PING PACKET SIZE AND TIMEOUT SETUP SCREENS

The PING packet size has six settings from 50 to 1400 bytes. The time the Net-Ping waits for a PING or DHCP response before displaying a No Response notice can be set from 1 to 40 seconds in one second increments.

LINK SEARCH SCREEN

The Link Search setup screen is used to set the length of time that the Net-Ping will monitor a wire pair for Link signals. Normal (about 2.5 seconds) is the default setting or use the Up/Down cursor key to select the Long setting (about 5 seconds). Some switches, especially if configured for VoIP, require a longer time to complete Link negotiations and the Long setting will provide more consistent Link detection.

UPDATE SCREEN

The Net-Ping firmware can be updated over the network as new revisions are released. Contact Black Box Technical Support for directions on getting the update. The basic procedure is to download the new firmware file, connect the Net-Ping to the network, go to the Update Setup screen, press the Select function key and the unit will Link to the network and enable the firmware update mode. Next run the downloaded file on the computer. The program will ask for the current IP address of the Net-Ping (see IP Address Setup screen) and your password. When the update is complete the program will notify the user and the Net-Ping immediately goes to the Link screen and searches for the Link. WARNING: Any disruption while programming is in process will result in the unit being unuseable and will have to be returned to the factory for repair. Install a fresh set of batteries or connect the AC adapter to the unit before starting an update.

POWER

Duration - The Net-Ping will typically provide about 5 to 6 hours of operation from a set of four AA alkaline batteries. An AC adapter is also provided which will power the unit but does not recharge the batteries.

Auto Power Down - The Net-Ping will automatically turn off after the time selected in the Power Down Setup screen or will run continuously until manually turned off when "ON" is selected for Power Down.

Low Battery - When the batteries are below the level required for the Net-Ping to operate properly, a battery graphic appears in the upper right hand corner of the display.

NET-PING Network IP Tester

BOX CONTENTS
- Net-Ping Network IP Tester
- Four AA Alkaline Batteries
- AC Adapter
- User Guide

BATTERY

The Net-Ping operates on four AA alkaline batteries. Remove the battery cover at the back of the unit and insert the batteries with the orientation as shown. Battery polarity is marked inside the battery well for reference.

TECHNICAL OVERVIEW

The Net-Ping Network IP Tester uses the "PING" function to send a data packet to another IP address on a network or respond to a PING sent to its own IP address. The PING test is used to verify connectivity, measure round trip communications time, check data integrity, determine a MAC address and search a stored list or a range of IP addresses. The Net-Ping provides a DHCP Client mode and a Port Identification function with selectable blink rates to locate which port on a hub or switch that a wall outlet is connected.

NETWORK COMPATIBILITY

The Net-Ping is designed for testing an Ethernet network that uses the IP protocol. The unit can communicate directly with a hub, switch, router, NIC or other network device that uses 10baseT or 100baseT. The Net-Ping will identify when it is connected to a 1000baseT device but it cannot transmit/receive a PING at 1000baseT.

MECHANICAL FEATURES

COMBINED RJ-45 CONNECTION

NET-PING

LCD DISPLAY

FUNCTION KEYS

CURSOR KEYS - LEFT, UP/DOWN, RIGHT

DATA ENTRY KEYPAD

ON/OFF BUTTON

AC ADAPTER POWER JACK
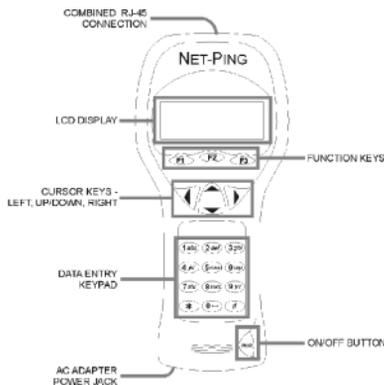
WEB BROWSER INTERFACE

The Net-Ping can be configured by connecting it to the network and using either Internet Explorer (6.0 or later) or Netscape (6.0 or later). To access the Net-Ping setup page, enter the IP address (shown in the IP Address setup screen) in the browser URL window. All setup features can be configured from the browser. The User Guide can also be displayed.

IP SETUP SCREEN

The IP address for the Net-Ping is input from this screen. The unit comes programmed with a default address of 192.168.1.42.

SUBNET MASK SETUP SCREEN

To Ping an IP address in a subnet different than the subnet of the Net-Ping, requires that the Subnet Mask be entered and "ON" and the appropriate Gateway IP address has been entered. Mask "ON" and OFF" is selected with the Up/Down Cursor key. A zero in the first field is an invalid mask entry and the Net-Ping defaults to 255 when the mask is saved. NOTE: Subnet Mask and Default Gateway IP address may be found by going to a computer on the subnet where the Net-Ping will be used, open the Windows Control Panel, open the network icon, open the LAN Icon, select TCP/IP Protocol and then select properties.

GATEWAY SETUP SCREEN

The IP address for the default Gateway (typically a router or a server) is input from this screen.

MAC SCREEN

The Net-Ping MAC address is displayed in this screen. The MAC for each Net-Ping is unique and can not be changed. See Note in DHCP.

PROFILE SETUP SCREEN

A profile consists of a Profile name, Net-Ping IP address, Subnet Mask on or off, Subnet Mask, Gateway Address and a list of one to eight destination IP addresses. One of the eight Profiles is selected using the Up/Down cursor, the Profile name and Net-Ping IP address is entered and the Next function key is pressed. The Subnet Mask is entered and turned on or off and the Next fuction key is pressed. The Gateway address is entered and the Next function key is pressed. From one to eight destination IP addresses are entered and then the Save function key is pressed.

DEFAULT PROFILE SCREEN

A default profile can be designated to be used initially when the Net-Ping is powered on.

POWER DOWN SETUP SCREEN

The Net-Ping will automatically turn off after the time selected in the Power Down Setup screen. Settings available are five minutes, fifteen minutes, thirty minutes and on (must be turned off manually). Press the SAVE function key to store the selected setting.

PASSWORD SCREEN

A password is required to configure the Net-Ping from a web browser or update the firmware. The password protects against a third party making unauthorized changes to the unit when it is connected to a network. The default password is 12345678. It is recommended that the default password be changed prior to initial operation.

PING COUNT SETUP SCREEN

The Net-Ping can be set to PING an IP address from 1 to 99 times or continuously. Pressing the Up/Down cursor key scrolls the number of times to PING from 1 to 99. The Continuous PING setting is shown by scrolling down from "1" or up from "99". Multiple PINGs are not available for Lists, Profiles or Ranges.

PORT ID SCREEN

Pressing the PortID function key in the Link Screen presents the Port ID Screen. As soon as this screen appears, the Net-Ping begins transmitting a pattern of Link

```
PORT ID
        Rate: MEDIUM

  Exit          Select
```

signals that will cause the hub,switch or NIC Link LED to blink or stay on continuously. Identifying the specific port a wall outlet/PC is connected to can aid in diagnosing the cause of failed PING tests. Hubs and switches from various manufactur-

ers have different specifications for the time it takes for Link signals to turn the Link LED on and off. The Net-Ping has four different blink rates and a continuous mode that can be selected by pressing the Up/Down cursor key. An initial test directly at the hub or switch will determine the best blink rate setting before conducting a Port ID test at a wall outlet.

SETUP

Pressing the SETUP key in any screen presents the Setup Screen.The Up/Down

```
SETUP
        Configure
        IP ADDRESS

  Exit          Select
```

cursor key is used to display: 1) IP Address Setup 2) Subnet Mask Setup 3) Gateway Setup 4) IP List Setup 5) MAC Screen 6) Profile Setup 7) Default Profile 8) Ping Count 9) Packet Size 10)Time Out 11) Power Down Time Setup 12)

Password Setup or 13) Update Press the SELECT function key to enter the displayed setup screen. The Net-Ping MAC is shown for information only and can not be changed.

IP LIST SETUP SCREEN

The IP List Setup screen is used to enter from one to eight names and IP addresses. The Net-Ping can then PING the entries individually or PING all entries sequentially.

Data Entry - Use the Up/Down cursor key to select one of the eight storage locations and press the right arrow key to display the cursor and begin entering a new name or

```
IP LIST
Name ANY NAME 2
Address 164.101.  1. 10
  Exit    Save    Setup
```

editing an existing one. Use the data entry keypad to input the number or letter (each time the key is pressed the next letter or number on the key is displayed). Pressing the right cursor key advances to the next character. Pressing the left cursor key se-

lects the previous character. Names can be a maximum of ten characters long. Pressing the right cursor key an eleventh time advances the cursor to the IP Address which is divided into four fields of three characters. Only numbers can be input in the fields and the maximum valid number for any field is 255. Single digits can be entered in any of the three character locations and will be right hand justified when the cursor is moved to the next field. Two digit numbers can be entered in the left two or right two character locations. If an invalid number is entered, the cursor will not advance to the next field. After entering or editing the name and IP address, press the SAVE function key to store the information in non-volatile memory. The information is retained even if the unit is turned off or the batteries are removed. To remove an entry from the list, press the right cursor key to select the entry and then press the star key. A "Delete Entry" message is displayed and pressing the SAVE function key clears the selected name and IP Address.

OPERATION

To test a hub, switch, router or NIC connect a patch cable from the RJ-45 port on the equipment to the RJ-45 jack on the Net-Ping.

LINK SCREEN

Turn on the Net-Ping by pressing the "PWR" button. The unit scans the RJ-45

```
LINK
        Searching

  Repeat        Setup
```

connection searching for Link signals. If no Link signals are found, a "No Link" message is displayed and a REPEAT function is provided to rerun the search for a Link Partner. When proper Link signals

are found, the Net-Ping displays the connection as a LAN, NIC or an Auto MDI-X port;

```
LINK LAN
Cap:10F/H 100F/H 1000F
Con:100 FULL      Pol:Norm
  Ping    DHCP    PortID
```

the capabilites of the Link Partner; the speed and duplex the Net-Ping is using for the connection and the polarity of the connection (normal or reversed). When the Link is established, the PING, DHCP and PortID

function keys are displayed. Disconnecting the Net-Ping will cause the unit to immediately restart the search for Link signals.

Note: If a Link Partner is transmitting NLP or MLT-3 Link signals instead of a Link Code Word, the duplex mode is unknown (shown as "UN" in the LINK screen) and the Net-Ping will always connect at half duplex. PING tests can still be run even if there is a duplex mode mismatch.

PING SCREEN

Pressing the PING function key in the Link Screen presents the PING Screen.

```
PING
1 Name ENTER IP
Address   .   .   .
  Exit    Ping    Setup
```

The Up/Down cursor key is used to select: 1) enter and PING a new IP address (1 to 99 times or continuously as shown next to "Name") 2) PING one of eight preprogrammed IP addresses (see IP List

Setup) 3) PING all of the one to eight preprogrammed IP LIST addresses 4) PING a Range of IP addresses or 5) PING one of eight Profiles(see Profile Setup).

When an IP Address, IP List or IP Range is selected, pressing the PING function key transmits the PING packet and "Wait" is displayed until a response is received. A

```
PING
COUNT: 16
GOOD: 16       BAD: 0
  Exit    Repeat    Info
```

summary of the PING responses is displayed showing the number of PINGs transmitted and the number of Good and Bad responses. Pressing the Up/Down cursor key shows, in numerical order, the results of

each PING including the Round Trip Time and if the received data is identical to the transmitted data (Data:Good) or the data has been corrupted (Data:Bad).

Pressing the INFO function key displays the MAC address of the PINGed IP address. If no PING response is received within specified Timeout time (see Timeout Setup), "No Response" is displayed. When the PINGed IP address is in a different subnet than the

```
PING
1: TIME:15ms  DATA:GOOD
Address 192.122.  1. 10
  Exit    Repeat    Info
```

Net-Ping address, the unit first attempts to locate the default gateway. If the gateway does not respond, the Net-Ping displays a "NOGW" message indicating either the gateway is not operating properly or an

incorrect gateway IP address was entered. When a PING response is received from another subnet, the MAC address of the Gateway is shown (GW MAC) by pressing the Info key.

Note: When the IP address of the device being PINGed is in the same subnet/VLAN as the IP address of the Net-Ping, the Subnet Mask can be "ON" or "OFF" and a Gateway IP address is not required. When the IP address is in a different subnet/VLAN, the Subnet Mask must be "ON" with the mask entered and the IP address of the Gateway must be entered. (See Subnet Mask Setup and Gateway Setup).

CONTINUOUS PING

When the Net-Ping is configured to PING continuously (See Ping Count Setup), the letter "C" is displayed to the left of "Name" in the PING Screen. Pressing the PING

```
PING
 Ping Count   CC:P2
 % Loss  3.000222
  Exit   Pause  Info
```

function key displays the number of PINGs that have been sent and the percent of the PINGs with No Response or that had corrupted data. Pressing the Info function key displays the PING Address and the running average of the Round Trip Times for all PINGs that received a response. Pressing the Info function key again displays the PING Address and the count of PINGS with no response.

LIST SCREEN

When "IP List" is selected and the PING function key is pressed, each IP address

```
LIST
Name COURTYARD
Address 164.101.  1. 10
  Exit   Ping   Setup
```

stored in the IP List (see IP List Setup) is PINGed in turn. The same "Wait" and "No Response" messages are displayed as described above. After completing the PING of the last stored IP address, the IP List Reponse screen is shown.

LIST RESPONSE SCREEN

The List Response screen shows the results of the PING to each of the stored IP

```
LIST
Name COURTYARD
RTTIME:72ms  DHTF:6000
  Exit   Repeat  Setup
```

addresses. The Up/Down cursor key is used to scroll through each IP address with Round Trip Time, Data status and MAC address presented for IP addresses that are found or "No Response" for IP addresses that did not respond within the Timeout period. Times less than one second are shown in milliseconds (ms).

RANGE SCREEN

When "Range" is selected, the Range screen is displayed with start and stop IP addresses. The first three octets of the start and stop address must be the same and

```
RANGE
Start: 192.168. 34.  1
Start: 192.168. 34.255
  Exit   Ping   Setup
```

the fourth octet defines the range from one to a maximum of 255 IP addresses. Pressing the PING function key PINGs all the addresses in the range simultaneously. Each PING response can be viewed by pressing the Up/Down cursor key. Holding the key will cause the responses to scroll faster.

PING RESPONDER MODE

The Net-Ping will respond to a PING request that is sent to the unit's IP address.

```
PING RECEIVED
 From  142.100.  1.103
  MAC  0050A8500100
  Exit
```

When the unit is in the LINK Screen, a PING to the Net-Ping IP address presents the PING Received screen. The Ping Received screen shows the IP and MAC addresses of the PING source.

DHCP SCREEN

Pressing the DHCP function key in the Link Screen presents the DHCP Screen and begins the DHCP client-server test.

```
DHCP  WAITING
 Server    .   .   .
 Address   .   .   .
  Exit   Ping   Info
```

Note: The MAC Address of the Net-Ping may have to be added to the Access List of the DHCP Server for the Net-Ping messages to be accepted - see your System Administrator for requirements.

The Net-Ping transmits a "Discover" message to locate a DHCP server. If no DHCP Server responds to the message within the DHCP Timeout period (see Timeout Setup), the Net-Ping will retransmit the "Discover" message up to three more times. If

```
DHCP  SERVERFOUND
 Server 142.100.  1.  1
 Address 142.100.  1.210
  Exit   Ping   Info
```

no DHCP Server responds after the fourth attempt, "No Response" is displayed. Pressing the Repeat function key restarts the DHCP discover process. When a DHCP Server responds to the message, the Net-Ping displays "Server Found" the IP Address of the Server and the IP Address assigned to the Net-Ping.

Pressing the INFO key displays the Gateway IP Address and the Subnet Mask used with the IP Address assigned by the DHCP Server. Note: If the DHCP Server does not provide the Gateway IP Address, a 0.0.0.0 IP Address is displayed.

Pressing the PING key while in the DHCP Client mode presents the PING screen

```
PING            D-CP
 Name ENTER IP
 Address 142.100.  1.  1
  Exit   Ping   Setup
```

with a "DHCP" message displayed and the IP Address of the Gateway. If Gateway information is not available, the DHCP Server IP Address is shown.

Pressing the PING key from the IP Ping Screen transmits a PING that uses the IP Address, Gateway Address and Subnet Mask provided by the DHCP Server instead of the IP Address, Gateway Address and Subnet Mask that were previously entered and stored in the Net-Ping. The Gateway IP Address is automatically entered as the address to be PINGed (or the DHCP Server address when Gateway information is not available). Alternatively, a new IP Address can be entered or the Up/Down cursor key can be used to select a previously stored address. Pressing the EXIT key returns the Net-Ping back to the LINK Screen and clears the DHCP Server assigned addresses and mask. Pressing the Setup key also clears the DHCP Server assigned information and transmits a DHCP release packet to the DHCP server so that the IP address is available for reassignment.