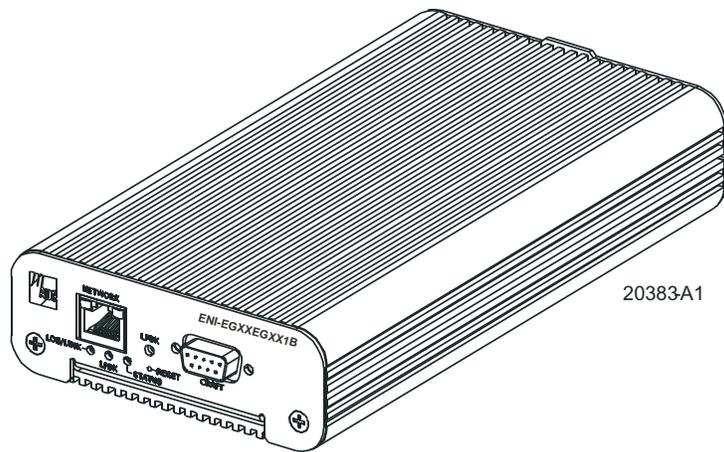

Ethernet Network Interface Unit (ENIU) User Manual



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REVISION HISTORY

The Revision History provides a summary of any changes in this manual. Please make sure you are using the latest revision of this manual.

Revision	Release Date	Revisions Made
01	August 7, 2006	Initial release with new format. Replaces ADCP-92-061 (Issue 1) (1315502).

This manual is available online at ADC's website (www.adc.com/documentationlibrary/) or you can order copies of the manual by contacting your sales representative. Please ask for document AIWN-UM-7001-01.

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ABOUT THIS MANUAL

INTRODUCTION

This manual applies to ADC's Ethernet Network Interface Unit (ENIU) card (hereafter referred to as the "ENIU").

ORGANIZATION

This manual includes the following chapters:

Chapter	Description
Chapter 1: Overview	Summarizes the features and functionality provided with the ENIU card.
Chapter 2: Installation	Provides procedures for installing an ENIU card.
Chapter 3: Command-Line Interface (CLI)	Lists the commands used to operate an ENIU card.
Appendix A: Specifications	Provides physical specifications for the ENIU, including power, mechanical, environmental, and electrical requirements.
Appendix B: Product Support	Provides information on how to contact the ADC Technical Support group.

INTENDED AUDIENCE

This manual is intended for anyone needing to operate, administer, or maintain ADC's line of ENIU cards.

CONVENTIONS

The following style conventions and terminology are used throughout this guide.

Element	Meaning
Bold font	Text that you must input exactly as shown (e.g., type 1 for card 1), menu buttons (e.g., ACCEPT SHELF OPTIONS) or menu screen options (e.g., ALARMS screen) that you must select
Italic font	Variables that you must determine before inputting the correct value (e.g., <i>Password</i>)
Monospace font	References to screen prompts (e.g., Invalid Password...Try Again:.)

Reader Alert	Meaning
	Alerts you to supplementary information
IMPORTANT 	Alerts you to supplementary information that is essential to the completion of a task
	Alerts you to possible equipment damage from electrostatic discharge
CAUTION	Alerts you to possible data loss, service-affecting procedures, or other similar type problems

Reader Alert	Meaning
	Alerts you that failure to take or avoid a specific action might result in hardware damage or loss of service
	Alerts you that failure to take or avoid a specific action might result in personal harm

INSPECTING YOUR SHIPMENT

Upon receipt of the equipment:

- Unpack each container and visually inspect the contents for signs of damage. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company and to ADC. Order replacement equipment, if necessary.
- Check the packing list to ensure complete and accurate shipment of each listed item. If the shipment is short or irregular, contact ADC as described in [Appendix B: Product Support on page B-1](#). If you must store the equipment for a prolonged period, store the equipment in its original container.

OVERVIEW

PRODUCT DESCRIPTION

Delivering a comprehensive set of Ethernet services requires an intelligent Ethernet network interface unit (ENIU) to serve as the service demarcation point at the edge of the customer's network. A critical component of a carrier-class Ethernet access system, the ENIU defines the edge of the carrier's management domain. Once in place, the ENIU serves an important function by collecting local performance and error data on both the access loop and the customer's network.

Operations Administration and Maintenance (OAM), sub-layer defined by IEEE 802.3ah is intended to facilitate management of Ethernet for subscriber access networks. The ENIU is designed to allow the carrier to segregate, isolate and troubleshoot network problems remotely through use of the OAM Protocol Data Units (PDU). The ENIU provides the following capabilities:

- One Ethernet Network Port
- One Ethernet Subscriber Port
- Full 802.3ah OAM functionality
- Enhanced OAM features provided via organization specific extension OAM PDU's
- Firmware that provides:
 - Bandwidth Allocation
 - Daily performance history log access
 - 15 minute performance history log access
- One RS-232 console port to provide a command line interface to all of the management, status, and maintenance functions of the ENIU
- Local and Remote Field Software download

The ENIU provides interfaces for Central Office (Network) and Subscriber Ethernet through Small Form-factor Pluggable (SFP) modules and/or RJ-45 connectors. RS-232 craft port interface is provided through a DB-9 connector. Power is supplied through a connector located on the rear. A front and rear view of the ENIU with SFPs is shown in [Figure 1-1](#).

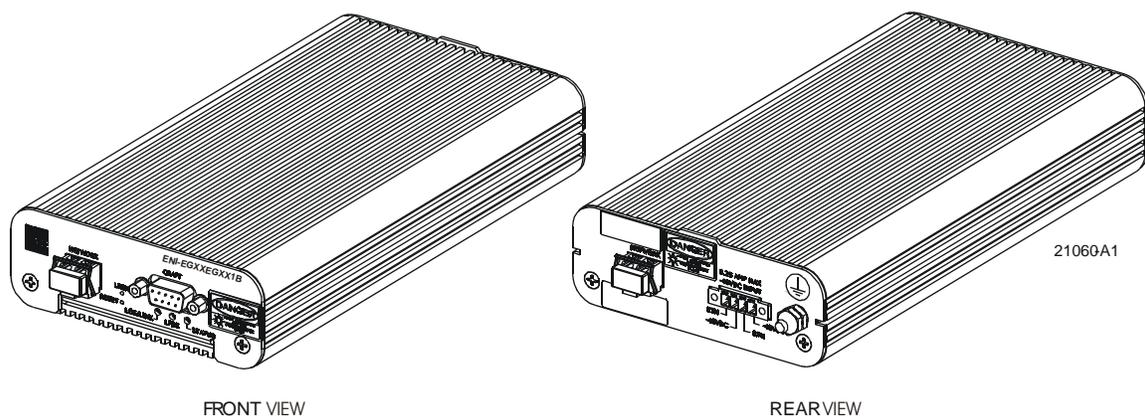


Figure 1-1. ENIU with SFPs

FRONT PANEL

Each ENIU has three LEDs, a STATUS LED, a LPBK LED, and a LOS/LINK LED. Under normal operation the ENIU STATUS LED is green. Front panel indicators and controls are defined in [Table 1-1 on page 1-2](#). An ENIU is shown in [Figure 1-2](#).

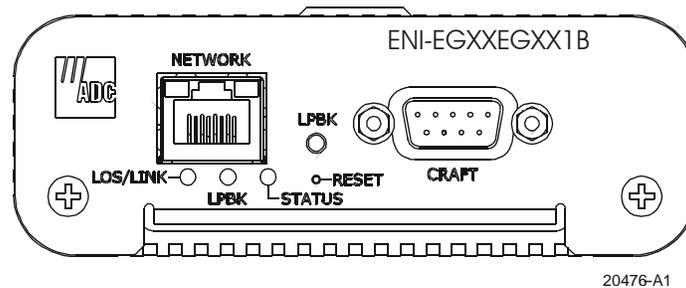


Figure 1-2. ENIU Front View

Table 1-1. ENIU LED Indicators and Controls

SIGNAL	COLOR	STATUS
STATUS	GREEN	ENIU Power OK and operating properly.
	RED	A service affecting fault exists within the ENIU.
	OFF	ENIU Power OFF.
LPBK	GREEN	Flashing if loopback is active on the ENIU.
	OFF	No active loopback detected.
LOS/ Link	RED	LOS detected on the network or subscriber interface.
	OFF	Normal operation.
CONTROL	DESCRIPTION	
Reset	Pressing the reset button restarts the ENIU.	
LPBK	Manual switch to enable or disable loopback at the ENIU.	

INSTALLATION

When using the mounting bracket, allow six inches (15.3 cm) on both ends of the ENIU for cable access. Install the ENIU using the following procedures.

DESKTOP INSTALLATION

Step	Action
1	Remove the protective adhesive backing from the four feet. Position a foot on each bottom corner of the ENIU. Press these firmly onto the ENIU.
2	Situate the ENIU in a way that provides both front and rear access. LEDs and Ethernet connections are located on both ends. Power connection is located on the rear panel.
3	Connect the power supply to the DC IN connector located on the back of the ENIU: <ul style="list-style-type: none">– If using AC power, connect the power supply to the AC source (110 – 240 VAC, 50 – 60 Hz).– If using DC power, connect the power following local practices. (See “Power and Ground Connections” on page 2-2.) See Appendix A: Specifications for fuse size.
4	Verify that the STATUS LED is lit.



Infrared radiation is invisible and can seriously damage the retina of the eye. Do not look into the optical connector of an operational transmitter, or into the end of an active fiber. A clean, protective cap or hood MUST be immediately placed over any radiating connector or optical fiber to avoid exposure to potentially dangerous amounts of radiation. This practice also helps prevent contamination of connectors and adapters. Do not assume laser power is turned off or the fiber is disconnected at the other end.

SURFACE MOUNT INSTALLATION

An optional ENIU mounting bracket provides a number of options when securing the ENIU to a vertical or horizontal surface. An ENIU can be installed facing up, down, right, or left when mounted on a vertical surface. The same mounting bracket is also used to secure the ENIU to the bottom of a work surface.



Note: Allow six inches (15.3 cm) on both ends of the ENIU for cable access.

Step	Action
1	Situate the ENIU in a way that provides both front and rear access. LEDs and Ethernet connections are located on both ends. Power connection is located on the rear panel.
2	Using the mounting bracket as a template, mark and drill holes in the mounting surface.
3	Secure the mounting bracket to the surface with appropriate fasteners for the surface material (#10 wood screws or machine screws depending on the mounting surface).
4	Align the slots on the rear face of the ENIU with the mounting bracket. See Figure 2-1. Slide the ENIU into the mounting bracket.
5	If not already installed, insert SFP into ENIU until you hear it click in place.

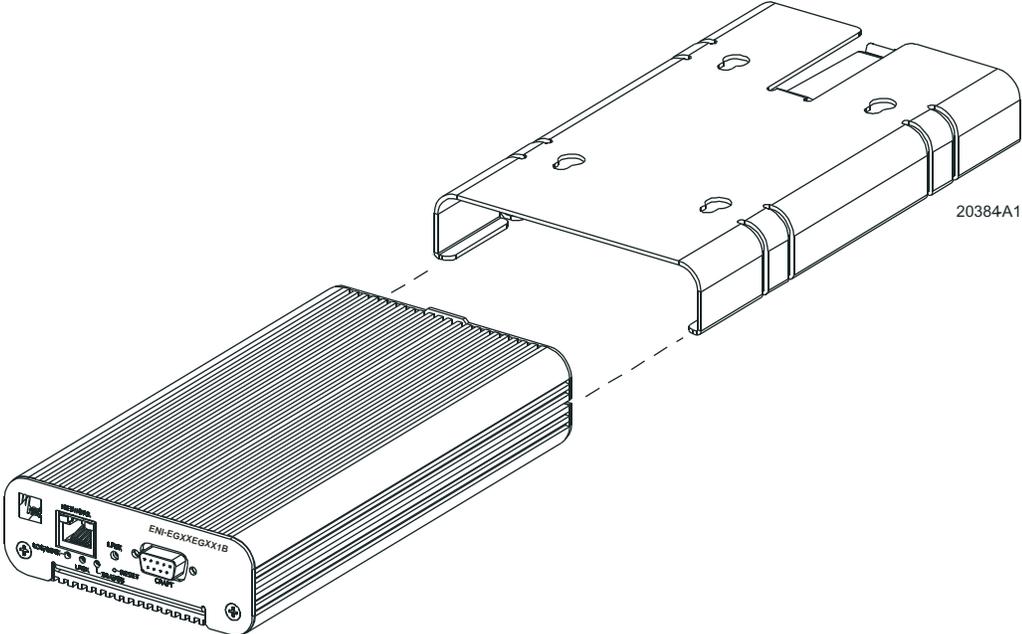
Step	Action
6	Connect the power supply to the DC IN connector located on the back of the ENIU. <ul style="list-style-type: none"> – If using AC power, connect power supply to the AC source (110 – 240 VAC, 50 – 60 Hz). – If using DC power, connect power following local practices. (See “Power and Ground Connections” on page 2-2.) See Appendix A: Specifications for fuse size.
7	Verify that the STATUS LED is lit. <div style="text-align: center;">  </div>

Figure 2-1. Inserting ENIU into Mounting Bracket

POWER AND GROUND CONNECTIONS

Power and ground connections are located on the back of the ENIU.



To avoid the possibility of severe and potentially fatal electric shock, use extreme care when working with the power terminations at the back of the ENIU.



Before making any connections to a ENIU, verify that the power is off (unplugged or fuse removed at the fuse and alarm panel).

Ground Connection

To assure proper operation, the ground stud located on the back of the ENIU (see Figure 2-2 on page 2-3) should be connected to a good earth ground. There must be no switching or disconnecting devices in the grounding circuit conductor between the ENIU and the point of connection to the grounding electrode conductor.

This procedure establishes a connection between the ENIU and a ground connection. A frame ground termination (#8 screw) is provided on the back of the ENIU for a frame ground connection. This connection must be made in accordance with all local and national electrical codes. The ENIU should be connected directly to a grounding electrode conductor or to a bonding jumper from a grounded electric box.

Step	Action
1	Using AWG 16 (1.25mm) solid copper wire, connect one end of the ground wire to the ground stud at the back of the ENIU (shown in Figure 2-2 on page 2-3). Tighten the stud nut to 15 pound-force inches (1.7 Newton meters) of torque.
2	To assure proper operation, the ground stud must be connected to a good earth ground.
3	Connect the other end of the ground wire to the office ground conductor. Ensure this connection is made using methods and hardware that meets all applicable local and national electrical codes.

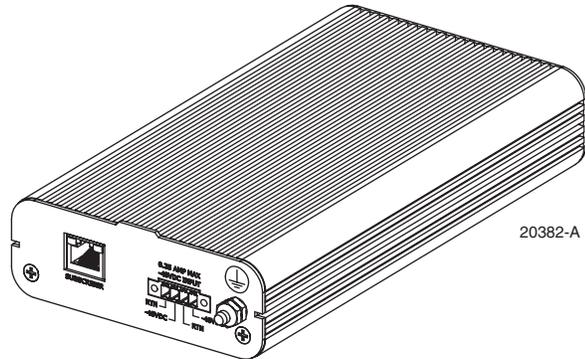


Figure 2-2. ENIU Rear View with RJ-45 Connector

Power Connection

Following local practices, attach two pair of power supply wires from two separate power sources to the four pin power plug (pair 1: -48 VDC-A, RETURN-A and pair 2: -48 VDC-B, RETURN-B) on the chassis backplane (see [Figure 2-3](#) for details).

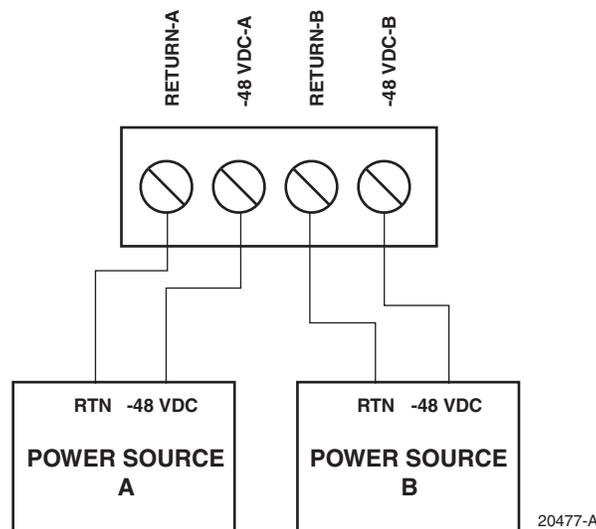


Figure 2-3. Four-Pin Power Plug Wiring Diagram

Separately fuse each -48 VDC power source, but do not install fuses now. Recommended wire size is 20 AWG (0.8 mm). This recommendation applies to wiring from the ENIU to a fuse panel using solid conductors. Fuse size should not exceed recommendation (see [Appendix A: Specifications](#) for fuse size). Plug the power plug into the power connector located on the back of the ENIU.

CABLING

RJ-45 cable connections are made to both the front and rear of the ENIU. DB-9 (command line interface) connection is made on the front and the power connection is made on the rear. A rear view of the ENIU is shown in [Figure 2-2 on page 2-3](#). A front view is provided below in [Figure 2-4](#).

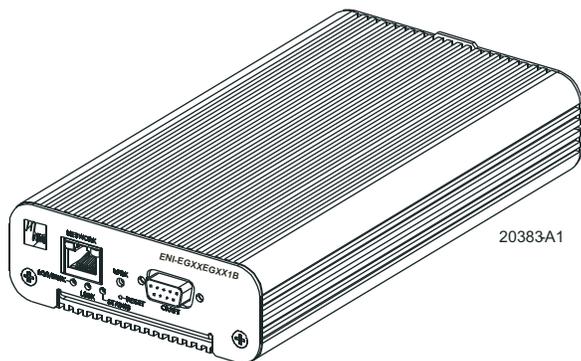


Figure 2-4. ENIU Front View with RJ-45 Connector

RJ-45 Ethernet Cables

Step	Action
1	<p>Each ENIU has an RJ-45 connector located on the front and rear. Use this connector when making the copper Ethernet connections. If an RJ-45 Patchcord is provided, proceed to Step 2. The following steps describe how to make your own RJ-45 Patchcord. Pinout information is shown in Table 2-1 on page 2-5, Table 2-2 on page 2-5, and Figure 2-5.</p> <div style="text-align: center;"> </div> <p style="text-align: center;">Figure 2-5. RJ-45 Connector Wiring</p> <ol style="list-style-type: none"> a. Use Cat5e or better cable, strip back cable jacket to expose the four wire pairs, the metallic sheath, and drain wire (if present). b. Cut off metallic sheath and drain wire (if present) so that it is even with the outer jacket of the cables. c. IEEE Specification for Ethernet 10 or 100BaseT(X) requires that two twisted pairs be used and one pair is connected to pins 1 and 2, and the second pair is connected to pins 3 and 6. d. IEEE Specification for Ethernet 1000BaseT requires that four twisted pairs are used. One pair is connected to pins 1 and 2, pair two is connected to pins 3 and 6, pair three is connected to pins 4 and 5, and pair four is connected to pins 7 and 8.
2	Connect Ethernet RJ-45 patchcords to the corresponding receptacles on the ENIU.

Table 2-1. 10/100 Mbps Ethernet RJ-45 Connector

Pin #	Signal Name	Function	Pin #	Signal Name	Function
1	TX+	Transmit Data	2	TX-	Transmit Data
3	RX+	Receive Data	4	---	Not used
5	---	Not used	6	RX-	Receive Data
7	---	Not used	8	---	Not used

Table 2-2. 1000BaseT Ethernet RJ-45 Connector

Pin #	Signal Name	Function	Pin #	Signal Name	Function
1	BD1+	Bidirectional	2	BD1-	Bidirectional
3	BD2+	Bidirectional	4	BD3+	Bidirectional
5	BD3-	Bidirectional	6	BD2-	Bidirectional
7	BD4+	Bidirectional	8	BD4-	Bidirectional

Optical Cables



The maximum cable length is the cable length that the signal can travel without suffering from critical attenuation (degradation).

The maximum distance that any optical link can support is dependent upon attenuation and dispersion at a particular wavelength, maximum bit rate, receiver sensitivity, splice and connector loss, and the data rate used. Refer to SFP specifications for operating parameters.

DB-9 Communications Cable

An RS-232 Craft port is provided through a DB-9 connector. Refer to your work order to determine the required communications connections. After determining the required connections, make the necessary connection. Shielded cable is recommended and the maximum cable length is 50 feet. A 1:1 cable is required to connect this port to the male DTE com port of a PC. Pinout information is shown in [Table 2-3](#) and [Figure 2-6](#).

Table 2-3. EIA-232 DCE Control Connector (Female 9-Pin D-Sub)

Pin #	Signal Name	I/O	Function
1	---	-	Not used
2	TXD	O	Transmit Data
3	RXD	I	Receive Data
4	---	-	Not used
5	GND		Signal Ground
6	---	-	Not used
7	---	-	Not used
8	---	-	Not used
9	---	-	Not used

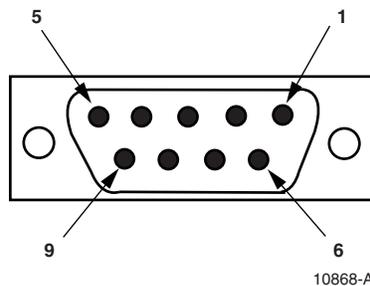


Figure 2-6. 9-Pin D-Sub Connector

EIA-232 Communication Port Defaults

Host terminal or computer communication parameters must match the ENIU communication settings, see [Table 2-4](#) for default settings.

Table 2-4. EIA-232 Serial Port Default Settings

Communication Parameter	Default
Baud Rate	115200
Data Bits	8
Parity	0
Stop Bits	1
No flow control	

COMMAND-LINE INTERFACE (CLI)

This section lists the commands used to operate the ENIU. After the initial installation of an ENIU, most testing and local operations are conducted with the Command Line Interface through a VT-100 compatible terminal. This terminal is connected to the front panel of the ENIU, and provides a standard EIA-232C interface.



Note: Command keywords are not case-sensitive.

COMMAND PROMPT

The CLI provides a prompt with a character indicating the user's privilege level.

Table 3-1. CLI Command Prompts

Effective privilege	Prompt
RO	command \$
RW	command %
SECURE	command #

SET-UP

The ENIU requires minimal set-up to provide OAM PDU reception, reporting, and remote loop-back functionality. The ENIU is shipped with a power supply connector, and a serial communications cable. The user must provide network cables (Cat5e or better Ethernet cables for electrical interfaces or optical cables appropriate to the SFP for optical connections). A PC with HyperTerminal or equivalent is required with an available COM port for status monitoring. Follow these steps to connect the unit:

Step	Action
1	Connect Ethernet and/or optical cables to the desired equipment.
2	Connect the serial communications cable to the Command port of the ENIU and to any COM port on the local PC.
3	Launch HyperTerminal and configure it for 115200 bits per second, 8 data bits, 0 parity bits, 1 stop bit, and no flow control.
4	Connect the power supply to the appropriate connector on the ENIU.
5	Verify that the terminal displays a configuration screen.

COMMANDS OVERVIEW

All settings are immediately saved. There is no separate 'save' command. Some settings (for example, save download) do not take effect until after the next CPU reset. The CLI will signal when a reboot is necessary.

Keyword tab completion and online help is available. Command-line editing and history is also available by using the arrow keys as defined on most modern key boards.

General command format is:

<verb> <object> <parameters>

where <verb> is GET, SET, CLEAR, HELP, or RESET.

All parameter strings (user passwords and names) have a maximum of 15 characters.

SECURITY

Three types of users (privileges) are supported:

- Read-only (RO) users may only view non-sensitive performance and configuration information.
- Read-write (RW) users may do and see whatever they want except user and software maintenance.
- Secure (SECURE) users may do and see whatever they want including user and software maintenance.

Users have 3 attributes: username, user privilege (RO, RW, SECURE), and password. A maximum of 8 configurable user definitions is supported. There is also a default user that is always present to provide RO access to the system.



Note: The default username is **adc** with a password of **eniu**.

If no users are defined, the system will allow full SECURE access from the Craft port, but once a configured user is defined, you must log in with that user or the default user to access the system. When defining users, the system ensures that there is always at least one SECURE user defined.

INITIAL SET-UP

The ENIU should be fully configured to work in your network without further configuration. It is strongly suggested that usernames be defined to control ENIU access.

COMMANDS LIST

Help Commands

Purpose:

Shows supported CLI commands.

Commands [all privileges]:

HELP

HELP CLEAR

HELP GET

HELP SAVE

HELP SET

Configuration

Get Configuration

Purpose:

Show the current configured parameters.

Command:[all privileges]

GET CONFIGURATION

Interface Speed and Negotiation

Purpose:

Configure speed and negotiation mechanism for the NETWORK and SUBSCRIBER interfaces.

Command:[RW, SECURE privilege]

SET [NETWORK|SUBSCRIBER] INTERFACE SPEED 10|100|1000 [AUTO|FORCE]



Note: NETWORK or SUBSCRIBER is optional and is specified to identify a specific interface. If not specified, both interfaces will be targeted. AUTO or FORCE is optional and indicates whether the interface(s) should auto-negotiate up to the configured speed or if the interface should be forced to the indicated speed. Negotiation defaults to AUTO if not specified.

Example 1: **SET INTERFACE SPEED 100**

Example 2: **SET NETWORK INTERFACE SPEED 1000 FORCE**

Status Commands: [all privileges]

GET CONFIGURATION

Configure Data Rate

Purpose:

Configure transmit and receive data rates relative to the SUBSCRIBER interface and independent of the link speed. This mechanism provides a mechanism to limit the amount of bandwidth that the SUBSCRIBER can use.

Command:[RW, SECURE privilege]

SET [TRANSMIT|RECEIVE] DATA RATE FULL|<value>

TRANSMIT or RECEIVE is optional and is specified to identify a specific direction. If not specified, both directions will be targeted. The data rate is specified in megabits by supplying a <value> number from 1 to 1000, or FULL to allow the full rate of the interface.

Example: **SET DATA RATE FULL**

Example: **SET TRANSMIT DATA RATE 15**

Status Commands: [all privileges]

GET CONFIGURATION

Configure Keep Alive

Purpose:

Configure “keep alive” mode. When on, the ENIU will not generate an alarm event if the subscriber interface loses link. This allows the network side to remain unencumbered by interfaces changes that may occur on the subscriber port from random changes in the subscribers network.

Command:[RW, SECURE privilege]

SET KEEP ALIVE ON|OFF

Status Commands: [all privileges]

GET CONFIGURATION

Configure Loopback Operation

Purpose:

Configure Loopback settings and timeout values. The ENIU provides an extension to IEEE 802.3ah loopback operation by providing a timeout feature. When on, loopback operations will automatically end after the timeout period has elapsed and return the ENIU to normal state of passing data. Timeout values are specified in minutes ranging from 10 to 240 minutes or 0 to disable the timeout. The ENIU implements OAM and extended OAM methods of loopback operation as well as manual operation through the command line and a push button.

Command:[RW, SECURE privilege]

SET LOOPBACK TIMEOUT <minutes>

SET LOOPBACK ON|OFF

Status Commands: [all privileges]

GET CONFIGURATION

GET LOOPBACK STATUS

Configure Error Forwarding Mode

Purpose:

Configure Error Forwarding mode to on/off. The ENIU provides the feature to forward the frames received with errors to the other side for end to end testing. When on, frames received with errors are forwarded to the other side and when set to off, the frames received with errors are discarded. The default is off.

Command:[RW, SECURE privilege]

SET ERROR FORWARDING ON/OFF

Status Commands: [all privileges]

GET CONFIGURATION

Craft Port Configuration

Purpose:

Configure user interaction with the command line interpreter.



Note: The Craft port interface has fixed communications settings of 115200 baud, 8 bits, 1 stop bit, no parity, and no flow control.

Command:[RW, SECURE privilege]

SET IDLE TIMEOUT <minutes>

Identifies the number of minutes that the Craft port can remain idle before a logged in user is logged off.

Command:[all privileges]

SET ECHO ON|OFF

Controls character echo for the current session.

Status Commands: [all privileges]

GET CONFIGURATION

System Name

Purpose:

Configure the system name.

Command:[RW, SECURE privilege]

SET SYSTEM NAME <name>

CLEAR SYSTEM NAME

Status Commands: [all privileges]

GET CONFIGURATION

OAM Configuration

The ENIU supports standard IEEE 802.3ah OAM operation as well as several extensions that allow its functionality to be used across a VLAN.

Configure OAM for IEEE 802.3ah Operation

Purpose:

Configure OAM to operate as an IEEE 802.3ah device.

Command:[RW, SECURE privilege]

SET OAM CONFIGURATION

Status Commands: [all privileges]

GET CONFIGURATION

Configure OAM for EXFO Operation

Purpose:

Configure OAM to interoperate with EXFO test equipment in a VLAN environment. Note: In addition to configuring OAM extensions, this command also changes the MAC address from which OAM messages will be accepted from the slow protocols address to an ADC unique multicast address of 01:80:51:00:00:00.

Command:[RW, SECURE privilege]

SET EXFO OAM CONFIGURATION

Status Commands: [all privileges]

GET CONFIGURATION

Configure OAM Mode of Operation

Purpose:

Configures OAM to operate in ACTIVE or PASSIVE mode or to turn OAM processing off.

Command:[RW, SECURE privilege]

SET OAM MODE ACTIVE | PASSIVE | OFF

Status Commands: [all privileges]

GET OAM STATUS

Configure OAM Extensions

Purpose:

Configure the individual OAM extensions that allow for OAM operation over a VLAN and for use with EXFO test equipment.

Command:[RW, SECURE privilege]

SET DISCOVERY MODE ON | OFF

Turns on abbreviated discovery mode for use with EXFO test equipment.

SET SWAP ADDRESS MODE ON | OFF

When on, forces ENIU to swap the source and destination addresses and recalculate the frame check sequence during loopback operations so that test frames can be returned directly to the sender.

SET UNICAST MODE ON | OFF

When on, forces the ENIU to send OAM messages to the unicast address of the active mode OAM peer that is found during OAM discovery instead of sending messages to the slow protocols address.

SET VLAN MODE ON | OFF

When on, allows the ENIU to discover VLAN tagged OAM protocol messages during OAM discovery and then use that tag to continue OAM protocol communications.

Status Commands: [all privileges]

GET CONFIGURATION

User and Privilege Settings

Purpose:

Defines users to the system.

Command: [SECURE privilege]

```
SET USER <name> RO|RW|SECURE <password>
```

```
CLEAR USER <name>
```

User name and passwords are specified as 1 to 15 alphanumeric characters.

Status Command: [SECURE privileges]

```
GET USERS
```

Performance and Alarms

Configure Alarm Thresholds

Purpose:

Configures the OAM alarm threshold and windows for CRC, Errored Symbol Period, Errored Frame Event, Errored Frame Period, and Errored Frame Seconds Summary events.

Command: [RW,SECURE privilege]

```
SET [<interface>] <type> EVENT THRESHOLD <number> [WINDOW <number>]
```

- <interface> can optionally be specified to target a specific interface; when not specified, both interfaces are targeted. <interface> must be either NETWORK or SUBSCRIBER.
- <type> is one of CRC|FRAME|FRAME PERIOD|FRAME SECONDS|SYMBOL PERIOD.
- <number> is an integer value whose range is dependent on the <type> and interface speed as specified by IEEE 802.3ah. For convenience, MINIMUM and MAXIMUM are keywords that can be substituted for <number> to set the values to the minimum and maximum values specified in IEEE 802.3ah.
- [WINDOW <number>] can be optionally specified; if not specified, the previous value is retained.

Example: SET FRAME PERIOD EVENT THRESHOLD 1

Example: SET SUBSCRIBER CRC EVENT THRESHOLD MINIMUM WINDOW MAXIMUM

Status Command: [all privileges]

```
GET [NETWORK|SUBSCRIBER] EVENT THRESHOLD
```

```
GET [NETWORK|SUBSCRIBER] ALARM STATUS
```

Configure Optical Thresholds

Purpose:

On ENIUs that have optical interfaces, these commands configure the alarm thresholds associated with the power levels of the optical connections.

Command: [RW, SECURE privilege]

```
SET [NETWORK|SUBSCRIBER] OPTICAL RECEIVE THRESHOLD OMA|AVERAGE threshold
```

```
SET [NETWORK|SUBSCRIBER] OPTICAL TRANSMIT THRESHOLD OMA|AVERAGE threshold
```

The **threshold** value is specified in milliwatts.

Status command: [all privileges]

```
GET OPTICAL THRESHOLDS
```

Monitor Performance

Purpose:

View and reset 15 minute and daily performance totals.

Command:[RW, SECURE privilege]

```
CLEAR PERFORMANCE STATUS
```

Status Commands: [all privileges]

```
GET [DAY] PERFORMANCE STATUS
```

The 15-minute totals are displayed unless DAY is specified. Specifying DAY will cause the daily totals to be displayed.

Interface Status

Purpose:

View link status and alarm conditions.

Command:[all privileges]

```
GET INTERFACE STATUS
```

System Commands

Temperature

Purpose:

Shows the internal operating temperature of the system.

Command: [all privileges]

```
GET TEMPERATURE
```

Optical Power

Purpose:

On ENIUs that have optical interfaces, this command shows the level of optical power being received.

Command: [all privileges]

```
GET NETWORK OPTICAL POWER
```

```
GET SUBSCRIBER OPTICAL POWER
```

Exit

Purpose:

Log off of a command line session.

Command: [all privileges]

EXIT

Inventory

Purpose:

Shows hardware and firmware versions as well as ADC catalog and part numbers.

Command: [all privileges]

GET INVENTORY

LED test

Purpose:

Perform an LED test for the front panel LEDs.

Command: [RW, SECURE privilege]

SET LED TEST

Reset

Purpose:

Restart the firmware in the ENIU.

Command: [RW, SECURE privilege]

RESET

Software Maintenance

Purpose:

Load new software.

Command:[SECURE privilege]

START DOWNLOAD

Starts the XMODEM protocol on the craft port to allow downloading of new firmware.

SAVE DOWNLOAD

Saves a successful firmware download so that it will become the operational software.

Status Commands: [all privileges]

GET DOWNLOAD STATUS

SPECIFICATIONS

Specifications for the ENIU are listed in [Table A-1](#).

Table A-1. Ethernet NIU Specifications

PARAMETER	SPECIFICATION	Remarks
Power		
Voltage	-48VDC, or 110 to 240VAC (50–60 Hz)	
Operating Voltage	+5 VDC	Backplane connector
Input Current	0.25 A maximum	Normal operation
Fuse Size	1.0 Amps	-48 VDC
Environmental		
Operating Conditions	+23°F to +122°F (-5°C to +50°C) 5% to 90% RH	
Storage Conditions	-40°F to +185°F (-40°C to +85°C) 10% to 95% RH	No Condensation
Mechanical		
Dimensions D x W x H	1.55 in. × 4.25 in. × 9.09 in. (3.94 cm × 10.8 cm × 23.1 cm)	
Weight	1.8 lb. (0.81 kg.)	
Electrical		
Network Interface	RJ-45, SFP	
Network Data Rates	Configurable to 10Mbps, 100Mbps or 1000Mbps	
Customer Interface	RJ-45, SFP [Small Form-factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA)]	
Customer Data Rates	Configurable to 10Mbps, 100Mbps or 1000Mbps	
Copper Media Requirements	10Mbps UTP Category 3, 4, 5 or better	Two twisted pair
	100Mbps UTP Category 5 or better	Two twisted pair
	1000Mbps UTP Category 5e or better	Four twisted pair
Distance	328 feet (100 meters)	Copper
Optical Media Requirements	850 to 1550 nm	Single Mode or Multi-Mode fiber
Distance	The maximum distance that any optical link can support is dependent upon attenuation and dispersion at a particular wavelength, maximum bit rate, receiver sensitivity, splice and connector loss, etc. Refer to SFP specifications for operating parameters.	Optical

Appendix B

PRODUCT SUPPORT

ADC Customer Service Group provides expert pre-sales support and training for all of its products. Technical support is available 24 hours a day, 7 days a week by contacting the ADC Technical Assistance Center.

Sales Assistance: 800.366.3891	Quotation Proposals, Ordering and Delivery General, and Product Information
Systems Integration: 800.366.3891	Complete Solutions (from concept to installation), Network Design and Integration Testing, System Turn-Up and Testing, Network Monitoring (upstream or downstream), Power Monitoring and Remote Surveillance, Service/Maintenance Agreements, and Systems Operation
ADC Technical Assistance Center: 800.366.3891 Email: wsd.support@adc.com	Technical Information, System/Network Configuration, Product Specification and Application, Training (product-specific), Installation and Operation Assistance, and Troubleshooting and Repair/Field Assistance
Online Technical Support:	www.adc.com/Knowledge_Base/index.jsp
Online Technical Publications:	www.adc.com/documentationlibrary/technicalpublications/
Product Return Department: 800.366.3891 Email: repair.return@adc.com	ADC Return Material Authorization (RMA) number and instructions must be obtained before returning products.

GLOSSARY

A

ALM – Alarm

AWG – American Wire Gauge

C

CLI – Command Line Interface

CO – Central Office

CPE – Customer Premise Equipment

E

ENIU – Ethernet Network Interface Unit

F

FCC – Federal Communications Commission

G

GND – Ground

L

LEC – Local Exchange Carrier

LED – Light-Emitting Diode

M

MON – Monitor

O

OAM – Operations, Administration, and Maintenance

OSS – Operations Support System

P

PDU – Protocol Data Units

R

RX – Receive

S

SFP – Small Form-factor Pluggable (SFP) Optical Transceiver Module

T

TX – Transmit

Certification and Warranty

Limited Warranty

Product warranty is determined by your service agreement. Refer to the *ADC Warranty/Software Handbook* for additional information, or contact your sales representative or Customer Service for details.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by ADC voids the user's warranty.

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

FCC Class A Compliance

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

Safety Standards Compliance

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

- GR 63-CORE - Network Equipment-Building System (NEBS) Requirements
- GR 1089-CORE - Electromagnetic Compatibility and Electrical Safety
- Binational Standard, UL-60950 3rd Edition/CSA1459 C22.2 No. 60950-00: Safety of Information Technology Equipment

For technical assistance, refer to **"Appendix B: Product Support"** on page B-1.

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Ethernet Network Interface Unit (ENIU) User Manual

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