Ethernet Interface Adapter

User's Guide

Boundless
TECHNOLOGIES

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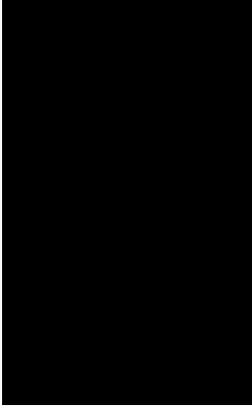
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The Ethernet Terminal consists of a standard Boundless Technologies text terminal with an adapter installed. The terminal's EIA port is re-configured as a 10BaseT (Twisted-Pair) Ethernet port replacing the terminal's EIA RS-232 communications port. The adapter provides the text terminal with a single Telnet session. (Telnet is an application providing terminal emulation connectivity for logging on to a remote system.)
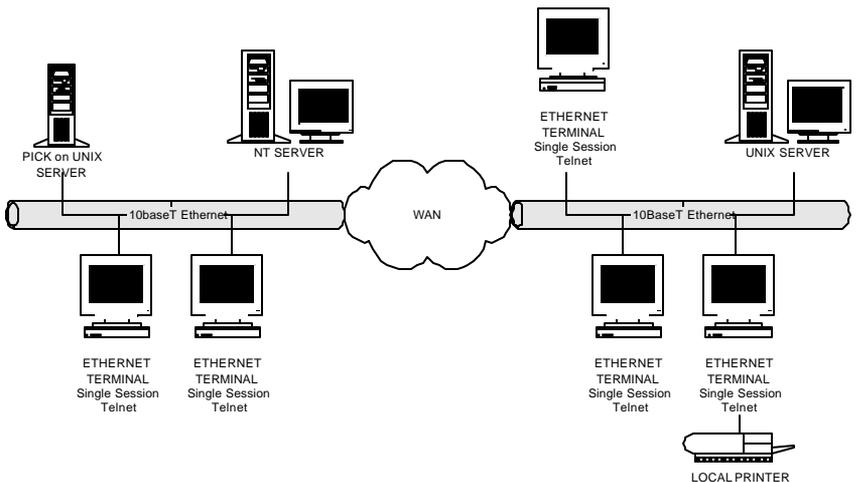
The adapter provides 802.3 Ethernet connectivity, TCP/IP host connectivity, and Telnet application connectivity.

Configuring The Terminal

In order for the adapter to function successfully, the terminal should be configured as follows:

Data Format

8 data bits
1 stop bit
No parity

EIA Baud Rate

38400

EIA Communication Protocol

None
Xon/Xoff
DTR/DSR
Both

NOTE

This setting should match the Comm Protocol setting of the adapter (see page 9). If the adapter's Comm Protocol is set to None, the terminal could lose data.

Emulation

This adapter works with all the standard terminal emulations. However, the **host emulation** should match the **terminal emulation.**

For example, a user logs on to a UNIX system, and selects the host emulation to be AT386 (using the command TERM=AT386 <CR> followed by set TERM<CR>). At this point, the user must make sure that the terminal emulation is also set to AT386 (by entering the **terminal** setup and checking the emulation parameter).

NOTE

A terminal in **PC-Term** emulation with **Scan Code** mode on, can not navigate the adapter setup menu. Change the key mode to ASCII or change the terminal emulation to other than PC-

Term during the setup navigation. Once the adapter is setup and running, you can change the terminal's and host's emulation back to **PC-Term.**

Startup Sequence

When the terminal is turned on, it performs an initial adapter diagnostic test and displays a message indicating the result of that test.

◊   Ethernet pass indicates that the test was successful and the card is functioning properly.

◊   Ethernet check xxh means that the diagnostic test has failed (see table labeled *Diagnostic Results* below).

◊   The Ethernet check may also be followed by the message FATAL ERROR. MAC address failure, contact technical support. This message indicates that the card's MAC address has been corrupted beyond software recovery. Record all error information and contact your Technical Support Department for assistance (see the inside of the back cover for details).

NOTE

The adapter will continue to operate after these error messages, however there is no guarantee that the unit will be able to connect to a host.

If the EEPROM checksum fails, all IP addresses are set to 0.0.0.0, Poweron Connect to No, and Comm Protocol to Both.

Diagnostic Results	

Check 01h
  RAM problem
	Check 09h
	  MAC and RAM problem

Check 02h
  ROM problem
	Check 0Ah
	  MAC and ROM problem

Check 03h
  RAM and ROM problem
	Check 0Bh
	  MAC, RAM and ROM problem

Check 04h
  NVRAM problem
	Check 0Ch
	  MAC and NVRAM problem

Check 05h	Check 0Dh
NVRAM and RAM problem	MAC, NVRAM and RAM problem
Check 06h	**Check 0Eh**
NVRAM and ROM problem	MAC, NVRAM and ROM problem
Check 07h	**Check 0Fh**
NVRAM, RAM and ROM problem	MAC, NVRAM, ROM and RAM
Check 08h	
MAC problem	

Displaying the Ethernet Interface Main Menu

If the Poweron Connect mode is Off (see page 8) at the conclusion of the startup diagnostics, you can press any key to enter the setup menu.

NOTE

Note that the Main Menu is accessible only when the terminal is disconnected from the host.

If the Poweron Connect mode is On, the card will automatically try to connect to the host.

```
            - MAIN MENU -
Status > Disconnected from Host
Host IP Address > XXX.XXX.XXX.XXX
1.  Setup Menu
 2.   Connect to Host
 3.  Ping
 4.  Hardware Information
  -------------------------
9.  Exit Main Menu
```

As shown in the illustration above, the Main Menu provides the following functions:

◊ Selection 1 (Setup Menu) allows you to configure the Ethernet interface.

◊   Selection 2 (Connect to Host) allows you initiate or terminate the Telnet connection to the host.

◊   Selection 3 (Ping) allows you to test the host connection by sending and receiving predefined test messages.

◊   Selection 4 (Hardware Information) allows you display the results of the initialization diagnostics as well as hardware information about the adapter.

◊   Selection 9 allows you exit the Main Menu and clear the Setup Menu. The Ethernet interface will wait for the next key (any key) to activate the Main Menu.

Configuring the Ethernet Interface

The procedures detailed in the following sections require some site-specific configuration information that must be supplied by your local network administrator. Before attempting to configure the Ethernet interface, make sure you have access to the following communication parameters:

◊   IP address of the terminal
◊   IP address of the host
◊   IP address of the default gateway (if any)
◊   value for the subnet mask

To configure the terminal's Ethernet interface, you must first select option number 1 (Setup Menu) from the Main Menu. The terminal displays the following Setup Menu. Initially, selections 1 through 4 are shown with their default values (0.0.0.0).

```
              - SETUP MENU -
.   Edit Host IP addr          0.0.0.0
2.   Edit Local IP addr                   0.0.0.0
3.   Edit Subnet Mask                     0.0.0.0
4.   Edit Default Gateway                 0.0.0.0
5.     Poweron Connect (Toggle) = No
6.     Comm Protocol (Toggle) = Both
             -----------------------
7.   Recall Saved Settings
8.   Save Settings for Powerup
9.   Return to Main Menu
```

Edit Host IP Address

To define your host IP address, select option number 1. When
prompted, enter the host's IP address in dotted-decimal format
as shown in the following example:

Enter Host IP address > *175.55.172.90* ↵

In this document, all user entries are displayed in italics with
the Enter key represented by a ↵ symbol as shown in the
previous example.

If a valid address is entered, the terminal stores the
information in its working memory and returns to the Setup
Menu with the Edit Host IP addr field updated.

```
            - SETUP MENU -
1.  Edit Host IP addr              175.55.172.90
2.  Edit Local IP addr             0.0.0.0
3.  Edit Subnet Mask               0.0.0.0
4.  Edit Default Gateway           0.0.0.0
5.  Poweron Connect (Toggle) = No
6.   Comm Protocol (Toggle) = Both
          -----------------------
7.  Recall Saved Settings
8.  Save Settings for Powerup
9.  Return to Main Menu
```

If an invalid address is entered, the terminal responds with an error message and prompts the user for the address again. For example:

```
Enter Host IP address > 175.55. ↵
Invalid entry: Format ###.###.###.###
Enter Your Choice: Host IP address >
```

Edit Local IP Address

To define your terminal IP address, select option number 2. When prompted, enter the terminal's IP address in dotted-decimal format as shown in the example below:

```
Enter Host IP address > 204.172.55.121 ↵
```

If a valid address is entered, the terminal stores it in its working memory and returns to the Setup Menu with the Edit Local IP Addr field updated.

If an invalid address is entered, the terminal responds with an error message and prompts the user for the address again.

Edit Subnet Mask

The *subnet mask* is a specific sequence of numbers that determines which part of an IP address is the network portion and which is the host portion.

To set the subnet mask for your terminal, select option number 3. When prompted, enter the subnet mask in dotted-decimal format as in the example below:

> Enter Subnet Mask >*255.255.255.0* ⮐

If a valid address is entered, the terminal stores it in its working memory and redisplays the Setup Menu with the Edit Subnet Mask field updated.

Edit Default Gateway

In a multi-network environment, a *gateway* is a host that forwards or exchanges packets of information between two or more networks. All traffic whose destination address cannot be found on the local network is sent to the IP address of the default gateway for routing to other networks.

To set the default gateway address for your terminal, select option number 4. When prompted, enter the IP address in dotted-decimal format as in the following example:

> Enter Default gateway >*204.172.55.1* ⮐

If a valid address is entered, the terminal stores it in its working memory and redisplays the Setup Menu with the Edit Default Gateway field updated.

Poweron Connect

The *Poweron Connect* feature allows the terminal to immediately request a host connection whenever it is turned on. Select option number 5 from the Setup Menu to toggle the state of the Poweron Connect mode. The selection should be set to Yes if immediate connection to the host is desired at poweron. The terminal will use the NVRAM values (see *Save Settings for Powerup*) to establish the connection.

Comm Protocol

The adapter's communication protocol could be set to None, Xon/Xoff, DTR/DSR, or Both. This setting should match the terminal's communication protocol setting for the EIA port or else the terminal could lose data. If the communication protocol is set to None, the terminal could lose data.

Recall Saved Setting

Selecting option number 7 from the Setup Menu sets the values of options 1 through 5 to that currently stored in NVRAM. Message Recall complete indicates a successful recall.

Save Settings for Powerup

When all of the terminal's Ethernet settings are acceptable, select option number 8 from the Setup Menu to save the displayed values in NVRAM.

Exit Setup Menu

When satisfied with all of the terminal's Ethernet settings, press **9** to return to the Main Menu.

```
              - MAIN MENU -
Status > Disconnected from Host
Host IP Address > XXX.XXX.XXX.XXX
1.   Setup Menu
 2.    Connect to Host
 3.   Ping
 4.   Hardware Information
   --------------------------
9.   Exit Main Menu
```

Connect to Host

Once all the necessary addresses have been established, the terminal is ready to initiate a Telnet connection to the selected

host. This can be done by selecting option number 2 from the
Main Menu. The terminal responds with a prompt similar to
the following:

```
Enter IP Connection: 175.55.172.90
```

Simply press the Enter key if the host IP address is correct, or
change the host IP address by typing the desired address.

Connecting to a host system automatically creates a Telnet
session and then exits from the Ethernet Main Menu.

If the connection is successful, the host takes over and
instructs the user for further action.

If the host is not responding, the Ethernet interface will try to
resend the connect command in intervals of 5, 10, 20, 40, 80
and 160 seconds. If still unsuccessful, the Ethernet interface
will stop trying and display the message Connection Failed to
followed by the host IP address.

> **NOTE**
>
> The menu system for the adapter is not available during a
> Telnet session.

After a Telnet session ends, the first keystroke will bring up
the Ethernet Main Menu.

Ping

Once all the necessary addresses have been entered, the
terminal is ready to Ping the selected host. This can be done by
selecting option number 3 from the main menu.

```
Enter Your Choice :3
```

The terminal responds with the following:

```
Enter Ping IP Address: 175.55.172.90
```

The displayed address is the same address as the Host IP
Address. Simply press the Enter key if the host IP address is
correct, or change the host IP address by typing the desired
address.

While waiting for the host to return, the terminal displays the message Trying to ping followed by the IP address.

If the Host responds, the Ethernet interface displays the message Successful Ping to followed by the host IP address.

If the Host does not respond within 10 sec, the Ethernet interface displays the message No response from followed by the host IP address.

Hardware Information

Select option number **4** from the Main Menu to display specific hardware information pertaining to the adapter.

- HARDWARE INFORMATION -	
Physical Address	XX:XX:XX:XX:XX:XX
Code Revision	X.XX
Part Number	589-XXXXXXX
Code Checksum	XXXXXX
Diagnostic Results	Pass / Check XX
Link Integrity	OK / No Link
Ethernet Statistics:	
Deferred Transmits	XX
Excess deferred Transmits	XX
Single Collision Count	XX
Multiple Collision Count	XX

◊ Physical Address or MAC (Media Access Control) address is a unique address for each network card. This address is assigned during the manufacturing and is not modifiable by the users.

◊ Code Revision is the revision of the software that is running on the Ethernet interface.

◊ Code Checksum is the checksum for the software running on the Ethernet interface.

◊   Part Number is the 10-diogit number of the Ethernet
interface.

◊   Diagnostics Results reports the status of the Ethernet
interface on the last powerup.

◊   Link Integrity reports the status of the link to the network. OK
indicates that the Ethernet interface is connected to a *live*
network; No Lnk indicates the Ethernet interface is not
connected to a *live* network.

◊   Ethernet Statistics can be used to view the most recent
Ethernet statistics. The Ethernet statistics will be
refreshed every time the menu is re-displayed or entered.
Upon powerup these values will start from 0. These
counters will role over to 0 if they reach 15.

- Deferred Transmits: Incremented by one for each collision
retry or after multiple transmit deferrals.

- Excess deferred Transmits: Incremented by one if a single
Ethernet packet is deferred transmitted multiple times.

- Single Collision Count: Incremented by one if the packet is
successfully re-transmitted after 1 collision.

- Multiple Collision Count: Incremented by one if the packet is
successfully re-transmitted after 1 to 16 collisions.

Enter 9 to exit the Hardware Information screen and return to
the Main Menu.

Exit Main Menu

With the Main Menu displayed, press 9 to exit from the
Ethernet menu system. This will put you at the terminal
screen and the next key (any key) will bring up the Main Menu.

Technical Support

Questions about this product should be directed to the Technical Support Department of the distributor from which you obtained your Boundless Technologies equipment. When requesting assistance, please have all pertinent information available including any error messages that may have appeared either on the terminal or the host.

If your distributor fails to provide adequate support for your needs, please contact the Boundless Technologies Technical Support Department directly. You will be required to provide the name of your distributor, and a description of the problem as described above.

Please refer to the Boundless Technologies Guide to Support Services which was packaged with the terminal.

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