



LinkRunner™ AT 1000/2000

Network Auto-Tester

User Manual

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LinkRunner AT 1000/2000 Network Auto-Tester

I. INTRODUCTION

LinkRunner AT 1000/2000 Network Auto-Tester enables quick verification of Ethernet copper and fiber (2000 model only) cables as well as network connectivity and availability. The tester also identifies the network device to which it is connected, measures and displays PoE voltage and configuration, generates reports, and serves as a packet reflector for performance tests conducted with other NetAlly products.

The included Link-Live Cloud Service provides automated reporting and options for organizing test results while the LinkRunner Manager application allows you to save custom test profiles, manually load results, and update firmware.

Link-Live Cloud Service

The Link-Live Cloud Service is a free, online system for collecting, tracking, and organizing your test results, which are automatically uploaded to Link-Live once configured. See “Link-Live Cloud Service,” page 11.

LinkRunner Manager

LinkRunner Manager is a Windows PC application for updating your LinkRunner AT software, creating profiles, storing results, and generating reports. You can install LinkRunner Manager from the included CD or download the app from Link-Live at <https://app.link-live.com/downloads>.

About this Manual

This User Manual is designed to be easy to navigate on a screen, with Adobe PDF Bookmarks to the left, and [blue hyperlinks](#) that point to other parts of the manual. [Blue underlined links](#) go to external resources on the internet.

LinkRunner AT 1000/2000 Network Auto-Tester is hereafter referred to as the LinkRunner AT or LR-AT.

The NetAlly Website

The NetAlly website provides additional documentation, release notes, software updates, and other resources.

Register Your Product

Registering your product with NetAlly gives you access to valuable information on product updates, troubleshooting procedures, and other services. To register, create an account, and then fill out the online form

Contact NetAlly

Safety Information

Table 1 gives descriptions of the safety symbols used on the Tester and in this manual.

Table 1. Safety Symbols

	Warning or Caution: Risk of damage to or destruction of equipment or software.
	Warning: Risk of electrical shock.
	NOT FOR CONNECTION TO PUBLIC TELEPHONE SYSTEMS
	CANADIAN STANDARDS ASSOCIATION CERTIFIED TO CANADIAN AND US STANDARDS
	This product complies with the WEEE Directive marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste.

 N10140	Meets Australia EMC Requirements.
	CLASS 1 LASER PRODUCT. DO NOT LOOK INTO LASER

Warnings

Use only the AC adapter provided to charge the battery.

To avoid possible electric shock or personal injury, follow these guidelines:

- Do not use this product if it is damaged. Before using the product, inspect the case. Look for cracked or missing plastic.
- Do not operate the product around explosive gas, vapor or dust.
- No serviceable parts.
- Do not try to service.
- If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired.

Warning Class 1 Laser Product

With an optional SFP fiber adapter installed, this product will contain a Class 1 laser. Do not look into the laser port because this may cause eye injury.

Cautions

Use the proper terminals and cable for all connections.

Cleaning the Tester

To clean the display, use a lens cleaner and a soft, lint-free cloth. To clean the case, use a soft cloth that is moist with water or a weak soap.

Caution

To prevent damage to the display or the case, do not use solvents or abrasive materials.

Kit Package Contents

For a listing of the contents of your LinkRunner AT package, see the list that came in the product's box, or see the lists of models and accessories at If something is damaged or missing, contact the place of purchase immediately.

II. PHYSICAL FEATURES

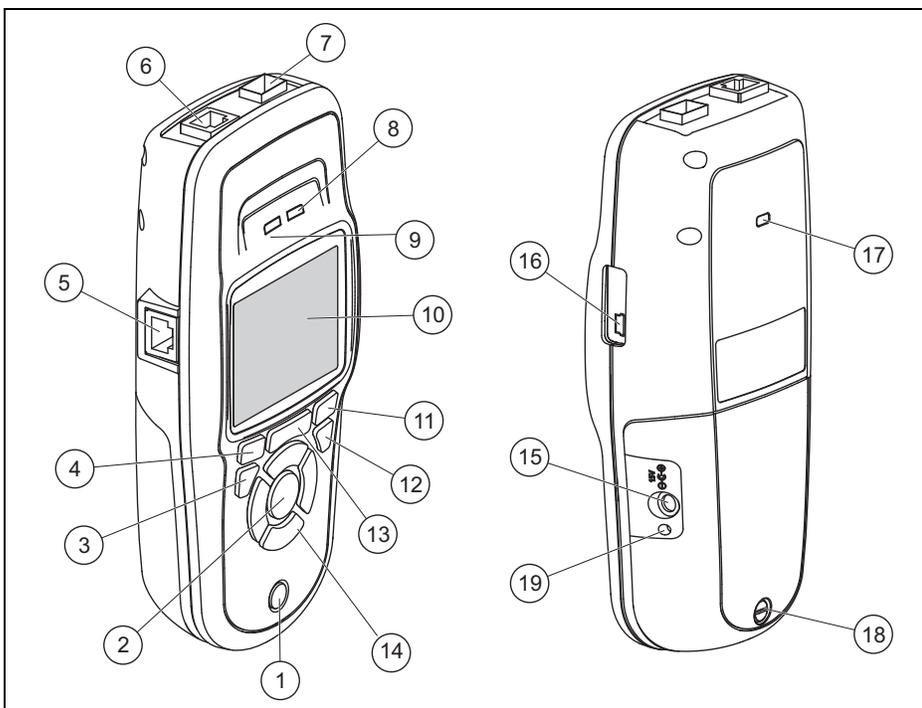


Figure 1. Physical Features of LinkRunner AT

- ① On/off key.
- ② Makes a selection on the screen.
- ③ Shows the previous screen.
- ④ Softkeys. The function of the softkey is shown above the key.
- ⑤ Cable test wire mapping input. Connect the cable from the top Ethernet port to this port to view the wire map details.
- ⑥ Ethernet 10/100/1000BASE-X port.
- ⑦ Fiber port. Use one of the many supported SFP adapters to connect to the network.
- ⑧ Tx/Rx - The LED blinks when the tester transmits and receives data.
- ⑨ The LED is on when the tester is linked to the network.
- ⑩ Full-color LCD.
- ⑪ Softkeys. The function of the softkey is shown above the key.

- ⑫ Shows the Home screen.
- ⑬ : Clears the current measurement data.

: Saves the current measurements data into a report file, which can be transferred to the LinkRunner Manager PC application.

NOTE: *If you are using Link-Live Cloud Service, results are automatically uploaded, and you do not need to save report files manually. See "Link-Live Cloud Service," page 11.*
- ⑭ Navigation keys. The outer ring of keys (four) perform the left/right and up/down screen navigation.
- ⑮ Connector for the AC adapter.
- ⑯ USB port for connection to a PC.
- ⑰ Kensington lock slot.
- ⑱ Screw for the battery pack.
- ⑲ The LED turns on when you connect the AC adapter. The LED is red when the battery is charging and green when the battery is fully charged.

Battery Charging and Life

LinkRunner AT 1000 model includes a AA battery pack.

LinkRunner AT 2000 model includes a rechargeable Lithium-ion battery pack.

Additional AA and Li-ion battery packs are available separately.

To charge the Li-ion battery, connect the AC adapter to the battery connector (see [Figure 1](#) number ⑮). You can use the tester while you charge the battery.

When the tester is off, the battery charges in approximately 3 hours. The Li-ion battery life is approximately 6 hours during typical operation. The AA battery life is approximately 3 hours.

An icon in the upper-left corner of the screen shows the battery status .

NOTE: *Do not leave the Li-ion battery pack in high temperatures, such as in a car on a sunny day.*

The Li-ion battery will not charge if the internal temperature of the tester is above 113°F (45°C).

Figure 2 illustrates the battery replacement process.

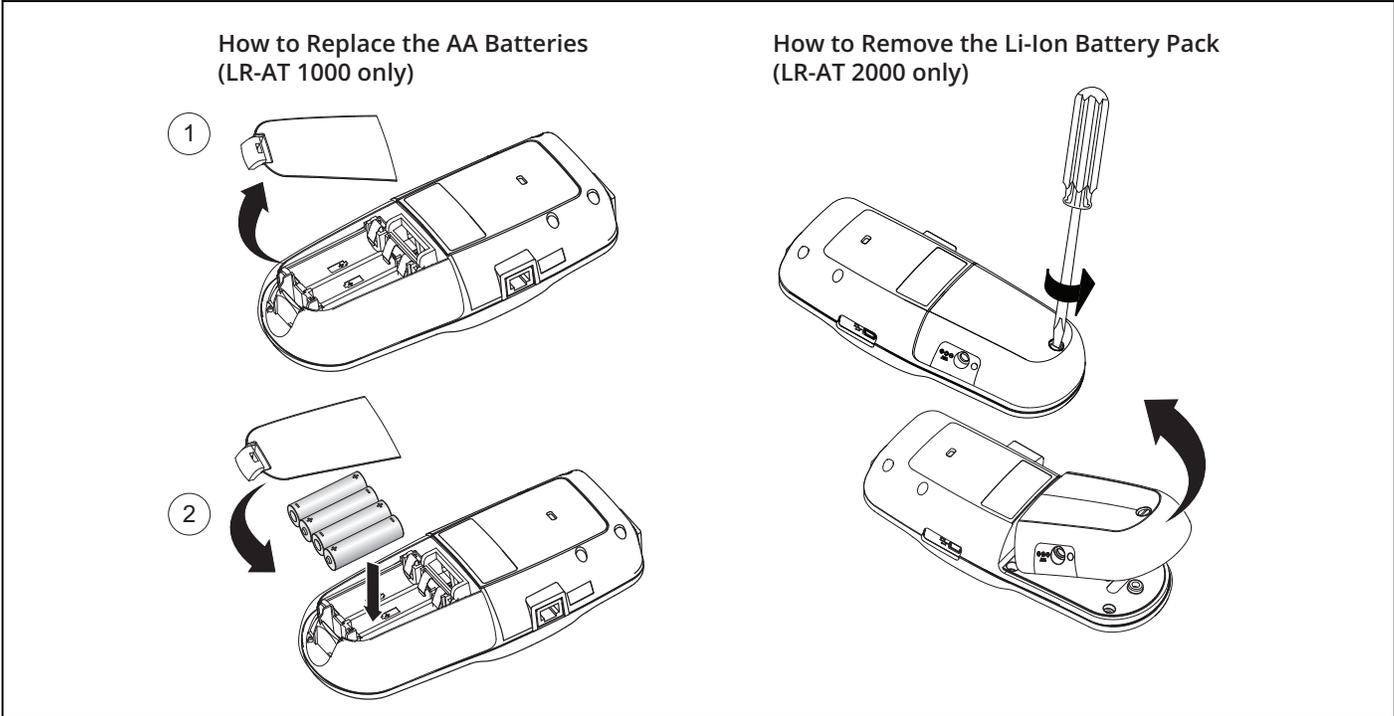


Figure 2. How to Remove/Replace the Batteries

Maintenance

Warning

To prevent possible fire, electrical shock, personal injury, or damage to the tester:

- Do not open the case. You cannot repair or replace parts in the case.
- Use only replacement parts that are approved by NetAlly.
- If you replace parts that are not specified as replacement parts, the warranty will not apply to the product and you can make the product dangerous to use.
- Use only service centers that are approved by NetAlly.

III. THE HOME SCREEN

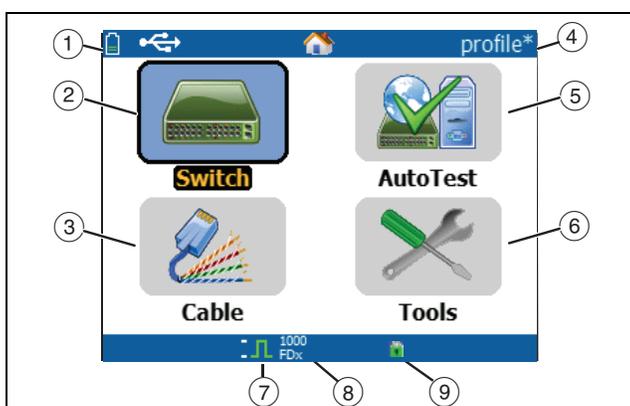


Figure 3. The Home Screen

- ①  Shows the battery status. When the battery charge is low, the icon blinks. Connect the AC adapter to charge the battery and to make sure the tester continues to operate.
-  Shows that the AC adapter is connected.
-  Shows that the USB interface is connected.
- ② **Switch:** Shows the advertised and actual link, PoE measurements, nearest switch with its name, type, IP address, port, slot, and VLAN information.

- ③ **Cable:** When the cable is connected un-terminated, or is connected to a WireView™ Cable ID, this shows cable information or wire mapping information. This feature can also be used to locate a cable with the optional Fluke Networks* IntelliTone™ Probe.
- ④ The name of the tester profile. A profile contains the tester configuration settings. The default name is "Untitled". An asterisk appears to the right of the name if you have changed a setting on the tester since you loaded or saved the profile.
- ⑤ **AutoTest:** Use AutoTest to Ping and connect to selected targets. Up to 10 targets can be entered as a URL or IPv4/IPv6 address along with the optional port number. When no port is specified, a Ping is performed. When the port is specified, a TCP SYN/ACK is performed. This is also referred to as a TCP Connectivity test.
- ⑥ **Tools** lets you manage files and settings.
- ⑦ Link established indicator.
- ⑧ Displays the link speed and duplex mode.
- ⑨ Displays the connection type: PoE ⚡, 802.1x 🔒, fiber ☀️. For 802.1x, a green lock indicates authentication passed, yellow indicates it is not needed, and a red closed lock indicates it failed authentication.

* IntelliTone is a trademark of Fluke Networks.

IV. COMMON QUESTIONS LINKRUNNER AT CAN ANSWER

First, connect an RJ-45 or fiber cable (2000 model only) from the network hub or wall plate to the LinkRunner AT RJ-45 LAN or fiber port. Check the following list of questions and associated answers to see how LinkRunner AT can help you get the job done.

Is this a good RJ-45 Ethernet cable?

Use **Cable** testing and the built in wiremap for patch cables, or an external WireView™ Office Locator.

Am I receiving a good fiber signal?

Connect to your network via a SFP adapter and validate the signal strength and link in the **Switch** screen.

Where does this RJ-45 cable go?

Use the **Cable** test toner function, **Switch > Flash Port** function, or **Switch** discovery protocol.

Is this cable hooked up to anything?

Select **Switch** to identify an open cable, an active link, or an un-powered network device.

Does this RJ-45 port support PoE?

Use **Tools** to specify the desired PoE power class and use **Switch** or **AutoTest** to verify the power under load up to 25.5 W (802.3at).

What speed/duplex is this device configured for?

Use **Switch** to check the advertised and actual speed/duplex. Additionally, use **Tools** to test for manual (non-Auto Negotiated) speed/duplex.

Can I see traffic from this connection?

Observe the utilization LED blinking to see network traffic.

Can I connect in a MAC access control environment?

Use **Tools > VLAN/MAC/Proxy Configuration** to specify a user defined MAC address.

Do I have network connectivity?

Select **AutoTest** to validate key network services (DHCP, DNS, Router).

Can I get an IPv4 DHCP address?

Select **AutoTest**. Select **DHCP** (or enter a static IP address) in the **Tools > IP Configuration** menu.

Can I get an IPv6 address?

Enable IPv6 in **Tools > IP Configuration**. Use **AutoTest** to observe the acquired IPv6 link-local and global address.

Common Questions LinkRunner AT Can Answer

Can I PING?

Select **AutoTest**. Configure an address to Ping under **Tools > AutoTest Configuration**.

Can I verify application connectivity?

Select **AutoTest**. Configure an address and application port (e.g. port 80 for web/HTTP) under **Tools > AutoTest Configuration**.

Can I use it for throughput testing?

Use the **Reflector** tool (setup under **Tools** - only available on LinkRunner AT 2000).

Can I connect to an 802.1X port?

Use the **Tools > Connect Configuration** screen to enable 802.1X. Also, use the LinkRunner Manager PC application (select **Tools > General Information** to enable 802.1X and set up security).

V. LINK-LIVE CLOUD SERVICE

This online service, once set up, automatically uploads and saves results from the LinkRunner AT.

In the Link-Live Cloud Service, you can view comments added to test results on the LinkRunner AT unit and add new comments to completed tests. These comments and other test characteristics can be searched and filtered to display only specific data, which can aid in troubleshooting. You can also customize folders in which to organize and categorize your test results by location, event, job, or other information. Link-Live can then generate and print reports for communicating job status or documenting completion.

To start, create a user account at [Link-Live.com](https://www.Link-Live.com) and sign in. After creating a new account, you will be prompted to Claim your first testing device. Follow the on-screen instructions to claim your LinkRunner AT.

Once your LinkRunner AT is claimed in Link-Live, and you have configured it to upload to Link-Live rather than save to internal memory, test results upload automatically as soon as you connect to the internet.



The Cloud icon displays in the upper right corner of the LinkRunner AT's test results screens (such as AutoTest) when the tester is able to upload to Link-Live Cloud Service.

If no connection is available, the Tester will queue up to 10 tests before overwriting previous results.

You can also configure uploading and notification settings on the Link-Live Cloud Service web site. For more information about Link-Live, click **Support > Questions** at the top right of the Link-Live web page at [Link-Live.com](https://www.Link-Live.com).

VI. SETTING UP THE TESTER

To change settings on the tester, select **Tools** from the home screen.

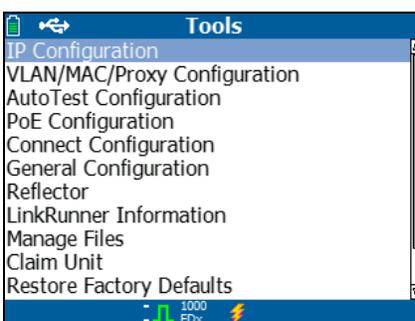


Figure 4. Tools Menu

IP Configuration

Select **Tools > IP Configuration**.

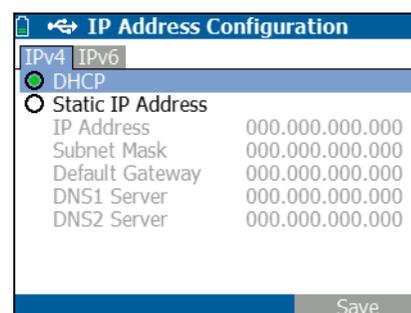


Figure 5. IP Configuration Screen

This screen allows you to enter an IPv4 address or use a DHCP address (default). It also allows you to enable IPv6 addressing (2000 model only). LR-AT uses the IP address during AutoTest. During AutoTest, the LR-AT is required to connect to the network for Ping and TCP Connectivity testing.

At no other time does the LR-AT connect to the network using IP addressing. This applies to the Switch and Cable test screens.

VLAN/MAC/Proxy Configuration

Select **Tools > VLAN/MAC/Proxy Configuration**.

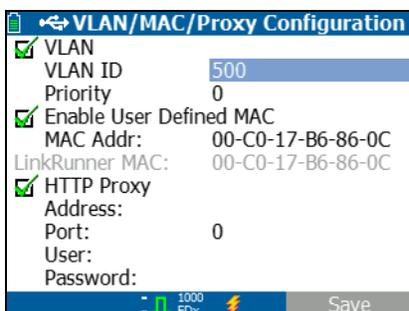


Figure 6. VLAN/MAC/Proxy Configuration Screen

This screen allows you to enable and enter the VLAN ID and its Priority level. Un-check the VLAN check box to disable the VLAN capability.

You can also enable and enter a user defined MAC address. Un-check the Enable User Defined MAC check box to revert the LinkRunner AT back to the factory default MAC address.

This screen also contains Proxy settings.

NOTE: To access the Proxy Configuration, your LinkRunner AT must have firmware version 2.5.3 or later, which also requires you to download and update LinkRunner Manager software to version 1.0.9.1112.

To configure with your network's Proxy settings:

- 1 Select **Address**, enter your proxy server address, and save (F2).
- 2 Select **Port**, enter your proxy server port number, and save (F2).
- 3 If required, select **User**, enter your User ID, and save (F2).
- 4 If required, select **Password**, enter your proxy password, and save (F2).

LinkRunner AT can now be claimed and then send test results to Link-Live.com via the configured proxy server.

AutoTest Configuration

Select **Tools > AutoTest Configuration**.

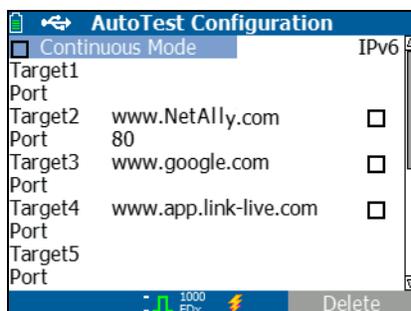


Figure 7. AutoTest Configuration Screen

This screen allows you to enter up to ten key device addresses (Targets) to test connectivity. You may enter an IP address, URL, or DNS name. If no port is specified, AutoTest will perform an ICMP Ping test to that address. If a port is specified, AutoTest will perform a TCP Connectivity test (SYN/ACK).

The Continuous Mode check box allows the test to run continuously (checked) or one time (un-checked). When you exit the AutoTest screen, the test is stopped.

PoE Configuration

Select **Tools > PoE Configuration**.



Figure 8. PoE Configuration Screen

By default, PoE is disabled. This screen allows you to enable/disable PoE detection, Enable TruePower™, and set the Class for detection. If you enable PoE and select Class 4 (25.5W), you can also enable LLDP Negotiation so that PoE is only reported if that criteria is met.

PoE TruePower™ is only available on the LinkRunner AT 2000 model. TruePower™ puts a load on the PoE device and measures whether the device supports the Class selected. See also, [“Using the PoE Feature” on page 23](#).

Connect Configuration

Select **Tools > Connect Configuration**.



Figure 9. Connect Configuration Screen

This screen allows you to enable 802.1x Authentication and set the Speed & Duplex.

For 802.1x Authentication, if a certificate is required, you must transfer it from your PC using the LinkRunner Manager PC application provided with LR-AT. Only one certificate can be installed on a LR-AT at a time.

For Speed & Duplex, Auto is the default and recommended configuration; 10 HDX is 10 Mbps half duplex, and 1000 FDX is 1000 Mbps full duplex.

General Configuration

Select **Tools > General Configuration**.

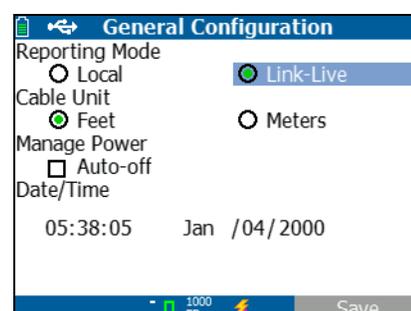


Figure 10. General Configuration Screen

The Reporting Mode determines whether test results are saved to the tester unit (Local) or uploaded to the Link-Live Cloud Service.

This rest of the screen allows you to set the units for the Cable test screen, Manage Power (10 minute automatic shutoff - default), and set the date and time.

Reflector Configuration (Model 2000 only)

This screen is used to configure the LR-AT 2000 to act as a reflector for performance tests conducted by other NetAlly testing devices.

Note

The LR-AT 2000 can reflect jumbo frame sizes up to 9600 bytes.

Select **Tools > Reflector**. The default or pre-configured Reflector settings are displayed below

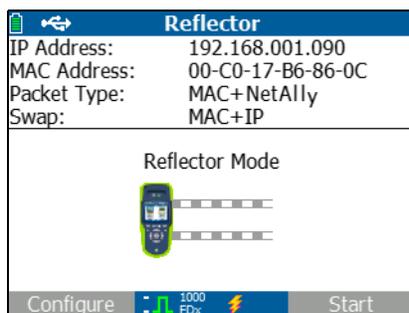


Figure 11. Reflector Settings Screen

Select **Configure**.

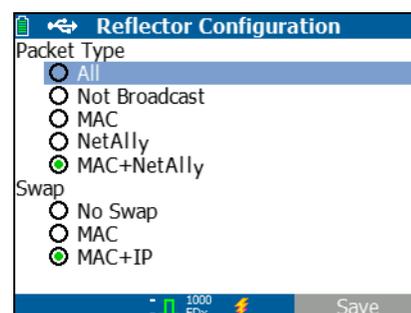


Figure 12. Reflector Default Configuration Screen

The LR-AT 2000 must be configured to:

MAC + NetAlly - This filter setting allows the LR-AT 2000 to only reflect packets when the destination MAC address field matches the LR-AT 2000's own MAC address and NetAlly payload.

MAC + IP - This swap setting allows the LR-AT 2000 to swap the source and destination MAC and IP addresses for packets that are reflected back to the analyzer.

Note

Any other Reflector setting may cause undesired traffic on your network.

VII. ADDITIONAL LINKRUNNER TOOLS

LinkRunner Information

Select **Tools > LinkRunner Information**.

This screen displays the following product information:

- **Serial Number:** The serial number is also shown under the battery pack.
- **MAC Address:** Media Access Control address. The unique address of the tester.
- **SW Version:** The version of software in the tester.
- **Build:** The build number of the software version.

LinkRunner Information	
LinkRunner	
Serial:	0002000121
MAC:	00-C0-17-B6-86-0C
SW Version:	2.5.4
Build:	1110
SFP	
Type:	SX (850nm)
Vendor:	AVAGO
Revision Code:	
Model #:	AFBR-57M5APZ
Copyright 2017	NetAlly

Figure 13. LinkRunner Information Screen with Connected Fiber Adapter

Manage Files

Manage Files allows you to load a profile, save a profile, save a report, rename a profile or report, or delete a profile or a report.

You can save reports on the tester and transfer them to the LinkRunner Manager PC application. Reports transferred to LinkRunner Manager can be displayed and printed. Reports contain the AutoTest, Switch, and Cable test results.

Profiles contain the following tester information: IP, VLAN/ MAC, AutoTest, PoE, Connect, General, and Reflector configurations. These settings can be modified in LinkRunner Manager and on the tester.

To Load a Profile

- 1 Select **Tools > Manage files**.
- 2 Select **Load Profile**.
- 3 Select a Profile from the list.

To Save a Profile

- 1 Select **Tools > Manage files**.
- 2 Select **Save Profile**. The current settings are now saved to the profile filename shown at the bottom of the screen. To change the filename, select **F1** **Edit**.
- 3 Select **F2** **Save**.

To Save a Report

- 1 Select **Tools > Manage files**.
- 2 Select **Save Report**. The current measurement data is now saved to the report filename shown at the bottom of the screen. To change the filename, select **F1** **Edit**.
- 3 Select **F2** **Save** or .

To Rename a File

- 1 Select **Tools > Manage files**.
- 2 Select **Rename file**.
- 3 Highlight either the **Report** or **Profile** folder.
- 4 Highlight the file, then press **SELECT**.
- 5 To edit the filename, press **F1** **Edit**.
 - To delete characters in the filename, press **F1** **Delete**.

- To add characters to the filename, use  to highlight a character, then press **SELECT**.
 - To move the cursor in the filename, highlight the filename, then press .
- 6 To rename the file with the name you made, press **F2** **Save**, then press **F2** **Rename**.

To Delete a File

- 1 Select **Tools > Manage files**.
- 2 Select **Delete file**.
- 3 Highlight either the **Report** or **Profile** folder.
- 4 Highlight a file, then press **SELECT**.
- 5 Press **F2** **Delete**.

Restore Factory Defaults

Restores any configuration changes to the following LinkRunner AT factory defaults.

- IP Configuration:
IPv4: DHCP
IPv6: Disabled
- VLAN/MAC/Proxy Configuration:
VLAN: Disabled
VLAN ID: 0
Priority: 0

User Defined MAC: Disabled
 MAC Address: LinkRunner MAC address
 Proxy: Disabled

- AutoTest Configuration:
 Continuous Mode: On
 Target: none
- PoE Configuration:
 Enable PoE: Disabled
 Class: Class 1
- Connect Configuration:
 Security: Disabled
 Speed & Duplex: Auto
- General Configuration:
 Reporting Mode: Local
 Cable Unit: Meters
 Manage Power: Enabled
- Set Language:
 English

When you select **Restore Factory Defaults**, you will be prompted with a popup. Select  **OK**, then press .

The tester turns off once it is finished restoring.

Update Firmware

- 1 Download the LinkRunner firmware update file from the NetAlly website , or contact NetAlly to get the update by other means.
- 2 Save the file to your hard disk.
- 3 Get the latest version of LinkRunner Manager from the NetAlly website shown in number 1.
- 4 Start LinkRunner Manager on your PC.
- 5 Turn on the tester.
- 6 Select **Tools > Firmware Update** > select  **Update**.
- 7 Use the USB cable supplied with the tester to connect the tester to the PC.
- 8 In LinkRunner Manager, select **LinkRunner > Update Software**.
- 9 Click **Select**, find and select the update file (.zip extension), then click **Select**.
- 10 Click **Update**.

Caution

Do not disconnect the LinkRunner from the PC or remove the battery during the update.

- 11 When the transfer is completed, disconnect the USB cable from the tester.

- 12 The screen on the tester goes blank while it installs the update file. When the update is completed, restart the tester.

Transfer Saved Profiles to/from LinkRunner Manager

Use LinkRunner Manager to view and configure the profiles that are saved on the tester.

To transfer profiles from the tester to LinkRunner Manager

- 1 Install the latest version of LinkRunner Manager software on your PC.
- 2 Open LinkRunner Manager.
- 3 Turn on the tester.
- 4 Use the USB cable supplied with the tester to connect the tester to the PC.
- 5 To see the profiles that are on the tester, select **Tools > Profile Manager** from the LinkRunner Manager tool bar. Profile names display under the LinkRunner Profile Files pane.
- 6 Highlight a profile in this pane, and select **Transfer from LinkRunner**.
- 7 When you are done editing the profile, highlight it and select **Transfer to LinkRunner**.

Set Language

To change the language displayed in all screens

- 1 Select **Tools > Set Language**.
- 2 Highlight a language and press  **Save**.

VIII. USING AUTOTEST, SWITCH, AND CABLE TEST

Using AutoTest

AutoTest can test up to ten targets. These targets can be local or off-net targets (devices). You can enter the IP address or a DNS name. If you specify a target address without specifying a port number, AutoTest will perform an ICMP Ping to the target address. If you specify a port number, AutoTest will perform a TCP Connectivity test (SYN/ACK). See figures 14 and 15.

Select **Tools > AutoTest Configuration** and enter the target address(es). Entering a port number is optional.

AutoTest will attempt to Ping/Connect to the target device three times. If **Continuous Mode** is selected, the test will run until you exit the AutoTest screen.

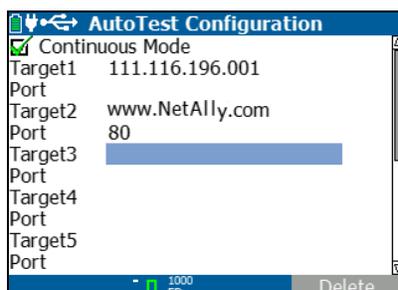


Figure 14. AutoTest Configuration Screen

Select **AutoTest** on the Home screen. AutoTest will run and the test results should look similar to figure 15.

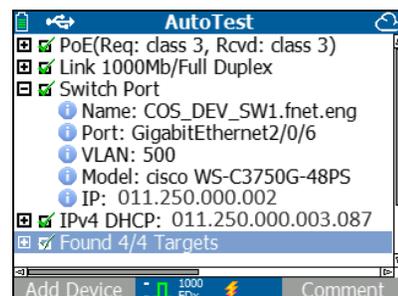


Figure 15. AutoTest Results Screen

The nearest switch is discovered, and its name, port, VLAN ID, model, and IP address are displayed. Then, the DHCP server information is displayed. Finally, the Gateway and DNS server(s) are displayed along with the target device(s).

Expand on each device to display the test results.

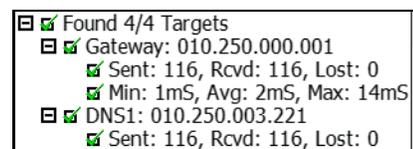


Figure 16. Expanded Test Results

Using the Nearest Switch Test

The Switch test screen displays the nearest switch. The nearest switch is discovered by locating the “port advertisement” on the first few packets seen by LR-AT.

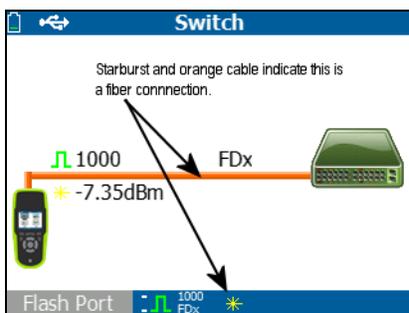


Figure 17. Nearest Switch Results

Select **Flash Port** to stimulate the switch to flash the LED on the port that the LR-AT is connected into. This can help locate the switch port in the closet. Set the Flash Port flash rate from slow to fast to differentiate from the other switch port LED flash rates.

Using the Cable Test

There are three use models for using the Cable screen:

- Connect a cable from the top LinkRunner AT RJ-45 connector into the side cable test RJ-45 connector to measure length and wire mapping.
- Connect an open cable (non-terminated) into the top LR-AT RJ-45 connector and measure length. An un-terminated cable can also be traced using an IntelliTone™ Probe and the **Tone** function.
- Connect a cable into the top LR-AT RJ-45 connector and select **Tone**. Using the IntelliTone™ Probe, you can trace the wire or locate it in the switch closet.

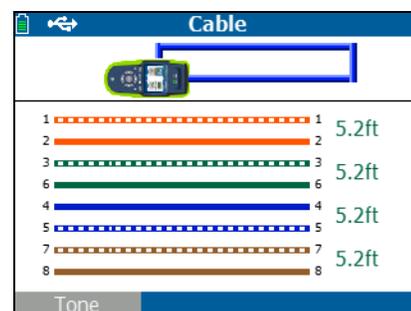


Figure 18. Cable Test Results

IX. USING THE POE FEATURE

Power over Ethernet (PoE) is disabled by default. To enable PoE, select **Tools > PoE Configuration**, and check **Enable PoE**. Select the Power Sourcing Equipment (PSE) class to verify.

If the LinkRunner AT is a 2000 model, you also have the option of enabling TruePower™. TruePower applies a load equivalent to the selected class to mimic a Powered Device (PD). See Figures 19 and 20.



Figure 19. PoE Configuration on LR-AT model 1000

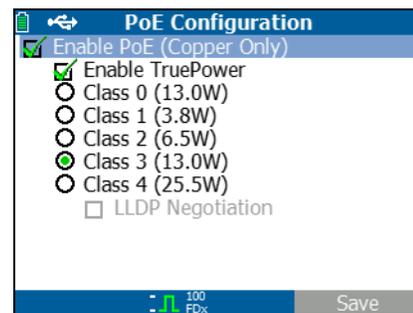


Figure 20. PoE Configuration on LR-AT model 2000

Without TruePower (Figures 21 and 22), the LinkRunner AT lists:

- PoE class requested and the class acknowledgment received from the PSE
- Positive and negative PoE pairs
- PoE power requested and the power acknowledgment received from the PSE
- Measured PoE voltage without a load
- PSE advertised type

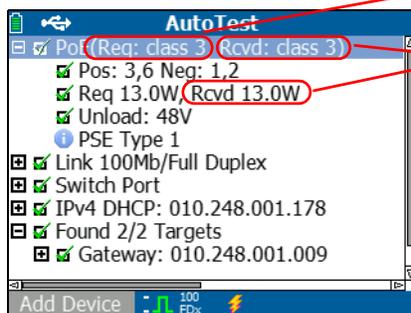


Figure 21. AutoTest results - PoE without TruePower

PoE request and advertised type

PSE acknowledgment

Measured without load

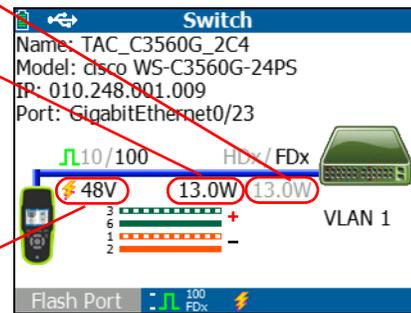


Figure 22. Switch - PoE without TruePower

With TruePower enabled (model 2000 only), the LinkRunner AT lists the following information (see Figures 23, 24, and 25):

- PoE class requested and the class acknowledgment received from the PSE
- Positive and negative PoE pairs
- PoE power requested and measured from the PSE
- Measured PoE voltage with and without a load
- PSE advertised type

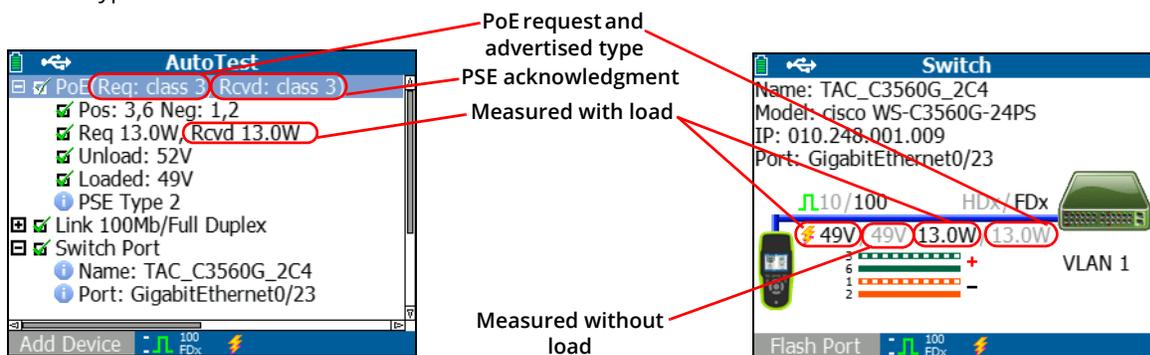


Figure 23. AutoTest results - PoE with TruePower

Figure 24. Switch - PoE with TruePower

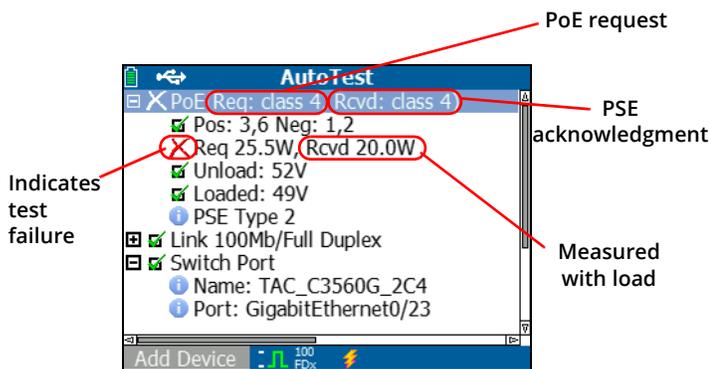


Figure 25. AutoTest results - PoE with TruePower and Measured Load

X. USING THE REFLECTOR FEATURE (MODEL 2000 ONLY)

The Reflector feature allows the LR-AT 2000 to act as a reflector for performance tests conducted by other NetAlly testing devices.

See [“Reflector Configuration \(Model 2000 only\)” on page 16](#) for instructions on setting up this feature. Once set up, the device can be used as the reflecting device for throughput performance testing. There is no start or stop, and no results are displayed on the tester.

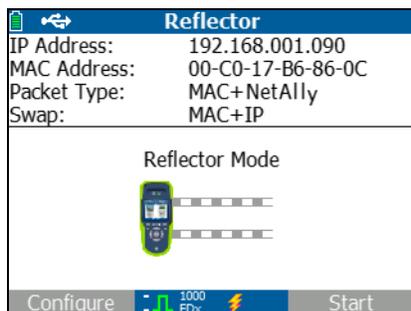


Figure 26. Reflector Mode Screen

XI. USING THE FIBER CONNECTION (MODEL 2000 ONLY)

Simply plug in the desired SFP adapter into the fiber port on the top of the tester and connect the fiber cable to the network. If both fiber and RJ-45 copper are connected to the network, the copper connection has priority.

Figure 27 shows the Switch results through a fiber connection with link, 1000 Mbps speed, full duplex, with a signal strength of 7.35 dBm.

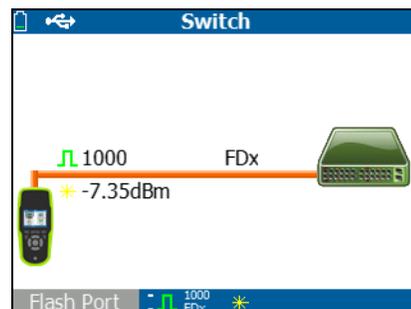


Figure 27. Fiber Connected Switch Results

XII. SAVING A REPORT

You can save the current measurement data the tester has collected into a report that can be viewed and printed through the LinkRunner Manager PC application. This information includes:

- AutoTest results
- Switch results
- Cable test results

Note

The LR-AT 1000 model can save up to 10 reports. The LR-AT 2000 model can save up to 50 reports.

Link-Live Cloud Service automatically uploads the results from AutoTest only.

To save the measurement data collected on the tester:

- 1 Press . The tester shows a default filename at the bottom of the screen.
 - To save the data with the filename shown, press  **Save**. The tester saves the data into a report file.
 - To overwrite a report that is saved on the tester, highlight the report, press , press  **Save**, then press  **OK**.
 - To change the filename, press  **Edit**.

Note

Report names can have a maximum of 12 characters. The extension LRS is appended when the file is saved to your PC through the LinkRunner Manager PC application.

- To delete characters in the filename, press  **Backspace**.
- To add characters to the filename, use    to highlight a character, then press .
- To move the cursor in the filename, highlight the filename, then press  .
- To save the report with the edited filename, press  **Save**, then press  **Save**.

To view the report, open it in Link-Live Cloud Service or LinkRunner Manager. Refer to the LinkRunner Manager help for instructions.

XIII. SPECIFICATIONS

Environmental Specifications

Operating temperature	32°F to 113°F (0°C to +45°C) <i>Note</i> <i>The battery will not charge if the internal temperature of the tester is above 113°F (45°C).</i>
Operating relative humidity (% RH without condensation)	90% (50°F to 95°F; 10°C to 35°C) 75% (95°F to 113°F; 35°C to 45°C)
Storage temperature	-4°F to 140°F (-20°C to +60°C)
Shock and vibration	Random, 2 g, 5 Hz-500 Hz (Class 2) 1 m drop
Safety	EN 61010-1: CAT none, pollution degree 2 EN/IEC 60825-1:2007, EN/IEC 60825-2:2004+ A1:2007 (LRAT-2000 only)
Altitude	4,000 m; Storage: 12,000 m
EMC	FCC Part 15 Class A, EN 61326-1: Portable
Certifications and compliance	 Conforms to relevant European Union directives
	 Conforms to relevant Australian standards
	 Listed by the Canadian Standards Association

General Specifications

Media Access	10BASE-T, 100BASE-TX, 1000BASE-T (IEEE-802.3) and PoE (IEEE 802.3at)
Cable Test	Pair lengths, opens, shorts, splits, crossed, straight through, and cable ID
Tone Generator	Digital tone: [500 KHz]; Analog tones: [400Hz, 1KHz]
Ports	RJ-45 copper port 1000BASE-X fiber adapter port (2000 only)
Dimensions	3.5 in x 7.8 in x 1.9 in (8.9 cm x 19.8 cm x 4.8 cm)
Weight	18 oz (0.5 kg)
Battery	Li-ion: Removable, rechargeable lithium-ion battery pack (18.5 Watt-hrs) AA: Removable AA battery pack. Requires four AA batteries.
Battery life	Li-ion: Typical operating life is 6 hours. Typical charge time is 3 hours. AA: Typical operating life is 3 hours.
External AC adapter/charger	AC input 90-264 Vac 48-62 Hz input power DC output 15 Vdc at 2 amps
Display	2.8 in color LCD (320 x 240 pixels)
Keypad	12-key elastomeric
LEDs	2 LEDs (transmit and link Indicators)
Host interface	USB 5-pin mini-B

LinkRunner Manager Software

Supported operating systems	Windows 8.1, Windows 10
Processor	1 gigahertz (GHz) or faster with support for PAE, NX, and SSE2
RAM	1 gigabyte (GB) (32-bit) or 2 GB (64-bit)
Hard disk	1 GB
Display	1024 x 768 high color, 32-bit (recommended)
Hardware	USB Port