

LinkRunner® AT 4000

Advanced Ethernet Tester



Advanced Ethernet Testing, Diagnostics, Discovery, and Mapping

- Provides deep visibility, diagnostics, and packet capture for network technicians and engineers to quickly resolve issues impacting single or multiple devices and network segments.
- Automatically discovers, inventories, and documents network infrastructure devices, endpoints, and connection paths across multiple VLANs and subnets; detects common problems and generates topology maps in Link-Live.
- Comprehensive AutoTest validates and troubleshoots all aspects of network connectivity and services.
- Verifies available link speed from 10Mbps to 10Gbps, tests PoE, identifies connected switch port and VLAN.



Overview

The LinkRunner AT 4000 is an advanced cable and network tester for Multigigabit NBASE-T and fiber Ethernet networks, including comprehensive network discovery and topology mapping with advanced diagnostics and problem detection for in-depth troubleshooting.

Using network discovery and layer 2 and 3 path analysis, the LinkRunner AT 4000 offers comprehensive network visibility to help resolve issues impacting multiple devices – not just a single link – while still providing the automated tests for moves/adds/changes validation and troubleshooting that the LinkRunner AT family of test solutions is known for.

Test results can be automatically uploaded to the Link-Live collaboration, reporting, and analysis platform to improve teamwork between network engineers and technicians, creating greater job visibility, better project control, and improved tester fleet management. Independent management plane via wired or Wi-Fi connection (with optional adapters) allows remote operation and result uploading separate from the network under test.

Key Features

- Automatically discover and instantly generate a topology map of your networks using the Link-Live™ reporting and analysis platform.
- Comprehensive AutoTest validates and troubleshoots all aspects of network connectivity and services including DHCP and DNS, as well as response time of cloud and on-prem HTTP and FTP services.
- Verifies link speed/duplex for 10/100 Mbps and 1 Gbps, with detection of NBASE-T and Multigigabit 2.5G, 5G and 10 Gbps links.
- Discovers nearest connected switch name and port information via CDP/LLDP/EDP, including VLANs; monitors VLAN trunk traffic.
- Validates Power over Ethernet switching and cabling up to 90W 802.3bt with TruePower™ loading.
- Advanced twisted-pair cable tests for length, wiremap, and faults such as shorts, opens, mis-wires (split pairs, crossovers), fiber optic link signal strength power measurement and SFP diagnostics. Locate cable endpoints with optional WireView adapters.
- In-depth analysis tools like Path Analysis and line-rate packet capture help solve complex issues.
- Automate reporting/documentation and enable collaboration with test result uploads, management, and tester remote control via Link-Live™



AllyCare Premium Support Benefits

LinkRunner AT 4000 comes with 1 year of AllyCare support which includes:

- Cloud-based remote control
- Advanced topology mapping
- Software updates
- Free repairs and replacement
- Priority support

LinkRunner AT 4000 Testing Applications

Discovery – Discover network devices and common problems across multiple VLANs, plus generate Topology Maps in Link-Live.

The LinkRunner AT 4000's Discovery application creates an inventory of the devices on your networks along with their attributes: device types, names, addresses, interfaces, VLANs, resources, and other connected or associated devices. The app allows you to identify and analyze network devices and acts as a jumping-off point for further analysis using other apps, such as Ping/TCP, Path Analysis, and connection tests.

Devices are discovered in the local broadcast domain where the LinkRunner AT 4000 is physically connected, as well as other configured subnets including a second wired network by utilizing an optional USB Ethernet adapter.

- Instantly see what is on the network and where it is connected, by switch, slot, and port number
- Identify changes in connected devices and links, plus quickly investigate and locate “suspect” devices and identify problems associated with device misconfigurations
- Includes powerful filter and sort function with automatic problem detection that identifies issues such as:
 - Duplicate IPs
 - Congested or errored switch ports
 - Security threats, such as unknown nodes
- Batch authorization workflow makes it easy to identify known vs. unknown devices, enabling “who’s on my network” auditing
- Upload Discovery test results to Link-Live™ and generate comprehensive, up-to-the-minute-accurate network Topology maps that show your network as it is NOW, integrating Layer 2 and Layer 3 information, documenting where each device in the network is connected.*

**Active AllyCare Premium Support required for detailed topology map controls and advanced reporting options in Link-Live.*

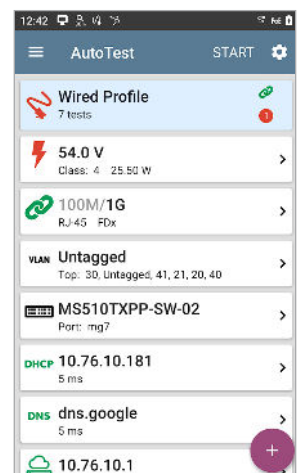
AutoTest and Profiles – Comprehensive network link test validates all aspects of network connectivity.

AutoTest is the most comprehensive testing application on the LinkRunner AT 4000. The app is fully customizable with savable test profiles and reusable Test Targets. Multiple profiles can be grouped allowing a single button press to validate connectivity on all VLANs. AutoTest results are automatically uploaded to the Link-Live platform after you claim your LinkRunner AT4000.

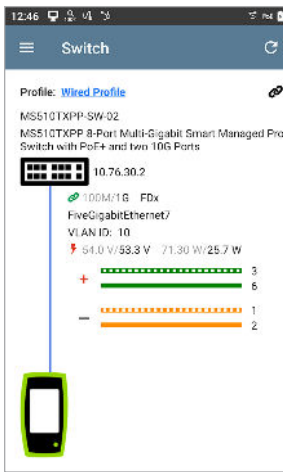
- Performs comprehensive connectivity tests in 7 seconds
- TruePower™ test validates loaded PoE performance to 90W
- Test includes:
 - Link speed and duplex (detects link speeds up to 10G)
 - Warns when the negotiated link speed is less than the advertised speed
 - 802.1x authentication
 - Discover nearest switch/slot/port
 - VLAN identification and monitor that shows traffic distribution of top VLANs
 - DHCP service testing including DHCP options and breakdown of response time
 - DNS test measuring the response time of an actual URL lookup
 - Gateway availability and responsiveness
 - Test results reverse grading and “stop after” controls
 - Ping or TCP port connectivity tests to unlimited user-defined targets
 - HTTP and FTP tests that breakdown End User Response Time (EURT) to quickly unravel the true performance issue



Discovery Screen



AutoTest Screen



Switch Screen

Switch Test – Identifies the nearest connected switch and critical configuration information.

The Switch test provides a graphical representation of the immediate connection from the AutoTest results. The LinkRunner AT 4000 uses the IEEE Link Layer Discovery Protocol (LLDP), plus the Cisco and Extreme Discovery Protocols (CDP and EDP) to display the nearest switch name, chassis, model, slot, and port. Plus, displays other critical information like switch MAC/IP address, connected VLAN and VLANs supported, link speed and duplex (can identify advertised link speeds up to 10G), connection (MDI or MDI/X), and PoE voltage/power (actual and under TruePower™ load).

- Uses LLDP, CDP, and EDP
- Displays nearest switch info:
 - Switch name, model, chassis, slot, and port#
 - Switch MAC/IP Address
 - VLANs supported by the port
 - Link speed and duplex (can identify advertised link speeds up to 10G)
 - Connection (MDI or MDI/X)
 - PoE voltage and power, both loaded and unloaded
 - Graphical representation of PoE power on pairs



Path Analysis

Path Analysis – Shows the switch/router path to any connected device.

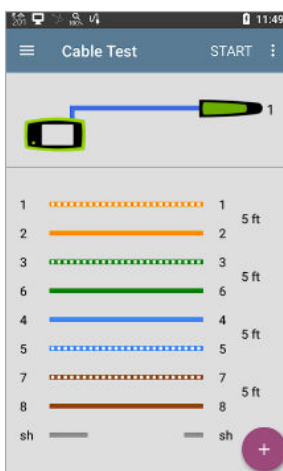
Path Analysis traces the connection points, including intermediate routers and switches, between the tester and a destination URL or IP address. You can use Path Analysis to identify issues such as overloaded interfaces, overloaded device resources, and interface errors. It also shows how devices within your network (and off-net devices) are connected to each other along a path including split routes.

All switches are pre-discovered through SNMP queries. When the measurement is complete, the LinkRunner AT 4000 shows the number of hops to the destination device.

Cable Test – Validate cabling for proper termination, test for length, common miswires, and distance to fault.

The LinkRunner AT 4000's Cable Test can help you determine cable length and fault status, verify wire mapping of patch cords and structured cabling, and locate cables using toning or WireView office locators. Test structured cabling using the top RJ-45 port. Test patch cables with the built in second RJ-45 for complete pin to pin mapping and TDR.

- Easily find opens, shorts, miswires, and split pairs:
 - On non-terminated cable
 - With WireView cable identifier
 - With built-in wiremap port
- Check patch cables using the built-in wiremap port
- Locate cable runs with:
 - Analog and IntelliTone™ toning
 - Switch port advertisement
 - Switch port link light blinking
 - Remote cable identifiers



Cable Test Screen

Ping/TCP Test – Verify connectivity to on or off-network devices, ensure TCP port availability.

The Ping/TCP test app runs a Ping or TCP Connect test to your chosen target, allowing you to verify connectivity and identify intermittent issues.

A Ping test sends an ICMP echo request to the selected target to determine whether it can be reached and how long it takes to respond. Test for MTU issues using the frame size and do not fragment settings. The results are trended, displaying the last 24 hours as well as loss statistics.

A TCP Connect test opens a TCP connection with the selected target to test for port availability using a 3-way handshake (SYN, SYN/ACK, ACK). You can open the TCP/Ping app from the Home screen, or you can select Ping or TCP Connect from another app, such as AutoTest, while viewing a device's details.

Capture – Packet capture to 1Gbps in-depth analysis.

Packet capture is the process of recording network traffic in the form of packets as data streams back and forth over wired connections. Packet captures can help you analyze network problems, debug client/server communications, track applications and content, ensure that users are adhering to administration policies, and verify network security.

You can open the Capture app from the Home screen or using a link from another app, such as AutoTest or Discovery.

Reflector – Works with other NetAlly tools for network performance testing.

The LinkRunner AT 4000 offers a packet reflector mode, which enables you to conduct end-to-end network performance tests when used with other NetAlly tools (LinkRunner 10G, EtherScope® nXG, CyberScope® CE). This mode validates network throughput capabilities up to 1Gbps. The reflector also works for 1G LANBERT™ media qualification testing. The line rate reflector supports control of what types of packets to reflect as well as swapping of source and destination MAC and IP addresses for L3 performance testing.

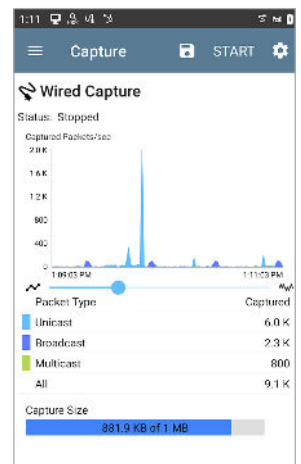
LANBERT™ Test - Maximize utilization of your existing cable plant and identify maximum error free throughput.

Your copper and fiber cable plant serves as the foundation of your network. But do you know whether it is of sufficient quality to provide the bandwidth required? The LANBERT media qualification app for NetAlly's LinkRunner AT 4000 provides a simple and fast method of assessing the quality of transmission and available bandwidth when used with another LANBERT-compatible NetAlly tester. LANBERT generates and measures the transmission of line rate Ethernet frames over your network cabling infrastructure, qualifying its ability to support 1G on fiber and 10/100M/1G on copper links.

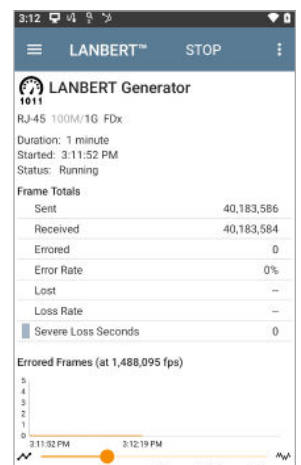
Running the LANBERT test over a long duration (up to 24 hours) serves as a “soak test” to identify the presence of intermittent issues and noise events that can corrupt network traffic. With easy-to-read trend graphs and the ability to drill down to 1-second granularity, LANBERT helps you identify exactly when errors occur.



TCP Test Screen



Capture Screen



LANBERT Screen

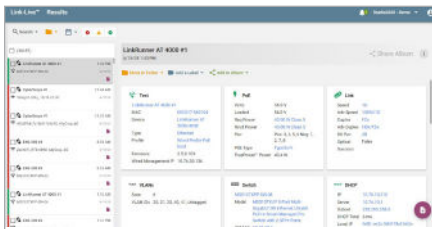
Link-Live™ Collaboration, Reporting, and Analysis Platform

Link-Live acts as a central system for managing test results and devices. It streamlines workflows by allowing easy logging, documenting, and reporting of test activities. When your tester is connected to Link-Live, test results are automatically uploaded to the dashboard for project management and reporting. In the case of no internet connectivity (air-gapped networks or new construction) results are buffered infinitely until connectivity is established.

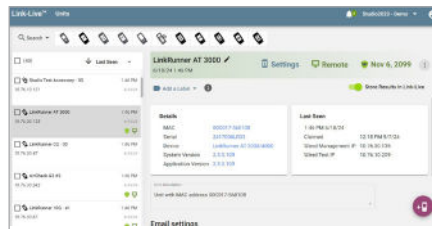
You can also upload additional files, screenshots, images, profiles, location information, and comments whenever needed. Moreover, LinkRunner AT 4000 testers with AllyCare Premium Support can receive firmware updates directly from Link-Live.

- AutoTest results uploaded via Link-Live platform for analysis and reporting
- Over-the-air software updates*
- Easily provide proof-of-performance
- Better manage projects and staff efficiency
- Remote Control – Secure remote control enables centralized experts to efficiently assist technicians in the field*

*Active AllyCare Premium Support required for web remote control and software updates.



AutoTest Dashboards



NetAlly Tester Dashboard



Discovery Dashboard

iPerf – Runs an iPerf3 performance test to a NetAlly Test Accessory or an iPerf server endpoint.

iPerf is a standardized network performance tool used to measure UDP or TCP throughput and loss. It is used to verify ensure adequate client bandwidth is available.

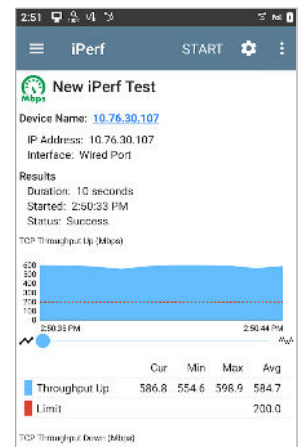
Wi-Fi Connectivity Support (requires optional USB adapter)

The LinkRunner AT 4000 supports Wi-Fi connectivity through the use of an optional USB Wi-Fi adapter. This provides on-the-go connectivity for uploading test results to Link-Live, web remote control*, and for conducting basic Wi-Fi diagnostics using third-party apps.

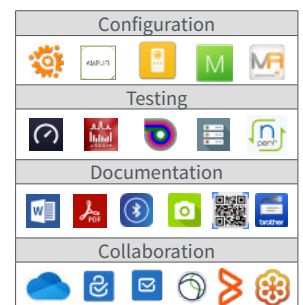
Additional Tools and Diagnostics – App Store

Users can download apps from the Link-Live app store to accomplish many tasks in addition to testing. Using third-party apps and USB or BT/BLE accessories allows the user to:

- Use the system web browser to connect to infrastructure elements and other resources
- Take pictures of or scan asset tags for documentation and inventories
- Identify available Wi-Fi networks
- Print ID labels
- Manage trouble tickets, and much more!



iPerf Screen



Examples of apps available to download onto the LinkRunner AT 4000

Models & Accessories

Model Number/Name	Description
LRAT-4000	Includes: LinkRunner AT 4000 tester with 1 year of AllyCare support (LRAT-4000-1YS), Power Supply with regional power plugs, WireView Cable ID #1, RJ-45 coupler, 850nm multimode 1 Gbps SFP, Getting Started Guide and Shoulder Sling Bag.
LRAT-4000-KIT	Includes: LinkRunner AT 4000 tester with 1 year of AllyCare support (LRAT-4000-1YS), Power Supply with regional power plugs, WireView Cable ID #1-#6, RJ-45 coupler, 850nm multimode 1 Gbps SFP, Holster, Getting Started Guide and Shoulder Sling Bag.
LINKSOLUTIONS-KT-4K	Includes: (1) LinkRunner AT 4000 tester (LRAT-4000) with 1 year of AllyCare support (LRAT-4000-1YS), (2) LinkSprinter network testers, (1) LinkRunner AT holster (HOLSTER-G3), and (2) LinkSprinter holsters.
LRAT-4000-1YS	One year of AllyCare support for LRAT-4000, LRAT-4000-KIT, and LINKSOLUTIONS-KT-4K (covers LRAT-4000 only).
LRAT-4000-2YS	Two years of AllyCare support for LRAT-4000, LRAT-4000-KIT, and LINKSOLUTIONS-KT-4K (covers LRAT-4000 only).
LRAT-4000-3YS	Three years of AllyCare support for LRAT-4000, LRAT-4000-KIT, and LINKSOLUTIONS-KT-4K (covers LRAT-4000 only).
G3-PWRADAPTER	AC Charger replacement/spare for LRAT-4000 mainframe with country power cords.
HOLSTER-G3	Field use carrying holster makes troubleshooting on the go easier. Openings allow access to all applicable buttons and interfaces.
SFP-100FX	100BASE-FX Fiber SFP transceiver with DDM (Multimode)
WIREVIEW 1	WireView wire mapper #1
WIREVIEW 2-6	WireView wire mappers #2-#6
US-WIFI-BT-USB	Edimax n150 Wi-Fi & Bluetooth USB Adapter for US and Canada
EU-WIFI-BT-USB	Edimax n150 Wi-Fi & Bluetooth USB Adapter for Europe
ALLY-SPACK	Sling-style shoulder bag can hold one tester and accessories, with other pouches and compartments for various tools or personal items.

Specifications

General	
Dimensions	4.02 in x 7.72 in x 1.65 in (10.2 cm x 19.6 cm x 4.2 cm)
Weight	1.06 lbs (0.48 kg)
Battery	Rechargeable lithium-ion battery pack (3.63 V, 9.75 Ah, 36.39 Wh)
Battery Life	Typical run duration: 8 hours Typical charge time: 5 hours (when unit is off)
Display	5.0-inch color LCD with capacitive touchscreen (720 x 1280 pixels)
Host Interfaces	RJ-45 and SFP test port RJ-45 Cable test port (1) USB Type-A Port (1) USB Type-C On-the-Go Port
Memory	Approximately 8 GB available for storing test results and user applications
Battery Charging	USB Type-C 65-W adapter: AC Input Power 100-240 V, 50-60 Hz; DC Output Power 15 V (3 A)
PoE Battery Charging	802.3 af/at/bt
Supported IEEE Standards	Wired: 802.3/ab/i/u/z, 1000BASE-T PoE: 802.3af/at/bt Class 0-8, and UPOE Fiber: 1000BASE-X, SFP SX/LX/ZX
LEDs	1 LED (Battery Status Indicator)

Environmental Specifications

Operating Temperature	32°F to 113°F (0°C to +45°C)
	NOTE: The battery will not charge if the internal temperature of the tester is above 113°F (45°C).
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	Meets the requirements of MIL-PRF-28800F for Class 3 Equipment
Safety	IEC 61010-1:2010: Pollution degree 2
Altitude	Operating: 4,000 m; Storage: 12,000 m
EMC	IEC 61326-1: Basic Electromagnetic Environment
	CISPR 11: Group 1, Class A

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netally.com/products/linkrunner-4000