS3 mode is set for C-Bit.

High Speed “Remote DS3 (Line)”: Requests a loopback of the entire DS3 signal at the other end of the DS3 link. This remote loopback request is only available if the DS3 mode is set for C-Bit.

NOTES

- *The MIX 56 will respond to receiving low-speed and high-speed remote loopback requests if the “Loopback Permission” is set to Yes on the System Settings screen.*
- *Low-Speed Loop-Up and Loop-Down codes vary depending on the interface setting and whether they are transmitted or received. The interface setting for the individual DS1 line is set from the Low Speed Configuration Screen.*

The Loop-Up and Loop-Down codes and the number of bits in each code are CSU loop codes, as defined below:

	NI Interface		CI Interface	
	Code	Bits	Code	Bits
Rx Loop Up	03	5	01	5
Rx Loop Down	07	5	01	3
Tx Loop Up	01	5	03	5
Tx Loop Down	01	3	07	5

- *The low-speed loopback settings of “Remote Tx LpDn” and “Remote Tx LpUp” causes the MIX 56 to transmit the appropriate loop-up or loop-down code for 6 seconds and then terminate the transmission.*
- *The MIX 56 will also respond when receiving the appropriate loop-up or loop-down code if the “Loopback Permission” setting of the System*

Settings screen is set to Yes. If loop back permission is set to Yes then the MIX 56 will —

- ◇ *Go into loopback when the loop-up code is no longer received and it had received the loop-up code for at least 5 seconds. A loopback is not established until the loop-up code is no longer received after being received for at least 5 seconds.*
- ◇ *Go out of loopback when the loop-down code has been received for 5 seconds. A loopback is cancelled after receiving the loop-down code for 5 seconds, it does not wait for the loop-down code to cease being received.*
- *The low-speed loop-up and loop-down codes can be received and transmitted either via the individual DS1 channel of the MUXed DS3 signal or via the corresponding DS1 line. The MIX 56 can be set up to either the DS3 or DS1 direction but not both at the same time. The low-speed remote loopback direction, DS3 or DS1, is set by the “LS Remote LB Dir” field of the System Settings screen.*
 - ◇ **“LS Remote LB Dir” set for DS3 (default):** The loop-up and loop-down codes are received and transmitted on the corresponding DS1 channel of the MUXed DS3 signal. The loopback set on receiving the loop-up code is the low-speed local loopback. A loop-up or loop-down code received on the DS1 line is not recognized.
 - ◇ **“LS Remote LB Dir” set for DS1:** The loop-up and loop-down codes are received and transmitted on the corresponding DS1 line. The loopback set on receiving the loop-up code is the low-speed line loopback. A loop-up or loop-down code received from the corresponding DS1 channel of the DS3 signal is not recognized.

To run a loopback, proceed as follow:

Step	Action
------	--------

1. From the Directory screen, press 19 to select Loopbacks, then Enter.

The Loopbacks screen appears:

```

MIX 56 by Telect                               Rt. Mix56                               Directory (CTRL+D)
                                                Loopbacks                               Help (?)
                                                -----
LS Chan #: 1                                     [Apply]
High Speed: None                               Rx: None
Low Speed: None                               Rx: None
=====
#  Name      DS3  DS1 Status  Rx  #  Name      DS3  DS1 Status  Rx
-----
1  Low Speed  01  None  None      No  15 Low Speed  15  None  Chan.Disabled...
2  Low Speed  02  None  None      No  16 Low Speed  16  None  Chan.Disabled...
3  Low Speed  03  None  Chan.Disabled...  17 Low Speed  17  None  Chan.Disabled...
4  Low Speed  04  None  Chan.Disabled...  18 Low Speed  18  None  Chan.Disabled...
5  Low Speed  05  None  None      No  19 Low Speed  19  None  Chan.Disabled...
6  Low Speed  06  None  None      No  20 Low Speed  20  ....Chan.Unavail...
7  Low Speed  07  None  Chan.Disabled...  21 Low Speed  21  None  Chan.Disabled...
8  Low Speed  08  ....Chan.Unavail...  22 Low Speed  22  None  Chan.Disabled...
9  Low Speed  09  None  Chan.Disabled...  23 Low Speed  23  None  Chan.Disabled...
10 Low Speed  10  None  Chan.Disabled...  24 Low Speed  24  None  Chan.Disabled...
11 Low Speed  11  None  Chan.Disabled...  25 Low Speed  25  None  Chan.Disabled...
12 Low Speed  12  None  Chan.Disabled...  26 Low Speed  26  None  Chan.Disabled...
13 Low Speed  13  None  Chan.Disabled...  27 Low Speed  27  None  Chan.Disabled...
14 Low Speed  14  None  Chan.Disabled...  28 Low Speed  28  None  Chan.Disabled...

```

2. In the LS Chan # field, type the number of the low speed channel you want to run a loopback on, and then press Enter.
If the selected channel is disabled, "Chan Disabled" will appear in the Low Speed field. If the selected channel is unavailable, "Chan Unavail." will appear in the Low Speed field.
3. Tab to the High Speed field, select a loopback by pressing the spacebar to toggle among "Local , DS3", "Line, DS3", "Line DS1 Ch xx in DS3", "Remove DS1 Ch xx in DS3", "Remote All DS1's in DS3", "Remote DS3 (Line)", or "None"; and then press Enter.
None means a loopback is not running, and therefore, the channel is operating normally.
4. Tab to the Low Speed field, select a loopback to run on the channel by pressing the spacebar to toggle among "Local, Line", "Remote Tx LpUp", "Remote Tx LpDn", or "None"; and then press Enter.
If the Low Speed Channel is disabled or unavailable, the Low Speed field is not enabled.
5. Tab to the [Apply] button and press Enter. A prompt appears asking you to confirm running the loopbacks. The [Apply] button is not enabled until a change in either the "High Speed" or "Low Speed" field is made.

6. Type *y* and press Enter. The High Speed field in the upper frame displays the loopback running on the High Speed circuit. The lower frame displays the status of the Low Speed channels.

NOTES

- *The Rx fields on the Loopback screen is to display the status of the MIX 56 receiving any remote loopback requests.*
- *The DS3 column on the Loopback screen's lower frame displays the status of the loopback that is currently set on the corresponding DS1 channel of the MUXed DS3 signal. This DS3 field will display either "Line" or "Rem".*

BER TESTING

The MIX 56 has a limited set of Bit Error Rate (BER) testing capabilities. This BER testing is setup from the Craft interface screen 20, "BER Testing". In the "BER Testing" screen you can specify test mode and test pattern.

The test mode specifies where the test is to be performed. This allows you to select either a C-Bit DS3 test on the high speed line, a T1/E1 test on a particular channel of the DS3 high speed line, or an unframed pattern test on a specific low speed line.

The test pattern selections are dependant on which test mode is selected. The test patterns available for the different modes are specified in the following table:

Mode	Available Patterns
C-Bit DS3 Test on High Speed Line This test puts a C-Bit DS3 test signal onto the DS3 high speed line	<ol style="list-style-type: none"> 1. Pseudorandom test, PBRs "2¹⁵-1" 2. Pseudorandom test, PBRs "2²⁰-1" 3. Pseudorandom test, PBRs "2²³-1"
T1/E1 Test on High Speed Line This test puts either a T1 or E1 test signal onto a specific channel of the Muxed DS3 signal on the DS3 high speed line	<ol style="list-style-type: none"> 1. Pseudorandom test, PBRs "2¹⁵-1" 2. Pseudorandom test, PBRs "2²⁰-1" 3. Pseudorandom test, PBRs "2²³-1" 4. Quasi_Random test, PBRs (QRSS) 5. All Ones 6. All Zeros 7. 3 in 24 8. 1 in 8 (1:7)
Unframed Test on Low Speed Line This test puts an unframed T1 or E1 test signal onto a specific low speed line	<ol style="list-style-type: none"> 1. Pseudorandom test, PBRs "2¹⁵-1" 2. Quasi_Random test (QRSS)

When test mode “T1/E1 Test on High Speed Line” is selected then you also specify:

1. Which channel of the muxed DS3 signal to insert the test pattern on.
2. Whether to use a framed test signal or not.
3. What frame format to use if using a framed test signal.
4. What remote alarm format to use if T1 line and using a framed test signal

When test mode “Unframed Test on Low Speed Line” is selected then you also specify which low speed channel to do the test on.

To Specify a BER Test

Step Action

1. From the Directory screen, press 20 to select “BER Testing”, then press enter. The “BER Testing” screen appears:

```

MIX 56 by Telect                                MIX 56                                Directory (CTRL+D)
                                                Help (?)

                                BER Testing
                                -----

                                Mode: T1/E1 Test on High Speed Line
                                Pattern: Disabled

                                                Receiving Pattern: None

Low Speed Channel #: 1                                Line Type: T1
  Framed Signal: Yes
  Frame Format: ESF
  RAI: FS Bit

                                                [Apply]

```

2. In the “Mode” field select the mode by pressing the spacebar to toggle between “CBit DS3 Test on High Speed Line”, “Unframed Test on Low Speed Line”, or “T1/E1 Test on High Speed Line” and then pressing Enter.

NOTE

The DS3 test on the high speed line is a C-Bit DS3 signal. This is due to the capabilities of the DS3 framer chip we used not being able to recognize a received test pattern unless the framer chip is set for C-Bit.

3. Tab to the “Pattern” field and select the desired pattern by pressing the spacebar to toggle between the available options and then pressing Enter.

The available options depend on the mode selection and are specified in the previous table.

4. Tab to the “Low Speed Channel” field and select the channel by typing in the number of the desired channel and then pressing enter.

NOTE

This field is only available in the “T1/E1 Test on High Speed Line” or “Unframed Test on Low Speed Line” modes.

If the selected Low Speed Channel is disabled or unavailable, then the “Line Type:” display will change to either “Line Disabled” or “Line Unavail.”

5. Tab to the “Framed Signal” field and toggle between “yes” and “no” by pressing the spacebar and then pressing Enter.

NOTE

This field is only available in the “T1/E1 Test on High Speed Line” mode.

6. Tab to the “Frame Format” field and toggle between the available options by pressing the spacebar and then pressing Enter. The available options depend on whether the line is a T1 or E1. The T1 options are “ESF” and “SF”. The E1 options are “DOUBLE” and “MULTI”.

NOTE

This field is only available in the “T1/E1 Test on High Speed Line” mode.

7. Tab to the “RAI” field and toggle between the available options by pressing the spacebar and then pressing Enter. This field only applies to a T1 signal and selects the remote alarm format (remote alarm indication, RAI). The available options are bit2 equals zero in every channel (Bit 2=0) and FS bit of frame 12 of the framed signal (FS Bit).

NOTE

This field is only available in the “T1/E1 Test on High Speed Line” mode.

8. To apply the BER test selected, tab to the [Apply] button and press enter. A prompt will appear telling you that this action will cause a continuous traffic interruption and ask if you want to continue.

If a Low Speed Channel is selected that is either disabled or unavailable, then the [Apply] button is not enabled.
9. Type “y” and Enter to perform the selected BER test.

5 *Owner Maintenance*



CAUTION

CAUTION! This product must be installed and maintained only by qualified technicians.

VORSICHT! Nur von qualifizierten Technikern installiert werden und instand gehalten werden.

PRECAUCIÓN! Ser instalado y ser mantenido solamente por los técnicos autorizados.

ATTENTION! Ce produit doit être installé et entretenu uniquement par des techniciens qualifiés.



ALERT

ALERT! To avoid electrostatic discharge, always wear a grounding strap plugged into the ESD jack when handling any MIX 56 components.

Telect's MIX 56 does not need preventive maintenance. However, you can replace or update the following components in the field:

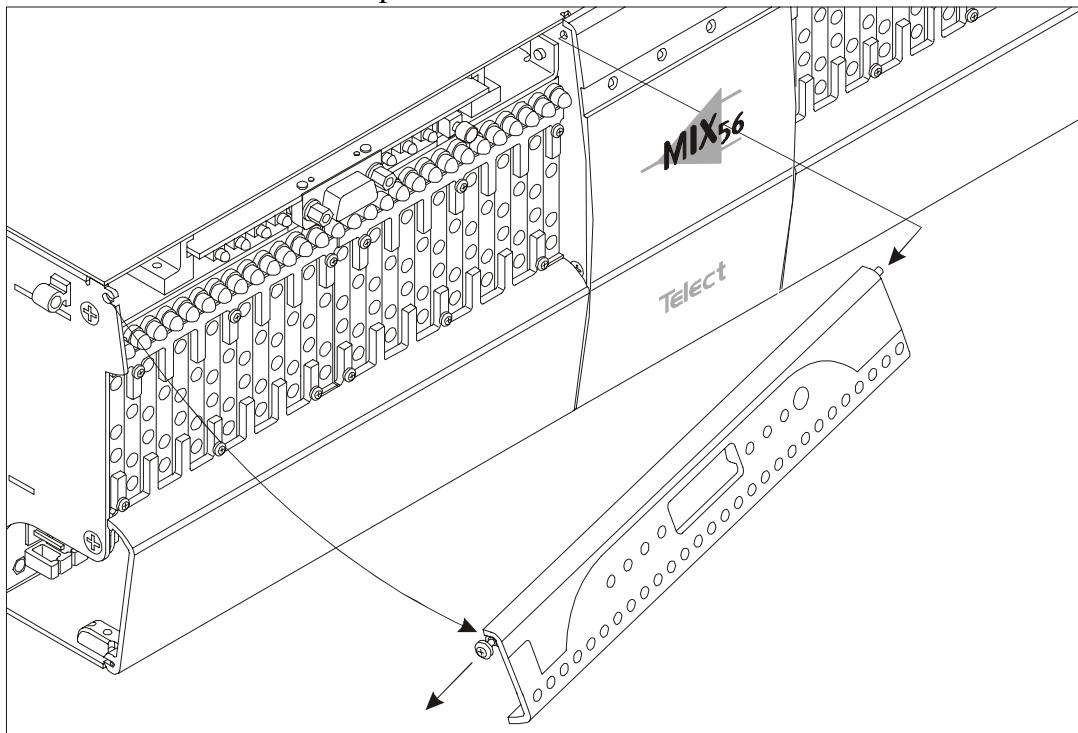
- DSX Jack Tracer Lamps (PN 231422-1)
- DSX Jacks (PN 302898)
- M13 Cards (PN 747-1001-2448)
- Alarm Cards (PN 747-1002-2448)
- Software (version numbers vary)

REPLACING DSX JACK TRACER LAMPS

To replace a DSX jack tracer lamp, you must remove the LED panel faceplate, which is held in place by a pin on one side and a screw on the other side. You must pull the faceplate out at an angle in order to remove it without breaking the pin, as described below.

Step	Action
------	--------

1. Loosen the screw holding the LED panel faceplate in place.
2. Carefully swing out the screw end of the faceplate — just enough to allow the pin end to slip free from the enclosure.
3. Set the faceplate aside.

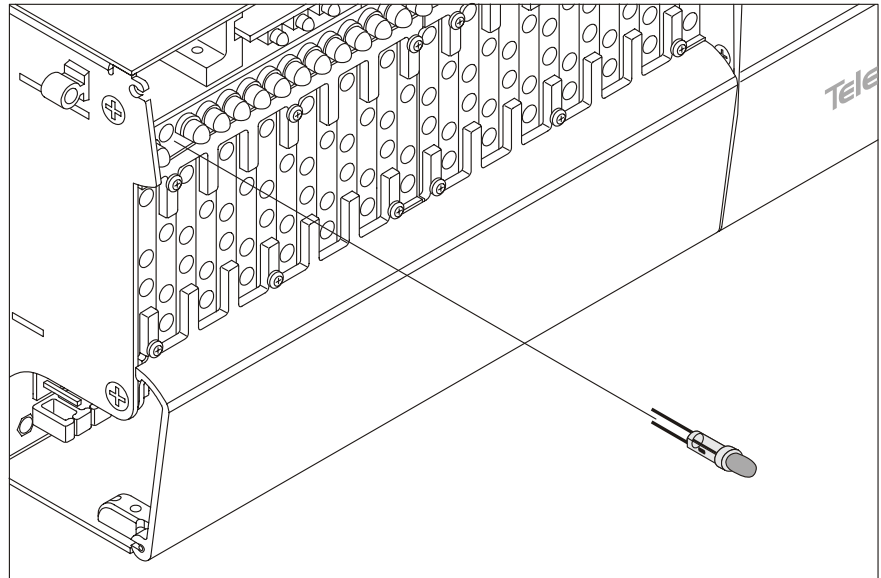


4. Pull the defective LED straight out with your fingers.
5. Align the replacement LED with the LED socket in the jack module, as shown below. Notice that the socket is keyed, and the LED only enters one way.



ALERT! Do not bend the LED's two metal leads.

6. Gently insert the LED into the socket. If you encounter resistance, do not force the LED into position. Move it until it slides easily into place.



When the LED snaps into place, the installation is complete.

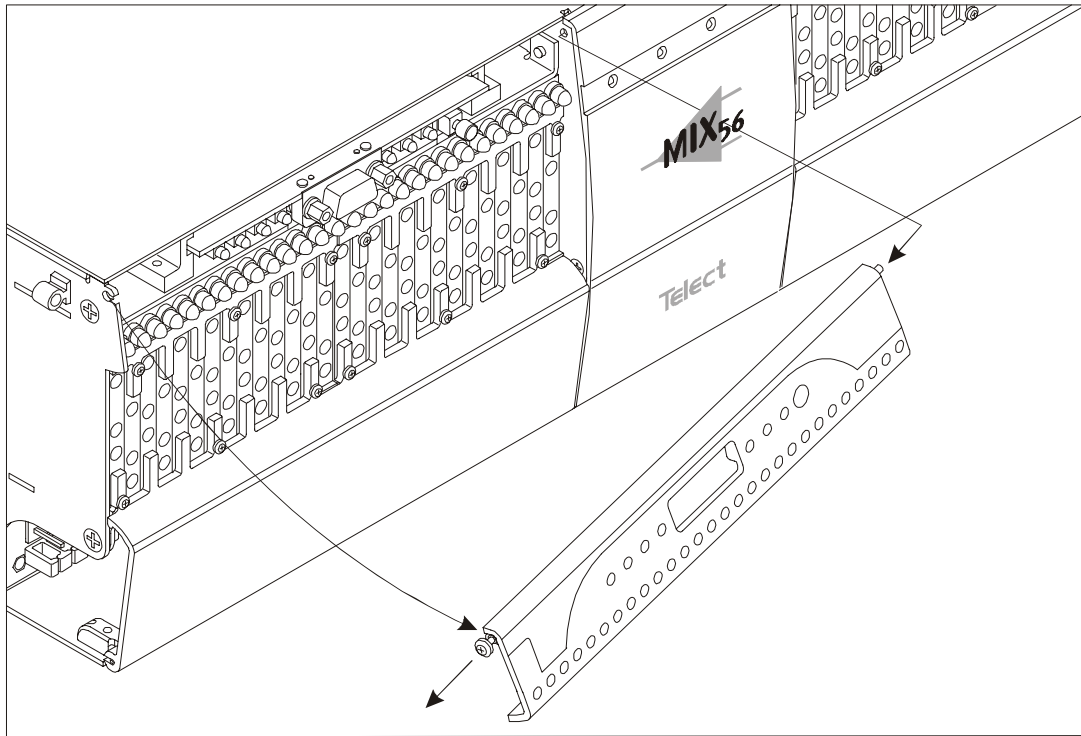
7. To test the new LED, insert a plug into the “M” (monitor) jack. The LED flashes for about 30 seconds, then lights steadily.
8. Replace the LED panel faceplate by inserting the pin into the enclosure hole, swinging the faceplate into position, and inserting the captive screw into its slot so that the faceplate is flush with the chassis. Tighten the screw.

REPLACING DSX JACKS

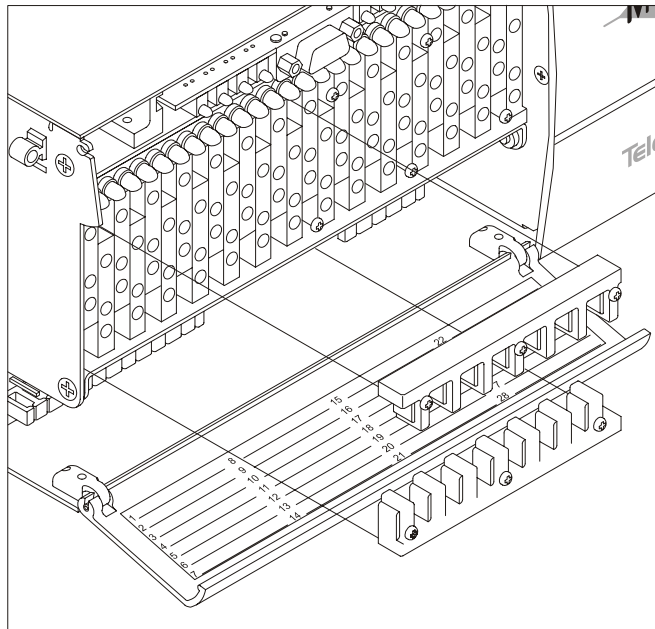
To replace a DSX jack, you must remove the LED panel faceplate, which is held in place by a pin on one side and a screw on the other side. You must pull the faceplate out at an angle in order to remove it without breaking the pin, as described below.

Step	Action
1.	Loosen the screw holding the LED panel faceplate in place.
2.	Carefully pull the end with the screw out slightly at an angle.

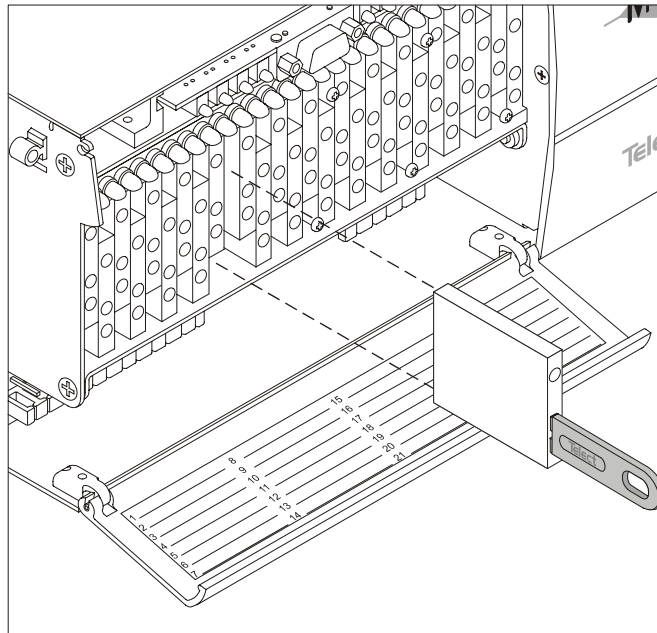
3. Remove the faceplate, as described on Page 5-2.



4. Loosen the six screws holding the upper and lower jack retainers in place and remove the retainers, as shown below. Press down on the wire-wrap door clip while removing the lower jack retainer.



5. Insert a bantam plug into the jack and pull the jack straight out, as shown below. You may need to wiggle the jack slightly to unseat it from the connectors.



6. Insert the new jack into its slot and gently press it into place so that the jack connectors insert into the chassis connectors.
7. Replace the upper and lower jack retainers and tighten the screws until the retainers are securely attached to the chassis.
8. Re-install the faceplate.

REPLACING M13 CARDS



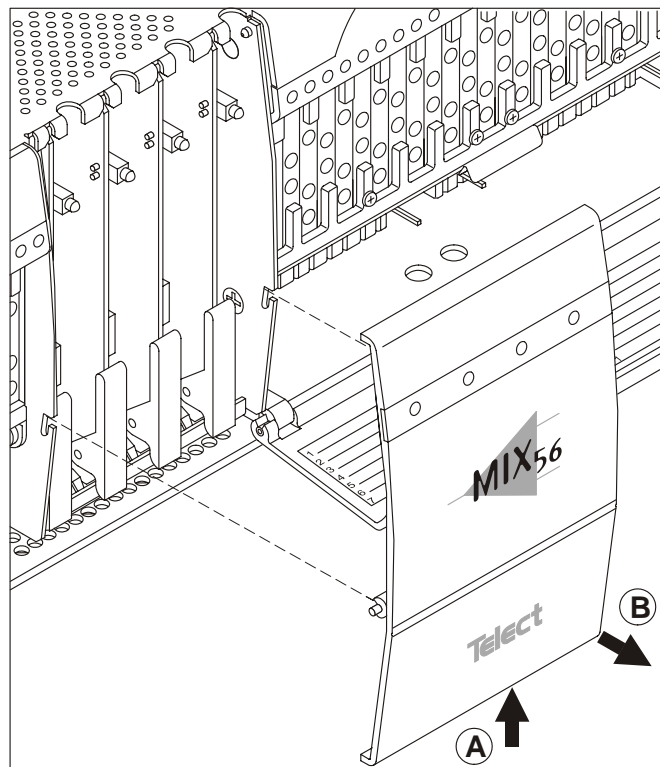
ALERT! To avoid electrostatic discharge, always wear a grounding strap plugged into the ESD jack when handling any MIX 56 components.



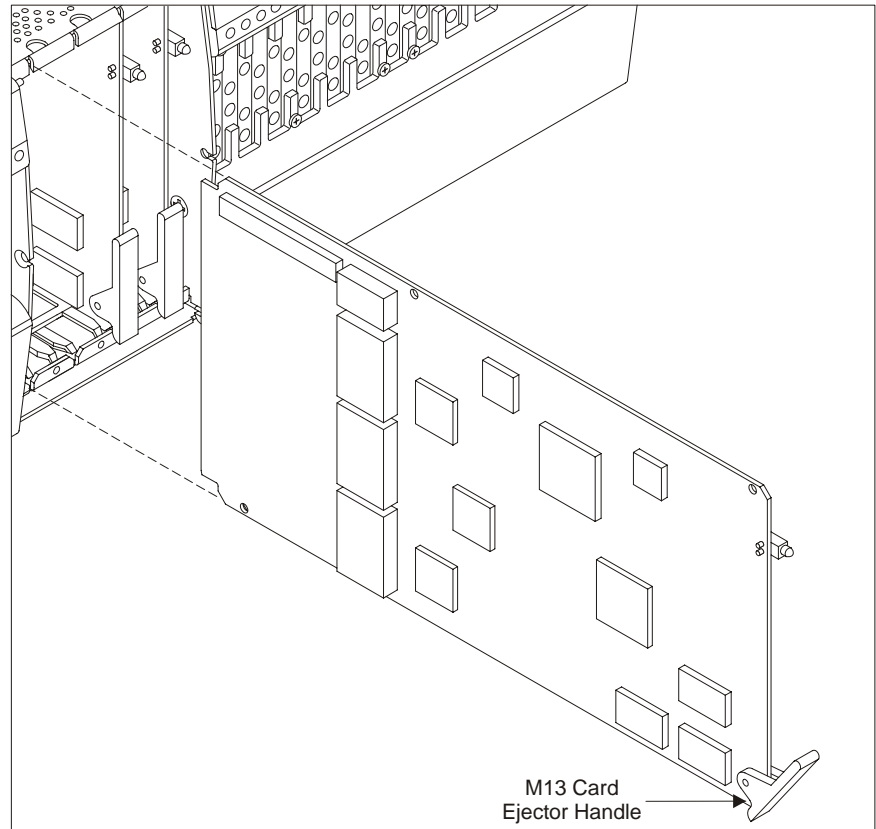
ALERT! Do not remove an M13 card that is carrying traffic. Switch traffic to the Standby card by setting it as the Active card in the System Settings screen of the craft interface. See “Specifying System Settings & M13 Card Functions” on page 4-14.

Step	Action
------	--------

1. Push up on the door and pull it off:



- Using the M13 card ejector handle, gently pull the card straight out of the chassis, as shown below.



- Align the new card with the card guides and gently insert it into the chassis by pressing the ejector handle against the card and pushing the card back.
- Again, touching only the ejector handle, firmly press the M13 card into place so that the connectors on the card fully mate with the connectors inside the chassis.
- Reattach the M13 card door.

REPLACING ALARM CARDS

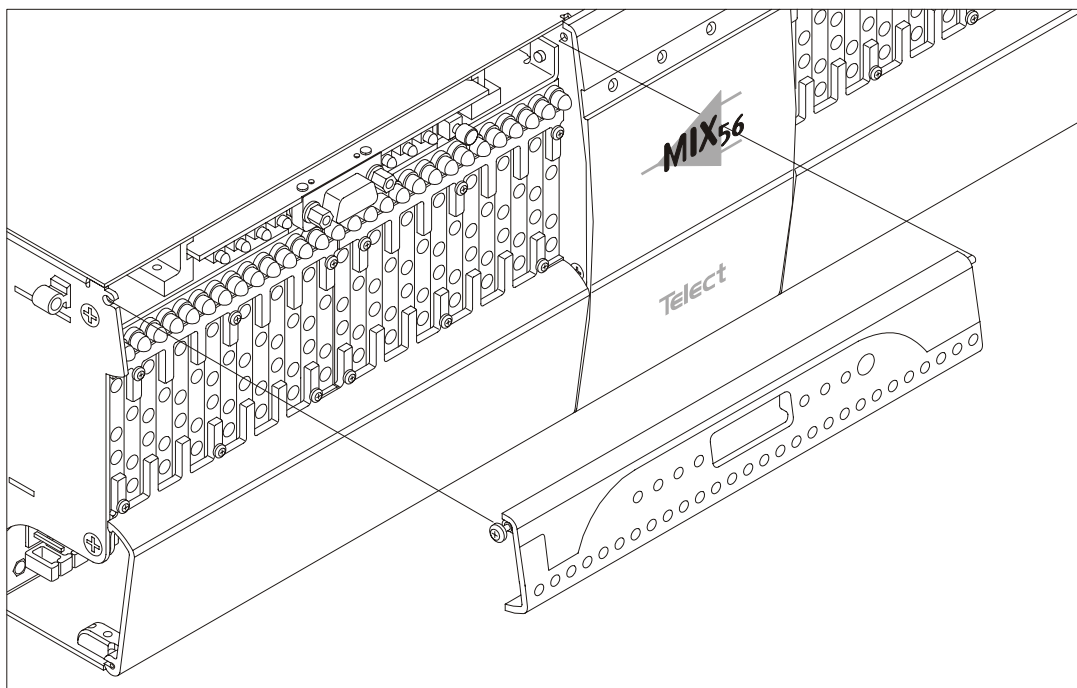


ALERT! To avoid electrostatic discharge, always wear a grounding strap plugged into the ESD jack when handling any MIX 56 components.

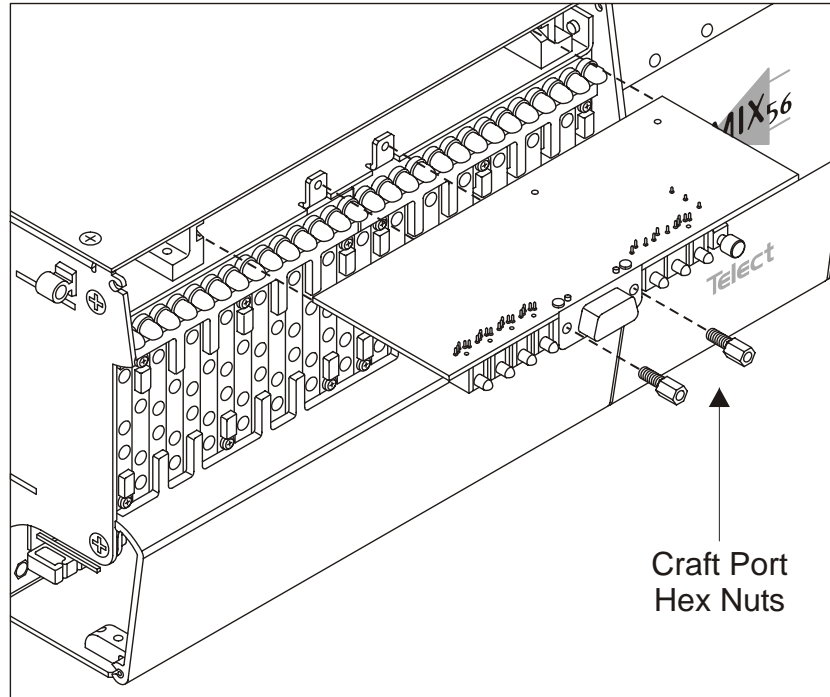
To replace an alarm card, you must remove the LED panel faceplate, which is held in place by a pin on one side and a screw on the other side. You must pull the faceplate out at an angle in order to remove it without breaking the pin, as described below.

Step	Action
------	--------

1. Loosen the screw holding the LED panel faceplate in place.
2. Carefully pull the end with the screw out slightly at an angle.
3. Pull the faceplate to the side of the chassis to remove its pin from the hole, and set the faceplate aside.



4. Using a 3/16 nut driver or a wrench, remove the two Craft port hex nuts shown below.
5. Using pliers, grasp the alarm card by the Craft port and pull the card straight out of its holder.
6. While holding the new alarm card by the Craft port, align the card with the guides and gently insert it into the holder until the card no longer moves back.



7. Replace the hex nuts and tighten them until the alarm card is securely in place.
8. Replace the LED panel faceplate by inserting the pin in the mounting hole, inserting the captive screw into its slot so that the faceplate is flush with the chassis, and tightening the screw.

UPDATING THE SOFTWARE

The method you use to update a system's software depends on the configuration of the system. Redundant systems are updated using Trivial File Transfer Protocol (TFTP) through the Ethernet port or directly through the Craft port. Redundant systems can also be updated automatically by switching between standby and active cards or by manually transferring the

program. Nonredundant systems are updated directly through the Craft port.

Regardless of which method you use, you must first download the update from Telect's website and ensure the files can be accessed by the system during the update process.

Warning — Do not use HyperTerminal to download upgrades through the serial port to the MIX 56. Data might be lost while using HyperTerminal to download the new upgrade. Telect would recommend the use of other terminal programs such as ProComm for doing Serial upgrades. Telect Inc. uses ProComm (copyrighted by Symantec Corporation) for doing serial updates.

Warning — Telect recommends that all updates/upgrades be performed in a maintenance window, and that all configurations be copied prior to performing any updates/upgrades. Performing updates/upgrades on non-redundant M13 single-card systems *will* cause loss of system configurations, requiring configuration information to be re-entered after any such update/upgrade. In addition, performing updates/upgrades on a redundant system *may* cause loss of system configurations. If you have any questions, please contact application engineering before starting any software updates/upgrades.

TFTP Update

Before beginning, ensure the two update files are on a TFTP server accessible to the MIX 56 system. You must also know the base name of the update files and the network address of the TFTP server on which it resides.

NOTE

The TFTP update can only be done on a redundant system. You may want to Ping the TFTP server to ensure it is up and running. See "To Ping Other Systems on the Network" on page 4-19.

Step Action

1. From the Directory screen, type 10 to select Update Flash and press Enter. The Update Flash screen appears:

```

MIX 56 by Telect                                MIX 56                                Directory (Ctrl+D)
                                                Help (?)

                                Update Flash
                                -----

TFTP Ethernet Port:
-----
                                Filename: mix56tst
                                TFTP Host IP Address: 10. 2. 1. 75
                                                [TFTP Load]

Serial Port: (9-pin)
-----
                                [Serial Load]

Transfer Program to Standby Card:
-----
                                [Program Transfer]

```

2. In the Filename field, type the base name of the update file (without extension) and press Enter.

The system will update from two files, “baseName.EXT” and “baseName.INT.

3. Tab to the TFTP Host Address field, type the address of the TFTP server the file resides on, and then press Enter. The address is divided into four sets of numbers from 0 to 255 each. Type in the four sets of numbers, separated by a period, then press Enter.
4. Tab to the [TFTP Load] button and press Enter.

A prompt appears asking you to confirm updating the software.

NOTE

If you get an error message saying TFTP update requires two cards, it means your system does not have a standby card—you need to use “Serial Load” as described in “Updating Nonredundant Systems.”

5. Type *y* and press Enter. A message appears asking you to wait while the update loads.

The update loads to the standby card. A minor alarm is reported because the active and standby cards now have different software versions.

A warning message appears, stating the standby card's flash program has been updated, and you must now switch to the standby card to activate a flash update to the currently active card.

6. As the warning message instructs, press Esc to exit this screen.

The Update Flash screen reappears, and the message "***Flash update successful***" appears on the TFTP Ethernet Port line.

7. Go to the System Settings screen and make the standby card the active card (see "Specifying System Settings & M13 Card Functions" on page 4-14).

When you do this, the auto-update feature of the software causes the former active card (now the standby card) to update to the new software from the former standby card (now the active card). When both cards have the same software version, the minor alarm clears.

Craft Port Update

Before beginning, ensure the two update files (internal flash and external flash) are on the terminal (or PC running terminal emulation software) connected to the MIX 56 system.

NOTE

The Craft Port Update can be used on Redundant or Nonredundant Systems. You must also know the names of the files. These are available in the download instructions at www.telect.com.

Step Action

1. From the Directory screen, type 10 to select Update Flash and press Enter.
The Update Flash screen appears.
2. Tab to the [Serial Load] button and press Enter.
A prompt appears asking you to confirm updating the software.
3. Type y and press Enter.
A screen appears asking you to download the external flash file.


```
Programming the External flash
Please download the MIX56 external flash image file

Downloading, send the S-Record or binary file:
```

4. Follow the procedure for your terminal (or PC running terminal emulation software) to browse for the file and download it. The file must already reside on the terminal or PC. Ensure the file transfer protocol is Raw ASCII or Text.

When the file finishes downloading, the screen shows the Checksum of the file and asks if you want to continue.

```
Programming the External flash
Please download the MIX56 external flash image file

Downloading, send the S-Record or binary file:
downloading file:

Calculated Cksum = 00000000
Program Flash Y/N:
press (Y) if you want to program
```

5. Verify that the Checksum is zero and press Y.

The external flash is overwritten with the new file, after which, the screen asks you to download the internal flash file.

6. Follow the procedure for your terminal (or PC running terminal emulation software) to browse for the file and download it. The file must already reside on the terminal or PC. Ensure the file transfer protocol is Raw ASCII or Text.

When the file finishes downloading, the screen shows the Checksum of the file and asks if you want to continue.

7. Verify that the Checksum is zero and press Y.

The internal flash is overwritten with the new file:

- If the system is a nonredundant system, the system will reboot.
- If the system is a redundant system, you just updated the standby card. A minor alarm is reported because the active and standby cards have different software versions.

A warning message appears, stating the standby card's flash program has been updated, and you must now switch to the standby card to activate a flash update to the currently active card.

If your system is a redundant system, continue as follows:

- a. As the warning message instructs, press Esc to exit this screen. The Update Flash screen reappears, and the message “***Flash update successful***” appears on the Serial Port line.
- b. Go to the System Settings screen and make the standby card the active card (see “Specifying System Settings & M13 Card Functions” on page 4-14).

When you do this, the auto-update feature of the software causes the former active card (now the standby card) to update to the new software from the former standby card (now the active card). When both cards have the same software version, the minor alarm clears.

Transferring Software Versions Between Cards

This pertains to redundant systems where the standby card has a newer version of software, but the customer prefers the older version currently on the active card. This procedure allows the customer to transfer the older version onto the standby and eliminate version mismatch.

Step	Action
------	--------

1. From the Directory screen, type 10 to select Update Flash and press Enter.

The Update Flash screen appears.

2. Tab to the [Program Transfer] button and press Enter.

A warning screen appears asking you to confirm updating the standby card flash.

NOTE

If you get an error message saying no standby card has been detected, you cannot use this procedure—you need to use “Serial Load” as described in “Craft Port Update.”

3. Type y and press Enter.

The message, “Flash update in process...please wait” appears on the Transfer Program to Standby Card line. When the process is complete, the message changes to “***Flash update successful***”.

6

Service

IN CASE OF DIFFICULTY

Recheck your installation and your software settings. If you want help, contact Telect technical support:

By e-mail: getinfo@telect.com

By phone: 888-821-4856 or 509-921-6161

IN-WARRANTY SERVICE

Contact your Telect equipment distributor, or call a Telect Customer Service Representative:

1-800-551-4567

1-509-926-6000

Telect will repair or replace defective products within the limits of the warranty. See “Repacking for Shipment” on the next page.

NOTE

Call a Customer Service Representative for a Return Material Authorization (RMA) before returning any equipment.

OUT-OF-WARRANTY SERVICE

The procedure for out-of-warranty service is the same as for in-warranty service, except that Telect charges a processing fee, and you must submit a Purchase Order along with a Return Material Authorization (RMA) before

returning equipment. Call a Customer Service Representative for help getting these forms.

The processing fee guarantees a repair estimate and is credited against actual material and labor costs.

REPACKING FOR SHIPMENT

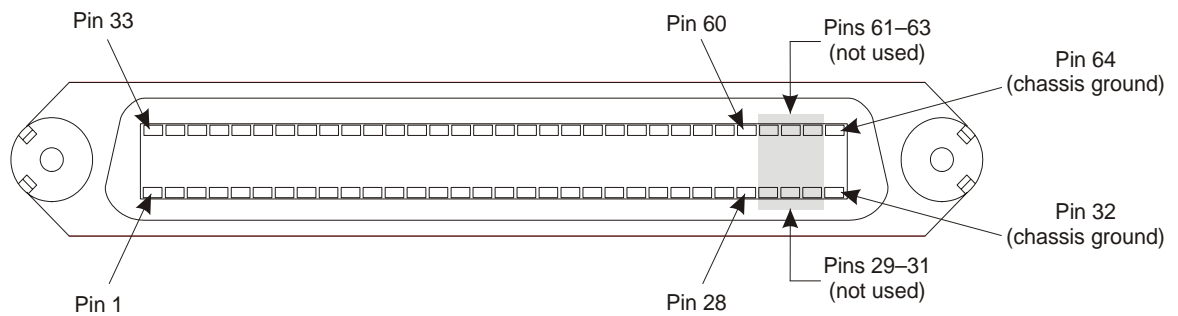
1. Tag the equipment showing owner's name, address, and telephone number, together with a detailed description of the problem.
2. Use the original shipping container if possible. If you do not have it, package the equipment in a way to prevent shipping damage. Include the RMA inside the container and legibly print the RMA number on the outside of the package, near the shipping address.
3. Insure the package.

NOTE

Telect is not liable for shipping damage.

Appendix A: Connector Pinouts

64-PIN CONNECTOR



DS1 In

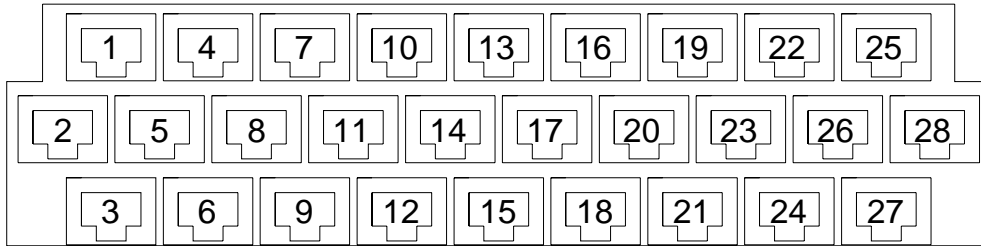
Tip connections are on pins 33–60; Ring connections are on pins 1–28.

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	DSX-1 RX Ring	9	DSX-9 RX Ring	17	DSX-17 RX Ring	25	DSX-25 RX Ring
2	DSX-2 RX Ring	10	DSX-10 RX Ring	18	DSX-18 RX Ring	26	DSX-26 RX Ring
3	DSX-3 RX Ring	11	DSX-11 RX Ring	19	DSX-19 RX Ring	27	DSX-27 RX Ring
4	DSX-4 RX Ring	12	DSX-12 RX Ring	20	DSX-20 RX Ring	28	DSX-28 RX Ring
5	DSX-5 RX Ring	13	DSX-13 RX Ring	21	DSX-21 RX Ring	29	Not Used
6	DSX-6 RX Ring	14	DSX-14 RX Ring	22	DSX-22 RX Ring	30	Not Used
7	DSX-7 RX Ring	15	DSX-15 RX Ring	23	DSX-23 RX Ring	31	Not Used
8	DSX-8 RX Ring	16	DSX-16 RX Ring	24	DSX-24 RX Ring	32	Chassis Ground
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
33	DSX-1 RX Tip	41	DSX-9 RX Tip	49	DSX-17 RX Tip	57	DSX-25 RX Tip
34	DSX-2 RX Tip	42	DSX-10 RX Tip	50	DSX-18 RX Tip	58	DSX-26 RX Tip
35	DSX-3 RX Tip	43	DSX-11 RX Tip	51	DSX-19 RX Tip	59	DSX-27 RX Tip
36	DSX-4 RX Tip	44	DSX-12 RX Tip	52	DSX-20 RX Tip	60	DSX-28 RX Tip
37	DSX-5 RX Tip	45	DSX-13 RX Tip	53	DSX-21 RX Tip	61	Not Used
38	DSX-6 RX Tip	46	DSX-14 RX Tip	54	DSX-22 RX Tip	62	Not Used
39	DSX-7 RX Tip	47	DSX-15 RX Tip	55	DSX-23 RX Tip	63	Not Used
40	DSX-8 RX Tip	48	DSX-16 RX Tip	56	DSX-24 RX Tip	64	Chassis Ground

DS1 Out

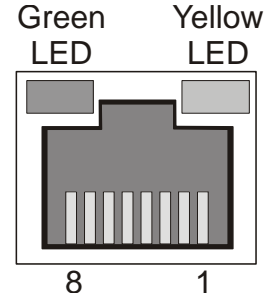
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	DSX-1 TX Ring	17	DSX-17 TX Ring	33	DSX-1 TX Tip	49	DSX-17 TX Tip
2	DSX-2 TX Ring	18	DSX-18 TX Ring	34	DSX-2 TX Tip	50	DSX-18 TX Tip
3	DSX-3 TX Ring	19	DSX-19 TX Ring	35	DSX-3 TX Tip	51	DSX-19 TX Tip
4	DSX-4 TX Ring	20	DSX-20 TX Ring	36	DSX-4 TX Tip	52	DSX-20 TX Tip
5	DSX-5 TX Ring	21	DSX-21 TX Ring	37	DSX-5 TX Tip	53	DSX-21 TX Tip
6	DSX-6 TX Ring	22	DSX-22 TX Ring	38	DSX-6 TX Tip	54	DSX-22 TX Tip
7	DSX-7 TX Ring	23	DSX-23 TX Ring	39	DSX-7 TX Tip	55	DSX-23 TX Tip
8	DSX-8 TX Ring	24	DSX-24 TX Ring	40	DSX-8 TX Tip	56	DSX-24 TX Tip
9	DSX-9 TX Ring	25	DSX-25 TX Ring	41	DSX-9 TX Tip	57	DSX-25 TX Tip
10	DSX-10 TX Ring	26	DSX-26 TX Ring	42	DSX-10 TX Tip	58	DSX-26 TX Tip
11	DSX-11 TX Ring	27	DSX-27 TX Ring	43	DSX-11 TX Tip	59	DSX-27 TX Tip
12	DSX-12 TX Ring	28	DSX-28 TX Ring	44	DSX-12 TX Tip	60	DSX-28 TX Tip
13	DSX-13 TX Ring	29	Not Used	45	DSX-13 TX Tip	61	Not Used
14	DSX-14 TX Ring	30	Not Used	46	DSX-14 TX Tip	62	Not Used
15	DSX-15 TX Ring	31	Not Used	47	DSX-15 TX Tip	63	Not Used
16	DSX-16 TX Ring	32	Chassis Ground	48	DSX-16 TX Tip	64	Chassis Ground

RJ CONNECTOR CIRCUIT ASSIGNMENTS



ETHERNET CONNECTOR

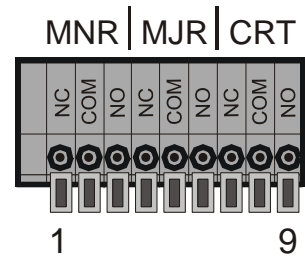
Pin	Signal
1	TX+
2	TX-
3	RX+
4	Not Used
5	Not Used
6	RX-
7	Not Used
8	Not Used
Green LED	LAN Link
Yellow LED	LAN Activity



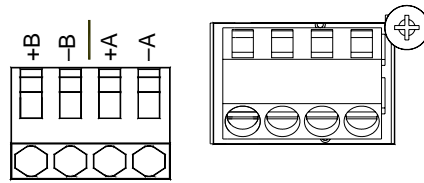
NOTE: SET PORT TO HALF-DUPLEX MODE.

EXTERNAL ALARM CONNECTOR

Pin	Label	Definition
1	MNR NC	Minor Alarm Relay Normally Closed Contact
2	MNR COM	Minor Alarm Relay Common Contact
3	MNR NO	Minor Alarm Relay Normally Open Contact
4	MJR NC	Major Alarm Relay Normally Closed Contact
5	MJR COM	Major Alarm Relay Common Contact
6	MJR NO	Major Alarm Relay Normally Open Contact
7	CRT NC	Critical Alarm Relay Normally Closed Contact
8	CRT COM	Critical Alarm Relay Common Contact
9	CRT NO	Critical Alarm Relay Normally Open Contact

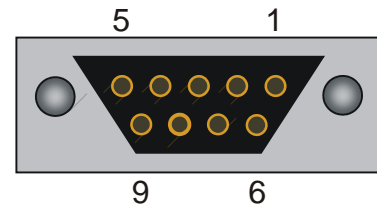


POWER CONNECTOR



CRAFT PORT

Pin	Signal
1	Not Used
2	TXD
3	RXD
4	Not Used
5	Ground
6	Not Used
7	CTS
8	RTS
9	Not Used



GROUND SWITCH



ON = Directly connected to chassis ground
 Default is all ON.

Telect, Inc.
1730 N. Madson St.
P.O. Box 665, Liberty Lake, WA 99019
509-926-6000, 800-551-4567, Fax 509-926-8915
E-mail: getinfo@telect.com Internet: <http://www.telect.com>

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<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

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