PRECIDIA TECHNOLOGIES

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*i*Pocket*232*

User Guide

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Both the menu and features in this release may have changed from the previous release. Please contact support@precidia.com if you wish to upgrade your software, obtain a User Guide for an earlier software version, or if you have questions or comments about using the product or document. For general inquiries, please contact info@precidia.com.

Contents

1 Before You Start

1.1 Preview

Each section in this Guide is a step in the process of installing and configuring your iPocket*232*:

1 Before You Start
Familiarize yourself with the features and installation requirements of the unit.

2 Setting up the iPocket*232*
Set up the hardware and configure the unit via terminal software.

3 Configuring the Ethernet Settings
Input the IP address, subnet mask, and gateway address for the unit.

4 Configuring the Serial Port Settings
Configure the protocol, speed, connection control, and port information.

5 Configuring the Security Settings
Configure the remote, console, and Web passwords, SNMP, and IPSec.

6 System Settings
If necessary, have your network administrator configure the advanced settings, including downloads and system logging options.

7 Accessing System Information
Find out how to access the system information locally or remotely.

Appendices at the back of this guide also provide valuable reference information:

A Glossary of Terms and Acronyms

B Troubleshooting and Support

C Specifications and Warranty

D Connecting with Telnet

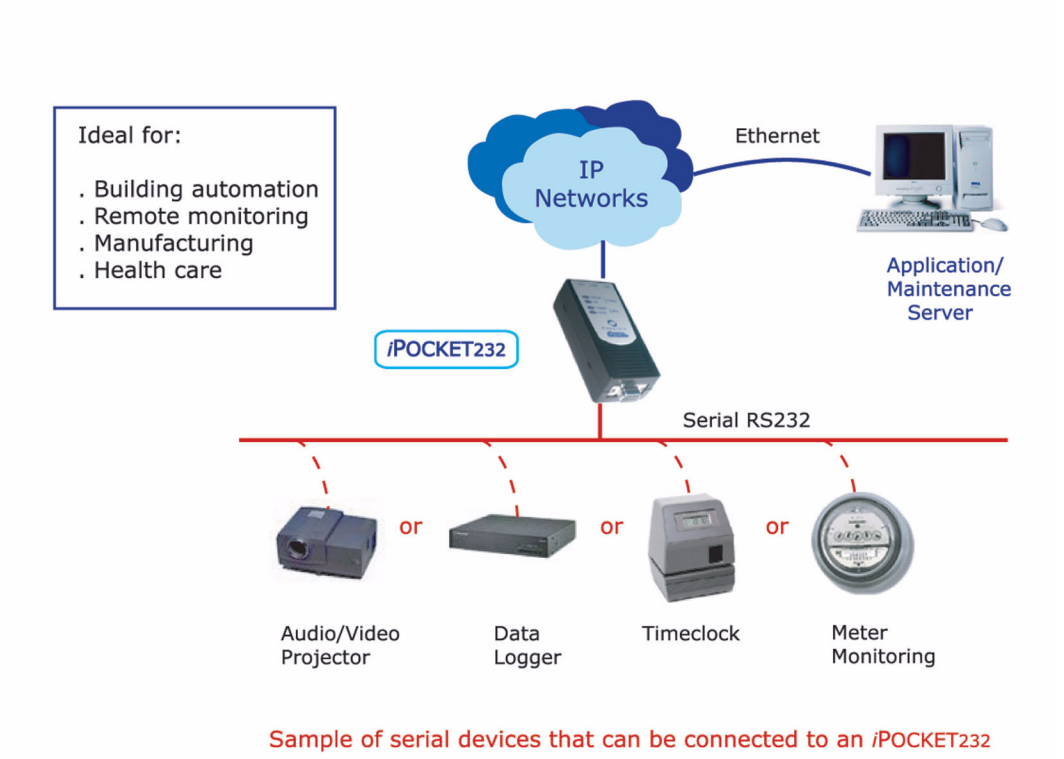
E Pinouts and Power Supply

F Modem Connection Control

1.2 Functionality and Features

How It Works

Precidia products connect serial devices and IP networks. A device sends information to the unit through the serial port. This information is processed according to the protocol set in the Serial Port Settings, then transferred to the Ethernet side of the unit. The unit then converts the information to IP compatible format and sends it out the Ethernet port to the remote server, according to the parameters set in the Ethernet Settings. The process is reversed when information is received from the remote server. The figure below illustrates an example configuration of the iPocket*232* in a network.



iPocket*232* — Network Configuration

Features

The iPocket*232* has many useful features, allowing you to:

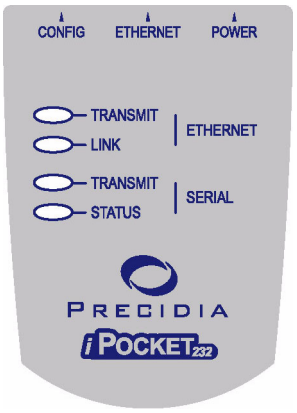
- Replace an existing modem with the iPocket232 without making any other changes to the network
- Configure settings locally via the COM port, *or* remotely using telnet
- Display static Web pages using a built-in Web page server
- Display dynamic System Status and System Log pages through the built-in Web server or the Configuration screen
- Manage information with SNMPv2c (Simple Network Management Protocol)

- Tap remotely into the datastream to monitor data and assist in debugging
- Provide security through passwords and IPsec
- Use a primary and a backup server (automatic switchover on failure)
- Capture statistics and log system information internally
- Perform firmware upgrades using TFTP (Trivial File Transfer Protocol) or via the local COM port
- Control and refine connection settings with:
  - Automatic connection in tcp(tunnel) and tcp-client modes, to establish a connection to the server as soon as the first data byte is received on the serial port
  - Connection recovery, to ensure the session remains active
  - Modem Connection Control that allows the iPocket*232* to act as a Hayes-compatible modem to your serial device
- Support the following network protocols:

ARP	DHCP	Ethernet, IEEE 802.3
FTP	HTTP	ICMP
IP	IPsec (manually keyed)	SNMPv2c
TCP	telnet	TFTP (download only)
UDP		

1.3 iPocket*232* Layout

Front Panel



iPocket*232* Front Panel

Table 1.1 describes the function of each indicator lamp.

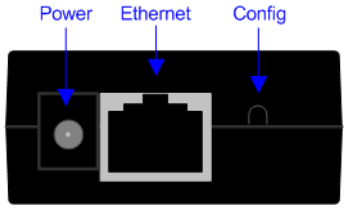
Table 1.1: Front Panel Indicator Lamps

Indicator Lamp		Description
ETHERNET	**LINK**	**On (solid):** when the Ethernet port has a valid connection to a 10BaseT Ethernet network.
	TRANSMIT	**Flashes**: when the unit has control of the line and is sending data on the network. **Off**: when receiving data.
SERIAL	**TRANSMIT**	**Flashes**: when the unit is sending or receiving data through the serial port. **On (solid):** while in configuration mode.
	STATUS	**Off:** Unit incorrectly configured, or the serial port is disabled. **Slow flash**: Correctly configured, in idle mode. **Fast flash**: Correctly configured, terminal has communicated. **On (solid)**: Correctly configured, connected.

NOTE: *See Appendix B, Troubleshooting and Support, for descriptions of how indicator lamps can be used for troubleshooting.*

Hardware Interfaces

The iPocket*232* has 4 interfaces, each described in Table 1.2. The figure below shows the top view of the iPocket.



Top View of iPocket232

Table 1.2: Connectors

Port	Location	Description
CONFIG	**Top of unit**	Activates local configuration through the serial port. (To activate, press and hold the recessed **CONFIG** button for several seconds using a ball point pen or similar object.)
ETHERNET	**Top of unit**	Accepts RJ-45 connector for direct connection to 10BaseT Ethernet network. ***NOTE:*** *If connecting directly to another Ethernet device, use a cross-over cable. If connecting to a 100BaseT network, your hub must support automatic switching to 10BaseT.*
POWER	**Top of unit**	Accepts the Precidia-supplied 9V power adapter.
SERIAL	**Bottom of unit**	Accepts DB-9 serial cable for operation and configuration.

1.4 Hardware Requirements

Equipment Included

The following items are included with your iPocket*232* device:

- one (1) iPocket*232* device
- one (1) power adapter
- one (1) mounting bracket

Additional Equipment Needed for Installation

To complete the hardware installation, you will need the iPocket*232* package, along with the following equipment:

- one (1) PC with terminal software, or a dumb terminal for configuration
- one (1) Ethernet cable for your network connection.
- If you are connecting the iPocket*232* to a DTE (Data Terminal Equipment) device, or as a modem replacement:
  - one (1) RS-232 serial cable for configuration and operation

- If you are connecting the iPocket*232* to a DCE (Data Communication Equipment) device:
  - one (1) RS-232 serial cable for configuration
  - one (1) straight through modem serial cable (DB-9 male to DB-9 female) for connecting your DCE serial device after configuration

TIP: How do you know if your serial device is DCE or DTE?

- DCE devices generally have a female (receptacle) DB-9 connector. Examples of DCE devices include the iPocket*232*, modems, Digital Service Units (DSU), Channel Service Units (CSU), and most communications equipment.
- DTE devices generally have a male (pin) DB-9 connector. Examples of DTE devices include communications servers, terminals, serial printers, and PCs with native RS-232-E serial ports.

Reconfiguration

After your iPocket*232* is operational, you will require a standard RS-232 serial cable and a PC or dumb terminal to locally reconfigure the unit.

NOTE: *You can also reconfigure the* iPocket*232 remotely using telnet, if you have set the Remote Password. See Appendix D: Connecting with Telnet.*

1.5 Software Requirements

You will need terminal software (or a dumb terminal) to locally configure the unit. Please see: Section 2.3, Setting Up the Terminal, on page 11, for further details.

1.6 Configuration Requirements

The following settings are the basic requirements for configuring the unit. You may need to configure other settings depending on your set-up, and the Protocol you are using.

Ethernet Settings

- IP Address, Subnet Mask, Gateway: the addressing information for the unit and the network. Leave at zero (000.000.000.000) if using DHCP (Dynamic Host Configuration Protocol) server

Serial Port Settings

- Protocol: the protocol used by the connected device
- Port Setting: port settings of the connected device
- Local Port: port number on the unit (as required)

- Remote Port and Remote IP: port number and IP address of remote host (as required)
- Fallback Port and Fallback IP: backup remote host address (optional)

Security Settings

- Remote Password: *must* be configured to enable remote access and configuration
- Console Password (optional)
- Web server access user ID and password (optional)

2 Setting up the iPocket*232*

2.1 Connecting the Hardware

CAUTION: Use the 9V power adapter supplied by Precidia, or an adapter conforming exactly to the specifications in Appendix E: Pinouts and Power Supply. Use of alternate power adapters can result in hardware damage and will render the warranty null and void!

1. Connect the power adapter to the **POWER** port of the unit.
2. Connect the Ethernet cable to the **ETHERNET** port of the unit.
3. Connect the serial cable to the serial port of the unit.
4. Plug the power adapter into a power outlet.
5. Connect the serial cable to one of the COM ports on your PC.
6. Follow Section 2.2 to set up your terminal software and access the Configuration screen.
7. Configure the unit (Sections 3 through 6).

NOTE: *You must set the Remote Password locally before you can configure the iPocket232 remotely.*

After Configuration

1. Disconnect the serial cable from the COM port of your PC.
2. Connect your serial device to the serial port of the iPocket*232* using the appropriate cable. (See Section 1.4, Hardware Requirements, on page 5.)

3 Connect the Ethernet cable to a hub or router if you have not already done so.

4 Ensure the **LINK** lamp is lit to indicate a valid Ethernet connection, and the **STATUS** lamp is flashing to indicate the unit is ready to transmit/receive data.

5 If you know the IP address of the iPocket*232*, ping the unit to ensure you have a valid network connection. (See *Check IP Address (Ping)* on page B-3.)

2.2 Mounting the iPocket*232*

The iPocket*232* comes with a mounting bracket that you can use to conveniently mount the unit. Once the mounting bracket is in place, the iPocket232 can be easily clipped on or removed as needed.

To mount the iPocket*232* to a wall or other surface:

1 Affix the mounting bracket to the wall using two #6 pan head screws.

2 Clip the iPocket*232* to the mounting bracket.

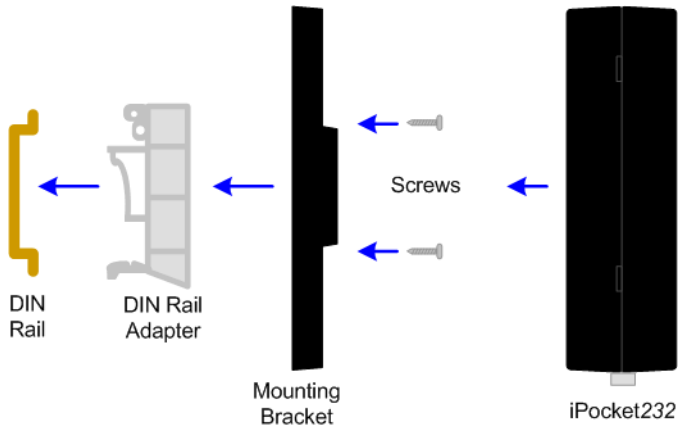
You can also attach a rail adapter (http://www.phoenixcontact.com/, part # USA 10) to the mounting bracket to secure the iPocket*232* to a DIN rail.

To mount the iPocket to a DIN rail:

1 Affix the recommended DIN adapter to the mounting bracket using two #6 or M3 thread forming screws, 3/8” (10 mm) long.

2 Clip the mounting bracket onto the DIN rail.

3 Clip the iPocket*232* to the mounting bracket.



Mounting the iPocket to a DIN Rail

2.3 Setting Up the Terminal

Once the iPocket*232* is connected to your PC, you can access the Configuration screen using terminal software.

You may use any terminal emulation software as HyperTerminal, which comes standard with Windows operating systems, or Procomm Plus (Symantec). For further help on using Hyper Terminal, please refer to the **Using HyperTerminal** Help Guide at: http://www.precidia.com/products/documentation.html.

IMPORTANT! WINDOWS NT/2000/XP USERS:
If using HyperTerminal to perform firmware upgrades, or to download static Web pages to the Precidia unit, you need to use the latest version of HyperTerminal. To obtain your free HyperTerminal upgrade, visit http://www.hilgraeve.com.

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1 Start your terminal program.

2 Select the correct COM port in your terminal program (usually Com1 or Com2).

3 Configure the terminal with the following settings:

- Bits per second: 9600 (required)
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: Hardware

NOTE: *The Data Bits, Parity, Stop Bits, and Flow control settings listed above are recommended settings. Configuration can be accessed using* ***any settings at 9600 bps****.*

---

4 Using a ballpoint pen or similar item, press and hold the recessed **CONFIGURE** button at the rear of the unit for several seconds, until the initial Configuration screen appears (as shown below).

If the screen does not appear, refer to Appendix B:, Troubleshooting and Support.

```
,-------------------------------------------------------------------------------.
| Precidia                iPocket232 Configuration                  v4.03.00 |
|-------------------------------------------------------------------------------|
|           Device Settings:           |                                        |
|                                      |                                        |
| 1) Ethernet:                0.0.0.0  |                                        |
|                                      |                                        |
| 2) Serial Port:             disabled |                                        |
|                                      |                                        |
| *) Save Current Configuration        |                                        |
| -) Exit Configuration (no save)      |                                        |
| $) Security Settings                 |                                        |
| #) System Settings                   |                                        |
| ?) Refresh this Screen               |                                        |
`-------------------------------------------------------------------------------'

Change which option?
```

Initial Configuration Screen

NOTE: *The SERIAL TRANSMIT lamp stays illuminated throughout the configuration process.*

2.4 Understanding the Configuration Screen

The left half of the Configuration screen displays the Device Settings menu and the right half of the screen displays the sub-menu of the option you select.

Table 2.1 provides a description of the menu items. Type the number or character bracketed at the start of the line to chose a menu item.

NOTE: *Pressing* **ESC** *cancels the current action and returns you to the previous prompt.*

Table 2.1: Device Settings Menu Options

Menu No.	Menu Item	Description
1)	**Ethernet**	Configure the local network information before the device is placed on a network so it does not cause a problem with the existing LAN, or configure automatically with a DHCP server.
2)	**Serial Port**	Configure host addresses and the protocols being used by the serial device.
***)**	**Save Current Configuration**	Save changes and exit from configuration mode. Resets the unit.
-)	**Exit Configuration (no save)**	Exit from the configuration mode without saving any changes. Resets the unit if configuring locally.
$)	**Security Settings**	Configure all passwords, IPsec, and SNMP.
#)	**System Settings**	For administrator only. Perform Web page and firmware downloads, and view system information.
?)	**Refresh this Screen**	Refresh the current Configuration screen.

2.5 Timeout During Configuration

After 4 minutes of inactivity the timeout notification appears under the prompt, as shown below. Any unsaved changes will be lost.

```
Change which option?
 !timeout! (changes not saved)
```

Timeout Notification

You must then press and hold the recessed CONFIGURE button for several seconds, or re-establish your remote telnet connection, to access configuration again and re-enter your changes.

NOTE: *Typing any character, or typing "***?***" to refresh the screen, will restart the 4-minute timer.*

2.6 Resetting to Factory (Default) Configuration

You may need to reset to "factory" settings if you have configured and subsequently lost a Console Password, or if you wish to completely reconfigure the unit. The procedure below will delete your previous configuration and revert all settings to factory default.

1. Unplug the power cord from the back of the unit.
2. Press and hold the recessed CONFIGURE button and plug the power cord back in to the POWER port.
3. Continue to press and hold the recessed CONFIGURE button for 15 seconds.

   The Configuration screen appears, reset to the factory settings.
4. Reconfigure the unit.
5. Type "*" to save the new configuration.

NOTE: *If you do not save the new settings, the unit will restart with the previously saved settings.*

---

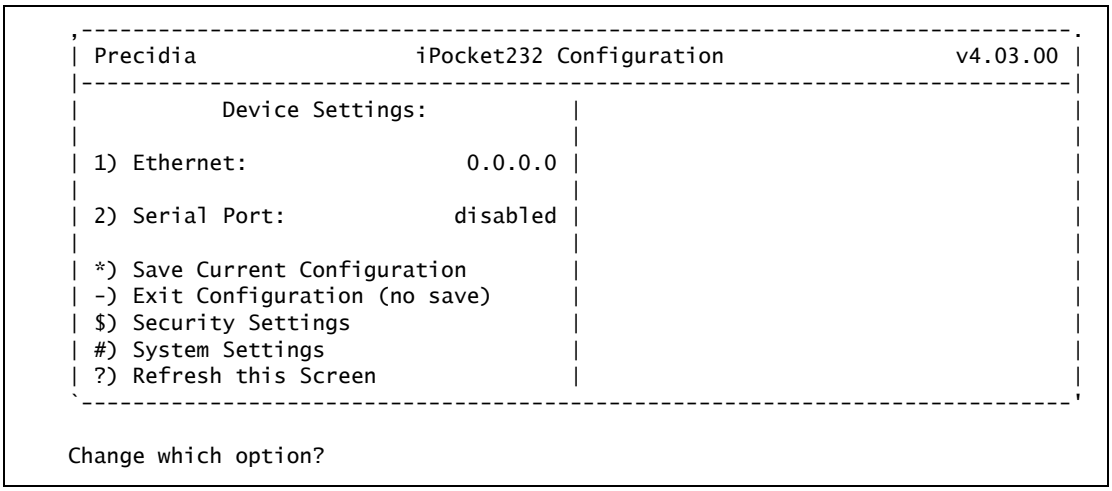
3 Configuring the Ethernet Settings

The Ethernet Settings sub-menu allows you to specify a unique IP address for your iPocket*232* to enable communication over an IP network and with the remote host(s).

If you are using a DHCP server, leave all Ethernet Settings at zero (0.0.0.0). The settings will always appear as zeros in the menu regardless of the values assigned by the DHCP server.

To configure or change the Ethernet Settings, choose **Ethernet** from the Device Settings menu.

The Ethernet Settings sub-menu appears on the right side of the Configuration screen, as shown below.



Ethernet Settings Sub-menu

NOTE: *Remember to save your changes by typing "*" to exit configuration!*

3.1 IP Address

An IP address is an identifier for computers or devices on a TCP/IP network. Make sure that the IP address you assign is not in use by any other device on your network. IP addresses are made up of four numbers from 0 to 255, separated by periods.

NOTE: *You can determine the IP address of your unit through the System Settings menu, if it is a dynamically allocated (DHCP) IP Address, or a Static IP Address. Please refer to 6.4: Display System Status for further information.*

3.1.1 DHCP - Dynamic IP Address

DHCP (Dynamic Host Configuration Protocol) allows you to dynamically allocate IP addresses to devices on a TCP/IP network.

NOTE: *For further help on DHCP Administration, please refer to our* **DHCP Administrator** *Help Guide* at http://www.precidia.com/products/documentation.html.

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iPocket*232*s come configured with the IP address and subnet mask set at 0.0.0.0, which automatically enables DHCP.

NOTE: *The DHCP server must be on the same physical subnet as the* iPocket*232*.

To enable DHCP configuration:

1. Choose **Ethernet Settings** from the Device Settings menu. (If the IP Address and Subnet Mask are both 0.0.0.0, then DHCP is already enabled.)
2. Choose **IP Address** from the Ethernet Settings sub-menu.
3. Type **0.0.0.0** at the prompt and press **Enter**.
4. Choose **Subnet Mask** from the Ethernet Settings sub-menu.
5. Type **0.0.0.0** at the prompt and press **Enter**.

   The unit should automatically obtain the Ethernet Settings from the DHCP server.

NOTE: *The settings obtained from the DHCP server may change if the unit is reset, since they will be lost and re-negotiated.*

3.1.2 Static - (No DHCP) IP Address Settings

If you decide not to allow DHCP to automatically detect and assign your iPocket*232*'s IP Address, you may enter the IP Address manually.

To enter or change the IP address:

1. Choose **Ethernet** from the Device Settings menu.
2. Choose **IP Address** from the Ethernet Settings sub-menu.

   You are prompted to enter the IP address of the device.
3. Type the unique IP address at the prompt (in the format xxx.xxx.xxx.xxx) and press **Enter**.

3.2 Subnet Mask (Static — No DHCP)

The subnet mask is used to determine what subnet an IP address belongs to. The mask allows a router to determine the network and host addresses, and forward data packets correctly.

To enter or change the Subnet Mask:

1. Choose **Ethernet** from the Device Settings menu.
2. Choose **Subnet Mask** from the Ethernet Settings sub-menu.

   You are prompted to enter the subnet mask of the device.
3. Type the subnet mask at the prompt (in the format xxx.xxx.xxx.xxx) and press **Enter**.

3.3 Gateway (Static — No DHCP)

If the device will be communicating with a host that is not on the local subnet, you must specify the router address (gateway) that will forward data to the destination. If the destination is within the LAN and can be accessed without passing through a router, you can leave this field blank (0.0.0.0). This setting is the default gateway.

To enter or change the Gateway:

1. Choose **Ethernet** from the Device Settings menu.
2. Choose **Gateway** from the Ethernet Settings sub-menu.

   You are prompted to enter the IP address of the gateway.

3 Type the gateway address at the prompt (in the format xxx.xxx.xxx.xxx) and press **Enter**.

3.4 Additional Gateway

The Additional Gateway option allows you to specify a second gateway (router) for a specific network address.

You can use the Additional Gateway to run the SNMP (Simple Network Management Protocol) manager on a computer on another network. You can also telnet to the iPocket*232*, or ping to check its status, from a computer on another network. In this way, if your primary network goes down, you can still access the iPocket*232* and remotely reconfigure it to another network.

NOTE: *The Additional Gateway must be on the same subnet as the device.*

Network Address

If the destination IP address of a packet matches this Network Address and the Network Mask, it is forwarded to the second gateway address defined below.

To enter or change the Network Address:

1 Choose **Ethernet** from the Device Settings menu.

2 Choose **Network Address** from the Ethernet Settings sub-menu.

You are prompted to enter the IP address of this network.

3 Type the address at the prompt (in the format xxx.xxx.xxx.xxx) and press **Enter**.

Network Mask

To enter or change the Network Mask:

1 Choose **Ethernet** from the Device Settings menu.

2 Choose **Network Mask** from the Ethernet Settings sub-menu.

You are prompted to enter the subnet mask of the device.

3 Type the network mask at the prompt (in the format xxx.xxx.xxx.xxx) and press **Enter**.

Gateway

The Gateway specified under Additional Gateway defines the address of the second router (gateway). Packets with destination addresses matching the Network Address and Subnet Mask configured above are sent to the additional gateway.

NOTE: *The Additional Gateway must be on the same subnet as the device.*

To enter or change the Gateway:

1. Choose **Ethernet** from the Device Settings menu.
2. Choose **Gateway** under **Additional Gateway** from the Ethernet Settings sub-menu.

   You are prompted to enter the IP address of the gateway.
3. Type the gateway address at the prompt (in the format xxx.xxx.xxx.xxx) and press **Enter**.

4 Configuring the Serial Port Settings

The Serial Port Settings sub-menu allows you to choose the protocol for communicating with the remote server.

To configure or change the Serial Port Settings choose **Serial Port** from the Device Settings menu.

The Serial Port Settings sub-menu appears on the right side of the Configuration screen, an example of which is shown below.

NOTE: *Once you choose a protocol, different options appear in the sub-menu. Set the* Protocol *option first.*

```
,-------------------------------------------------------------------------.
| Precidia                iPocket232 Configuration                v4.03.00 |
|-------------------------------------------------------------------------|
|           Device Settings:            |        Serial Port Settings:    |
|                                       |                                 |
| 1) Ethernet:                0.0.0.0   | A) Protocol:       Transparent (tcp) |
|                                       | B) Port Setting:    300 bps 8N1 [no] |
| 2) Serial Port:          Transparent  | C) Connection Control:     Automatic |
|                                       |                                 |
|                                       | D) Local Port:                  0 |
|                                       | E) Remote IP:               0.0.0.0 |
|                                       | F) Remote Port:                 0 |
|                                       | G) Fallback IP:             0.0.0.0 |
|                                       | H) Fallback Port:               0 |
|                                       |                                 |
| *) Save Current Configuration         | I) Packet Prefix:            none |
| -) Exit Configuration (no save)       | J) Max Inter-Char Delay:        0 |
| $) Security Settings                  | K) Preferred Packet Size:       0 |
| #) System Settings                    |                                 |
| ?) Refresh this Screen                | L) Initial String:         (not set) |
`-------------------------------------------------------------------------'

Change which option?
```

Example of the Serial Port Settings Sub-menu

NOTE: *Remember to save your changes by typing "*" to exit configuration!*

4.1 Protocol

The Protocol setting defines how the iPocket*232* communicates with the remote server. The Protocol setting has two parts: **data formatting** and **session mode**.

The first part of the Protocol setting, **data formatting**, indicates how to parse or process the data stream to provide compatibility with the remote server. Table 4.1 describes the data formatting options.

Table 4.1: Data Formatting Options

Menu Item	Description
disabled	Default setting. The unit will not accept any host initiated or local sessions. You must choose a protocol for the unit to become active.
ComPort Control	***IMPORTANT!*** *The iPocket232 is a DCE device and therefore cannot remotely control the DTR and RTS signals, nor monitor the DSR, CTS, and DCD signals in compliance with RFC2217. Port speed, parity, data width, and handshaking all function correctly.* Extends a serial link to allow remote configuration and control of a serial port. Upon receipt of a message containing Com Port Control commands, the iPocket*232* extracts the command information from the message and sets the following parameters of the serial port: baud rate, data length, parity bits, stop bits, DSR signal, and flow control. Once the serial port is set, the iPocket*232* forwards the data to the serial device unchanged. If any changes to the Com Port or modem line occur, the iPocket*232* will automatically send a notification packet to the host. Once the transaction/transmission is complete, the iPocket*232* automatically resets to the Port Setting defined in the Serial Port Settings sub-menu until the next message is received. Telnet Com Port Control is defined in RFC2217. If you are connecting only one iPocket*232* to a PC and the application requires COM port connection, you can use Com Port Redirector software if your application is not affected by the limitations noted above. You can find more information and purchase this software on the Precidia Web site at http://www.precidia.com/products/soft_utilities.html.

Table 4.1: Data Formatting Options

Menu Item	Description
Telnet	Turns the iPocket*232* into either a telnet client (most common use) or a telnet server and allows the user to telnet out of the iPocket*232* to a remote server, such as a UNIX workstation. The standard connection control options are supported. By leaving the Connection Control parameter at Automatic (default setting), the user can initiate the telnet session by pressing any alphanumeric key. If the Connection Control parameter is set to DTR/DSR Control, the iPocket*232* tries to open a telnet session as soon as DSR is detected from the terminal, but the timeout function of most hosts makes this option somewhat unreliable. **Telnet-Client:** The most common use of the telnet protocol. To create a telnet client, select **tcp-client** as the session mode. This configuration allows the iPocket*232* to communicate with the telnet server at the configured Remote IP address and Remote Port. **Telnet-Server:** To create a telnet server, select **tcp-server** as the session mode when configuring this protocol. The iPocket*232* listens on port 23, and the Remote Password must be disabled so that the standard configuration program is not listening on that port. You can configure Telnet to listen on a port other than 23 (but above 1024 to avoid using reserved ports).
Transparent	Typical setting. No alterations are made to the data stream, nor is it parsed in any way. Data is collected until either the preferred packet size is reached or there is a pause between characters that exceeds the inter-character timer. The buffer is then transmitted as a single frame. Preferred Packet Size and Max Inter-Char Delay can be left at the default settings (0), and the unit will automatically determine a reasonable setting based on the current serial port speed. Transparent protocol includes the option “Packet Prefix”, which allows you to include a header in the packet defining it’s length. See Section 4.11, Packet Prefix (Transparent Protocol Only), on page 34.

Table 4.1: Data Formatting Options

Menu Item	Description
Terminated	No alterations are made to the data stream, but incoming data is checked for known "end-of-record" characters, or "terminators", that identify the end of a block so that it can be transmitted as a whole to the remote host. If this mode is selected, you will be prompted to enter up to six Terminators in their ASCII decimal form (e.g. <CR> = 13). This is ideal when the host requires pre-parsing of the data, such as with an AS/400. ***NOTE:*** *To use zero (null) as a terminator, you must set it as Terminator #1. Any zeroes after the first terminator are ignored.*

The second part of the Protocol setting, **session mode**, determines how the data channel between the terminal and the server is established. Communications between the device and the host can be over TCP or UDP channels. In addition, the device can initiate a session immediately, or wait until either the server (host) or the terminal (client) attempts to establish a connection. Table 4.2 describes the session mode options.

Table 4.2: Session Mode Options

Menu Item	Description
tcp(tunnel)	Typical configuration for most applications. Use tcp(tunnel) mode when the iPocket*232* must be able to initiate TCP connections and accept TCP connections from the host. In this configuration, the iPocket*232* can communicate with the TCP/IP host as if it were virtually connected. Local Port, Remote Port, and Remote IP must be configured. Sections 4.6 through 4.10 describe how to configure ports and IP addresses.
tcp-client	Use tcp-client mode when all transactions must be initiated by the terminal. This ensures that a TCP/IP host (server) can never initiate communications with the terminal.
tcp-server	Use tcp-server mode when the TCP/IP host must never be interrupted by the terminal unless it authorizes a connection. This ensures that data from the terminal will be discarded until the server establishes a session. As a security feature, the host address must match the Remote IP configured in the Serial Port Settings (it is not necessary to match the Remote Port). Local Port and Remote Port must be configured. Sections 4.6 through 4.10 describe how to configure ports and IP addresses.

Table 4.2: Session Mode Options

Menu Item	Description
udp	Similar to tcp(tunnel) mode, use UDP mode when reception acknowledgement of the data packets is not required. UDP is a connectionless channel, therefore, it is not necessary to initiate or accept connections. This makes for slightly faster data flow. Setting the Remote IP address to all zeros puts UDP into "reply mode" and the iPocket*232* will send data to the last address it received data from. For peer-to-peer communication, the host address must match the Remote IP defined in configuration.

To set or change the Protocol:

1 Choose **Serial Port** from the Device Settings menu.

2 Choose **Protocol** from the Serial Port Settings sub-menu.

You are prompted to choose a new protocol, as shown below.

```
A. disabled        B. ComPort Control C. Telnet          D. Transparent
E. Terminated
1. tcp(tunnel)     2. tcp-client      3. tcp-server      4. udp

Choose new protocol (letter+number) or press ESC to cancel:
```

Choosing a Protocol

3 Type the letter (**A** to **E**), plus the number (**1** to **4**), that corresponds to your selection and press **Enter**.

4.2 Port Setting

The serial port settings of the iPocket*232* must match the settings of the attached serial device to enable communication. Settings include bit rate, data width, error detect, framing, and flow control.

NOTE: *To avoid data loss, choose hardware flow control if you set the port speed to 19 200 bps or higher.*

The flow control options are described Table 4.3 .

Table 4.3: Flow Control Options for Port Setting Parameter

Option	Description
None	**Default** No flow control enabled. Data may be lost due to overflow during high speed communication.
h/w (rts/cts)	Hardware handshaking uses the RTS/CTS (Request To Send/Clear To Send) signal lines for flow control on the COM port. Hardware handshaking works by altering voltage levels on these lines. When the remote end is ready to receive data, it asserts the CTS signal to tell the iPocket*232* to start transferring data. If the remote end is unable to accept the data as fast as it is received from the iPocket*232*, the remote end negates CTS, and the iPocket*232* suspends data transfer. When the remote end is ready for more data, it asserts CTS again. When the iPocket*232* is ready to receive data, it asserts the RTS signal. If the iPocket*232* cannot accept data as quickly as the device is passing data, it negates RTS. The iPocket*232* asserts RTS again when it is ready to resume receiving data. This setting can be used for the majority of installations.
s/w (xon/xoff)	Software handshaking requires that XON/XOFF characters are asserted and obeyed on the COM port. XON is used by either the iPocket*232* or the remote host to signal the other end to start sending data. XOFF can also be used by either the iPocket*232* or the remote host to signal the other to stop sending data. ***NOTE:*** *XON/XOFF characters included in a data transmission are interpreted as flow control characters and will cause transmission problems. This option is not recommended for binary data transmission.*

To set or change the **Port Setting**:

1 Choose **Serial Port** from the Device Settings menu.

2 Choose **Port Setting** from the Serial Port Settings sub-menu.

You are prompted to enter one item from each column to configure the port, as shown below.

```
Port configuration is made up of the several different parameters:

  Bit Rate       Data Width     Error Detect   Framing        Flow Control
  ~~~~~~~~~~~~~~ ~~~~~~~~~~~~~~ ~~~~~~~~~~~~~~ ~~~~~~~~~~~~~~ ~~~~~~~~~~~~~~~
  A. 300         8. 8 bits      N. no parity   1. 1 stop bit  N. none
  B. 600         7. 7 bits      O. odd parity  2. 2 stop bits H. h/w (rts/cts)
  C. 1200        9. 9 bits      E. even parity                S. s/w (xon/xoff)
  D. 2400                       M. mark parity
  E. 4800                       S. space parity
  F. 9600
  G. 19200
  H. 38400
  I. 57600
  J. 115200


Enter one item from each column to configure port (eg. C-7E1-H):
```

Choosing the Port Configuration

3 Type the letter or number from each column corresponding to your desired settings, and press **Enter**.

NOTE: *Serial ports communicate using the RS-232 serial (bit-stream) protocol. Each byte of data transferred through the serial port consists of a predetermined number of bits: 1 start bit, 7, 8, or 9 data bits, 1 or no parity bit, and 1 or 2 stop bits, for a total between 9 and 13 bits. The port configuration "8E2", for example, results in a 12-bit data length consisting of 1 start bit + 8 data bits + 1 parity bit + 2 stop bits. Serial ports on the* iPocket*232, however, support only 10- and 11-bit transfers. Port configurations of 9, 12, or 13 bits are automatically converted by adding an extra stop bit to 9-bit transfers, and dropping stop bits and parity bits (if necessary) from 12- and 13-bit transfers.*

4.3 Connection Control

Connection Control specifies the method of connection between the iPocket*232* and the remote serial device. The options are described in Table 4.4 .

Table 4.4: Connection Control Options

Option	Description
Automatic	**Default** Useful for most setups. Initiates a connection as soon as there is data to send (except in tcp-server mode).

Table 4.4: Connection Control Options

Option	Description
Net-Linked	Links the protocol connection to the status of the network (Ethernet). Attempts to keep the connection permanently open.
DTR/DSR Control	Uses the DTR/DSR lines to open and close connections. In tcp-client mode, the iPocket*232* establishes an IP connection to the remote host when DSR is asserted and terminates a connection when DSR is negated. In tcp-server mode, the iPocket*232* asserts DTR when there is a valid incoming connection attempt and accepts the connection as soon as DSR is asserted. In tcp(tunnel) mode the iPocket*232* both accepts and establishes connections to the host.
RTS/CTS Control	Uses the RTS/CTS lines to open and close connections. In tcp-client or tcp(tunnel) mode, the iPocket*232* establishes an IP connection to the remote host when CTS is asserted and terminates a connection when CTS is negated. In **tcp-server or tcp(tunnel) mode,** the iPocket*232* asserts RTS when there is a valid incoming connection attempt and accepts the connection if CTS is currently asserted.
Modem	Enables the iPocket*232* to act as modem to a device connected to its serial port. The iPocket*232* processes a superset of the standard Hayes command set, including the ability to answer, dial, and originate a connection. FTP and HTTP are supported with extended AT commands. For implementation notes and a description of supported commands, see Appendix F: Modem Connection Control.

To set or change the **Connection Control**:

1 Choose **Serial Port** from the Device Settings menu.

2 Choose **Connection Control** from the Serial Port Settings sub-menu.

You are prompted to enter a connection control type, as shown below.

```
   A. Automatic    B. Net-Linked   C. DTR/DSR Control   D. RTS/CTS Control
   E. Modem

  Enter connection control type (letter):
```

Choosing the Connection Control

3 Type the letter that corresponds to the desired option and press **Enter**.

4.4 Terminal Type (Telnet Protocol Only)

If you select Telnet in the Protocol setting, you can enter the type of terminal you are using. If the Terminal Type is unknown, this parameter may be left at (unset). The telnet server will set a default type, but it is more effective to set it yourself. If the terminal type is incorrect, the full screen telnet applications will not work properly.

To enter or change the Terminal Type (Telnet only):

1 Choose **Serial Port** from the Device Settings menu.

2 Choose **Terminal Type** from the Serial Port Settings sub-menu.

You are prompted to enter the type of attached terminal, as shown below.

```
The "terminal type" is not simply an arbitrary string of characters describing
the type of device attached to the serial port.  It is a specific name that
will be recognized by the remote host and used by it to decide how to control
that type of terminal.

Common terminal types are "dumb", "ansi", "vt100", and "vt102".

Enter type of attached terminal:
```

Entering the Terminal Type

3 Type in the terminal type and press **Enter**.

4.5 Local Port

Local Port is the port number that listens for incoming connections. This option must be set if the iPocket*232* will ever receive a session initiated from an outside source (in tcp(tunnel), tcp-server, and udp modes). If the iPocket*232* will only be used to initiate sessions, this setting can be left at 0 (tcp-client mode).

To enter or change the **Local Port**:

1 Choose **Serial Port** from the Device Settings menu.

2 Choose **Local Port** from the Serial Port Settings sub-menu.

You are prompted to enter the port number on the local system.

3 Type the port number at the prompt and press **Enter**.

4.6 Remote IP

Remote IP is the IP address of the remote host to attempt connections to. If incoming connections are being accepted, then only connections from the Remote IP address or Fallback IP address are accepted.

Set Remote IP to all zeros (0.0.0.0) to disable outgoing connections and allow incoming connections from anywhere.

To enter or change the **Remote IP**:

1. Choose **Serial Port** from the Device Settings menu.
2. Choose **Remote IP** from the Serial Port Settings sub-menu.

   You are prompted to enter the IP address of the remote system.
3. Type the remote IP address and press **Enter**.

4.7 Remote Port

Remote Port is the port address on the remote device to which the iPocket*232* sends incoming data. Remote Port must be set in tcp(tunnel), tcp-client, and udp modes.

To enter or change the **Remote Port**:

1. Choose **Serial Port** from the Device Settings menu.
2. Choose **Remote Port** from the Serial Port Settings sub-menu.

   You are prompted to enter the port number on the remote system.
3. Type the remote port number at the prompt and press **Enter**.

4.8 Fallback IP

Fallback IP is the IP address of the machine the unit connects to if the Remote IP address (primary) is not responding, not accepting connections, or not sending data.

The unit makes one attempt to connect to the Remote IP. If that attempt fails, it attempts to connect to the Fallback IP, alternating until a connection is made. After connecting to the Fallback IP address, the unit tries the Remote IP on the next attempt. If data is received from either host, the next connection attempt is to the Remote IP address.

Fallback can also be disabled, or enabled to accept incoming connections from any host. Table 4.5 describes Fallback IP settings.

Table 4.5: Fallback IP Configurations

Fallback IP Setting	Result
0.0.0.0	Fallback operation disabled.
255.255.255.255	Incoming connections are accepted from any source as long as the unit is not already connected. Any host can establish a connection if the primary host connection is lost. This provides the same function as setting the Remote IP to 0.0.0.0 and can be used when the Remote IP must be configured, such as in tcp(tunnel) mode. ***NOTE:*** *When you set the Fallback IP to 255.255.255.255, set the Fallback Port to zero (0) or an error will occur if the primary host connection is lost.*
xxx.xxx.xxx.xxx	Type the IP address of the backup machine to attempt connections to if the primary address (Remote IP) is not responding.

To enter or change the Fallback IP:

1 Choose **Serial Port** from the Device Settings menu.

2 Choose **Fallback IP** from the Serial Port Settings sub-menu.

You are prompted to enter the IP address of the fallback system.

3 Type the desired setting and press **Enter**.

4.9 Fallback Port

Fallback Port is the TCP port number to initiate connections to on the fallback host (Fallback IP), if the Remote IP is not responding or not accepting connections. Set this value to zero (0) to disable the fallback operation or if you have set the Fallback IP to 255.255.255.255. Use port numbers in the range of 1024 to 65 535 to avoid using reserved port numbers.

NOTE: *If the session mode is set to udp, this option is ignored.*

To enter or change the Fallback Port:

1 Choose S**erial Port** from the Device Settings menu.

2 Choose **Fallback Port** from the Serial Port Settings sub-menu.

You are prompted to enter the port number on the fallback system.

3 Type the fallback port address and press **Enter**.

4.10 Terminators (Terminated Protocol Only)

If you select Terminated in the Protocol setting, you are able to configure up to six terminators in the Serial Port Settings sub-menu, as shown below.

```
,-------------------------------------------------------------------------.
| Precidia                iPocket232 Configuration                 v4.03.00 |
|-------------------------------------------------------------------------|
|           Device Settings:           |        Serial Port Settings:     |
|                                      |                                  |
| 1) Ethernet:                0.0.0.0  | A) Protocol:        Terminated (tcp) |
|                                      | B) Port Setting:    300 bps 8N1 [no] |
| 2) Serial Port:          Terminated  | C) Connection Control:     Automatic |
|                                      |                                  |
|                                      | D) Local Port:                   0 |
|                                      | E) Remote IP:                0.0.0.0 |
|                                      | F) Remote Port:                  0 |
|                                      | G) Fallback IP:              0.0.0.0 |
|                                      | H) Fallback Port:                0 |
|                                      |                                  |
|                                      | I) Terminator #1:      000 < > : 000 |
| *) Save Current Configuration        | J) Terminator #2:      000 < > : 000 |
| -) Exit Configuration (no save)      | K) Terminator #3:      000 < > : 000 |
| $) Security Settings                 | L) Terminator #4:      000 < > : 000 |
| #) System Settings                   | M) Terminator #5:      000 < > : 000 |
| ?) Refresh this Screen               | N) Terminator #6:      000 < > : 000 |
`-------------------------------------------------------------------------'

Change which option?
```

Setting the Terminators

The iPocket*232* continues to capture data from the serial port into the receive buffer until any one of six specific terminators is identified. Once this character is marked, the iPocket*232* continues to capture a configurable number of characters (tail bytes), then terminates the frame and transmits it to the host.

Terminators must be specified in their ASCII decimal form. For example, Carriage Return is entered as 13. The most common terminators are listed in Table 4.6 .

NOTE: *To use zero (null) as a terminator, you must set it as Terminator #1. Any zeroes after the first terminator are ignored.*

To configure or change the terminating characters:

1 Choose **Serial Port** from the Device Settings menu.

2 Choose a **Terminator** from Terminator #1 through #6.

You are prompted to enter a terminator character in decimal.

3 Type in a terminator and press **Enter**.

You are prompted to enter the number of tail bytes in decimal.

4 Enter the number of tail bytes and press **Enter**.

NOTE: *The number of tail bytes determines how many characters to wait for after the terminator before sending the packet.*
For example, if you are parsing a data frame that ends with ETX and has a 2 byte CRC that follows, you will want to terminate on 3, with 2 tail bytes. However, if you get an ACK, you may not want to collect any tail bytes at all, so you would terminate on 6 with 0 tail bytes.

Table 4.6: Common Terminators

Terminator	Mnemonic	ASCII Decimal	Terminator	Mnemonic	ASCII Decimal
Null	NUL	0	Data Control 2	DC2	18
End of Text	ETX	3	Data Control 3	DC3 or XOFF	19
End of Transmis-sion	EOT	4	Data Control 4	DC4	20
Enquire	ENQ	5	Neg-Acknowledge	NAK	21
Acknowledge	ACK	6	Synchronization	SYN	22
Line Feed	LF	10	End of Block	ETB	23
Vertical tab	VT	11	Cancel	CAN	24
Form Feed	FF	12	End of Message	EM	25
Carriage Return	CR	13	End of File	EOF	26
Data Link Escape	DLE	16	Escape	ESC	27
Data Control 1	DC1 or XON	17			

4.11 Packet Prefix (Transparent Protocol Only)

If you select Transparent in the Protocol setting, you have a Packet Prefix option. Packet Prefix allows you to insert a two-byte header stating the length of the data in the packet, including or not including the header itself. Some POS systems, such as ACI BASE24, may require these types of headers.

To set or change the **Packet Prefix**:

1. Choose **Serial Port** from the Device Settings menu.
2. Choose **Packet Prefix** from the Serial Port Settings sub-menu.

   You are prompted to enter the packet prefix type, as shown below.

```
A. none     - received bytes are sent in packets with nothing extra
B. length   - a 2-byte header indicating the length of the data to follow
C. length+2 - a 2-byte header indicating the length of data plus header

Enter packet prefix type (letter):
```

Choosing the Packet Prefix Type

3. Choose a packet prefix type and press **Enter**.

4.12 Maximum Inter-Character Delay

Maximum inter-character delay specifies the maximum elapsed time in milliseconds between received characters before the iPocket*232* forwards the data packet to the destination, to a maximum of 60 000 ms. This option accumulates the data before sending it and therefore tends to group related data together and reduce network overhead.

If left at zero (0), the iPocket*232* determines a reasonable delay based on the configured Port Settings.

To enter or change the **Max Inter-Char Delay**:

1. Choose **Serial Port** from the Device Settings menu.
2. Choose **Max Inter-Char Delay** from the Serial Port Settings sub-menu.

   You are prompted to enter the maximum inter-character delay in ms.
3. Type the time for the delay at the prompt and press **Enter**.

4.13 Preferred Packet Size

Preferred Packet Size specifies the maximum number of characters in a data packet. If left at 0, data will be sent in amounts equal to the maximum network packet size (usually about 1500 bytes). As with maximum inter-character delay, this option accumulates data before sending it, which can help reduce network overhead.

To enter or change the **Preferred Packet Size**:

1. Choose **Serial Port** from the Device Settings menu.
2. Choose **Preferred Packet Size** from the Serial Port Settings sub-menu.

   You are prompted to enter the preferred packet size.
3. Type your preferred packet size and press **Enter**.

4.14 Initial String (Transparent Protocol Only)

Initial String allows you to insert a string of characters that are prepended to the initial data packet at the beginning of every established connection between the iPocket*232* and your serial device. The string can be a unique identifier for each device, a maximum of 16 characters long, and can include the special characters listed in Table 4.7.

Table 4.7: Initial String Special Characters

Character	Description
\r	Carriage return
\n	Carriage return
\l	line feed
\t	tab
\x??	character ?? (two hex digits giving the ASCII value of the desired character)

To configure an **Initial String**:

1. Choose **Serial Port** from the Device Settings menu.
2. Choose **Initial String** from the Serial Port Settings sub-menu.

   You are prompted to enter the string to be sent upon connection.
3. Type the string at the prompt and press **Enter**.

5 Configuring the Security Settings

The Security Settings sub-menu allows you to implement SNMP (Simple Network Management Protocol) and IPsec (Internet Protocol security), and restrict access to the iPocket*232* by specifying passwords and user IDs.

To configure or change the Security Settings, choose **Security Settings** from the bottom of the Device Settings menu.

The Security Settings sub-menu appears on the right side of the Configuration screen, as shown below.

```
,-------------------------------------------------------------------------.
| Precidia                iPocket232 Configuration                v4.03.00 |
|-------------------------------------------------------------------------|
|           Device Settings:            |          Security Settings:     |
|                                       |                                 |
| 1) Ethernet:                 0.0.0.0  | A) Console Password:      (hidden) |
|                                       | B) Remote Password:       (hidden) |
| 2) Serial Port:              disabled |                                   |
|                                       | C) Web Server:             enabled |
|                                       | D) Access Userid:        (not set) |
|                                       | E) Access Password:      (not set) |
|                                       |                                   |
| *) Save Current Configuration         | F) SNMP Server:            enabled |
| -) Exit Configuration (no save)       | G) SNMP Settings                   |
| $) Security Settings                  |                                   |
| #) System Settings                    | H) IPsec Tunnel #1:       disabled |
| ?) Refresh this Screen                | I) IPsec Tunnel #2:       disabled |
`-------------------------------------------------------------------------'

Change which option?
```

Security Settings Sub-menu

NOTE: *Remember to save your changes by typing "*" to exit configuration!*

5.1 Console Password

The Console Password allows you to restrict local access to configuration mode. After creating a Console Password, anyone accessing the iPocket*232* locally through the COM port must enter the password before the Configuration screen appears.

Setting the Console Password

NOTE: *Passwords are case sensitive and can consist of uppercase letters, lowercase letters, numbers, and symbols.*

1. Choose **Security Settings** from the Device Settings menu.
2. Choose **Console Password** from the Security Settings sub-menu.

   You are prompted to enter a console access password with a maximum of 8 characters.
3. Type your password (appears as a series of asterisks(*)) then press **Enter**.

Viewing the Console Password

1. Choose **Security Settings** from the Device Settings menu.
2. Choose **Console Password** from the Security Settings sub-menu.

   The current password is displayed in brackets: [was: password].
3. **Do not** type any characters. Press **ESC** to keep the same password and return to the menu.

Clearing the Console Password

1. Choose **Security Settings** from the Device Settings menu.
2. Choose **Console Password** from the Security Settings sub-menu.
3. **Do not** type any characters. Press **Enter** to clear the password.

   The password is displayed as (not set) in the Security Settings sub-menu.

5.2 Remote Password

To remotely configure the iPocket*232*, you must first set the Remote Password through local configuration. This is a security option to disable unauthorized remote access. Appendix D: Connecting with Telnet describes how to remotely telnet into the iPocket*232*.

NOTE: *Unless you set a remote password, you will not be able to telnet to the iPocket232 for configuration, or perform remote firmware and Web page downloads.*

Setting the Remote Password

NOTE: *Passwords are case sensitive and can consist of uppercase letters, lowercase letters, numbers, or symbols.*

1. Choose **Security Settings** from the Device Settings menu.
2. Choose **Remote Password** from the Security Settings sub-menu.

   You are prompted to enter a remote access password with a maximum of 8 characters.
3. Type your password (appears as a series of asterisks(*) on the screen) and press **Enter**.

Viewing the Remote Password

1. Choose **Security Settings** from the Device Settings menu.
2. Choose **Remote Password** from the Security Settings sub-menu.

   The current password is displayed in brackets: [was: password].
3. **Do not** type any characters. Press **ESC** to keep the same password and return to the menu.

Clearing the Remote Password

NOTE: *Clearing the Remote Password disables remote access to configuration through telnet.*

1. Choose **Security Settings** from the Device Settings menu.

2 Choose **Remote Password** from the Security Settings sub-menu.

You are prompted to enter a remote access password with a maximum of 8 characters.

3 D**o not** type any characters. Press **Enter** to clear the password.

The password is displayed as (not set) in the Security Settings sub-menu.

5.3 Web Server

The default setting is <**enabled>**.

The Web Server enables or disables access to the Web, Status and System Log pages stored in the unit. The pages are accessible through your Web browser, and are described in Section 7, Accessing System Information, on page 57.

If enabled, you can also define the Access Userid and Password to restrict access to the Status and System Log pages.

IMPORTANT! *If enabled, but you do not configure the Access Userid and Access Password (default), anyone who knows the IP address of the unit can access the pages through a Web browser.*

NOTE: *HTTP authentication schemes for passing the user ID and password to the HTTP daemon include Basic and Digest Access Authentication. Most Web browsers support one or both authentication schemes and should function correctly. Update your browser if problems occur.*

To enable or disable the **Web Server**:

1 Choose **Security Settings** from the Device Settings menu.

2 Choose **Web Server** from the Security Settings sub-menu.

You are prompted to enable or disable the Web Server, as shown below.

```
The web server allows access to the set of static pages loaded in to the unit
(see the system menu) and to the various dynamic pages such as system status
and system log.

A. enabled          B. disabled

Choose desired setting or press ESC to cancel:
```

Web Server Options

3 Type the letter that corresponds to the desired setting and press **Enter**.

5.4 Access Userid

Access Userid also provides security against unauthorized access to the iPocket*232*'s dynamic Web pages.

1 Choose **Security Settings** from the Device Settings menu.

2 Choose **Access Userid** from the Security Settings sub-menu.

You are prompted to enter an access user ID for the dynamic Web pages, with a maximum of 15 characters.

3 Type the user ID at the prompt and press **Enter**.

5.5 Access Password

Access Password also provides security against unauthorized access to the iPocket*232*'s dynamic Web pages.

Setting the Access Password

NOTE: *Passwords are case sensitive and can consist of uppercase letters, lowercase letters, numbers, or symbols.*

---

1 Choose **Security Settings** from the Device Settings menu.

2 Choose **Access Password** from the Security Settings sub-menu.

You are prompted to enter an access password with a maximum of 15 characters.

3 Type your password (appears as a series of asterisks (*) on the screen) and press **Enter**.

Viewing the Access Password

1 Choose **Security Settings** from the Device Settings menu.

2 Choose **Access Password** from the Security Settings sub-menu.

The current password is displayed in brackets: [was: password].

3 **Do not** type any characters. Press **ESC** to keep the same password and return to the menu.

Clearing the Access Password

1 Choose **Security Settings** from the Device Settings menu.

2 Choose **Access Password** from the Security Settings sub-menu.

3 **Do not** type any characters. Press **Enter** to clear the password.

The password is displayed as (not set) in the Security Settings sub-menu.

5.6 SNMP Server

The SNMP Server enables or disables the SNMP function in the iPocket*232*. The default setting is “enabled”.

To enable or disable the **SNMP Server**:

1 Choose **Security Settings** from the Device Settings menu.

2 Choose **SNMP Server** from the Security Settings sub-menu.

You are prompted to enable or disable the SNMP Server, as shown below.

```
The SNMP server allows access to many internal statistics as well as the values
seen in the system status page.

  A. enabled          B. disabled

Choose desired setting or press ESC to cancel:
```

SNMP Server Options

3 Type the letter that corresponds to the desired setting and press **Enter**.

5.7 SNMP Settings

Precidia products support SNMPv2c. SNMP (Simple Network Management Protocol) is a protocol for viewing network statistics and settings. An SNMP management system consists of a manager (remote) and an agent (Precidia device) using UDP as the communication protocol.

The Precidia SNMP agent supports MIB-II, and allows GET (read) commands for gathering information, SET (write) commands for managing how the information is gathered, and trap (notification) generation for alerting the Network Manager when selected or unusual events occur.

To access the SNMP Settings, choose **SNMP Settings** from the Security Settings sub-menu.

The SNMP Settings sub-menu appears, as shown below.

```
,-------------------------------------------------------------------------.
| Precidia                iPocket232 Configuration                v4.03.00 |
|-------------------------------------------------------------------------|
|           Device Settings:           |            SNMP Settings:        |
|                                      |                                  |
| 1) Ethernet:                0.0.0.0  | Community Names:                 |
|                                      | A) MIBII:                (not set) |
| 2) Serial Port:             disabled | B) Precidia:             (not set) |
|                                      | C) Set:                  (not set) |
|                                      |                                  |
|                                      | Trap Managers:                   |
|                                      | D) IP Address #1:          0.0.0.0 |
| *) Save Current Configuration        | E) IP Address #2:          0.0.0.0 |
| -) Exit Configuration (no save)      | F) Trap Check Interval (s):      0 |
| $) Security Settings                 |                                  |
| #) System Settings                   | G) SNMP Trap Settings            |
| ?) Refresh this Screen               | H) SNMP Allowed Hosts            |
`-------------------------------------------------------------------------'

Change which option?
```

SNMP Settings Sub-menu

For details on configuring the SNMP feature refer to the **SNMP Settings and Compliance** Help Guide, available at: http://www.precidia.com/products/documentation.html.

5.8 IPsec Tunnels #1 and #2

IPsec (Internet Protocol security) refers to a set of specifications for security at the IP layer of TCP/IP networks. IPsec tunnels are special secure channels of communication encapsulated within IP protocol that encrypt both the payload data and the packet header. Encapsulated Secure Payload (ESP) for IP is defined in RFC1827. You can define up to two tunnels to securely connect the iPocket*232* to two separate networks.

IMPORTANT! *IPsec contains computationally intensive algorithms. Enabling IPsec may cause a significant decrease in the speed/performance of the* iPocket*232. If your application has performance or latency requirements, please ensure that this decrease in performance does not break the timing requirements. Full baud rates may not be achievable when IPsec is enabled.*

To access the Secure IP Association settings you must first select an IPsec protocol.

Protocol

The IPsec protocol defines the method of encryption and authentication to use through the IPsec tunnel. You can choose between two modes: DES-MD5-96 or 3DES-MD5-96. Encoding is provided by DES (Data Encryption Standard), a secret key cryptography method. DES uses a 56-bit key, while 3DES (tripleDES) uses a 168-bit key.

Authentication is provided by MD5 (Message Digest 5). The message digest allows the receiver of a packet to ensure that a packet has not been altered en route from the sender. MD5 is described in RFC1321.

Choose **IPsec Tunnel #1** or **IPsec Tunnel #2** from the Security Settings sub-menu.

The **Secure IP Association #1 or #2** sub-menu appears, as shown below.

```
,-------------------------------------------------------------------------------.
| Precidia                iPocket232 Configuration                   v4.03.00 |
|-------------------------------------------------------------------------------|
|           Device Settings:            |      Secure IP Association #1:        |
|                                       |                                       |
| 1) Ethernet:                 0.0.0.0  | A) Protocol:                 disabled |
|                                       |                                       |
| 2) Serial Port:              disabled |                                       |
|                                       |                                       |
| *) Save Current Configuration         |                                       |
| -) Exit Configuration (no save)       |                                       |
| $) Security Settings                  |                                       |
| #) System Settings                    |                                       |
| ?) Refresh this Screen                |                                       |
`-------------------------------------------------------------------------------'

Change which option?
```

Secure IP Association Menu

4 Select **Protocol** from the Secure IP Association sub-menu.

You are prompted to select a new IPsec mode, as shown below.

```
 A. disabled        B. DES-MD5-96      C. 3DES-MD5-96

Choose new IPsec mode (letter) or press ESC to cancel:
```

Choosing an IPsec Protocol

5 Type the letter that corresponds to the desired mode and press **Enter**.

The Secure IP Association sub-menu appears, with new options, as shown below.

```
,-------------------------------------------------------------------------.
| Precidia                iPocket232 Configuration                v4.03.00 |
|-------------------------------------------------------------------------|
|           Device Settings:            |      Secure IP Association #1:  |
|                                       |                                 |
| 1) Ethernet:                0.0.0.0   | A) Protocol:           3DES-MD5-96 |
|                                       | B) Secure Address:        (public) |
| 2) Serial Port:             disabled  | C) SPI:                   00000000 |
|                                       |                                 |
|                                       | D) Network Address:        0.0.0.0 |
|                                       | E) Network Mask:           0.0.0.0 |
|                                       | F) Network Gateway:        0.0.0.0 |
|                                       |                                 |
|                                       | Encode/Authenticate Keys:       |
|                                       | G) Encode (Pt1):    0000000000000000 |
| *) Save Current Configuration         | H) Encode (Pt2):    0000000000000000 |
| -) Exit Configuration (no save)       | I) Encode (Pt3):    0000000000000000 |
| $) Security Settings                  |                                 |
| #) System Settings                    | J) Auth (Pt1):      0000000000000000 |
| ?) Refresh this Screen                | K) Auth (Pt2):      0000000000000000 |
`-------------------------------------------------------------------------'

Change which option?
```

Secure IP Association Sub-menu

6 Configure the Secure IP settings as described in the following sections.

Secure Address

Secure Address is an optional parameter to configure a “private” IP address for the iPocket*232* on the network. This IP address can be the same or different from the IP address configured in the Ethernet Settings.

If you leave the Secure address set to zero (0.0.0.0) it will display as “public” in the menu and automatically default to the configured or dynamic IP Address of the unit.

To enter or change the **Secure IP address**:

1 Choose **Secure Address** from the Secure IP Association sub-menu.

You are prompted to enter the secure IP address of this device.

2 Type the secure IP address at the prompt (in the format xxx.xxx.xxx.xxx) and press **Enter**.

SPI

SPI (Security Parameters Index) is a 32-bit hexadecimal number used to identify the security association of an IP packet. The SPI is used to look up the Encode and Authenticate Keys, and must be the same at both ends of the tunnel. The first 256 SPI values are reserved, but you can use any number from 100 hex up to FFFFFFFF hex as the SPI.

To enter or change the **SPI**:

1. Choose **SPI** from the Secure IP Association sub-menu.

   You are prompted to enter the SPI for this tunnel in Hex digits.

2. Type the SPI (up to 8 characters long) at the prompt, and press **Enter**.

Network Address

The Secure IP Association Network Address is the address of the remote device.

To enter or change the Network Address:

1. Choose **Network Address** from the Secure IP Association sub-menu.

   You are prompted to enter the IP address of the secure network.

2. Type the address at the prompt (in the format xxx.xxx.xxx.xxx) and press **Enter**.

Network Mask

Network Mask is the subnet mask of the network on which the remote device resides.

To enter or change the **Network Mask**:

1. Choose **Network Mask** from the Secure IP Association sub-menu.

   You are prompted to enter the subnet mask of the secure network.

2. Type the network mask at the prompt (in the format xxx.xxx.xxx.xxx) and press **Enter**.

Network Gateway

The Secure IP Association Network Gateway is the address of the gateway of the network on which the remote device resides.

To enter or change the **Network Gateway**:

1. Choose **Network Gateway** from the Secure IP Association sub-menu.

   You are prompted to enter the IP address of the secure network's gateway.

2 Type the gateway address at the prompt (in the format xxx.xxx.xxx.xxx) and press **Enter**.

Encode/Authenticate Keys

Encode and Authenticate Keys are manually keyed in the iPocket*232* by the user to provide IP packet security. Encode and Authenticate Keys must be the same on both ends of the IPsec tunnel. You must manually configure the remote end, a gateway or device, with the same encode and authentication keys as you configured in the iPocket*232*.

The Encode Key is configured in up to three parts of 64 bits each. The Encode Key must be input as a 64-bit hex number for DES and a 192-bit hex number for 3DES. DES and 3DES remove the least significant bit (LSB) from each byte, making the actual DES key 56 bits and the 3DES key 168 bits.

The Authenticate Key must be input as a 128-bit number in hex format. The Auth Key is configured in two parts of 64 bits each.

To set or change the Encode Key:

1 Choose **Encode (Pt1)** from the Secure IP Association sub-menu.

You are prompted to enter bits 1–64 of the encoding key in hex.

2 Type the 64 bits (16 characters) of the encoding key in hexadecimal format at the prompt, and press **Enter**.

If you are using DES-MD5-96 Protocol, configure the Authenticate Key now.

3 For 3DES-MD5-96 Protocol, choose **Encode (Pt2)** from the Secure IP Association sub-menu.

You are prompted to enter bits 65–128 of the encoding key in hex.

4 Type the next part of the encoding key (16 more characters) in hexadecimal format at the prompt, and press **Enter**.

5 Choose **Encode (Pt3)** from the Secure IP Association sub-menu.

You are prompted to enter bits 129–192 of the encoding key in hex.

6 Type the last part of the encoding key (16 characters) in hexadecimal format at the prompt, and press **Enter**.

To set or change the Auth Key:

1 Choose **Auth (Pt1)** from the Secure IP Association sub-menu.

You are prompted to enter bits 1–64 of the authentication key in hex.

2 Type the first half of the authentication key (16 characters) in hexadecimal format at the prompt, and press **Enter**.

3 Choose **Auth (Pt2)** from the Secure IP Association sub-menu.

You are prompted to enter bits 65–128 of the authentication key in hex.

4 Type the second half of the authentication key (16 characters) in hexadecimal format at the prompt, and press **Enter**.

The keys are displayed in the Secure IP Association sub-menu.

IMPORTANT! *The SPI, Encode Keys, and Authenticate Keys must be the same on both ends of the IPsec tunnel (secure connection).*

---

6 System Settings

The System Settings should only be configured by network administrators or advanced users who need to upgrade the firmware or view log information.

To configure or change the System Settings, select **System Settings** from the Device Settings menu.

The System Settings sub-menu appears on the right side of the Configuration screen, as shown below.

```
,-------------------------------------------------------------------------.
| Precidia                  iPocket232 Configuration              v4.03.00 |
|-------------------------------------------------------------------------|
|           Device Settings:            |           System Settings:      |
|                                       |                                 |
| 1) Ethernet:            192.168.1.25  | A) Unit ID value:  00:01:1E:87:47:48 |
|                                       |                                 |
| 2) Serial Port:          Transparent  | B) Web Page Download:         (none) |
|                                       | C) Firmware Download:     2003-09-23 |
|                                       |                                 |
|                                       | D) Display System Status        |
|                                       | E) Dump System Log (long)       |
|                                       | F) Delete System Log            |
| *) Save Current Configuration         |                                 |
| -) Exit Configuration (no save)       | G) Perform Self Test            |
| $) Security Settings                  | H) Reset Unit                   |
| #) System Settings                    |                                 |
| ?) Refresh this Screen                | I) SNTP Settings                |
`-------------------------------------------------------------------------'

Change which option?
```

System Settings Sub-menu

NOTE: *Remember to save your changes by typing "*" to exit configuration!*

6.1 Unit ID Value

Unit ID Value is the hardware address of the iPocket*232* and cannot be changed. It is assigned at the factory and printed below the barcode on the bottom of the iPocket*232*.

6.2 Web Page Download

Use Web Page Download to change or upgrade the internal static web page in the iPocket*232*. You can access this page by obtaining the IP address of the unit and typing it in the address bar of your browser: **http://IP address.**

See Section 7.2, System Log, on page 60 and refer to the **Converting and Downloading Static Web Pages** Help Guide at: http://www.precidia.com/products/documentation.html for more information.

6.3 Firmware Download

CAUTION: Do not attempt a Firmware Download without first consulting the instructions and obtaining the correct firmware file from Precidia. Improper downloading may render the warranty null and void!

Use Firmware Download to change or upgrade the firmware. The current firmware version number is displayed in the top right corner of the Configuration screen, and the release date is displayed beside Firmware Download in the System Settings sub-menu.

```
,-------------------------------------------------------------------------.
| Precidia                  iPocket232 Configuration              v4.03.00 |
|-------------------------------------------------------------------------|
|           Device Settings:            |           System Settings:      |
|                                       |                                 |
| 1) Ethernet:            192.168.1.25  | A) Unit ID value:  00:01:1E:87:47:48 |
|                                       |                                 |
| 2) Serial Port:          Transparent  | B) Web Page Download:         (none) |
|                                       | C) Firmware Download:     2003-09-23 |
|                                       |                                 |
|                                       | D) Display System Status        |
|                                       | E) Dump System Log (long)       |
|                                       | F) Delete System Log            |
| *) Save Current Configuration         |                                 |
| -) Exit Configuration (no save)       | G) Perform Self Test            |
| $) Security Settings                  | H) Reset Unit                   |
| #) System Settings                    |                                 |
| ?) Refresh this Screen                | I) SNTP Settings                |
`-------------------------------------------------------------------------'
```

Software Version and Firmware Download Date

Refer to the **Firmware Download: Local** and **Firmware Download:Remote** Help Guides at: http://www.precidia.com/products/documentation.html for instructions.

6.4 Display System Status

The System Status page allows you to view useful statistics about the unit. This information includes system uptime, activity through the serial port (Port #1), and network port settings. The System Status page displays the same information as the Status Web page.

You can easily determine the IP address of the unit through the System Status page, even if it is dynamically allocated. The first Local address listed under Network Routing is the IP address of the unit.

Choose **Display System Status** from the System Settings sub-menu.

The status information appears, an example of which is shown below.

```
iPocket232 Status:

System Uptime
  Up 0 days,  0:13:48
  Load Average:  5sec=17%  30sec=24%  5min=19%  30min=4%
  Firmware Revision:  4.03.00 (2003-04-17)

Port #1 [null] (terminated/tcp-client, connected)
  Received                        Transmitted
    Bytes:    77461                 Bytes:    10242
    Packets:  158                   Packets:  195
    Avg-BpP:  490                   Avg-BpP:  53

Network Routing
  Local           Network         Subnet Mask     Gateway          Iface  Pkts-In Pkts-Out
Pkts-Err
  192.168.1.18    192.168.1.0     255.255.255.0                    eth   585     451      1
  127.0.0.1       127.0.0.0       255.0.0.0                        lo    0       0        0

Please hit <return>:
```

Example of the System Status Page

See Section 7.1, System Status, on page 57, for a description of the System Status page.

6.5 Dump System Log

Dump System Log allows you to review all activity that has occurred on the iPocket*232* since it was configured, or since the Delete System Log option was used. The dump may require a few minutes to complete.

The System Log is a wrapping buffer up to 64 KB. It will never run out of memory, but will write over the earlier messages once the buffer fills up. See Section 7.2, System Log, on page 60, for a description of the log information.

6.6 Delete System Log

Delete System Log erases the system log in the iPocket*232*. When diagnosing a problem, you can clear the System Log to start capturing relevant information. For a complete explanation of the information on the log refer to Section 7.2, System Log, on page 60.

6.7 Perform Self Test

Perform Self Test is a troubleshooting aid that performs a check on the unit's memory I/O system. You will not need to use this feature during the normal course of operation. The self-test takes a few minutes to run and the unit is unable to process any information during this time.

The Com Port portion of the test will always return "Com Port... skipped (external loopback not found)" if you are running the Self Test from a local connection and do not have an external loopback dongle attached to the COM port. You must attach a loopback dongle and run the Self Test remotely via telnet to test the com port.

Messages that may result from the Com Port test are described in Table 6.1:

Table 6.1: Com Port Self Test Results

Result	Meaning
Com Port... passed	The port is working as expected
Com Port... character not received	A transmitted character was not received
Com Port... character not transmitted	The internal port could not transmit
Com Port... skipped (external loopback not found)	No loopback dongle found
Com Port... control lines not looped back	The DTR/DSR, DTR/DCD lines, if present, are not looped back as expected
Com Port... transmitted and received characters are different	The data sent is not the same as the data received

To run **Perform Self Test**:

1 Choose **System Settings** from the Device Settings menu.

2 Choose **Perform Self Test** from the System Settings sub-menu.

You are prompted to continue with the Self Test or not, as shown below.

```
During a self test, the system will not be available for normal operations
and data processing until after all tests are complete.  This will take a
few minutes.  Are you sure this is what you wish to do? (y/n)
```

Perform Self Test Prompt

3 Type **y** to run the test.

The results of the test appear, an example of which is shown below.

```
CPU Internal Memory... passed
External Memory... passed
Application ROM... crc verification failed
Downloader ROM... passed
Ethernet Controller... passed
Com Port... skipped (external loopback not found)

All tests complete.  Please hit <return>:
```

Example of Perform Self Test Results

4 Press **Enter**.

6.8 Reset Unit

Reset Unit is useful for troubleshooting, since it allows you to ensure that modem connections are dropped correctly. Reset Unit resets the iPocket*232*, and drops all active modem connections. The Configuration screen doesn't change, nor is the System Log cleared, however, the message "===== iPocket232 Started =====" is appended to the System Log.

Reset Unit allows you to reset the iPocket*232* from a telnet session, without saving any changes to the configuration menu.

6.9 Simple Network Time Protocol

Simple Network Time Protocol (SNTP) is an adaptation of the Network Time Protocol (NTP) and is used to synchronize computer clocks on the Internet. SNTP is used when the ultimate performance of the full NTP implementation is not needed or justified.

The internal clock in iPocket*232*s will drift slightly over time. With SNTP configured, the internal clock can be adjusted according to a central time server with an accuracy of approximately 4 milliseconds.

iPocket*232*s only support SNTP in unicast mode. In unicast mode, the client (iPocket*232*) sends a request to a designated server or servers and waits for a reply.

You can configure up to two SNTP servers. The iPocket*232* will attempt to update the internal clock every five minutes. If the unit is already connected to the network, it will contact the first server. If the unit is not connected, it will wait until a connection is established, contact both servers, and accept the first reply. If a reply is not received, both servers will be contacted on the next attempt.

SNTP Settings

To configure **SNTP**:

1 Choose **System Settings** from the Device Settings menu.

2 Choose **SNTP Settings** from the System Settings sub-menu.

3 Choose **Primary Server** from the SNTP Settings sub-menu.

You are prompted to enter the IP address of the Primary Server as shown below.

```
,-------------------------------------------------------------------------------.
| Precidia                  iPocket232 Configuration                 v4.03.00 |
|-------------------------------------------------------------------------------|
|           Device Settings:            |            SNTP Settings:             |
|                                       |                                       |
| 1) Ethernet:            192.168.1.25 | A) Primary Server:           0.0.0.0 |
|                                       | B) Secondary Server:         0.0.0.0 |
| 2) Serial Port:          Transparent  |                                       |
|                                       |                                       |
| *) Save Current Configuration         |                                       |
| -) Exit Configuration (no save)       |                                       |
| $) Security Settings                  |                                       |
| #) System Settings                    |                                       |
| ?) Refresh this Screen                |                                       |
`-------------------------------------------------------------------------------'

Change which option? A

Enter IP address of Primary Server:
```

Configuring the SNTP Settings

4 Type the IP address of the central time server you want to use (in the format xxx.xxx.xxx.xxx) and press **Enter**.

5 If required, select **Secondary Server** from the SNTP Settings sub-menu and type the IP address of the second central time server when prompted.

6 To view the configured IP addresses, type "**?**" to refresh the screen.

7 Type "*****" to save your changes and exit the Configuration screen.

NOTE: *SNTP is enabled in the iPocket232 by configuring an IP address for the Primary Server. Entering 0.0.0.0 for the Primary Server disables SNTP, regardless of whether the Secondary Server is configured.*

More Information

For more information on SNTP please see *RFC1305: Network Time Protocol (Version 3)*, and *RFC2030: Simple Network Time Protocol (SNTP) Version 4 for IPv4, IPv6, and OSI* available at http://www.rfc-editor.org/. RFC Editor is the official publisher of Request for Comments (RFCs).

7 Accessing System Information

The iPocket*232* stores information that can be used for management, diagnostics, and troubleshooting. There are three types of information pages available:

- System Status page
- System Log page
- Static Web page(s)

All the information pages for the iPocket232 are accessible through a Web browser. You can disable this feature, or establish secure access with a user ID and password, through the Security Settings menu. See Section 5, Configuring the Security Settings, on page 37.

Additionally, you have the ability to create custom Web pages through which you can remotely control the serial device connected to the iPocket*232*.

7.1 System Status

The System Status page provides valuable statistical and operational information such as system uptime and the number of packets sent and received through the configured port.

Accessing the System Status Page

To access the System Status page through a browser:

1. Ensure the Web Server in the Security Settings sub-menu is enabled and you have the Access Userid and Access Password, if set.
2. Open your browser.
3. Type **http://IPaddressOfUnit/status.html** in the address bar.

To access the System Status page in configuration mode:

1 Access the iPocket*232* Configuration screen either locally or remotely.

2 Choose **System Settings** from the Device Settings menu.

3 Choose **Display System Status** from the System Settings sub-menu.

The System Status page appears, as shown below.

```
iPocket232 Status:

System Uptime
  Up 0 days,  0:13:48
  Load Average:  5sec=17%  30sec=24%  5min=19%  30min=4%
  Firmware Revision:  4.03.00 (2003-04-17)

Port #1 [null] (terminated/tcp-client, connected)
  Received                        Transmitted
    Bytes:    77461                 Bytes:    10242
    Packets:  158                   Packets:  195
    Avg-BpP:  490                   Avg-BpP:  53

Network Routing
  Local           Network         Subnet Mask     Gateway          Iface  Pkts-In Pkts-Out
Pkts-Err
  192.168.1.18    192.168.1.0     255.255.255.0                    eth    585     451      1
  127.0.0.1       127.0.0.0       255.0.0.0                        lo     0       0        0

Please hit <return>:
```

Example of the System Status Page

Understanding the System Status Page

The System Status page is divided into three sections:

- System Uptime
- Serial Port
- Network Routing

System Uptime

This describes how long the system has been operational, the loading on the Precidia device's CPU, and the firmware version of the iPocket*232*. Table 7.1 describes each parameter:

Table 7.1: System Uptime on the System Status Page

Parameter	Description
Time	The length of time the system has been operating since the last reset in days, hours:minutes:seconds. Note that the time is not accurate and may drift slightly.
Load Average	The loading (activity) of the iPocket*232* CPU.

Table 7.1: System Uptime on the System Status Page

Parameter	Description
Firmware Revision	The software version currently installed in the iPocket*232* with the date of the software build in parentheses.

Serial Port

This section describes the configured serial port in the iPocket*232*. It consists of a header line and a table showing the data received and transmitted.

NOTE: *If the serial port is not configured, or incorrectly configured, this section does not appear on the System Status page.*

The header contains is formatted as follows:

Port #1 [**port type**] (**data formatting** / **session mode**, **connection status**)

- Port type: null if it is not connected, or serial if connected.
- Protocol: the data formatting, the session mode, the connection status (connected, connecting, or idle)

The information below the header shows the number of bytes, the number of packets, and the average bytes per packet received and transmitted by the unit.

Network Routing

This section reveals how the system is handling the data going through the iPocket*232* in the same style as the "print-route" command. Table 7.2 describes each parameter in the Network Routing section.:

Table 7.2: Network Routing Parameters

Parameter	Description
Local	The IP Address of the unit (configured in Ethernet Settings or obtained through DHCP).
Network Address	The network address, derived from the IP address and subnet mask, for which this entry applies.
Subnet Mask	The Subnet Mask for which this entry applies (configured in Ethernet Settings or obtained through DHCP).
Gateway	The Gateway (router) address for which this entry applies (configured in Ethernet Settings or obtained through DHCP).
Iface	The interface used to connect to the remote host. eth = Ethernet
Pkts-In	Total number of packets received by the unit since the last reset.

Table 7.2: Network Routing Parameters

Parameter	Description
Pkts-Out	Total number of packets sent by the unit since the last reset.
Pkts-Err	Total number of error packets received by the unit since the last reset.

7.2 System Log

The System Log, an example of which is shown below, logs transaction data and system information. Connection attempts and failures, and remote and console access attempts are logged.

```
iPocket232 Log:

===== iPocket232 Started =====

00000 days 00:00:00  Port #1: Listening for connections on tcp port 9999...
00000 days 09:07:22  Port #1: Incoming connection on tcp port 9999 from 192.168.1.2:2569
00000 days 09:07:22  Port #1: Connection was established with 192.168.1.2:2569
00000 days 09:07:37  Port #1: Connection closed by remote host at 192.168.1.2:2569
00000 days 09:07:37  Port #1: Connection closed by us to host at 192.168.1.2:2569
00000 days 22:09:02  Port #1: Incoming connection on tcp port 9999 from 192.168.1.2:2664
00000 days 22:09:02  Port #1: Connection was established with 192.168.1.2:2664
00000 days 22:10:32  Port #1: Connection closed by remote host at 192.168.1.2:2664
00000 days 22:10:32  Port #1: Connection closed by us to host at 192.168.1.2:2664

===== iPocket232 Started =====

00000 days 00:00:00 Port #1: Connection attempt to 192.168.1.2:999...
00000 days 00:00:00 Port #1: Connection with 192.168.1.2:999 stopped due to connec-
tion control
00000 days 00:00:01 Port #1: Connection attempt to 192.168.1.2:999...
00000 days 00:00:01 Port #1: Connection was established with 192.168.1.2:9999
00000 days 23:01:49  current system time

Please hit <return>:
```

Example of the System Log Page

Accessing the System Log

To access the **System Log** through a browser:

1. Ensure the Web Server in the Security Settings sub-menu is enabled and you have the Access Userid and Access Password, if set.
2. Open your browser.
3. Type **http://IPaddressOfUnit/log.html** in the address bar.

To access the **System Log** in configuration mode:

1 Access the iPocket232 Configuration screen either locally or remotely.

2 Choose **System Settings** from the Device Settings menu.

3 Choose **Dump System Log** from the System Settings sub-menu.

Understanding the System Log

Table 7.3 describes System Log messages you may see when performing a System Log dump, and Table 7.4 lists possible error messages and what to do about them:

Table 7.3: System Log Messages

Message	Description
====*iPocket232* Started====	The unit has been started by: plugging in the power adapter, saving a new configuration, timing out during local configuration, exiting configuration without saving, or choosing Reset Unit from the System Settings menu. No timestamp presented. This message indicates the unit was started in normal mode. Timestamp will start counting from zero (0) after this message.
iPocket232 Log Deleted	The iPocket*232* had its log deleted. If present, this message will always be the first entry in the log.
CONSOLE: login accepted	The unit went into console configuration mode, a password prompt was given, and the correct password was entered.
CONSOLE: login rejected (time-out)	The unit went into console configuration mode, a password prompt was given, but no response was input within the 30 second timeout period. Unit resets.
CONSOLE: login rejected (invalid password)	The unit went into console configuration mode, a password prompt was given, but the password entered did not match the configured Console Password. Unit resets.

Table 7.3: System Log Messages

Message	Description
TELNET: login from *xxx.xxx.xxx.xxx* rejected (configuration already running)	The unit went into telnet configuration mode, a password prompt was given, and the correct password was entered, but configuration was already running (probably locally through the COM port).
TELNET: login from *xxx.xxx.xxx.xxx* accepted	The unit went into telnet configuration mode, a password prompt was given, and the correct password (configured Remote Password) was entered.
TELNET: login from *xxx.xxx.xxx.xxx* rejected (timeout)	The unit went into telnet configuration mode, a password prompt was given, and the correct password was entered, but no response was input within the 30 second timeout period. Unit does not reset.
TELNET: login from *xxx.xxx.xxx.xxx* rejected (invalid password)	The unit went into telnet configuration mode, a password prompt was given, but the password entered did not match the configured Remote Password. Unit does not reset.
Port #n: Listening for connection on tcp port *pppp*...	The unit will allow incoming TCP connections on port *pppp*.
Port #n: Connection attempt to *xxx.xxx.xxx.xxx:pppp*...	The unit is contacting the remote server at the IP address and port indicated.
Port #n: Incoming connection on tcp port *pppp* from *xxx.xxx.xxx.xxx:pppp*	The unit has detected an incoming communication from the remote host indicated on port *pppp*.
Port #n: Connection was established with *xxx.xxx.xxx.xxx:pppp*	The unit has established a TCP connection with the remote host indicated on port *pppp*.
Port #n: No response connecting to host at *xxx.xxx.xxx.xxx:pppp*	The remote host has not responded to any TCP session establishment requests.
Port #n: No response from host at *xxx.xxx.xxx.xxx:pppp*	The remote host is no longer responding to TCP traffic (after it had previously been responding).
Port #n: Connection was refused by *xxx.xxx.xxx.xxx:pppp*...	The remote host actively refused a connection request from the unit.

Table 7.3: System Log Messages

Message	Description
Connection was not from configured remote address - refused	The incoming connection attempt was not from the IP address configured as the Remote IP.
Port #n: Connection reset by remote host at *xxx.xxx.xxx.xxx:pppp*	The remote host forcibly terminated the active TCP session with the unit.
Port #n: Connection closed by remote host at *xxx.xxx.xxx.xxx:pppp*	The remote host is taking the steps to correctly close the TCP session with the unit.
Port #n: Connection closed by us to host at *xxx.xxx.xxx.xxx:pppp*	The unit is taking the steps to correctly close the TCP session with the remote host.
HTTP: host at *xxx.xxx.xxx.xxx* failed to authenticate properly.	The remote host attempted unsuccessfully to access the userid/password protected HTTP pages. Internet Explorer may attempt access using old data from previous connections, resulting in this error.
Configuration changes saved -- restarting system	A configuration change was saved. Unit resets.
Port #n: Listening for connections on tcp port *pppp* was not possible (Error #nn)	The unit cannot listen on the specified port. Table 7.4 lists possible error codes.
Port #n: Connection attempt to *xxx.xxx.xxx.xxx:pppp* was not possible (Error #nn)	The unit could not connect to the specified IP address and port number. Table 7.4 lists possible error codes.
Port #n: Incoming connection on tcp port pppp from *xxx.xxx.xxx.xxx:pppp* (Error #nn)	The unit could not accept the incoming connection. Table 7.4 lists possible error codes.
Incoming connection on tcp port held waiting for connection control	The connection control setting dictates that the incoming connection not be established until the connection control signals are matched.
Connection with *xxx.xxx.xxx.xxx* stopped due to connection control	The connection control setting and signal lines dictate that the session being established no longer become established.
Connection with *xxx.xxx.xxx.xxx* dropped due to connection control	The connection control setting and signal lines dictate that the session that was established be dropped.

The following table lists all possible error codes that may appear in the system log.

Table 7.4: System Log Error Messages

Error No.	Error
1	the i/o request has been scheduled but not completed
2	no more i/o paths are available
3	requested operation was not supported by the driver
4	the provided i/o buffer was not valid
5	requested operation cannot be done in current state
6	too many connections of this type are already open
7	socket connection type (“domain”) is unknown
8	socket protocol type is unknown
9	“socket has already been bound to another port” Check that the port number is available for use. Change configuration if necessary.
10	requested port number is already in use
11	requested address was not valid for operation
12	operation requires bound port but socket is unbound
13	device is not ready for the requested operation
14	cannot open connection because socket is already connected
15	operation requires connected socket but not connected
16	“data message is too big for transport type” Usually occurs with UDP mode.
17	requested operation would break this thread -- try later
18	incoming data corruption has been detected
19	no data is available for this operation
20	“no route available from this host to destination host” Check the IP address of the host. Change configuration if necessary.
21	storage device can accept no more data
22	requested option is not available

NOTE: *If any other error number, name, or message appears in the System Log, contact your Service Representative via the Service Request Form on our Web site* http://www.precidia.com/support/service_request.html *or via email at: e-mail support@precidia.com*

7.3 Static Web Page

You can host static Web pages in the iPocket*232* for displaying information such as help desk telephone numbers or updates on the latest software downloads. The iPocket*232* comes loaded with a default static Web page that includes specifications and product information.

Creating Static Web Pages

You can create one or more HTML pages that display any information, including graphics, that you require. The iPocket*232* looks for a page called “index.html” as the default main page to display. In addition to your main page, you can also create a custom page called “Error404.html” that is displayed when a requested URL is not found. A maximum of 64KB is allocated in memory for static web page(s). HTML pages and associated files must be converted to a hex file format for download.

Refer to the **Converting and Downloading Static Web Pages** Help Guide at: http://www.precidia.com/products/documentation.html for complete instructions.

Accessing the Static Web Page

1. Ensure the Web Server in the Security Settings sub-menu is enabled.
2. Open your browser.
3. Type **http://IPaddressOfUnit/** in the address bar.

   The static Web page appears.

NOTE: *By default, your browser is directed to "index.html". To access a page with another file name, type the complete URL in the address bar of your browser. For example, to access a page called "mypage.html", type* **http://IPaddressOfUnit/mypage.html.**

Appendix A:Glossary of Terms and Acronyms

ARP *Address Resolution Protocol.* A TCP/IP protocol used to convert an IP address into a physical address, such as an Ethernet address. Defined in RFC826.

AT *Attention*, modem command prefix.

BpP *Bytes per Packet.*

bps *Bits per second.* The standard measure of data transmission speeds.

CGI *Common Gateway Interface*. A standard for running external programs from a World Wide Web HTTP server.

CPU *Central Processing Unit.*

CRC *Cyclic Redundancy Checking.* An error checking method that uses a 16 or 32-bit polynomial that is derived from, stored and transmitted, with a block of data, in order to detect corruption.

CSU *Channel Service Unit.* A device that performs protective and diagnostic functions for a telecommunications line.

CTS *Clear To Send.* A modem signal line (pin 8 of DB-9 connectors), used for hardware flow control. It is the counterpart to Request To Send (RTS). When the remote end is ready to receive data, it sends a CTS signal to the local computer to start transferring data.

DB-9 *DB-xx* is the designation for a series of port connectors for attaching devices to computers. DB-9 specifically is a standard 9-pin, D-shell connector, used for RS-232 serial communications.

DCD *Data Carrier Detect.* A modem signal line (pin 1 of DB-9 connectors).

DCE *Data Communications Equipment.* It is the interface that a modem or other serial devices use to exchange data with a computer.

DES *Data Encryption Standard.* A standard cryptography method that uses a 56-bit private key. DES performs encryption operations on 64-bit blocks of data in 16 rounds. DES was developed by IBM in 1977 and was considered "strong" encryption.

3DES *TripleDES* provides even stronger encryption than DES, by extending the 56-bit private key to 192 bits.

DHCP *Dynamic Host Configuration Protocol.* A protocol for assigning dynamic IP addresses to devices on a network.

DIN *Deutsches Institut für Normung E.V.*, a standards organization.

DLE *Data Link Escape*. Mnemonic for ASCII 16, a transmission control character that changes the meaning of a limited number of contiguously following characters or coded representations.

DSR *Data Set Ready.* A modem signal line (pin 6 of DB-9 connectors), used for RS-232 hardware flow control. It is the counterpart to Data Terminal Ready (DTR).

DSU *Data Service Unit.* A device that connects a terminal or computer to a digital line.

DTE *Data Terminal Equipment*. The interface used to exchange between computers.

DTR *Data Terminal Ready.* A modem signal line (pin 4 of DB-9 connectors), used for RS-232 hardware flow control. It is the counterpart to Data Set Ready (DSR).

Ethernet An industry standard local area network architecture that serves as the basis for IEEE 802.3. Ethernet uses a bus or star topology and supports data transfer rates of 10 and 100 Mbps.

ETX *End of Text*. Mnemonic for the ASCII 3 character, signaling the end of a text frame.

FCC *Federal Communication Commission.*

Gateway A device that enables data to flow between different networks, forming an Internet. In this case, a router connects two broadcast networks at the IP layer 3.

Hex *Hexadecimal*. It refers to a base-16 numbering system, as opposed to binary, which is a base-2 numbering system. Hexadecimal numbers consist of numbers 0-9, and letters A-F. Hexadecimal numbering is commonly used to express 8-bit binary numbers. One hexadecimal digit can represent the arrangement of four binary digits. Two hexadecimal digits can represent eight binary digits, or a byte.

HTTP *HyperText Transfer Protocol*. A stateless protocol used by the World Wide Web. HTTP defines how messages are formatted and transmitted, and which actions Web servers and browsers should take in response to various commands. Defined in RFC2616.

binary numbers, where a byte contains 8 bits. One hexadecimal digit can represent the arrangement of four binary digits. Two hexadecimal digits can represent eight binary digits, or a byte.

CMP *Internet Control Message Protocol.* An extension to IP, ICMP supports packets containing error, control, and informational messages. Defined in RFC792.

ID *Identification/Identifier/Identity.*

IEEE *Institute of Electrical and Electronic Engineers.*

I/O *Input/Output.*

IP *Internet Protocol.* The network layer for the TCP/IP protocol suite, widely used with Ethernet networks. IP is a connectionless, best-effort packet switching protocol. It provides packet routing, fragmentation and re-assembly through the data link layer. Defined in RFC791.

IP Address The notation that expresses the four-byte (32-bit) address as a sequence of four decimal numbers separated by dots. IP addresses are made up of four numbers from 0 to 255, separated by periods (e.g. 255.255.255.0).

IPsec *Internet Protocol Security.* A protocol providing security for transmission of sensitive information over unprotected networks, such as the Internet. IPsec acts at the network layer, protecting and authenticating IP packets between participating devices (peers), such as routers.

LAN *Local Area Network.* A data communications network which is geographically limited (typically to a 1 km radius), allowing easy interconnection of terminals, microprocessors and computers with adjacent buildings.

LRC *Longitudinal Redundancy Checking.* An error checking method that generates a parity byte from a specified string or block of bytes.

LSB *Least Significant Bit/Byte*. Bit zero, the bit in a binary number giving the number of ones, the last or rightmost bit.

MD5 *Message Digest 5*. An algorithm used to verify data integrity through the creation of a 128-bit message digest from data input. Defined in RFC1321.

MIB *Management Information Base.* A database of managed objects accessed by network management protocols. An SNMP MIB is a set of parameters which an SNMP management station can query, or set, in the SNMP agent of a network device (e.g. router).

ms *Milliseconds.*

MSB *Most Significant Bit/Byte.* Bit n-1 in a binary number with n bits, the bit with the greatest weight, the first, or leftmost bit.

PC *Personal Computer.*

PDU *Protocol Data Units.*

POS *Point of Sale.* Refers to financial transaction devices located directly in stores/ businesses, where the customer pays directly from their account.

Request For Comments. A series of technical documents and organizational notes about the Internet. See http://www.rfc-editor.org/

RTS *Request To Send*. A modem signal line (pin 7 of DB-9 connectors), used for hardware flow control. It is the counterpart to Clear To Send (CTS). When the unit is ready to receive data, it sends the RTS signal to the remote host to start transferring data.

SNMP *Simple Network Management Protocol.* A set of protocols for managing complex networks. SNMP sends messages, protocol data units (PDUs), to different parts of a network. SNMP-compliant devices, called agents, collect and store the data about themselves in MIBs. The agents then return this data to the SNMP requesters. Defined in RFC1157.

SPI *Security Parameters Index.* An optional 32-bit field found in an SRTP packet. It is used to distinguish among IP packets using IP security associations.

STX *Start of Text*. Mnemonic for ASCII 2, character that signals start of a text frame.

Subnet mask A bit mask used to identify which bits of an IP address correspond to the network address, and subnet portions of the address. The subnet mask has ones in positions corresponding to the network and subnet numbers, and zeros in the host number positions.

SVC *Switched Virtual Circuit*. A temporary virtual circuit that is set up and used only as long as data is being transmitted. Once the communication between the two hosts is complete, the SVC disappears.

TCP *Transmission Control Protocol.* TCP is the connection-oriented protocol built on top of Internet Protocol (IP) and is nearly always seen in the combination TCP/IP (TCP over IP). It adds reliable communication and flow-control and provides full-duplex, process-to-process connections. Defined in RFC793.

TFTP *Trivial File Transfer Protocol.* A simple file transfer protocol used for many purposes including downloading to diskless workstations.

UART *Universal Asynchronous Receiver-Transmitter.* A computer component (chip) that handles asynchronous serial communication.

UDP *User Datagram Protocol.* A connectionless protocol that, like TCP, runs on top of an IP network. Unlike TCP, UDP provides no error recovery services, offering instead, a direct way to send and receive datagrams over an IP network.

URL *Uniform Resource Locator.* The global address of documents and other resources on the global Internet.

VPN *Virtual Private Network.* A VPN uses a public telecommunication infrastructure, such as the Internet, to provide remote offices or individual users with secure access to their organizations' networks. VPN maintains privacy through security procedures and tunneling protocols.

Appendix B:Troubleshooting and Support

First Steps

1. Configure the unit with the correct settings. Follow the procedure in the figure on the following page (B-2) to troubleshoot Configuration screen access.

2. Ensure that you are using the correct serial cables and that all cables are properly connected and in good working order.
   - If you are connecting the iPocket*232* to a DTE (Data Terminal Equipment) device or using it as a modem replacement, use an RS-232 serial cable.
   - If you are connecting the iPocket*232* to a DCE (Data Communication Equipment) device, use a null modem serial cable.

3. If you know the IP address of the unit, you can check the network connection by pinging the unit. (See Check IP Address (Ping) on page B-3.)

4. Check the indicator lamps on the front panel of the unit and use the indicator lamp tables in this appendix to diagnose the problem.

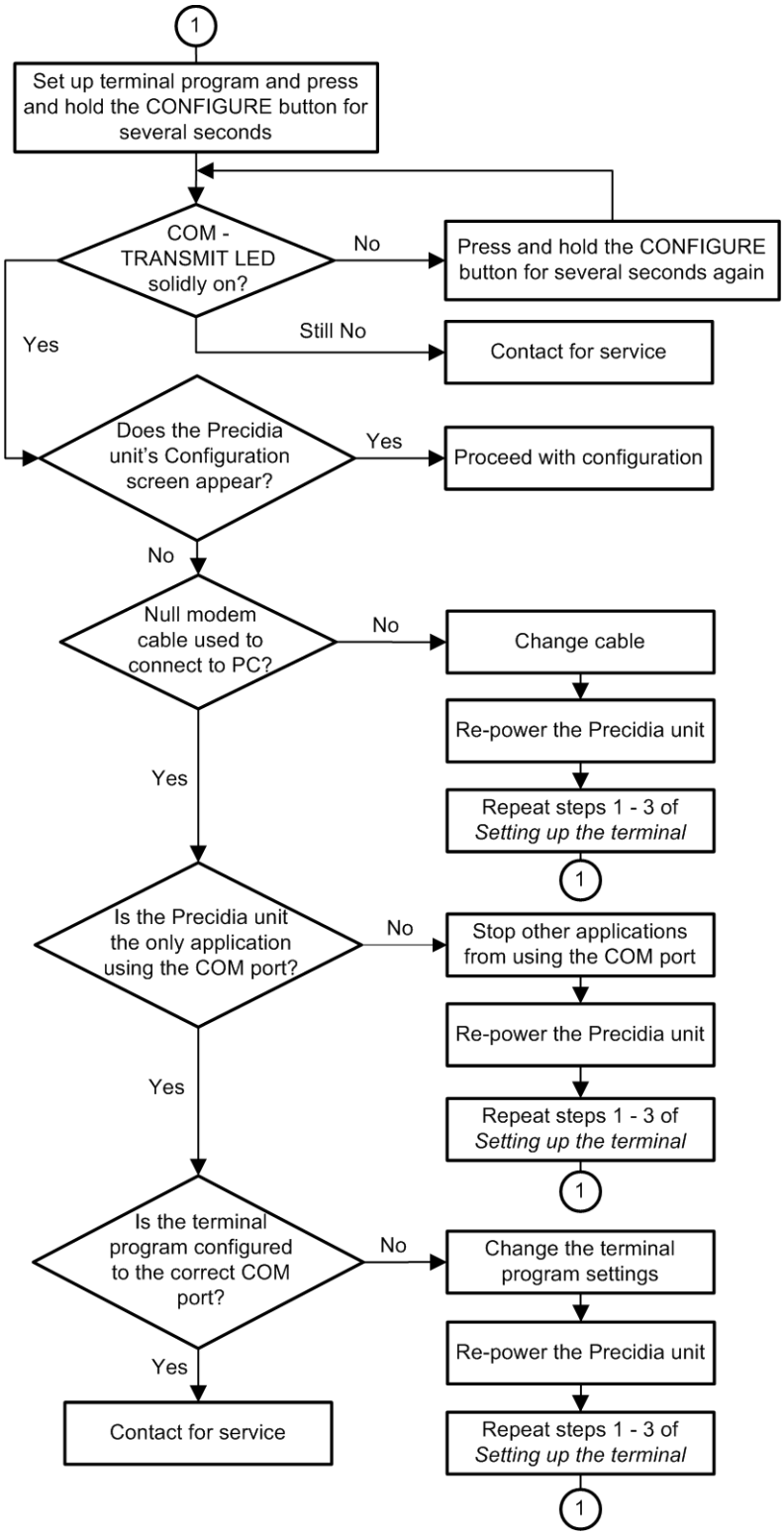
5. If, after following the suggestions in this guide, you are still having problems accessing configuration or gaining connectivity, you can contact Precidia support.

   Fill out the Service Request Form at:
   http://www.precidia.com/support/service_request.html
   and a support representative will contact you within one business day.

   General information, User Guides and Help Guides available at:
   http://www.precidia.com/

   See Appendix C: Specifications and Warranty for warranty information.

Troubleshooting Configuration Access



Troubleshooting Flow for Set-Up Connection

Check IP Address (Ping)

Use ping to check if the iPocket*232* is correctly configured on the network. If you cannot reach the iPocket*232* using Ping, the iPocket*232* is either incorrectly configured or there is a network problem.

To "ping" the iPocket*232*:

1 Open the MS-DOS Prompt. (Usually found under Start>Programs)

2 At the C:\WINDOWS> prompt type **ping** and the **IP address** you want to check.

- If you get **Reply** messages, the iPocket*232* has a valid connection to the network.
- If you get a **Request timed out** message, the iPocket*232* is incorrectly configured with the IP address, or you have a network connection problem.

NOTE: *You can also use ping to check if an IP address is already in use on your network, before assigning it to a new unit.*

Basic Troubleshooting

Table B.1: Basic Troubleshooting

Problem	Solution
The Configuration screen does not appear when I press the CONFIGURE button	1 Follow the troubleshooting flow diagram on the previous page (B-2). 2 Ensure your terminal software is set to 9600 bps 3 Ensure you are pressing and holding the CONFIGURE button for at least 2 seconds
I can't access the unit using telnet	1 Ensure the unit is active on the network (check by pinging or viewing the status page locally) 2 Set a Remote Password
I only see strange characters in the terminal window when I press the CONFIGURE button	Ensure the terminal software is set to 9600 bps.

Table B.1: Basic Troubleshooting

Problem	Solution
The TRANSMIT lamp illuminates but nothing appears on the terminal screen when I press the CONFIGURE button	1 Check the terminal settings. Ideal settings are 9600 bps, 8 data bits, no parity, 1 stop bit, hardware flow control 2 Check that the terminal is configured to the correct Com port on your PC 3 Check that you are using a null modem cable to connect the unit to your PC 4 Unplug the unit and plug it back in 5 Try again
I completed set-up with 2 units, but they do not appear to be communicating	1 Ensure IP Address, Subnet Mask, and Gateway are configured or automatically obtained 2 Ensure the Local Port setting on each unit matches the Remote Port on the other unit
I'm trying to connect my serial device to my PC over the LAN/WAN	You need to use Com Port Redirector software on your PC and the ComPort Control Connection Control setting for the iPocket*232*.
What are the pinouts for the unit?	See "Connector Pinouts" on page E-1.
The unit is not connecting to the network	Ensure the IP Address, Subnet Mask, and Gateway are correctly configured. This can be done manually, or through a DHCP server.
The unit is not communicating with the serial device	1 Ensure all cables are properly connected 2 Ensure the proper cable is used. 3 Ensure you have a configured a Protocol for the Serial Port and any other necessary settings
I lost the Console Password and I cannot access Configuration	1 If you have defined a Remote Password, access the unit through telnet and view or change the Console Password 2 See page 14 of the User Guide for instructions on how to reset the entire configuration to factory default settings, erasing all passwords
The unit is not responding on the network.	Check that your cable length falls within the standards set out in IEEE 802.3. For 10BaseT cables, the maximum distance that the cable can travel, before signal degradation occurs, is 328 feet / 100 meters.

Table B.1: Basic Troubleshooting

Problem	Solution
I lost the Console Password and I cannot access Configuration	1 If you have defined a Remote Password, access the unit through telnet and view or change the Console Password 2 See page 14 of the User Guide for instructions on how to reset the entire configuration to factory default settings, erasing all passwords
I lost the Console Password and I cannot access Configuration	1 If you have defined a Remote Password, access the unit through telnet and view or change the Console Password 2 See page 14 of the User Guide for instructions on how to reset the entire configuration to factory default settings, erasing all passwords

Indicator Lamps (LEDs)

ETHERNET – LINK lamp

Illuminates when the Ethernet port has a 10BaseT Ethernet network connection.

Table B.2: LINK Lamp Troubleshooting

Lamp	Status	Standard Troubleshooting Procedure
On	**OK - Ethernet connection in place**	None ***NOTE:*** *This light may be on if the iPocket232 is not configured.*
Off	**No Ethernet connection**	• Ensure the Ethernet cable is properly plugged into the iPocket*232*. • Ensure the Ethernet cable's opposite end is properly plugged into your LAN hub. ***NOTE:*** *The hub also has Link lamps that will provide further troubleshooting information.*

ETHERNET – TRANSMIT lamp

Flashes when the iPocket*232* is sending or receiving data via the Ethernet port. Normally you will see very short data bursts.

Table B.3: TRANSMIT Lamp Troubleshooting

Lamp	Status	Standard Troubleshooting Procedure
Flashing	**OK - data is being transmitted**	None
Off	**No data is being transmitted**	Ensure the Ethernet cable between the iPocket*232* and the Ethernet device is properly connected

SERIAL – TRANSMIT lamp

Illuminates when the iPocket*232* is sending or receiving data via the serial port Normally you will see very short data bursts.

Table B.4: SERIAL TRANSMIT Lamp Troubleshooting

Lamp	Status	Standard Troubleshooting Practice
On	**OK - In configuration mode**	Finish configuring the iPocket*232* and exit from configuration mode.
Flashing	**OK - data is being transmitted**	None
Off	**No data is being transmitted**	• Ensure the serial cable between the iPocket*232* and the serial device is properly connected • Was the configuration recently changed? Look at the System Status page to check the system uptime. If it is a short period, check the configuration of the iPocket*232* to see if it has been modified recently. Please refer to Sections 3 and 4 for further information.

SERIAL – STATUS lamp

This lamp indicates the status of the network connection.

Table B.5: SERIAL STATUS Lamp Troubleshooting

Lamp	Status	Standard Troubleshooting Practice
On	**Network connection is established**	None
Slow Flash	**OK - no activity present**	None
Fast Flash	**OK - attempting connection to remote host**	None
Off	**Unit may be incorrectly connected or configured**	• Ensure cable between the iPocket*232* and the RS-232 device is properly connected with the correct serial cable • Check configuration of unit

Service and Support

Fill out the Service Request Form at

http://www.precidia.com/support/service_request.html

and a support representative will contact you within one business day.

General information, User Guides and Help Guides available at

http://www.precidia.com/

See Appendix C, Specifications and Warranty, for warranty information.

Appendix C:Specifications and Warranty

iPocket*232* Specifications

Serial interface:	RS-232 DCE Interface
Serial connector:	DB-9 female
Serial speed:	300 – 115 200 bps
Device support:	RS-232 asynchronous serial devices with 7- or 8-bit data, with or w/out parity
Ethernet interface:	Ethernet, IEEE 802.3, 10baseT
Ethernet connector:	RJ-45
Ethernet speed:	10 Mbps
Indicators:	Ethernet (link, transmit), Serial (transmit, status)
Protocols/Services:	ARP, ICMP, UDP, TCP, IP, HTTP, telnet, TFTP, Com Port Control (RFC2217), SNMPv2c, FTP, IPsec (manually keyed)
Configuration:	Serial interface protocol and IP addresses for device, subnet mask, gateway router, and destination
Security:	IPsec (manually keyed), and Web, Remote and Console password protection
Power adapter:	9V DC external, 300mA (power req. 8.5V, 200mA)
Operating temp.:	0-50ºC / 32-125ºF
Dimensions (l x w x h):	85 mm x 45 mm x 24 mm / 3.33” x 1.75” x 0.95”
Weight:	55 g / 1.94 oz. 285 g / 10.05 oz. (incl. power supply)

Warranty

Precidia products are warranted against manufacturing defects in materials and workmanship for a period of one year. This warranty is conditional on the unit being installed and used as directed in the User Guide. The warranty is extended to cover the iPocket*232* as well as the power adapter.

Precidia's obligation under this warranty shall be limited to the repair, including all necessary parts and the cost of labour connected therewith, or at our option the exchange of a unit, which shows manufacturing defect within the warranty period with a like new unit.

Customer obligations

The customer is responsible for transportation to the service depot and any applicable brokerage fees.

Warranty exclusions

This warranty shall not apply to appearance or any accessory items including but not limited to cables. This warranty shall, in addition, not apply to damages due to handling, transportation, and unpacking. The warranty also does not extend to cover any malfunction caused by, or resulting from, abnormal environmental conditions, unauthorized service, improper maintenance, modifications or repairs by the customer, abuse, misuse, neglect, accident, fire, flood, or other acts of nature, or incorrect line voltage.

The customer may have other rights under existing state/provincial or federal laws, and where such laws prohibit any terms of this warranty, they are deemed null and void, but the remainder of the warranty shall remain in effect.

Service and Support

Fill out a service request form at:

http://www.precidia.com/support/service_request.html

and a support representative will contact you within one business day.

General information, user guides and help guides available at

www.precidia.com

Appendix D:Connecting with Telnet

Before you can access and reconfigure Precidia products remotely, you must configure the following settings locally:

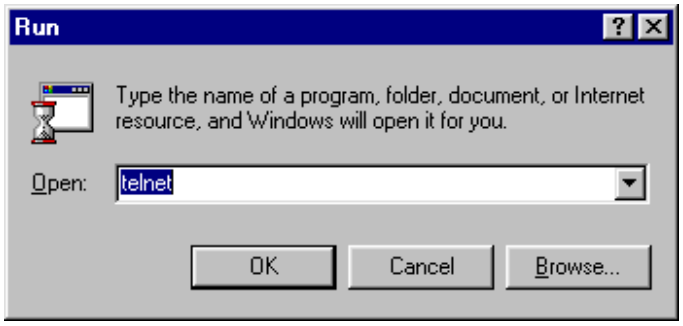
- the IP Address and Subnet Mask (or automatically with DHCP)
- the Gateway address if necessary (or automatically with DHCP)
- the Remote Password

Refer to the User Guide for more information on configuring these settings.

To connect to the iPocket*232* remotely using Telnet:

1 From the **Start menu**, select **Run...**

The Run window appears.

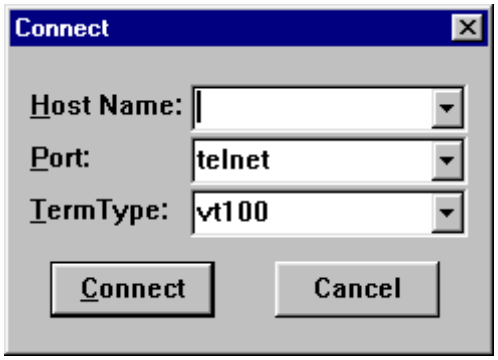


2 Type **telnet** in the Open field and click **OK**.

The Telnet application window appears.

3 From the **Connect** menu, chose **Remote Systems...**

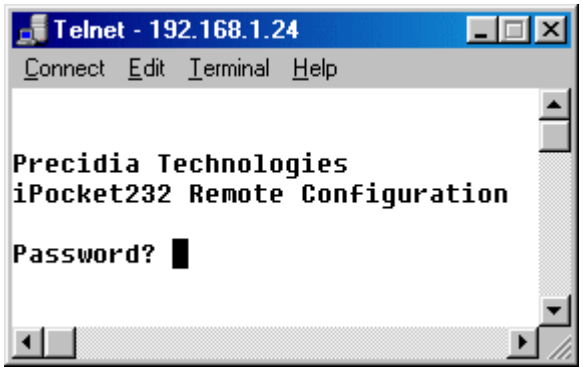
The Connect window appears.



4 Type the **IP address** of the unit in the Host Name field, and choose **Telnet** in the Port field.

5 Click **Connect**.

You are prompted to enter your password in the Telnet window.



6 Type the **Remote Password** you created during local configuration, and press **Enter**.

The Configuration screen appears in the Telnet window.

If you typed an invalid password, the connection to the host will be dropped. Ensure you have the correct IP address and Remote Password, and go back to Step 3.

NOTE: *The Remote Password is case sensitive.*

Appendix E:Pinouts and Power Supply

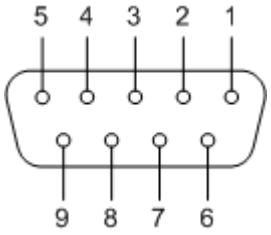
Connector Pinouts

Straight Through Modem Serial Cable

DB-9 Male	DB-9 Female
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

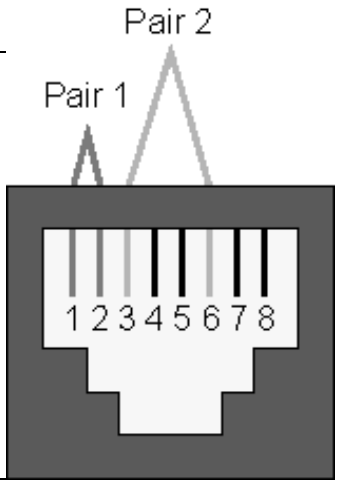
Serial Port Pinout (DB-9 Female)

Pin	Signal	Type
1	Data Carrier Detect (DCD)	Out
2	Transmit Data (TD)	Out
3	Receive Data (RD)	In
4	Data Terminal Ready (DTR)	In
5	Signal Ground (GND)	Power
6	Data Set Ready (DSR)	Out
7	Request to Send (RTS)	In
8	Clear to Send (CTS)	Out
9	No Connect/Power	Out



ETHERNET Port Pinout (RJ-45)

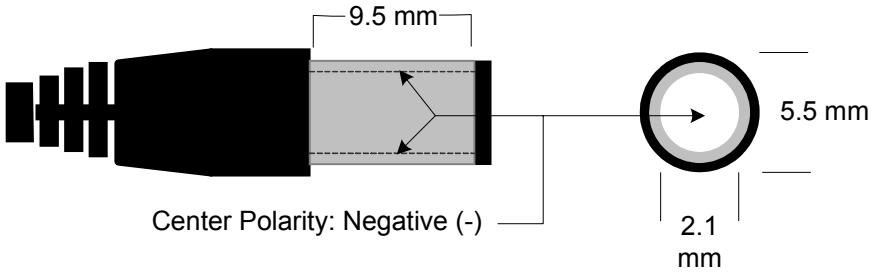
Pin	Signal	Type
1	Transmit positive (TX +)	Out
2	Transmit negative (TX-)	Out
3	Receive positive (RX+)	In
4	NC	—
5	NC	—
6	Receive negative (RX-)	In
7	NC	—
8	NC	—



Power Supply

Customers in North America are supplied with an AC power adapter conforming to the specifications below. Customers in other parts of the world should obtain a power supply that meets these requirements.

Output Voltage:	9 VDC @ 300 mA
Polarity:	Center Pin Negative (-)
	
Inside Diameter:	2.1 mm
Outside Diameter:	5.5 mm
Barrel Length:	9.5 mm
Class 2 Transformer	



Appendix F:Modem Connection Control

Modem Connection Control is available with the Precidia's Remote Access products. The iPocket*232* is slightly different since it is a DCE device and drives the DCD signal. When you choose **Modem** as the method of Connection Control, the iPocket*232* behaves like a Hayes, or "universal" modem to the device connected on its serial port. The connected serial device (DTE) receives the expected modem replies when communicating with the iPocket*232*. For further information on setting Modem Connection Control, see "Connection Control" on page 27.

iPocket*232* Modem Overview

AT commands direct a modem to dial, answer, hang-up, and perform many other communication tasks. All commands listed, except A/ and +++, must be preceded by AT, followed by a carriage return. You can include multiple commands on a command line, as long as the command does not exceed 80 characters when including the prefix and carriage return. Spaces are ignored. Commands following a command that opens, or closes an active connection, are ignored.

A Dial command (ATD) instructs the modem to attempt a connection to the specified IP address and port number, or, if none is specified, to the configured Remote IP in the Serial Port Settings sub-menu.

An On-Line command (ATO) instructs the modem to return to its active connection. If there is no active connection, the modem attempts to establish one using the configured Remote IP and Remote Port.

An Answer command (ATA) instructs the modem to listen on a specified port number. If no port number is specified, the configured local port number is used. If the local port is not set, the standard telnet port (23) is used.

The escape sequence (+++) causes the modem to return to command mode from answer or dial states, keeping the active connection open. An on-off transmission on the DTR line also causes the modem to return to command mode. In this case, the active connection may be maintained or closed, depending on how AT&D2 is defined.

The modem must be in command mode to receive commands. Any command, other than the escape sequence (+++), that is sent to the modem while it is in transmission mode, is transmitted as data.

NOTE: *If any characters arrive from the DTE while the modem is executing a command, such as ATA or ATD, that command is aborted.*

Supported AT Commands

Precidia supports a subset of the standard Hayes command set, and a selection of extended commands, including the ability to initiate and perform FTP and HTTP transfers (see page F-10).

NOTE: *You can test the iPocket232 modem, when not in configuration mode, by typing AT commands in your terminal software (HyperTerminal, Procomm Plus).*

NOTE: *Only the options listed under Parameters are valid. Any unsupported standard command options return an OK result. Any unsupported non-standard commands return an error result. Options not required are ignored.*

The following two tables describe the supported standard AT commands and the extended AT& and AT+ commands:

Table F.1: Supported Commands

Command Syntax	Description	Parameters
A*[pppp]*	**ANSWER** Allows the iPocket*232* modem to listen for a connection, or accept a connection on the provided port [pppp]. Successful connection returns a "CONNECT <speed>" message. Otherwise, the modem waits indefinitely, or until a key is pressed to cancel. If no port number is specified, the modem uses the configured Local Port. If Local Port is 0, the modem uses the standard telnet port (23). The modem provides a "RING" message when an incoming connection is received and auto-answer is not active. ***NOTE:*** *A telnet program is already listening on port 23 if the Remote Password has been set. If this command is also input, you will get an "ERROR" message.*	[pppp] The listening port number, range 0-65535
D*string*	**DIAL** Attempts a connection to the specified IP address. If the IP is specified, but port is not, the modem uses the telnet port (23). If a dial string is invalid or not specified, the modem uses the Remote IP and Remote Port. If Remote Port is 0, the modem uses the Fallback IP and Fallback Port.	string = aaa.bbb.ccc.ddd:pppp aaa.bbb.ccc.ddd is the IP address in standard notation pppp is the port number (0-65535) Note: Any non-digit can replace the "." or ":".
DS=*n* *or* **DS*n***	**DIAL STORED** Attempts a connection to a stored IP address and port number.	n = 0 (or no option present) uses Remote location n = 1 uses Fallback location
E*n*	**ECHO** Allows host commands to be echoed.	n = 0 (or no option present) will disable echo n =1 enables command mode echo (default)

Table F.1: Supported Commands

Command Syntax	Description	Parameters
H*n*	**HOOK** Closes an open connection.	n = 0 (or no option present) will close an open connection.
I*n*	**INQUIRY** Displays information about the iPocket*232*.	n = 0 returns the product name n = 1 returns the product name, the company name, version string and Device ID n = 2 returns the information listed above, plus the IP addresses for device information, status, log history, company information and support.
O	**ONLINE (Go on-line)** Will return to an active connection if one exists (escaped from via the "+++" command) or originate a connection to the configured Remote host.	none
Q*n*	**RESULT CODES DISPLAY** Allows you to choose whether result codes are displayed after each command.	n = 0 (or no option present) returns result codes n = 1 will not return result codes
S*r*=*n*	**SET REGISTER** Set value of register r to n.	r = register number Note: r cannot be greater than 14. Register S13 is reserved. See , S-Registers, on page 8.. n = value to assign
S*r*?	**DISPLAY REGISTER** Inquiry about value of register r.	r = register number

Table F.1: Supported Commands

Command Syntax	Description	Parameters
V*n*	**RESULT CODES FORMAT** Choose how result codes are returned.	n = 0 (or no option present) displays result codes in numeric form n = 1 displays result codes in verbose (text) form (default)
Z	**RESET** Closes any active connection and resets the S-registers to their saved values.	none

Table F.2: Extended AT& and AT+ Commands

Command Syntax	Description	Parameters
&C*n*	**DCD CONTROL** Controls the behavior of the DCD line.	n = 0 sets the DCD line as always active n = 1 sets the DCD line to follow the connection status (default)
&D*n*	**DTR CONTROL** Sets how the iPocket*232* will react to changes in the DTR signal.	n = 0 ignore n = 1 DTR on-off transition returns modem to command mode and maintains the connection n = 2 DTR on-off transition returns modem to command mode and closes the connection (default) n = 3 on-off transition returns the modem to command mode, closes the connection, and resets the S-registers and command options to saved values (as with ATZ)
&F	**LOAD FACTORY SETTINGS** Loads the default settings for commands and S- registers.	none

Table F.2: Extended AT& and AT+ Commands

Command Syntax	Description	Parameters
&H*n*	**FLOW CONTROL** Sets the type of flow control used. The default is set in configuration.	n = 0 disables flow control n = 1 selects hardware (CTS/RTS) flow control n = 2 selects software (XON/XFF) flow control
&S*n*	**DSR CONTROL** Sets how the modem drives the DSR signal.	n = 0 (or no option present) sets the DSR line as always active (default) n = 1 sets the DSR line to follow the connection status
&V	**VIEW PROFILE SETTINGS** Displays the command and S-register settings.	none
&W	**SAVE CONFIG** Writes the current configuration settings into memory. Includes the S-register values, command options, IP addresses and port numbers.	none
&Z?	**DISPLAY NUMBERS** Returns the currently configured Remote IP and Remote Port as "Stored Host #1: xxx.xxx.xxx.xxx:pppp" and the Fallback IP and Fallback Port as "Stored Host #2: xxx.xxx.xxx.xxx:pppp".	none
&Z*n*=*s*	**STORE NUMBER** Stores an IP address and port number (in the form xxx.xxx.xxx.xxx:pppp) into either the Remote IP and Port or Fallback IP and Port locations.	n = 0 Stores as Remote IP and Port (primary location) n = 1 Stores as Fallback IP and Port

Table F.2: Extended AT& and AT+ Commands

Command Syntax	Description	Parameters
+B*n*	**FALLBACK HOST** Enables or disables switchover to a fallback host in case of primary host connection failure. An ATD command always attempts a connection with the Remote IP (primary host). If FallBack IP is configured and enabled, upon failure to connect with the Remote IP the next ATD command attempts a connection with the Fallback IP. Regardless of whether a connection is established, the next ATD command reattempts a connection to the Remote IP.	n=0 Disables switchover to fallback host. n=1 Enables switchover to fallback host.
+H*n*	**NETWORK CONTROL** ***NOTE:*** *For IP232 and Cell 232Plus only.* Establishes or drops PPP connections to the configured host.	n = 0 (or no option present) Terminates PPP connection n = 1 Establishes PPP connection
+P*string*	**FTP PUT / HTTP PUT** Upload from Precidia modem to an FTP or HTTP server.*	string = ftp://[userid[:password]@]ipadr[:port]/path/file.ext
+G*string*	**FTP GET / HTTP GET** Download from an FTP or HTTP server to the Precidia modem.*	string = ftp://[userid[:password]@]ipadr[:port]/path/file.ext

* See page 9 for a description of FTP/HTTP procedures.

Escape to Command Mode

The modem can be moved into command mode in one of two ways: sending the sequence (*pause*, +++, *pause*) to the serial port, or dropping the DTR signal (AT&D*n*).

The first method, sending an escape sequence, moves the modem into command mode but keeps the connection active. The default escape character is "+" and is stored in register S2. The default pause value is the value of register S12 (20) multiplied by 20ms. You can change the defaults by setting the registers with your own values.

The second method, dropping the DTR signal, is not supported by hardware platforms that do not have a wire for the DTR signal. Additionally, the reaction to the DTR signal depends on how you configure the DTR setting using the &D*n* command. See &D*n* on page E-4 for DTR settings.

S-Registers

Basic S-registers (S0–S12) store information used by the modem and communication software. Basic S-registers have predefined values. Extended S-registers (S13+) are used for storing command option values. The following table summarizes the values and purpose of Precidia-supported S-registers.

Table F.3: Precidia S-Register Definitions

"S" Register	Default (decimal)	Purpose
0	0	Zero value disables auto-answer. Any non-zero value enables auto-answer.
1	0	Unused.
2	43	Defines escape character. (+)
3	13	Defines carriage return. Cannot be changed.
4	10	Defines line feed. Cannot be changed.
5	8	Defines backspace.
6	3	Unused.
7	60	Unused.
8	2	Unused.
9	6	Unused.
10	7	Unused.
11	70	Unused.
12	50	Defines guard time in 20 ms increments.
13	—	Reserved.
14	3	FTP/HTTP timeout in seconds to a maximum of 60.

Result Codes

A result code is returned after each command sequence. The modem is set by default to return result codes in verbose format. Result code format is set using the "V*n*" command.

Numeric result codes display as: Numeric Code<CR>. Verbose result codes display as: <CR><LF>Verboce Code<CR><LF>.

Unsupported basic and extended (&) commands return the "OK" result code. Command sets starting with *, +, or # (other than those in Table F.2) return the "ERROR" result code. The following table summarizes the possible codes that result from AT commands.

Table F.4: Result Codes

Code	Verbose	Meaning
0	OK	Command executed without error.
1	CONNECT	Active connection established with host.
2	RING	A connection to the local port is requested.
3	NO CARRIER	Connection refused, broken, or closed.
4	ERROR	Illegal command. Error in command line.
5	CONNECT 1200	Active connection established with host, connection speed in bps.
6	NO DIALTONE	Unable to make a connection attempt.
7	BUSY	Unused.
8	NO ANSWER	No response from host.
10	CONNECT 2400	Active connection established with host, connection speed in bps.
13	CONNECT 9600	Active connection established with host, connection speed in bps.
18	CONNECT 4800	Active connection established with host, connection speed in bps.
85	CONNECT 19200	Active connection established with host, connection speed in bps.

NOTE: *For speeds of 300, 600, 38 400, and 57 600 bps, code "1" is returned.*

Using the FTP/HTTP Client

The iPocket*232* modem supports an FTP and HTTP client through the use of proprietary extended AT commands. FTP is defined in RFC959 and HTTP is defined in RFC2616 (available at http://www.rfc-editor.org/).

Configuration

You must configure the iPocket*232* Ethernet (IP Address, Subnet Mask, Gateway) or PPP Dial-up settings (Modem Dial, Login Userid, Modem Chat-script). You also need to configure the Serial Port settings (Protocol, Port Speed, Connection Control), and set Connection Control to **Modem**.

NOTE: *To initiate a file upload, the extended AT command uses the same standard URL format used for FTP in Web browsers.*

Extended FTP AT Commands

Table F.5: FTP Commands

Command Syntax	Description	Parameters
+Pstring	**FTP PUT / HTTP PUT** Upload from iPocket*232* modem to an FTP or HTTP server.	string = ftp://[userid[:password]@]ipadr[:port]/path/file.ext
+Gstring	**FTP GET / HTTP GET** Download from an FTP or HTTP server to the iPocket*232* modem.	string = ftp://[userid[:password]@]ipadr[:port]/path/file.ext

FTP / HTTP Transfers

The "userid", "password", and "port" fields can all be omitted; default values of "anonymous", "serialport@precidia.device", and "21" (FTP) or “80” (HTTP) are used.

When the DTE device gets a **CONNECT** result, it streams data to the serial port and the iPocket*232* modem will send that data as an FTP or HTTP file transfer to the server.

The transfer is considered complete when there is no data from the terminal for the number of seconds specified in register S14, or the DTR line is dropped (hung-up).

Upon completion, an **OK** result is sent back to the DTE, and the iPocket*232* modem returns to command mode. Note that &D must be set to 1, 2, or 3 for dropping DTR to function correctly.

If there were any errors during the transfer the iPocket*232* modem sends an **ERROR** message.

Any characters received on the serial port before the **CONNECT** message will terminate the connection attempt (just as they would on a standard ATD command).

Result Codes

The CONNECT result code appears when the FTP/HTTP session is established and the iPocket*232* modem is ready to move data. Possible result codes are described in the following table.

Table F.6: FTP Result Codes

Result Code	Meaning
CONNECT	FTP/HTTP session established.
NO CARRIER	Connection is broken or closed
NO DIALTONE	No route exists to the requested host
NO ANSWER	Host ignored or refused the connection
ERROR	Bad URL, user, password, etc.

Tips

- If you put a “1” after the +P, but before the URL string, the connection will be "verbose", and all connection messages from the server will also appear on the serial port. Useful for troubleshooting.
- We recommend placing "&H1" between the "AT" and the "+P" or "+G" to make sure that hardware handshaking is enabled before sending data. This option can also be explicitly set in the iPocket*232* configuration.