



ATLAS Quad USSI Module USER MANUAL

Part Number 1200261L1



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Table of Contents

List of Figures	vii
List of Tables	ix
Chapter 1. Introduction	1-1
ATLAS Quad USSI Module overview	1-1
Features	1-1
Interfaces	1-1
Module Specifications	1-2
Physical Description	1-2
Adapter Cable	1-2
Chapter 2. Installation	2-1
Unpack and Inspect	2-1
Contents of ADTRAN Shipment	2-1
Wiring	2-1
Installing the ATLAS Quad USSI Module	2-2
Chapter 3. Operation	3-1
Overview	3-1
Password Security Levels	3-1
TERMINAL Menu Structure	3-1
Menu Descriptions	3-3
> Slt	3-3
> Type	3-3
> Menu	3-4
> Alarms	3-4
> Test	3-4
> State	3-4
> Status	3-4
> Rev	3-4
ATLAS Quad USSI Module Menu Options	3-5
> Quad USSI Info	3-5
» Part Number	3-5
» Serial Number	3-5
> Quad USSI Alarms	3-5
» SLIP	3-5
» PLL	3-5
» ZERO	3-5
» NO EXT CLK	3-5
> DTE Status	3-6
> Data Rate	3-6

- > Inband STATS 3-6
- > PLL/FIFO 3-6
- > Configuration 3-7
 - » Name 3-7
 - » Clk (+/-) 3-7
 - » Data 3-7
 - » CTS 3-7
 - » DCD 3-7
 - » DSR 3-7
 - » DTR 3-7
 - » 0 Inh 3-7
 - » Inband 3-7
 - » Send Leads 3-7
- > Test 3-8
 - » Loopbk 3-8
 - » Loopback Status 3-9
 - » 511 3-9
 - » 511 Result 3-9
 - » Inject 3-9
 - » 511 Clr 3-9
- > DTE Interface 3-9
 - » DTE Interface Mode 3-9
 - » Current DTE Type 3-9

- Appendix A. Dial Plan Interface Configuration A-1**

- Appendix B. Pinouts B-1**

- Index Index-1**

List of Figures

Figure 1-1. ATLAS Quad USSI Module	1-2
Figure 2-1. Installing the Quad USSI Module	2-2
Figure 3-1. Menu Tree	3-2
Figure 3-2. Modules Menu	3-3
Figure 3-3. Quad USSI Module Menu Options	3-5
Figure A-1. Dial Plan Menus	A-1

List of Tables

Table 3-1.	Normal Mode Operation.....	3-8
Table B-1.	Pinout for EIA-530 Cable.....	B-1
Table B-2.	Pinout for EIA-530A Cable	B-2
Table B-3.	Pinout for RS-449 Cable.....	B-2
Table B-4.	Pinout for RS-232 Cable.....	B-3
Table B-5.	Pinout for CCITT X.21 (V.11) Cable.....	B-3
Table B-6.	Pinout for the DB-78 Connector	B-4

ATLAS QUAD USSI MODULE OVERVIEW

The ATLAS Quad USSI Module provides four synchronous DTE ports, each of which can operate at any rate that is a multiple of 56 or 64 kbps, up to 2.048 Mbps. You can install the ATLAS Quad USSI Module into any available option slot of the ATLAS 800 chassis.

Features

- Each port operates using 1 to 32 time slots, each time slot being 56 or 64 kbps
- Includes an elastic store for absorption of rate variations
- Any port can be used as a timing source for the entire system
- Outputs a 50 percent duty-cycle output clock at all rates
- Generates and responds to V.54 looping codes
- Generates and checks 511 test patterns
- Bidirectional loopbacks:
 - Port (toward the network)
 - DTE (toward the DTE)

**NOTE**

You can invoke loopbacks locally or remotely (V.54).

Interfaces

- EIA-530
- EIA-530A
- RS-449
- RS-232
- CCITT X.21 (V.11)
- Connector: DB-78
(DB-78 to Dual D sub connector adapter cables ship with this module.)

Module Specifications

DTE Interface

- EIA-530 Synchronous
- EIA-530A Synchronous
- RS-449
- RS-232 Synchronous
- CCITT X.21 (V.11)

Rate

56 kbps to 2.048 Mbps in 56K or 64K steps

Tests

- Local Loopback (Bilateral)
- Remote Loopback (V.54)
- Self Test

Test Pattern

511 with errored seconds display and error inject capability

Excessive 0s Protection

Excessive zeros alarm indication and configurable excessive zeros protection

Connector

DB-78 with cables to convert to D sub female connectors

Physical Description

The ATLAS Quad USSI Module can plug into any available option slot in the ATLAS 800 chassis (see Figure 1-1). The module has an indication under each D-shell connector referring to the port on the card.

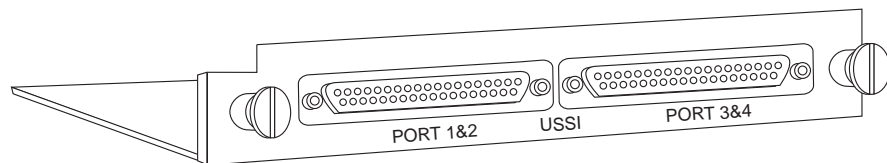


Figure 1-1. ATLAS Quad USSI Module

Adapter Cable

Two ADTRAN-supplied adapter cables convert from the DB-78 connectors on the rear of the module to Dual D sub connectors. These connectors are marked as 1/3 and 2/4 to represent the port connected (1 or 3/2 or 4), based on the cable to which the DB-78 attaches.

UNPACK AND INSPECT

Carefully inspect the option module for any shipping damage. If damage is suspected, file a claim immediately with the carrier and then contact ADTRAN Technical Support. (See the last page of this manual for information on contacting Technical Support.) If possible, keep the original shipping container for returning the option module to ADTRAN for repair or for verification of damage during shipment.

Contents of ADTRAN Shipment

- The ATLAS Quad USSI Module
- The ATLAS Quad USSI Module *User Manual* (to be inserted into the appropriate section of the *ATLAS 800 User Manual*)
- Two DB-78 to dual D sub adapter cables

**NOTE**

Customers must provide the DTE cables.

WIRING

Each of the ATLAS Quad USSI Module ports contains a D sub connection (via the supplied adapter cables). Appendix B contains the pinouts for the various cables.

INSTALLING THE ATLAS QUAD USSI MODULE

Figure 2-1 represents the action required to properly position the ATLAS Quad USSI Module within the ATLAS chassis.

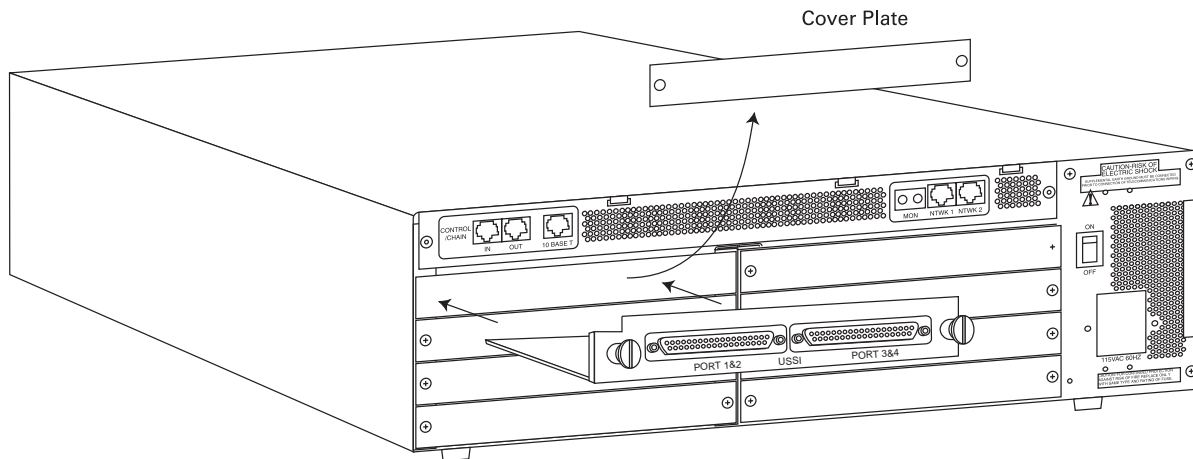


Figure 2-1. Installing the Quad USSI Module

Follow the steps below to install the option module:

Instructions for Installing the ATLAS Quad USSI Module	
Step	Action
1	Remove the cover plate (corresponding to the option slot into which you want to install the ATLAS Quad USSI Module) from the ATLAS 800 chassis rear panel.
WARNING	<i>Dangerous voltage is exposed when the cover plate is removed.</i>
2	Slide the ATLAS Quad USSI Module into the ATLAS 800 chassis until the module is positioned firmly against the front of the ATLAS Base Unit.
3	Using a screwdriver, tighten the thumbscrews at both edges of the option module.
4	Connect the cables to the associated device(s).
5	Complete installation of remaining modules and Base Unit as specified in the <i>Installation</i> chapter of the <i>ATLAS 800 User Manual</i> .

OVERVIEW

You can configure and control the ATLAS Quad USSI Module from a variety of sources, including the following:

- The ATLAS Front Panel provides minimal configuration and status support.
- The terminal menu allows detailed configuration, status, and diagnostics.

You can access the terminal menu from either a VT-100 terminal attached to the ATLAS Base Unit's control port, or through a Telnet session established through the Base Unit's Ethernet port. *ATLAS User Manual* provides detailed instructions on operating each of the supported management approaches.



This chapter describes the menu items presented when managing the ATLAS Quad USSI Module via the terminal menus.

PASSWORD SECURITY LEVELS

To edit items in the terminal menu, you must have the appropriate password level. Each menu description in this section indicates the required password level required for write and read access. ATLAS security levels range from level 5 (most restrictive) through level 0 (most permissive). See the section *Access Passwords* in the *ATLAS 800 User Manual* for detailed information on working with passwords.

TERMINAL MENU STRUCTURE

The ATLAS 800 uses hierarchical menus to access all of its features. The top-most menu level leads to submenus which are grouped by functionality (see Figure 3-1). All menu items display in the terminal window.



Refer to the *ATLAS 800 User Manual* for detailed instructions on how to navigate through the terminal menu.

Modules	Slit	Quad USSI Info	Part Number
	Type		Serial Number
	Menu	Quad USSI Alarms	SLIP
	Alarms		PLL
	Test		ZERO
	State		NO EXT CLK
	Status	DTE Status	Name
	Rev	Data Rate	Clk (+/-)
		Inband Stats	Data
		PLL / Fifo	CTS
		Configuration	DCD
			DSR
			DTR
			0 Inh
		Inband	
		Send Leads	
		Loopbk	
		Loopback Status	
	Test	511	
		511 Result	
		Inject	
		511 Clr	
	DTE Interface	DTE Interface Mode	
		Current DTE Type	

Figure 3-1. Menu Tree

The ATLAS System Controller automatically detects the presence of the ATLAS Quad USSI Module when it is installed in the system. To see the menus for the ATLAS Quad USSI Module via the terminal menu, use the arrow keys to scroll to the **Modules** menu and press **Enter** to access the module choices (see Figure 3-2). The following sections describe all of these menu options.

Slot	Type	Menu	Alarm	Test	State	Status	Rev
0	Sys Ctrl	[+]	[OK]	[OFF]	ONLINE	Online	A
1	EMPTY				ONLINE	Empty	-
2	USSI	[+]	[OK]	[OFF]	ONLINE	Online	A
3	EMPTY				ONLINE	Empty	-
4	EMPTY				ONLINE	Empty	-
5	EMPTY				ONLINE	Empty	-
6	EMPTY				ONLINE	Empty	-
7	EMPTY				ONLINE	Empty	-
8	EMPTY				ONLINE	Empty	-

Figure 3-2. Modules Menu

MENU DESCRIPTIONS

To help you follow the terminal menu hierarchy, the following notations are used:

- > MAIN MENU
- » Submenus
- »» Sub-submenus

> SLT

Read security: 5

Displays the number of available slots in the ATLAS chassis. Slot 0 refers to the ATLAS Base Unit. This field is read-only.

> TYPE

Write security: 3; Read security: 5

Displays the type of module actually installed in the slot or the type of module you plan to install in the slot. If an ATLAS Quad USSI Module is installed, the **Type** field automatically defaults to USSI (the ATLAS Quad USSI Module). You can use this field to preconfigure a system before actually installing modules by simply specifying the module that you want to install in each slot.



NOTE

If you install a module in a slot, then want to install a different type of module in the slot, you must set this field to **Empty** before selecting another module type.

If a module is installed, **Type** automatically displays the name of the installed module, and cannot be set to any other option.

- > MENU** Displays additional status and configuration menus for the selected module. (To access the menus options for this item, use the arrow keys to scroll to the **Menu** column for the module you want to edit, and press **Enter**.) For detailed information on each menu option, see *ATLAS Quad USSI Module Menu Options* on page 3-5.
- > ALARMS** **Read security: 5**
Displays whether there is an alarm condition on the ATLAS Quad USSI Module. Press **Enter** in this field to activate the Alarm menu.
- > TEST** **Read security: 5**
Displays whether the ATLAS Quad USSI Module is executing a test. Press **Enter** in this field to activate the **Test** menu.
- > STATE** **Write security: 3; Read security: 5**
Allows an installed module to be marked **Offline**, which may be useful in system troubleshooting. Although a module is physically installed, it must be marked **Online** for it to be considered an available resource.
- > STATUS** **Read security: 5**
This is a read-only field presenting status information on the ATLAS Quad USSI Module. The following messages may display:
- | | |
|---------------------------------|---|
| Online | The module is enabled, and is responding to the System Controller's status polls. This is the normal response of the system. |
| No Response | The module is enabled, but is not responding to the System Controller's status polls. This response indicates either a problem in the system or that the module is not installed. |
| Empty | The System Controller has not detected the presence of a module in the slot, nor has a module been manually enabled for this option slot. |
| Offline | The module is installed, but has been taken Offline by a user. The module is still responding to controller polls. |
| Offline/
No Response | The module is installed, but has been taken Offline by a user. The module is not responding to polls. |
| Not Supported | The module is not supported by the current ATLAS Base Unit. |
- > REV** **Read security: 5**
(Hardware Revision) Displays the hardware revision of the ATLAS Quad USSI Module. This is a read-only field.

ATLAS QUAD USSI MODULE MENU OPTIONS

Figure 3-3 shows the menu options available for the ATLAS Quad USSI Module. The following sections describe these options.

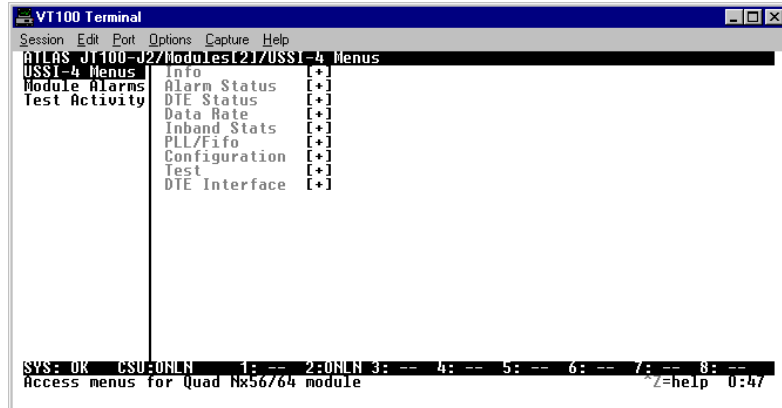


Figure 3-3. Quad USSI Module Menu Options

- > **QUAD USSI INFO** **Read security: 5**
Indicates the module status. These fields are read-only.
 - » **Part Number** Displays the module part number.
 - » **Serial Number** Displays the module serial number.

- > **QUAD USSI ALARMS** **Read security: 5**
Displays any active alarms. These fields are read-only.
 - » **SLIP** A rate mismatch exists between the DTE clock and the network-side clock (as set by DS0 assignment).
 - » **PLL** The USSI port cannot lock onto the clock provided by the network interface.
 - » **ZERO** The DTE is sending an excessive number of consecutive zeroes to the network interface.
 - » **NO EXT CLK** The DTE is not providing an external transmit clock (if the USSI port is configured to get transmit clock from the DTE).

> DTE STATUS**Read security: 5**

Shows the status of the following key DTE interface signals (read-only).

RTS	Request To Send from DTE
CTS	Clear To Send to DTE
DTR	Data Terminal Ready from DTE
DSR	Data Set Ready to DTE
DCD	Data Carrier Detect to DTE
RI	Ring Indicate to DTE
TD	Transmit Data from the DTE
RD	Receive Data toward the DTE
EC	External Clock from the DTE

> DATA RATE**Read security: 5**

Displays the data rate at which each USSI port currently operates. The number of DS0s assigned to a port and the rate per DS0 associated with the active maps determines a port's data rate.

**> INBAND
STATS****Read security: 5**

Displays information useful when using the inband control channel capability of the USSI.

Rx Frames	Number of frames received on inband control channel
Tx Frames	Number of frames sent on inband control channel
Rx Bytes	Number of bytes received on inband control channel
Tx Bytes	Number of bytes sent on inband control channel
Reset Stats	Resets all above fields to zero

> PLL/FIFO**Read security: 5**

Indicates status of circuitry used to generate and detect data clock and the status of elastic store buffer.

Lock	Phase Lock Loop is locked
RXE	Receive data FIFO Empty
RXF	Receive Data FIFO Full
TXE	Transmit Data FIFO Empty
TXF	Transmit Data FIFO Full

-
- > **CONFIGURATION** Configures the ATLAS Quad USSI Module.
- » **Name** **Write security: 3; Read security: 5**
Allows you to enter a descriptive alpha-numeric name for each port.
 - » **Clk (+/-)** **Write security: 3; Read security: 5**
(TX Clock Polarity) Controls the clock used by the ATLAS Quad USSI Module to accept the transmit (TX) data from the DTE. This is usually set to **Normal**. If the interface cable is long, causing a phase shift in the data, the clock can be set to **Inverted**. This setting switches the phase of the clock, which should compensate for a long cable.
 - » **Data** **Write security: 3; Read security: 5**
(Data Format) Inverts DTE data. This inversion can be useful when operating with a high-level data link control (HDLC) protocol (often used as a means to ensure 1s density). Select either **Normal** or **Inverted**.
 - » **CTS** **Write security: 3; Read security: 5**
(Clear to Send) Controls characteristics of CTS (see Table 3-1). Choose from **Normal** or **Forced On**.
 - » **DCD** **Write security: 3; Read security: 5**
(Data Carrier Detect) Indicates to the DTE when a valid signal is being received at the Network Interface (see Table 3-1). Choose from **Normal** or **Forced On**.
 - » **DSR** **Write security: 3; Read security: 5**
(Data Set Ready) Indicates to the DTE when the DCE is turned **On** and ready for operation (see Table 3-1). Choose from **Normal** or **Forced On**.
 - » **DTR** **Write security: 3; Read security: 5**
(Data Terminal Ready) Determines whether the ATLAS 800 treats a connection as permanent (**DTR=Ignore**) or temporary, connecting only when DTR is active, (**DTR=Connect On DTR**). Select either **Ignore** or **Connect on DTR**.
 - » **0 Inh** **Write security: 3; Read security: 5**
(Zero Inhibit) Instructs the ATLAS 800 to send 1s toward the network when the port detects an uninterrupted string of 0s transmitted for more than one second.
 - » **Inband** **Write security: 3; Read security: 5**
Creates an 8 kbps management channel by robbing a bit from the first DS0 assigned to the port. This channel can manage remote ADTRAN products.
 - » **Send Leads** **Write security: 3; Read security: 5**
Sends the state of the DTE leads to the remote unit whenever any DTE lead changes state. See the online help menus for more information.

Table 3-1. Normal Mode Operation

Conditions Causing Port Control Signal Deactivation			
Signal	CTS	DCD	DSR
RTS	Follows	—	—
V.54 Loopback	Off	—	Off
511 Test On	Off	—	Off
Self-test Active	Off	Off	Off
Network Test Active	Off	—	Off
No DS0 Mapped	Off	Off	Off
Network Alarm	Off	Off	—
— = Do not care			

> TEST

Activates specific data ports testing. It also controls the activation of loopbacks and the initiation of data test patterns. Test results display on the ATLAS 800 front panel.

**NOTE**

Executing port tests disrupts normal data flow in the test port.

» Loopbk

Write security: 4; Read security: 5

Controls the activation and deactivation of loopbacks.

- No Loopback** The loop is deactivated.
- Local Loopback** The USSI port activates both a local loopback (back toward the DTE) and a port loopback when invoked.
- Remote Loopback** The remote loopback causes a V.54 loopback code to be sent to the far end. If the device at the far end supports V.54, the device activates a loopback on detection of the V.54 code.

-
- » **Loopback Status** **Read security: 5**
Indicates a port's current loopback status by displaying any of the following status messages (read-only):
- No loopback active**
 - Looping up remote unit**
 - Remote unit looped back**
 - Looping down remote unit**
 - Remote loopup failed**
 - Port looped from remote source**
 - Port loopback active**
- » **511** **Write security: 4; Read security: 5**
(511 Test Pattern) Controls the activation of the 511 test pattern generator and detector.
- Off** Turns off the 511 test pattern generator and detector.
 - On** Turns on the 511 test pattern generator and detector.
- » **511 Result** **Read security: 5**
Displays the results of the 511 test in the form of the number of errored seconds (read-only).
- Sync** Y (yes), N (no)
 - ES** Errored seconds. Indicates the number of seconds (after pattern sync) that have contained at least one error.
- » **Inject** **Write security: 4; Read security: 5**
(Inject Error) Injects a 511 pattern error.
- » **511 Clr** **Write security: 4; Read security: 5**
(Clear Results) Clears test results for the selected port.
- > **DTE INTERFACE** Provides control and information about the DTE interface.
- » **DTE Interface Mode** **Write security: 3; Read security: 5**
Controls the type of electrical DTE interface for the selected port. The **Auto** setting works with special ADTRAN cables to automatically detect the type of interface.
- » **Current DTE Type** **Read security: 5**
Displays the current electrical DTE interface type for the selected port.

Appendix A Dial Plan Interface Configuration

The **User Term** option for the **Dial Plan** menu sets the configuration parameters for the end point for the ATLAS Quad USSI Module. The Dial Plan menus are only accessible when using terminal mode. To access these options, select **Dial Plan** from the top-level menu (see Figure A-1).

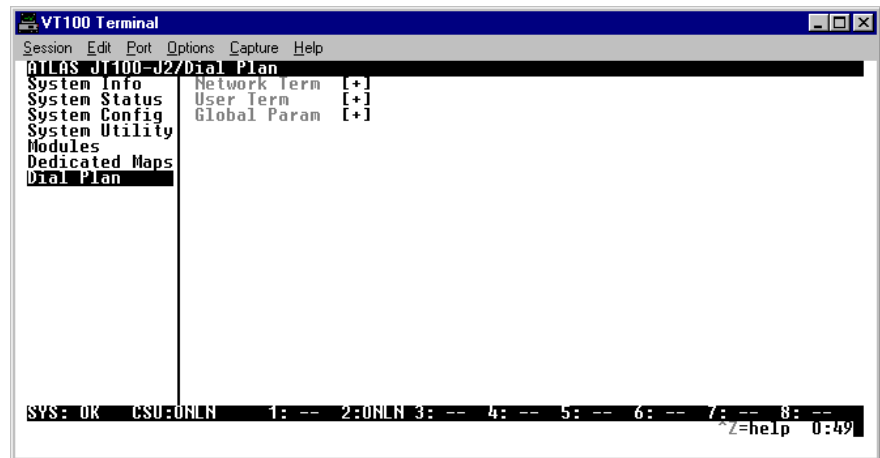


Figure A-1. Dial Plan Menus

Interface Configuration

This section describes the **Dial Plan / User Term** configuration settings for the ATLAS Quad USSI Module.



NOTE

The USSI can only serve as a User Termination end point.

> USER TERM

When working in the **User Term** section of the **Dial Plan** and **Slot** (Slot) is defined as a USSI module, the following configuration options are available:

» Ports Available

Indicates which of the four ports of the ATLAS Quad USSI Module have already been defined either in another switched end point (indicated by “s”) or in a **Dedicated Map** (indicated by “n”). This field is read-only.

» **Number of Ports** Defines to ATLAS how many of the ports could be used to answer calls to the number(s) defined in the **Accept Call** list. You can enter numbers 1 through 4. The ports are contiguous beginning with the port number selected and the number of ports.

Example

If the port selected (as a part of Slot/Port selection) is 2, and the number of ports selected here was 2, then ports 2 and 3 would be enabled to receive calls to the numbers listed under the **Incoming Call Accept** list.

Appendix B Pinouts

This appendix contains the pinout tables for the following wiring:

- EIA-530
- EIA-530A
- RS-449
- RS-232
- CCITT x.21 (V.11)
- DB-78 connector

Table B-1. Pinout for EIA-530 Cable

Pin	Signal Description	Pin	Signal Description
1	Shield (Ground)	13	Clear to Send (B)
2	Transmit Data (A)	14	Transmit Data (B)
3	Received Data (A)	15	Transmit Clock (A)
4	Request to Send (A)	16	Received Data (B)
5	Clear to Send (A)	17	Receive Clock (A)
6	DCE Ready (A)	18	Local LoopBack*
7	Signal Ground	19	Request to Send (B)
8	Carrier Detect (A)	20	DTE Ready (A)
9	Received Clock (B)	21	Remote Loopback*
10	Carrier Detect (B)	22	DCE Ready (B)
11	Ext. Transmit Clock (B)	23	DTE Ready (B)
12	Transmit Clock (B)	24	Ext. Transmit Clock (A)
		25	Test Mode*

* Ignored by Quad USSI Module

Table B-2. Pinout for EIA-530A Cable

Pin	Signal Description	Pin	Signal Description
1	Shield (Ground)	13	Clear to Send (B)
2	Transmit Data (A)	14	Transmit Data (B)
3	Received Data (A)	15	Transmit Clock (A)
4	Request to Send (A)	16	Received Data (B)
5	Clear to Send (A)	17	Receive Clock (A)
6	DCE Ready (A)	18	Local LoopBack*
7	Signal Ground	19	Request to Send (B)
8	Carrier Detect (A)	20	DTE Ready (A)
9	Received Clock (B)	21	Remote Loopback*
10	Carrier Detect (B)	22	Ring Indicator
11	Ext. Transmit Clock (B)	23	Signal Ground
12	Transmit Clock (B)	24	Ext. Transmit Clock (A)
		25	Test Mode *

* Ignored by Quad USSI Module

Table B-3. Pinout for RS-449 Cable

Pin	Signal Description	Pin	Signal Description
1	Shield (Ground)	19	Signal Ground
2	Signaling Rate Indicator*	20	Receive Common*
3	Not Used	21	Not Used
4	Transmit Data (A)	22	Transmit Data (B)
5	Transmit Clock (A)	23	Transmit Clock (B)
6	Received Data (A)	24	Receive Data (B)
7	Request to Send (A)	25	Request to Send (B)
8	Receive Clock (A)	26	Receive Clock (B)
9	Clear to Send (A)	27	Clear to Send (B)
10	Local Loopback*	28	Terminal in Service*
11	DCE Ready (A)	29	DCE Ready (B)
12	DTE Ready (A)	30	DTE Ready (B)
13	Carrier Detect (A)	31	Carrier Detect (B)
14	Remote Loopback*	32	Select Standby*
15	Ring Indicator	33	Signal Quality*
16	Select Frequency*	34	New Signal*
17	Ext. Transmit Clock (A)	35	Ext. Transmit Clock (B)
18	Test Mode*	36	Standby/Indicator*
		37	Send Common*

* Ignored by Quad USSI Module

Table B-4. Pinout for RS-232 Cable

Pin	Signal Description	Pin	Signal Description
1	Shield (Ground)	14	Sec. Transmit Data
2	Transmit Data	15	DCE Transmit Clock
3	Received Data	16	Sec. Received Data
4	Request to Send	17	Receive Signal Element Timing
5	Clear to Send	18	Not used
6	Data Set Ready	19	Sec. Request to Send
7	Signal Ground	20	Data Terminal Ready
8	Received Line Signal Detector	21	Signal Quality Detector *
9	+ Voltage *	22	Ring Indicator
10	- Voltage *	23	Data Signal Rate Selector *
11	Not used	24	DTE Transmit Clock
12	Sec. Received Line Signal Indicator	25	Not used
13	Sec. Clear to Send		

* Ignored by the Quad USSI Module

Table B-5. Pinout for CCITT X.21 (V.11) Cable

Pin	Signal Description	Pin	Signal Description
1	Shield (Ground)	8	Signal Ground
2	Transmit Data (A)	9	Transmit Data (B)
3	Request to Send (A)	10	Request to Send (B)
4	Received Data (A)	11	Received Data (B)
5	Carrier Detect (A)	12	Carrier Detect (B)
6	Transmit/Receive Clock (A)	13	Transmit/Received Clock (B)
7	Ext. Transmit Clock (A)	14	Ext. Transmit Clock (B)
		15	Not Used

Table B-6. Pinout for the DB-78 Connector

Pin	Signal Description	Pin	Signal Description
1	RXD-A 2/4	41	RTS-B 2/4
2	RXD-B 2/4	42	GND
3	RXC-A 2/4	43–48	NOT USED
4	RXC-B 2/4	49	MOD2
5	TXD-A 2/4	50	MOD0
6	TXD-B 2/4	51	EXT-TXC-A 1/3
7	TXC-A 2/4	52	DTR-B 1/3
8	TXC-B 2/4	53	DTR-A 1/3
9	EXT-TXC-A 2/4	54	DCD-B 1/3
10	EXT-TXC-B 2/4	55	DCD-A 1/3
11–17	NOT USED	56	DSR-B/RI 1/3
18	GND	57	DSR-A 1/3
19	GND	58	CTS-B 1/3
20	CHASIS GND	59	CTS-A 1/3
21	CTS-A 2/4	60	CHASIS GND
22	CST-B 2/4	61	GND
23	DSR-A 2/4	62–68	NOT USED
24	DSR-B/RI 2/4	69	MOD1
25	DCD-A 2/4	70	EXT-TXC-B 1/3
26	DCD-B 2/4	71	TXC-B 1/3
27	DTR-A 2/4	72	TXC-A 1/3
28	DTR-B 2/4	73	TXD-B 1/3
29–37	NOT USED	74	TXD-A 1/3
38	RTS-A 1/3	75	RXC-B 1/3
39	RTS-B 1/3	76	RXC-A 1/3
40	RTS-A 2/4	77	RXD-B 1/3
		78	RXD-A 1/3

* 1/3 or 2/4 indicates the port on the USSI Module

Index

Numerics

0 Inh (zero inhibit) menu 3-7

A

alarms

NO EXT CLK 3-5

PLL 3-5

SLIP 3-5

Zero 3-5

alarms menu 3-4

ATLAS front panel 3-1

C

changing modules 3-3

clock polarity, TX 3-7

configuration menu 3-7

(CTS) clear to send 3-7

0 Inh (zero inhibit) 3-7

data 3-7

DCD (data carrier detect) 3-7

DSR (data set ready) 3-7

DTR (data terminal ready) 3-7

inband 3-7

name 3-7

send leads 3-7

TX clock polarity 3-7

controlling the module 3-1

CTS 3-6

customer service iv

D

data rate 3-6

DCD 3-6

dial plan

interface configuration A-1

number of ports A-2

ports available A-1

user term A-1

DSR 3-6

DTE signal status 3-6

DTE status 3-6

DTR 3-6

F

FCC statement iv

features 1-1

H

hardware revision 3-4

I

inband menu 3-7

inband statistics 3-6

info menu 3-5

inject error 3-9

installing the module 2-2

installing the Quad USSI 2-1

interface configuration A-1

interfaces 1-1

L

local loopback 3-8

loopback

local 3-8

none 3-8

remote 3-8

loopback status 3-9

loopback test 3-8

M

menu

description 3-3

options 3-5

Quad Nx 56/64 3-5

structure 3-1

submenu items 3-5

menu descriptions

ATLAS 3-3

alarms 3-4

menu 3-4

rev menu (hardware revision) 3-4

- slt (slot) 3-3
- state 3-4
- status 3-4
- test 3-4
- type 3-3
- Quad USSI 3-5
 - alarms
 - NO EXT CLK 3-5
 - PLL 3-5
 - SLIP 3-5
 - Zero 3-5
 - alarms menu 3-5
 - configuration 3-7
 - 0 Inh 3-7
 - Clk (+/-) 3-7
 - CTS 3-7
 - data 3-7
 - DCD 3-7
 - DSR 3-7
 - DTR 3-7
 - inband 3-7
 - name 3-7
 - send leads 3-7
 - data rate 3-6
 - DTE status 3-6
 - inband stats 3-6
 - info 3-5
 - part number 3-5
 - PLL/FIFO 3-6
 - serial number 3-5
 - test 3-8
 - 511 3-9
 - 511 Result 3-9
 - clear results 3-9
 - inject 3-9
 - loopback status 3-9
 - loopbkt 3-8
- module detection 3-2

N

- NO EXT CLK alarm 3-5
- no loopback 3-8
- number of port, dial plan A-2

O

- offline 3-4
- online 3-4
- operating the module 3-1
- operation 3-1
- operation, overview 3-1

P

- part number 3-5

- password 3-1
- password security level 3-1
- pattern generator and detector test 3-9
- PLL alarm 3-5
- PLL/FIFO 3-6
- ports available, dial plan A-1

Q

- Quad Nx 56/64
 - features 1-1
 - installing 2-2
 - menu options 3-5
- Quad USSI
 - adapter cable 1-2
 - controlling 3-1
 - features 1-1
 - installation 2-1
 - interfaces 1-1
 - operation 3-1
 - overview 1-1
 - physical description 1-2
 - specifications 1-2
 - wiring 2-1

R

- RD 3-6
- remote loopback 3-8
- rev menu 3-4
- RI 3-6
- RTS 3-6

S

- self test 3-8
- send leads menu 3-7
- serial number 3-5
- SLIP alarm 3-5
- slot 0 3-3
- slot menu 3-3
- state menu 3-4
- status menu 3-4
- status messages 3-4

T

- TD 3-6
- Telnet session 3-1
- terminal menu 3-1
- test menu 3-4, 3-8
 - 511 3-9
 - 511 Result 3-9
 - clear results 3-9
 - inject 3-9
 - loopback status 3-9

loopbk 3-8
type menu 3-3

V

VT-100 terminal emulation 3-1

W

warranty and customer service iv

wiring for the Quad USSI 2-1

Y

Y2K iii
year 2000 compliancy iii

Z

Zero alarm 3-5

Product Support Information

Presales Inquiries and Applications Support

Please contact your local distributor, ADTRAN Applications Engineering, or ADTRAN Sales:

Applications Engineering (800) 615-1176

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Huntsville, Alabama 35807

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