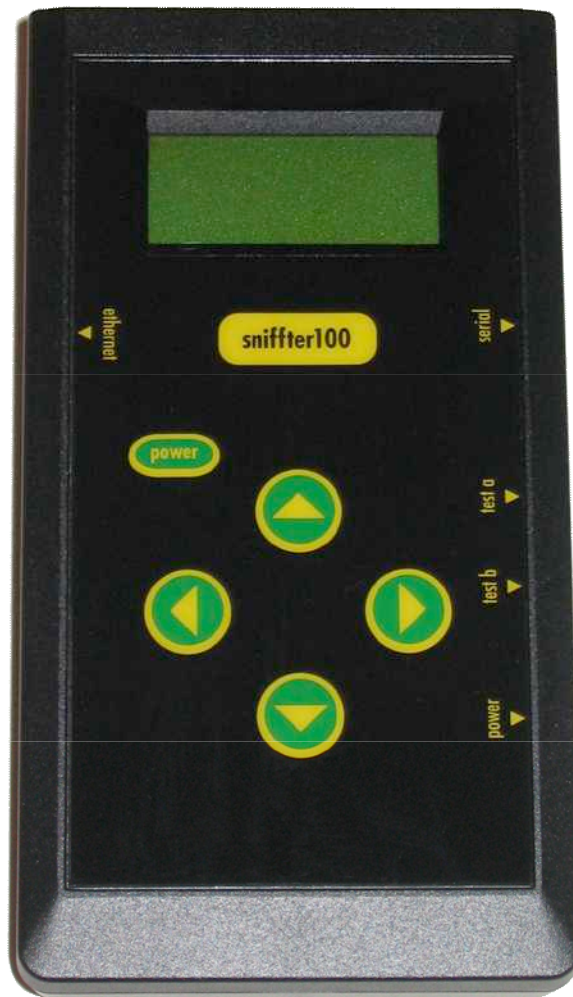


## Sniffter 100 Documentation



***Written by Tom Collins***

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## Introduction

The Sniffter 100 is a rechargeable, hand-held network tester. Through a simple user interface, it enables a technician to quickly diagnose and isolate problems related to a 10-BaseT TCP/IP network.

In addition to troubleshooting networks, the Sniffter can:

Test cables for opens, shorts or miswires.

Generate warble tones on any pair of a 2, 3 or 4-pair cable (for use in tracking with an inductive amplifier).

Display reference diagrams of standard wiring (2-line phone, 3-line phone, EIA/TIA 568A/B) showing:

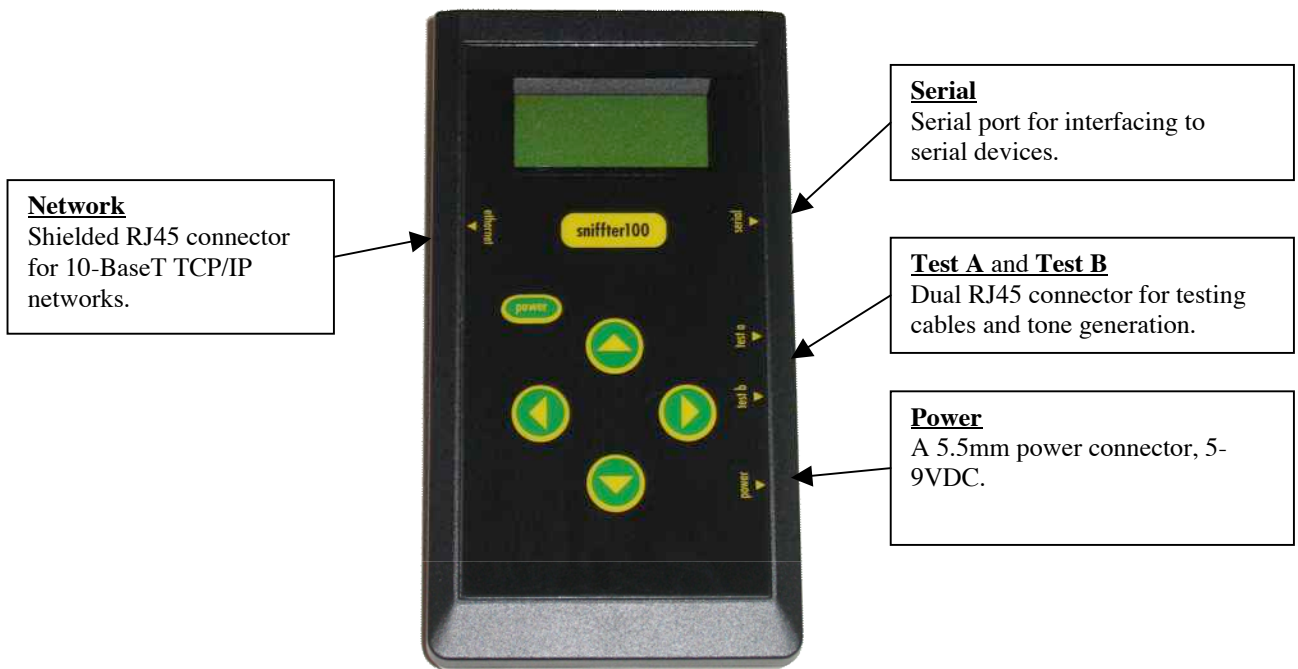
solid or banded color codes

pair numbering

polarity (tip/ring)

## Interface

The Sniffter 100 includes the following jacks:



Turn the Sniffter on or off by pressing and releasing the **power** button. When you turn the Sniffter on, it reports its software revision, serial number, current battery level, and whether it is charging or plugged in.

```
Sniffter v1.00
Serial #000000
02003 Tom Logic LLC
[Charging Icon] Continue▶
```

Sniffter Boot Screen

The Sniffter uses a Lithium-Ion battery and can reach full charge after 4 hours of charging. When the battery charge drops to a certain level, the Sniffter will notify you that it requires immediate recharge and then turn itself off.

```
[Battery Status Key]
[Plugged in Icon] Plugged in
[Charging Icon] Charging
[Battery Level Icon] Battery Level
```

Battery Status Key

The Sniffter displays information on a 20-character wide, 4-line, backlit LCD display. To turn the backlight on or off, hold the power button down for 3 seconds (until the backlight changes) and then release.

```
You are lost in a
maze of twisty
Passages, all alike.
Action: ▲N ▼S ◀W ▶E
```

Triangles Indicate Actions

```
HW Version: B.0 ▲
Level: 1
Extension: 0x00
SN: 12005282344 ▼
```

Example of Scrolling Text

```
[Sniffter Main Menu]
▶Network Tools
Cable Tester
Cable Ref/Tone Gen▼
```

Main Menu

The display uses solid triangles to indicate what will happen if the user presses any of the buttons. When there is more information than can fit on the screen, the Sniffter places up and/or down triangles on the right side of the screen indicating that scrolling in that direction will display more text.

Menus are similar to scrolling text, but have an additional right triangle in the left column pointing to the selected menu option. Use the up and down buttons to move the triangle through the menu options and scroll. Use the right button to accept the selected menu option. Use the left button to exit to the previous screen.

## Internet (TCP/IP) Testing

The Sniffter is equipped with a 10-BaseT Ethernet jack (the silver RJ45 jack on the left-hand side of the Sniffter) for interfacing to TCP/IP networks. **You should not connect the network jack into a phone line or DSL circuit.** It is designed for 10/100-BaseT Ethernet networks only.

The two LEDs on the Ethernet connector indicate the following:

Amber/Link	Green/Activity	Status
Off	Off	Ethernet port is off.
Off	On	Ethernet port is on, no link detected.
On	On	Ethernet port is on and has link to network.
On	Flashing	Has network link and is sending or receiving.

### Network Tools

To start any of the network tests, you must select the **Network Tools** option from the main menu. When starting the Network Tools, the Sniffter goes through the following steps:

```
Connect network jack
  on Sniffter to
  Ethernet network.
◀ Exit
```

The Sniffter activates its Ethernet port then waits until it is connected to a 10-BaseT network.

```
[-TCP/IP Settings-]
▶Acquire via DHCP
  Use static IP
```

If your unit is not configured to default to DHCP, you can choose between using DHCP or static settings for your connection. (See **Edit Net Config** for information on changing static settings.)

```
Link established.
  Connecting to
  DHCP Server.
  Please wait...
```

The Sniffter attempts to obtain network settings from a DHCP server and log onto the network. Press the left arrow to abort, or the right arrow to give up and switch to the static configuration.

```
Obtained address
  from DHCP Server.
  IP: 130.13.135.179
◀ Exit   Continue ▶
```

If the Sniffter is able to connect to a DHCP server on the network, it will display its assigned IP address. At this point you can continue on to the network tests.

```
Can't find DHCP
  Server. Using static
  IP: 10.0.0.99
◀ Exit   Continue ▶
```

If the Sniffter cannot connect to a DHCP server, it will attempt to use its static configuration. If the static configuration matches the network, you can still perform network tests.

```
IP: 192.168.1.20
  unavail. Used by MAC
  00:03:93:f4:5d:0d.
◀ Exit   ARP Scan ▶
```

If the requested static IP is already in use by another device, the Sniffter will only allow an ARP Scan (see **ARP Network Scan** below).

## Current Settings

The first menu option displays detailed information on the Sniffer's current network settings. You can use this screen to compare the Sniffer's DHCP settings to settings on a customer's PC to determine if there is a problem with the network or the customer's PC.

```

Link: yes
Lease exp:167:59:59
IP Address:
  130.13.135.179
Subnet Mask:
  255.255.255.0
Default Gateway:
  130.13.171.1
Name Servers (DNS):
  192.168.3.1
  206.80.192.1
  204.147.80.5
DHCP Server:
  192.168.3.1
Domain Name:
  west.net
Host Name:
  <none>
◀ Exit          Renew ▶

```

Network Settings, DHCP

Since the display is updated in real time, you can use the Link status to diagnose faulty cables. When Link is **yes**, the Sniffer has detected an Ethernet network connected to its network jack. When Link is **no/check cable**, the network connection has been broken. If you suspect a faulty cable or crimp, wiggle the Ethernet cable and watch for lost link on the display.

**Lease exp** indicates how long the address leased from the DHCP server is valid. **IP Address** is the address assigned to the Sniffer. **Netmask**, **Default Gateway**, **Name Servers (DNS)**, **Domain Name** and **Host Name** are all settings from the DHCP server. **DHCP Server** is the IP address of the DHCP server that supplied the settings.

```

Link: yes
Using static config
IP Address:
  130.13.135.179
Subnet Mask:
  255.255.255.0
Default Gateway:
  130.13.171.1
Name Servers (DNS):
  206.80.192.1
  204.147.80.5
◀ Exit

```

Network settings, static

Settings displayed for a static configuration are mostly identical to those displayed for DHCP, with the following differences:

Displays **Using static config** instead of lease expiration; no **DHCP Server** to display; only displays two **Name Servers**; doesn't display **Domain Name** or **Host Name** (since they are both blank when using a static configuration).

## Speed Test

The Sniffter speed test is similar to the speed test you can run on a customer's PC. The Sniffter connects to a web site and times the download of a large file. While downloading the file, the Sniffter displays its progress and overall speed (measured in kilobits per second).

```
[Speed Test]
Trying DNS lookup of
speed.sniffter.com
```

Start of test.

```
[Speed Test]
DNS lookup failed:
speed.sniffter.com
← Exit
```

DNS failure, can't perform test.

```
[Speed Test]
Connecting to host
speed.sniffter.com
```

Connecting to speed server.

```
[Speed Test]
Downloading file...
||||||| | 749kbps
← Abort
```

Test in progress.

```
[Speed Test]
Downloading file...
Aborted: 731kbps
← Exit
```

Test aborted after pressing left button.

```
[Speed Test]
Downloading file...
Test done: 818kbps
← Exit
```

Test completed.

Note that the Sniffter's top speed is approximately 1200 kbps. No matter how fast the customer's network connection is, the Sniffter will never go much higher than 1200 kbps. If a speed test reports abnormal results, simply run it again.

If a customer's PC is reporting poor results on the speed test, you can determine whether it is a problem with the computer or their Internet connection. Simply unplug the Ethernet cable from the back of the customer's PC and plug it into your Sniffter. Run the speed test and compare the Sniffter results to the results on the customer's PC.

The Sniffter should report a speed of approximately 75-85% of the quoted line speed. For example, the Sniffter would report about 800kbps on a 1024kbps line.

You can press the left button during the test to abort it. At the end of the test, press the left button to return to the Network Tools menu.

## **Ping Test**

A simple way to test network connectivity is to ping a remote host. The ping test sends an ICMP Echo message and watches for an ICMP Echo Reply. By sending multiple pings and tracking the time it takes to receive a reply, you can determine the reliability and responsiveness of the network.

When starting a Ping Test on the Sniffer, you can select a host to ping from a list of hosts:

### **Default Gateway:**

Verify connectivity to the first network router.

### **Name Server, DHCP Server:**

Verify connectivity to various servers on the local network.

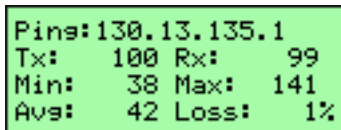
### **www.yahoo.com:**

Verify connectivity to a server on the public Internet.

### **Enter IP Address:**

Verify connectivity to a manually entered IP address.

While pinging a host, the Sniffer displays the following statistics:



```
Ping: 130.13.135.1
Tx: 100 Rx: 99
Min: 38 Max: 141
Avg: 42 Loss: 1%
```

**Ping:** The IP address being pinged.

**Tx:** Number of packets transmitted.

**Rx:** Number of packets received.

**Min:** Minimum response time (in milliseconds).

**Max:** Maximum response time (in milliseconds).

**Avg:** Average response time (in milliseconds).

**Loss:** The percentage of packets lost  $((Tx - Rx) / Tx)$ .

Packet loss of 1-2% over a 100-packet test is acceptable. Investigate the TCP/IP network if losses exceed 10%.

Press the left button to exit the ping test.

## ARP Network Scan

The Sniffter can use ARP (Address Resolution Protocol) packets to scan the local subnet for used and available addresses.

```
[ARP Network Scan]
(192.168.2.0/24)
Scanning ||||| |
◀ Exit
```

The ARP Scan works by sending multiple ARP requests to all possible addresses on the subnet. If a device on the network is using a particular address, it will respond to the request.

```
[ARP Network Scan]
(192.168.2.0/24)
▶31 used (12%)
223 available
```

After collecting the responses, the Sniffter displays the number of addresses used and available, plus the percentage of addresses in use. Use the up and down buttons to toggle between used and available, right button to select and left button to exit.

```
---Used Addresses---
192.168.2.1
192.168.2.5
192.168.2.12 ▼
```

When viewing Used Addresses, use the up and down buttons to scroll through the list. Use the right button to toggle between displaying IP addresses...

```
---Used Addresses---
00:a0:cc:68:4c:11
00:30:ab:70:07:31
00:03:93:7d:45:14 ▼
```

...and the corresponding MAC ID for each IP. Use the left button to go back to the ARP Network Scan summary.

```
Available Addresses
192.168.2.2
192.168.2.3
192.168.2.4 ▼
```

Use the up and down buttons to scroll through the list of Available Addresses. Use the left button to go back to the ARP Network Scan summary.

## NAT/firewall check

This is a simple tool to determine whether the Sniffter is connected directly to the Internet, connected to the Internet through a firewall, or if it is on a private network and connects to the Internet via a device that provides Network Address Translation (NAT). NAT is sometimes referred to as IP Masquerading (ipmasq) or Internet Connection Sharing.

A NAT device is a special type of router/firewall that allows multiple computers on a private network to share a single Internet IP address. When connecting through a NAT device, the Sniffter appears to have the NAT device's IP address instead of its actual IP address.

```
[NAT/firewall check]
Checking connection.
Please wait...
```

Sniffter starts the test. In order to check for NAT, the Sniffter connects to a CGI script on [www.sniffter.com](http://www.sniffter.com).

If the test is successful, you'll see one of the following four results (IP addresses used are just examples, your results will show the actual addresses in use):

```
IP 130.35.119.12:
Connected directly
to the Internet.
◀ Exit
```

The Sniffter has a public IP address of 130.35.119.12 and is connected to the Internet directly. The test did not detect a firewall on the connection.

```
IP 130.35.119.12:
Internet connect
through firewall.
◀ Exit
```

The Sniffter has a public IP address of 130.35.119.12 and connects to the Internet through a firewall (the firewall is blocking inbound connections to the Sniffter).

```
IP 192.168.100.5:
Internet via one-way
NAT 130.35.119.12.
◀ Exit
```

The Sniffter has an IP address of 192.168.100.5 and connects to the Internet through a NAT device with a public IP address of 130.35.119.12. Inbound connections to 130.35.119.12 are not forwarded back to the Sniffter.

```
IP 192.168.100.5:
Internet via two-way
NAT 130.35.119.12.
◀ Exit
```

The Sniffter has an IP address of 192.168.100.5 and connects to the Internet through a NAT device with a public IP address of 130.35.119.12. Inbound connections to 130.35.119.12 are forwarded back to the Sniffter.

There are three ways the test can fail. In the first two cases, use the other tests (like the ping test) to confirm that you have a valid network connection.

```
[NAT/firewall check]
DNS lookup failed:
www.sniffter.com
◀ Exit
```

The Sniffter is unable to look up [www.sniffter.com](http://www.sniffter.com) on the current DNS servers. This can happen if the Sniffter doesn't have a valid Internet connection, or was unable to configure itself via DHCP.

```
[NAT/firewall check]
Couldn't connect to
www.sniffter.com
◀ Exit
```

The Sniffter couldn't connect to [www.sniffter.com](http://www.sniffter.com). This can happen if the [www.sniffter.com](http://www.sniffter.com) server is down, or there is a problem with the Sniffter's network connection.

```
[NAT/firewall check]
Error connecting to
www.sniffter.com
◀ Exit
```

The Sniffter was able to connect to [www.sniffter.com](http://www.sniffter.com), but there was an error on the server that prevented the test from working.

Technical details on the firewall and two-way NAT test:

During the NAT test, the [sniffter.com](http://sniffter.com) server attempts to send SNMP packets (UDP port 161) back to the IP address connecting to it. If the Sniffter connects through a one-way NAT or a firewall that blocks SNMP packets, the Sniffter won't receive the packets.

## Test PC NIC

In addition to testing the network, it is possible to use the Sniffter to test a computer's NIC (network interface card). With the **Test PC NIC** menu option, you can check for a network link to the PC, see if the PC attempts to dynamically acquire an IP address with DHCP, and find out whether the PC responds to ping packets.

Note that this test will not work if the computer is configured to use a static IP address instead of DHCP. It may be necessary to connect the cables and start the PC NIC Test on the Sniffter **before** turning on the computer to test.

```
[PC NIC Test]
  Initializing
Ethernet Hardware
Please Wait.
```

The Sniffter requires about 5 seconds to set itself up the first time you run the PC NIC Test.

```
Connect network jack
to PC NIC w/cross-
over Ethernet cable.
← Exit
```

The Sniffter displays this screen until there is a physical connection to a functional, powered PC NIC. Use a crossover Ethernet cable (like the orange one that ships with the Sniffter) to connect the Sniffter's network jack directly to the Ethernet port on the PC's NIC.

```
[PC NIC Test]
Link, can't ping PC
Waiting for packet
```

Once link is established (**Link**), the Sniffter waits for the PC to ask for an IP address via DHCP (the Dynamic Host Configuration Protocol). It will continue to display **can't ping PC** until the PC responds to the Sniffter's ping packets.

```
[PC NIC Test]
Link, can't ping PC
PC: DISCOVER server
MAC ID: 0123456789AB
```

The PC will initially broadcast a "DISCOVER" message, asking for an IP address from any available DHCP server. The Sniffter emulates a DHCP server and responds with an offer of 10.0.0.10. When the Sniffter receives packets from the PC, it will show the PC's 12-character MAC address on the last line of the display.

```
[PC NIC Test]
Link, can't ping PC
PC: IP REQUEST good
MAC ID: 0123456789AB
```

If the PC accepts the DHCP server's offer, it will request the address. This screen shows the PC accepting the Sniffter's offer and requesting the address. If the display reads **IP REQUEST bad**, then the PC is asking for a different, incorrect, IP address.

```
[PC NIC Test]
Test complete. PC
config tests good.
MAC ID: 0123456789AB
```

If the PC successfully configures itself with the IP address and starts responding to the Sniffter's ping packets, the display will show **PC config tests good**. The test is complete and the PC should work fine on a DHCP-based network.

## ***Troubleshooting during the PC NIC Test***

During the PC NIC Test, the Sniffter will attempt to ping the PC. For additional confirmation, you can try pinging the Sniffter from the PC. On a Windows PC, bring up a command-line or DOS prompt and type “ping 10.0.0.2”. If the PC receives responses from the Sniffter (i.e., the pings don’t time out), the PC’s NIC and Internet (TCP/IP) configuration are good.

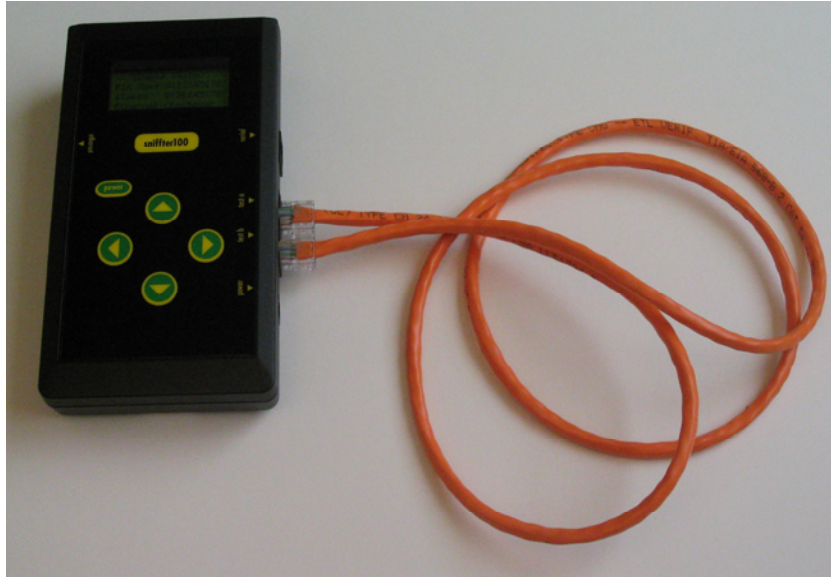
You can also try using the winipcfg and ipconfig utilities on Windows PCs to check the status of the NIC and Internet (TCP/IP) settings.

	Symptom	Explanation/Additional Troubleshooting Steps
1	Computer is on but Sniffter is stuck on the “Connect network jack” screen (no link).	<p>Make sure the crossover cable is wired properly (using Sniffter’s Cable Test).</p> <p>Make sure the crossover cable connects the Sniffter’s Network jack (silver, left-hand side of tester) to the PC’s network jack.</p> <p>Reboot the PC.</p> <p>Reinstall the PC NIC drivers on the PC.</p> <p>If possible, try installing a different type of NIC in the PC.</p>
2	Testing doesn’t get past <b>Waiting for packet.</b>	<p>Make sure the crossover cable is wired properly (using Sniffter’s Cable Test).</p> <p>Reboot the PC.</p> <p>Check the Internet (TCP/IP) settings on the computer to confirm that it is configured for DHCP (sometimes referred to as “Acquire an IP address automatically”).</p>
3	The PC has an IP address starting with 169.254 (e.g., 169.254.17.237).	<p>When a computer set with DHCP is unable to contact a DHCP server, it will default to an IP address on the 169.254.0.0 subnet. Any time a PC has an address in this range, it has NOT connected to a DHCP server.</p> <p>Try the troubleshooting steps for Symptom #1.</p>
4	Sniffter displays <b>IP REQUEST bad.</b>	<p>For some reason, the PC is not accepting the Sniffter’s DHCP offers.</p> <p>Reboot the PC.</p> <p>If the test never shows <b>IP REQUEST good</b>, then there is a problem with the PC.</p>
5	Sniffter displays <b>IP REQUEST good</b> , but the ping test fails ( <b>can’t ping PC</b> ).	<p>The PC might have firewall software installed that blocks ping requests. Try temporarily disabling the firewall software.</p> <p>If you can ping the Sniffter from the PC (see instructions above), the PC configuration is OK.</p>

When the test is complete, turn off the Sniffter, reboot the PC, and reconnect it to the network. If the network and PC have tested good, the PC should acquire an IP address from network DHCP servers and be able to connect to your home page and other Internet servers.

## Cable Testing

Note that the Sniffert is only testing cable **continuity** (whether a signal reaches the other end of the cable). It cannot detect split pairs or cross-talk on a cable.



```
Insert cable to test
info Test A & Test B
* No Live Circuits *
◀ Exit Continue ▶
```

To begin a test, insert a cable into the Sniffert's Test A and Test B jacks. You can test in-wall wiring by plugging long cables (that have already been tested) into each wall jack and connecting them to the Sniffert.

The following screen shots show examples for various cable types. The pin map provides a detailed pin-out of the cable. The paired numbers (A above B) represent a connection. For example, in the Ethernet Crossover shot, the first pair of numbers tell you that "pin 1 on Test A goes to pin 2 on Test B".

```
[Cable Tester]
Pin Map→ A:12345678
↓Type↓ B:36178245
Ethernet Crossover
```

Special Cable Type

```
[Cable Tester]
Pin Map→ A:12345678
↓Type↓ B:12345678
Standard 4-Pair
```

"Straight Through" cable

```
[Cable Tester]
Pin Map→ A:12345678
↓Type↓ B: 765432
Flipped 3-Pair
```

"Flipped" Cable

```
[Cable Tester]
Pin Map→ A:12345678
↓Type↓ B:
No connection
```

Nothing connected to tester

```
[Cable Tester]
Pin Map→ A:12345678
↓Type↓ B:1 34 67
Unknown Cable Type
```

Open Pins

```
[Cable Tester]
Pin Map→ A:12345678
↓Type↓ B:* 3* 678
Shorted Cable
```

Shorted Pins (pins 1 and 4 on A go to multiple pins on B)

## Cable Reference/Tone Generator

The Sniffter includes reference information to assist in typical telephone and Ethernet wiring. From the **Cable Ref/Tone Gen.** menu, you can find out which color wire to connect to each pin of a phone/network jack/cable. You can see a visual diagram of the pairs and their pin assignment. The Sniffter can even generate a warble tone on any given pair of its **Test A** jack for tracking cable pairs with an inductive amplifier.

```
Type:EIA/TIA 568B
Label:banded colors
▶Action:pair map
Start/View
```

Menu

Use the up and down buttons to go to each line of the menu. On the first three lines, use the left and right buttons to change the various settings. Once you have the correct settings, move to the **Start/View** item and press the right button to view the information.

To exit, move to **Start/View** and press the left button.

```
EIA/TIA 568B
      r--3--r
      r2  |  r1  |  r4  |
Pin:1 2 3 4 5 6 7 8
```

Sample Pair Map

Use the up and down buttons to cycle through the wiring types (EIA/TIA 568B, EIA/TIA 568A, 2-line phone, and 3-line phone). Use the left or right button to exit.

```
EIA/ 1:WH/OR 2:OR/WH
TIA  3:WH/GR 4:BL/WH
568B 5:WH/BL 6:GR/WH
      7:WH/BR 8:BR/WH
```

Sample Cable Pinout

Use the up and down buttons to cycle through the wiring types. Use the right button to cycle through the labels (banded colors, solid colors, pair/line #). Use the left button to exit.

```
[Tone Generator]
WH/BL:OFF→WH/OR:ON
WH/GR:OFF WH/BR:OFF
◀Prev Next▶ ▲On ▼Off
```

Tone Generator

Before using the Tone Generator, select the correct cable type (568A, 568B, phone) for the cable you have plugged into the **Test A** jack. Use the left and right buttons to cycle through the pairs, and the up and down buttons to turn tone on and off for each pair.

To exit, move to the first pair and use the left button.

## Edit Net Config

From the **Edit Net Config** menu, you can change the static configuration that the Sniffer uses when not using DHCP. You can set the IP Address, Network Mask (sometimes referred to as subnet mask), Default Gateway, and two Name Servers.

```
[Edit Net Config]
IP Address:
 192.168.2.20
◀Exit  Edit▶ 1/5▼
```

Use the up and down buttons to cycle through the screens for IP Address, Network Mask, Default Gateway and the two Name Servers.

```
[Edit Net Config]
IP Address:
 192◄.168. 2. 20
◀ Cancel      Next ▶
```

After using the right button to edit a setting, use the left and right buttons to select each octet of the address, and the up and down buttons to edit the selected octet.

```
[Edit Net Config]
IP Address:
 192.168. 2. 20◄
◀ Previous    Save ▶
```

Press the left button with the first octet selected to cancel without saving changes. Press the right button with the last octet selected to save the changes.

```
[Edit Net Config]
Network Mask:
 24◄(255.255.255.0)
◀ Cancel      Save ▶
```

The Network Mask editor is slightly different. Here, you use the up and down buttons to change the number of bits in the mask (0 to 32) while the Sniffer displays the corresponding “dotted quad”.

## Update Sniffter Software

Starting with version 1.05 of the Sniffter software, technicians can now update each other's Sniffters in the field, allowing for easy distribution of new software releases.

Simply connect the serial ports on two Sniffters with a flipped phone cable\* and select **Update Sniffter SW** from the main menu on both units.

```
[Sniffter SW Update]
WARNING: A failed
update results in a
dead Sniffter. Only
perform update when
necessary.
To start update,
connect 2 Sniffters
with flipped cable
on serial port.
At prompt, select
update on old unit
and wait.
◀Exit      Continue▶
```

The Sniffter displays this warning before entering update mode.

Updates take less than one minute, but if an update is interrupted (for example, by disconnecting the serial cable), the unit receiving the update will be unusable until it has its software factory reloaded.

After reading the warning, press the right button on both units.

```
Connect Sniffter
serial ports with
flipped cable.
◀Exit
```

The Sniffters display this screen until they are able to communicate with each other. Once communications have been established, one of the following three outcomes are possible.

```
[Sniffter SW Update]
Both units have
version 1.10
◀Exit
```

1) Both Sniffters have identical software. You don't have any update options.

```
[Sniffter SW Update]
This Unit: v1.05
Other Unit: v1.10
◀Exit      Update▶
```

2) Your Sniffter has older software. Press the right arrow to download and install a copy of the other Sniffter's **newer** software onto your Sniffter.

```
[Sniffter SW Update]
This Unit: v1.20
Other Unit: v1.10
◀Exit      Revert▶
```

3) Your Sniffter has newer software. It is possible to download and install the older software by selecting **Revert**, but you should rarely need to do so.

```
[Sniffter SW Update]
Loading Sniffter SW
Please wait...
```

This screen appears when you select **Update** or **Revert**. The other Sniffter's screen will say **Sending** instead of **Loading**. When the update is complete, both Sniffters will power off.

\* Like the flat black cable that ships with the Sniffter (a 6-conductor cable with pins 1&6, 2&5 and 3&4 swapped) or a 4-conductor cable with pins 1&4 and 2&3 swapped.

## Glossary

**10-BaseT:** The standard for operating 10 Mbps Ethernet on twisted-pair wiring.

**Default Gateway:** IP address of device on the local network responsible for routing packets outside of the local network.

**DHCP (Dynamic Host Configuration Protocol):** UDP-based protocol used by computers signing onto on a TCP/IP network. The client sends broadcast messages to the server to obtain network configuration information (e.g., IP address, netmask, default gateway, DNS server addresses).

**DNS (Domain Name System):** UDP-based protocol for determining the IP address (e.g., 66.218.70.50) for a given name (e.g., www.yahoo.com).

**FTP (File Transfer Protocol):** TCP-based protocol for transferring files between two computers on a TCP/IP network.

**HTTP (HyperText Transfer Protocol):** TCP-based protocol used by web browsers to access data on web servers.

**Hub:** A device for connecting multiple 10-BaseT hosts to each other.

**ICMP (Internet Control Message Protocol):** Low-level protocol used by tools like ping and traceroute.

**IP Address:** A 4-byte address that identifies a device on a TCP/IP network. Typically written in decimal, separated by periods (e.g., 207.224.191.234).

**Kbps (Kilobits per second):** A measurement of bandwidth. Answers the question of “How many thousands of bits (ones and zeros) can pass through the connection in one second?”

**Link:** Whether an Ethernet device is connected to an active network. Typically displayed via an LED on the device. If only one pair of wires is connected, it is possible for a device to show a positive link status yet be unable to send.

**MAC (Media Access Control) Address:** A 6-byte ID that uniquely identifies an Ethernet device. Typically written in hexadecimal (e.g., 12:34:56:78:9A:BC).

**Mbps (Megabits per second):** A measurement of bandwidth. Answers the question of “How many millions of bits (ones and zeros) can pass through the connection in one second?”

**NAT (Network Address Translation):** A system that allows multiple computers on a private network to access the Internet via a single, shared IP address.

**NIC (Network Interface Card):** A card that provides a network interface to a computer. Many computers now have built-in Ethernet instead of using a separate card.

**Ping:** A simple network test using ICMP packets to check connectivity between devices on a TCP/IP network. Typically used to verify that a remote host is reachable.

**POP3 (Post Office Protocol):** TCP-based protocol for retrieving mail from a mail server.

**Router:** A network device that passes packets from one network to another. Sometimes referred to as a gateway from one network to another.

**SMTP (Simple Mail Transport Protocol):** TCP-based protocol for sending mail.

**Subnet Mask:** A 4-byte “mask” that allows a TCP/IP host to determine whether an IP address is on its local network (and can receive packets directly) or on a remote network segment (and should have its packets sent to the default gateway).

**TCP (Transmission Control Protocol):** Low-level session-based protocol used by higher-level protocols like HTTP (web), FTP (ftp), SMTP (email delivery) and POP (email pick-up).

**TCP/IP (Transmission Control Protocol/Internet Protocol):** Networking protocol of the Internet.

**UDP (User Datagram Protocol):** Low-level connectionless protocol used by higher-level protocols like DNS and DHCP.

## **Sniffter 100 Product Warranty**

The Sniffter 100 Network Tester comes with a one year limited warranty against product failure during the course of regular use. It does not cover failure caused by improper use or damage beyond normal wear and tear.

Warranty coverage for each Sniffter 100 begins on the date Customer receives it and continues for ONE YEAR.

The Sniffter 100 software (referred to as firmware) is shipped as-is. Customer is responsible for installing any firmware updates supplied by Tom Logic. Updates to correct bugs in the existing firmware will be made available free of charge. Tom Logic may offer future firmware with new features as paid upgrades.

Tom Logic will pay for shipping to and from Customer (within the United States) on Warranty repairs.

### **Non-Warranty Repairs**

Costs for repairs out of the warranty period will be quoted on a per repair basis. Non-warranty repairs require a valid PO or credit card authorization for the amount of the repair. Customer will be responsible for shipping costs to and from Tom Logic.

### **RMA Process**

All units shipped to Tom Logic must have a Return Merchandise Authorization (RMA) number clearly marked on the box. Email [repairs@sniffter.com](mailto:repairs@sniffter.com) with the unit serial number (if available), customer info, and a description of the problem. If Tom Logic determines that the unit requires repair, Customer will receive an RMA number and shipping instructions.

## Technical Specifications

(This section of the manual is currently incomplete, additional tech specs to be added at a future date.)

Dimensions: 6" x 3.25" x 1.25"

Weight: 7.8 oz

Display: 4 lines by 20 characters (80 characters total)

Battery: permanent rechargeable Lithium-Ion

### **Ports**

Network: shielded 10Base-T Ethernet; amber link and green activity LEDs

Serial: single RS-232 serial port with hardware flow control (CTS/RTS) or dual RS-232 serial ports without flow control. Tested to 115200 bps.

Test A: tone generation and cable test

Test B: cable test

Power: 5V-9V DC, standard 2.1mm plug

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