

# Datasheet: LinkRunner™ AT

## Network Auto-Tester

### Key features include:

- Multiple user-configured AutoTests
- Cable length measurement, fault location and fault type
- TruePower(tm) Power over Ethernet (PoE) measurement
- Ethernet speed and duplex verification at 10/100/Gigabit rates
- Twisted pair and fiber optic link testing
- Nearest switch identification
- DHCP, DNS and Gateway connectivity tests
- Ping and TCP port connectivity tests to up to 10 user-selected targets
- Results saved on the tester or uploaded to the Link-Live Cloud Service with zero-touch
- Results, project and staff management using the Link-Live Cloud Service
- Packet reflection at rates up to 1Gbps



Network technicians and desktop support professionals are under ever-increasing pressure to deploy new infrastructure and ensure user satisfaction.

To address these challenges, LinkRunner™ AT Network Auto-Tester provides quick and complete copper and fiber optic network connectivity testing. This rugged, handheld network tester speeds troubleshooting and reporting with a complete one-button AutoTest and zero-touch Link-Live cloud reporting. The AutoTest performs your required set of connectivity tests in 10 seconds, enabling you to quickly and accurately identify and solve network connectivity problems. Cloud reporting automatically uploads results to the Link-Live Cloud Service for project management and reporting.

### Overview

The LinkRunner AT provides the answers you need to quickly troubleshoot connectivity problems:

- Am I following the best troubleshooting practice?
- Is this patch cable good? Where is the cable broken?
- Where does the cable from this jack terminate?
- Is this the correct switch and port? Is it delivering PoE power?
- What is the speed and duplex of my copper and fiber links?
- Are the DHCP and DNS servers working properly?
- Is the Gateway available?
- Are our most important local datacenter servers available?
- Are our key cloud and SaaS applications available?
- Are 802.1X and IPv6 implemented correctly?
- How do I save and manage hundreds of results?
- Where and when is my staff working and what are they testing?
- How can I do my job better and faster while impressing my boss?

In seconds, the LinkRunner AutoTest provides these answers and more on a brightly colored display that's easy to read under desks or outdoors. You can document your test results to prove the job's done right. With a six hour battery life and rugged design, the LinkRunner AT Network Auto-Tester can work wherever and whenever you need it.

## LinkRunner AT Features

**Instant-on operation** — ready to run your first test in less than three seconds.

**Get answers fast** — user-defined AutoTest performs your required set of connectivity tests in seconds, enabling you to accurately and quickly identify and solve network problems. The AutoTest facilitates standardized troubleshooting by ensuring that everyone on the support team tests in accordance with the organization-defined, network-specific best practice. Create up to 10 AutoTest profiles for a variety of troubleshooting scenarios.

**Take control** — use the Link-Live Cloud Service to manage thousands of test results and multiple testers. Easily view and sort results. Organize results by job-specific folders. Tag individual results with detailed comments and images. Create professional reports customized with your logo and project specific information. Know who on your staff is testing what, where and when by assigning a tester to a technician.

**Verify connectivity at 10/100/1G over copper or 100/1G over fiber** — connect using copper or fiber, turn it on to see link status, connection type, signal strength and traffic.

**Nearest switch and VLAN information** — uses IEEE Link Layer Discovery Protocol (LLDP) plus the Cisco® and Extreme Discovery Protocols (CDP and EDP) to display the VLAN and nearest switch model, slot and port.

**TruePower™ PoE testing** — quickly validate PoE performance by drawing actual power up to the 802.3at standard 25.5W. Load the circuit to stress switches, cabling and patch panels, all while measuring the voltage and pairs being used. The ability to validate the TruePower delivery before installing cameras, AP's and phones ensures smooth deployment.

**802.1X authentication** — verify access to secure networks using 802.1X and MAC Access Control Lists (ACL). The included LinkRunner AT Manager software configures 802.1X EAP type, downloads certificates and enters passwords.

**Cable verification and toning** — check patch cables using the built-in wiremap port including pin-to-pin connection, or installed wiring for length, shorts, opens or split pairs. The optional office locator kit allows identification of up to six unique ports for documenting cable plants.

**IPv4/IPv6 ready** — supports both IPv4 and IPv6 networks.

**Key device and application availability** — in addition to ping, which is often blocked or disabled, the LinkRunner AT performs a TCP port open test to verify application connectivity to up to 10 user-defined servers using IPv4 and IPv6. Router, DNS and DHCP servers are reported.

**Document results** — Save test results locally on the tester or select the Link-Live Reporting Mode to have results automatically uploaded the Link-Live Cloud Service. Results on the tester are downloaded to your PC and managed locally using the LinkRunner AT Manager PC application. Results uploaded to cloud service are managed using any smart device with a browser and an internet connection.

**Designed for field use** — six-hour Li-ion battery life, one-handed operation and a rugged design.

## LinkRunner AT Functions

### Cable Length

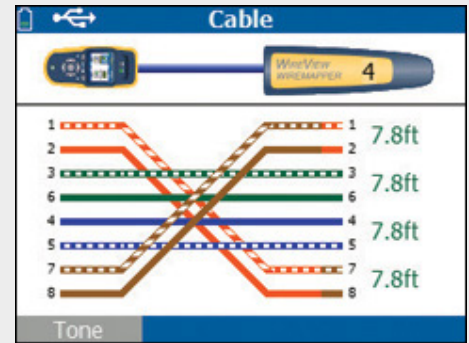
Measure the length of non-terminated twisted pair cables with TDR.

### Graphical Cable Wiremap

Find opens, shorts, mis-wires and split pairs on non-terminated cable with a WireView Cable Identifier or the built-in wiremap port.

### Cable Location

Locate cable runs with toning, switch port discovery, switch port LED blinking and cable identification with up to six remote cable identifiers. Toning supports both analog and digital IntelliTone™ modes.

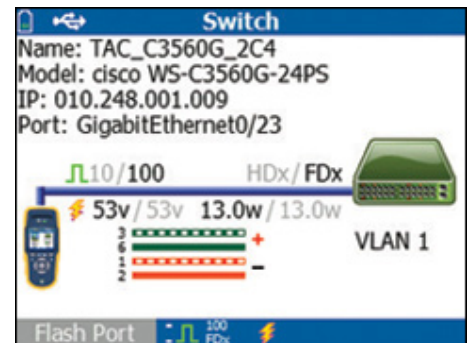


A mis-wired cable with pairs 1,2 and 7,8 swapped using cable identifier #4

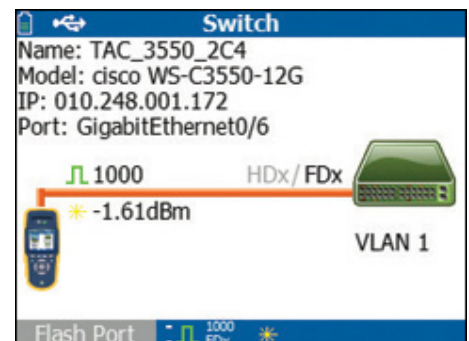
### Switch Information

LinkRunner AT decodes discovery packets to display critical nearest switch information including:

- Switch name and model
- IP address
- Port, slot and VLAN
- Duplex and speed (actual and advertised)
- Signal strength
- Connection MDI or MDI/X
- PoE voltage and power (actual and test limits)
- Graphical representation of power on pairs



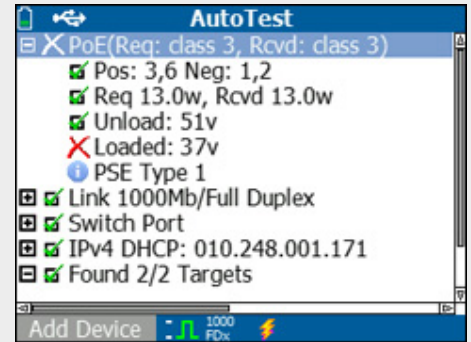
100 Mbps link on copper with PoE on port 23



1 Gig link on fiber

### TruePower™ PoE Loading

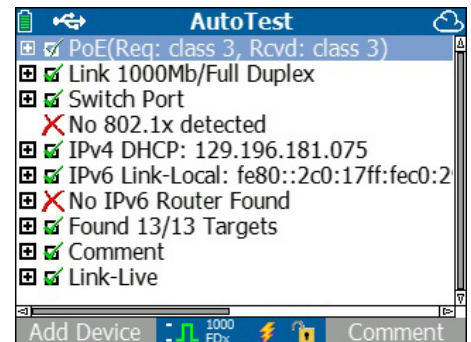
Verify you are receiving the required current and voltage up to 25.5W to power your PoE enabled devices. The LinkRunner TruePower PoE loading draws actual power to verify that your PoE enabled devices will have the required power to function.



### AutoTest

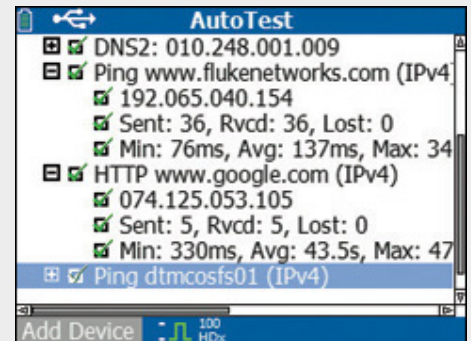
Verify enterprise connectivity in seconds with AutoTest. Standardize your set of critical network tests in profiles to run every time. Create, save and share up to 10 network and task specific profiles. Tests include:

- PoE (copper only) class
- Link speed and duplex(actual and advertised)
- RX pair and polarity
- 802.1x authentication
- Switch name, port, VLAN, model and IP
- DHCP auto-negotiation with subnet and DHCP server addresses
- IPv4 and IPv6 availability
- Ping and TCP port connectivity with lost and min, max and average speed



### Ping and TCP Port Connectivity

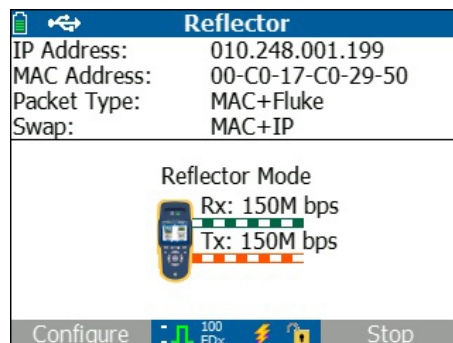
Verify connectivity to key devices with ping and TCP connectivity testing. Devices automatically include a router, DNS server and DHCP server. Configure 10 additional devices to meet your requirements by URL or IPv4/ IPv6 address and optional application port number.



## Reflector

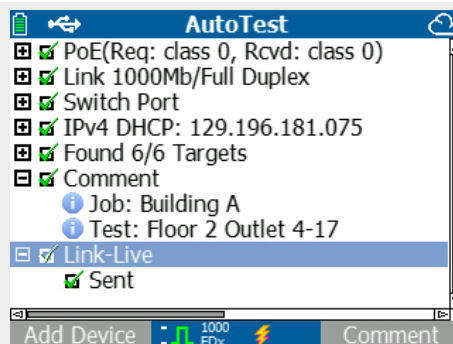
The packet reflector mode allows use as a remote device during end-to-end network path performance testing to validate LAN and WAN throughput capabilities at rates up to 1Gbps. The LinkRunner AT 2000 model supports packet reflection for multiple testers including:

- OptiView XG Network Analysis Tablet
- OneTouch™ AT Network Assistant
- EtherScope™ Network Assistant
- MetroScope™ Service Provider Assistant



## Link-Live Reporting Mode

Enable Link-Live Reporting Mode to have AutoTest results automatically uploaded to the Link-Live Cloud Service. This zero-touch reporting feature speeds and simplifies reporting and ensures that results are consistently saved. Append comments to each test result. You can even add an image to a test result - a photograph of the link under test for example. Results can be automatically saved to job-specific folders to simplify project management. Up to 10 results are held in memory in the absence of a network connection and uploaded later when a connection is available.



## Link-Live Cloud Service

For AutoTest results uploaded via the Link-Live Reporting Mode the Link-Live Cloud Service facilitates management and analysis of test results, test reports, testers, jobs, projects and support staff. The internet-hosted service is available from anywhere at anytime using any smart device with a browser and internet connection.

There are two levels of service: Essentials and Job Pro. Essentials is provided free while Job Pro is an optional fee-based service.

Essentials cloud service features	Job Pro adds the following to Essentials:
View test results uploaded via the Link-Live Reporting Mode	Job folders to simplify job and project management - for example create a folder hierarchy representing job, site, building, floor and work area and organize results accordingly
Sort and filter test results	Automatic uploading of test results into a user-specified folder
Add comments to test results using the cloud service	Add images to test results using the cloud service - for example a photograph of the link under test
Generate reports in PDF and CSV formats	Add images to test results by replying to the email message sent by the service
Claim and manage multiple testers	Graphical analysis PDF report page summarizing the results for all the tests in the report
Configure AutoTest profiles	Custom PDF report cover page - for example add a custom logo, title, subtitle and additional text
Configure AutoTest profiles	
Download AutoTest profiles to remote testers	
Administer multiple organizations	
Email test results to a user-specified address to view results on a smart phone, tablet or PC	
Add comments to test results by replying to the email message sent by the service	



FLUKE networks. LINK-LIVE.COM							
View Folder [All Results]							
Summary Details For: 1d 3d 7d 14d All Ending: 01/23/2015 Show: 0 0 0 All							
Time	Test	PoE	Link	Switch	DHCP	Gateway	WWW
Jan 23, '15 Friday 12:45:40pm	Name: LinkRunner AT Eric 01 MAC: 00C017-C02950 Device: LinkRunnerAT Profile: Profile 9C Images: Comments: Building F Floor 2 Outlet 3-6	Pos: 3,6 Neg: 1,2 Unloaded: 56v Loaded: 56v Req Power: 3.84W/Cla Rcvd Power: 3.84W Rcvd Class: Class 1 PSE Type: 2	Speed: 1000 Adv Speed: 10/100/1000 Duplex: FDX Adv Duplex: HDX/FDX RX Pair: All Polarity: normal Optical: No	Name: JohnLab Type: EDP Model: no model IP/MAC: 00e02ba0b100 Port: 1/1	IP: 129.196.181.079 Server: 128.181.003.050 Subnet: 255.255.252.000 DNS1: 129.196.132.135 DNS1 PING (ms): 1, 1, 1 DNS2: 129.196.132.244 DNS2 PING (ms): 1, 1, 1	IP: 129.196.180.001 PING (ms): 1, 1, 1	Type: PING IP: 129.196.231.098 Time (ms): 1, 1, 1 URL: www.google.com Type: TCP IP: 074.125.224.115 Port: 80 Time (ms): 37.34.31 URL: www.google.com Type: TCP IP: 074.125.224.116 Port: 443 Time (ms): 36.34.31
Jan 23, '15 Friday 12:26:55pm	Name: LinkRunner AT Eric 01 MAC: 00C017-C02950 Device: LinkRunnerAT Profile: Profile 9C Images: Comments: Building F Floor 2 Outlet 3-7	Pos: 1,2 Neg: 3,6 Unloaded: 48v Loaded: 48v Req Power: 3.84W/Cla Rcvd Power: 3.84W Rcvd Class: Class 1 PSE Type: 1	Speed: 100 Adv Speed: 10/100 Duplex: FDX Adv Duplex: HDX/FDX RX Pair: 3,6 Polarity: normal Optical: No	Name: s-n-v-s-f-p-f Type: CDP Model: cisco WS-C3750-48P IP/MAC: 129.196.180.001 Port: FastEthernet2/0/30 VLAN: 180 Voice VLAN: 11	IP: 129.196.181.079 Server: 128.181.003.050 Subnet: 255.255.252.000 DNS1: 129.196.132.135 DNS1 PING (ms): 1, 1, 1 DNS2: 129.196.132.244 DNS2 PING (ms): 1, 1, 1	IP: 129.196.180.001 PING (ms): 4, 1, 1	Type: PING IP: 129.196.231.098 Time (ms): 1, 1, 1 URL: www.google.com Type: TCP IP: 074.125.224.114 Port: 80 Time (ms): 35.35.32 URL: www.google.com Type: TCP IP: 074.125.224.115 Port: 443 Time (ms): 35.35.33
Jan 23, '15 Friday 12:20:38pm	Name: LinkRunner AT Eric 01 MAC: 00C017-C02950 Device: LinkRunnerAT Profile: Profile 9C Images: Comments: Building F Floor 2 Outlet 4-2	Pos: 1,2 Neg: 3,6 Unloaded: 30v Loaded: 30v Req Power: 13W/Cla Rcvd Power: 13W Rcvd Class: Class 3 PSE Type: 1	Speed: 1000 Adv Speed: 10/100/1000 Duplex: FDX Adv Duplex: HDX/FDX RX Pair: All Polarity: normal Optical: No	Name: JohnLab Type: EDP Model: no model IP/MAC: 00e02ba0b100 Port: 1/1	IP: 129.196.181.079 Server: 128.181.003.050 Subnet: 255.255.252.000 DNS1: 129.196.132.135 DNS1 PING (ms): 1, 1, 1 DNS2: 129.196.132.244 DNS2 PING (ms): 1, 1, 1	IP: 129.196.180.001 PING (ms): 1, 1, 1	Type: PING IP: 129.196.231.098 Time (ms): 1, 1, 1 URL: www.google.com Type: TCP IP: 074.125.224.115 Port: 80 Time (ms): 33.34.31 URL: www.google.com

Link-Live Dashboard



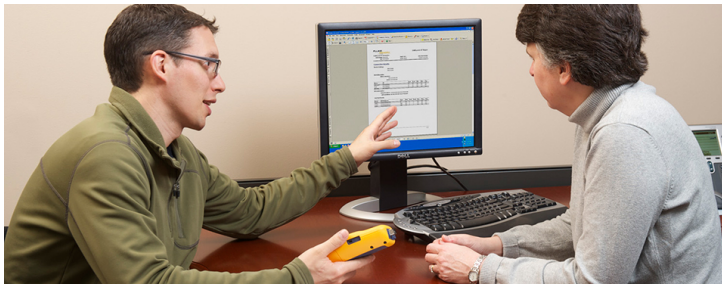
Link-Live Cloud Services

## LinkRunner AT Manager Software

For AutoTest results saved locally on the tester via the Local Reporting Mode the LinkRunner AT Manager Software facilitates management and analysis of test results, test reports and testers. LinkRunner AT Manager Software is an application installed on a Windows(R) PC.

LinkRunner AT Manager Software features:

- View test results saved locally on the tester
- Move test results from the tester to a local drive
- Generate reports in PDF, CSV and HTML formats
- Configure AutoTest profile
- Transfer AutoTest profiles between a tester and a local drive
- Capture screen images
- Update tester firmware



## Multiple language support

LinkRunner AT fully supports multiple languages including English, French, German, Spanish, Portuguese, Russian, Japanese and Simplified Chinese. Multi-language support includes LinkRunner AT user interface, getting started guide, user manual and supporting LinkRunner AT Manager software, help files and user reports.

## Gold Support

Sign up for the Gold Support plan and enjoy unrivaled privileges that support and protect your investment. These include repairs and loaner equipment, unlimited technical assistance seven days a week, 24 hours a day via phone or our website support center; free software upgrades; unlimited web-based training; and access to our extensive Knowledgebase library. Some benefits are not available in all countries. See [www.flukenetworks.com/goldsupport](http://www.flukenetworks.com/goldsupport) for more information.



## Model Comparison

	Feature	LRAT-1000	LRAT-2000
<b>Basic Test</b>	10/100/100 RJ45 interface	✓	✓
	Solicit PoE voltage (802.3af)	✓	✓
	Link/DHCP/gateway	✓	✓
	Nearest switch (CDP/LLDP)	✓	✓
	Ping/TCP Port single target	✓	✓
<b>UX</b>	Color display	✓	✓
	AA battery pack	✓	option
	Lithium Ion rechargeable battery	option	✓
<b>Cable Test</b>	Length and distance to fault	✓	✓
	Flash switch port	✓	✓
	Integrated patch cable test	✓	✓
	WireView office ID/wiremap	option	✓
	Toning (analog and IntelliTone)	✓	✓
<b>Configurable</b>	Configurable PoE class (802.3at)	✓	✓
	Configurable link speed/duplex	✓	✓
	Configurable MAC address	✓	✓
	Configurable VLAN ID	✓	✓
	Configurable 802.1X security	✓	✓
<b>AutoTest</b>	Continuous testing w/ stats	✓	✓
	>1 Ping/TCP target (up to 10)	✓	✓
	AutoTest profiles (up to 10)	✓	✓
<b>Advanced</b>	TruePower PoE load (25.5W)		✓
	100/1000 Fiber SFP interface		✓
	Line rate packet reflector (1Gbps)		✓
	IPv6 support		✓
<b>Reports</b>	Results saved locally on tester	10	50
	LinkRunner AT Manager PC software	✓	✓
	Link-Live Cloud Reporting	✓	✓
	Link-Live Cloud Service	✓	✓

## Technical Specifications

Environmental	
Operating Temperature and Relative Humidity	32°F to 113°F (0°C to +45°C) <i>Note: The Li-ion 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 2nd edition
Safety	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
Certifications and Compliance	Conforms to relevant European Union directives Conforms to relevant Australian standards Listed by the Canadian Standards Association

General	
Media Access; Copper	RJ-45: 10BASE-T, 100BASE-TX, 1000BASE-T and PoE (IEEE 802.3af and 802.3at)
Media Access; Fiber	SFP Adapter Port supports 100BASE-FX and 1000BASE-LX/SX/ZX (LRAT-2000 Only)
Cable Tests	Pair lengths, opens, shorts, splits, crossed, straight through and cable ID
Tone Generator	IntelliTone digital tone: [500 KHz]; analog tones: [400 Hz, 1 KHz]
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)
Li-ion Battery	Removable, rechargeable li-ion battery pack (18.5 Watt-hrs). Typical operating life is 6 hours; Typical charge time is 3 hours
AA Battery	Removable AA battery pack. Typical operating life is 3 hours
External AC Adapter/Charger	AC input 90 to 264 Vac 48 to 62 Hz input power DC output 15 Vdc at 2 amps (li-ion battery pack only)
Display	2.8 in color LCD (320 x 240 pixels)
Keypad	12-key elastomeric
LEDs	2 LEDs (Link and Receive/Transmit indicators)
Host Interface	USB 5-pin mini-B

## LinkRunner AT Manager Software

<b>Supported Operating System</b>	Windows® Vista, Windows® XP, Windows® 7, Windows® 8
<b>Processor</b>	400 MHz Pentium processor or equivalent (minimum); 1 GHz Pentium processor or equivalent (recommended)
<b>RAM</b>	96 MB (minimum); 256 MB (recommended)
<b>Hard Disk</b>	Up to 500 MB of available space may be required
<b>Display</b>	1024 x 768 high color, 32-bit (recommended)

## Ordering Guide

Item Name	Description
<b>LRAT-2000</b>	Includes LinkRunner AT 2000 with Li-ion battery, Wireview Cable ID #1, LinkRunner Manager software CD, USB cable, RJ45 coupler, Getting Started Guide and soft case.
<b>ACK-LRAT2000</b>	Includes AirCheck™ tester, LinkRunner AT 2000 tester, AirCheck external directional antenna, spare Li-ion battery for either AirCheck or LinkRunner AT, IntelliTone Pro 200 probe, WireView IDs #2-6 cable ids, LinkRunner AT holster, AirCheck holster and deluxe carrying case.
<b>LRAT-2000-FTK</b>	Includes LinkRunner AT 2000, SimpliFiber® Pro optical power meter, 850/1300 multimode source, VisiFault™ VFL, FT120 FiberViewer™, FindFiber™ Remote ID source, carrying case and SC, ST, and LC power meter adapters.
<b>LRAT-2000-KIT</b>	Includes LinkRunner AT 2000, IntelliTone™ Pro 200 Probe, WireView Cable IDs #2-6 and deluxe carrying case.
<b>LRAT2-CIQ-GSV</b>	LinkRunner AT 2000/CableIQ Gigabit Service Kit Includes: LinkRunner AT 2000, CableIQ Qualification Tester, IntelliTone Pro 200 Probe, CableIQ Remote Identifiers #1-7 and deluxe carrying case
<b>LRAT-2000-5PK</b>	Includes 5 LRAT-2000s and 5 WireView #2-6 cable ID sets. <i>Note: Available only in the US, Canada and Europe.</i>
<b>LRAT-2000-10PK</b>	Includes 11 LRAT-2000s and 11 WireView #2-6 cable ID sets. <i>Note: Available only in the US, Canada and Europe.</i>
<b>CIQ-GSV2</b>	Includes CableIQ™ Qualification Tester, LinkRunner AT 1000, IntelliTone Pro 200 Probe, CableIQ Remote Identifiers #1-7 and deluxe carrying case.
<b>LINKSOLUTIONS-KIT</b>	Includes LinkRunner AT 2000, two LinkSprinter 300 network testers, LinkRunner AT holster and two LinkSprinter holsters. Note: Available only where LinkSprinter 300 is sold.
<b>LRAT-1000</b>	Includes LinkRunner AT 1000 tester with AA battery pack, 4 AA batteries, LinkRunner Manager software CD, USB cable, Getting Started Guide and soft case.
<b>GLD-LRAT</b>	LinkRunner AT Gold Support Services, 1 year
<b>GLD3-LRAT</b>	LinkRunner AT Gold Support Services, 3 years

For a complete listing of LinkRunner AT models and accessories, visit [www.flukenetworks.com/LinkRunnerAT](http://www.flukenetworks.com/LinkRunnerAT)