

FLUKE
networks

Fluke Networks Solutions Catalog

Products for the installation, testing, monitoring and analysis of enterprise and telecommunication networks

www.flukenetworks.com

Fluke *Networks* is trusted

Fluke Networks offers best of breed solutions that span network deployment, network performance management and troubleshooting, as well as security and performance monitoring. Fluke Networks solutions are trusted by:

- **Network professionals to help them deploy, manage and troubleshoot business critical networks**
- **Agencies, Enterprises & Carriers around the world**
- **By 98 of the Fortune 100 Companies**





Datacom Cabling

Copper Certification and Testing

Loss / Length (Tier 1) Fiber Certification

Fiber Inspection and Cleaning



IT Networking

Test and Troubleshooting

Monitoring, Analysis and Troubleshooting





COPPER CABLE TEST SOLUTIONS

Complete solutions for the installation, testing, documentation and certification of copper premises cabling

Fluke Networks' copper verification, qualification and certification products are essential tools for installers, contractors and network technicians in today's environment. As networks grow and change, the performance of cabling is critical to delivering services to users. New testing standards also emerge and with them come guidelines that cabling professionals must follow when installing, testing, troubleshooting, and certifying copper. Whether it is coax, 10BASE-T, 100BASE-TX, 1000BASE-T or 10GBASE-T, you need to be aware of the requirements and avoid the potential pitfalls in the copper infrastructure.

Fluke Networks' copper testing products reduce network downtime caused by flaws in the cabling or installation process. They also resolve problems in operating networks and make upgrades simpler. Intuitive user interfaces are easy to learn and understand. With precise and repeatable accuracy that have become gold standard in network testing, network professionals save time and money using Fluke Networks' copper testing products.



DTX CableAnalyzer™ significantly reduces your total time to certify.

The DTX CableAnalyzer™ Series from Fluke Networks is the testing platform for today – and tomorrow. This revolutionary platform significantly reduces total time to certify by improving every aspect of the testing process. It all starts with a Cat 6 Autotest time that's several times faster than other testers – and fiber testing that's five times faster. DTX also gives you a complete solution for 10 Gig testing over copper, Basic Tier 1 fiber testing, and Extended Tier 2 fiber testing with the industry's only modular OTDR. The DTX makes you ready for whatever the world throws at you – today and tomorrow.

DTX CableAnalyzer™
It's all about time.

**The DTX advantage:
speed, performance and accuracy.**

The DTX CableAnalyzer's powerful features, speed, and revolutionary platform make you more efficient and productive – and you can see the results on the bottom line. It's all about time – and no other tester delivers like DTX.

- **Increase productivity from day one.**
Intuitive interface means your techs spend less time in training and more time testing.
- **Certify 10 Gig Performance.**
The DTX-1800 with DTX 10 Gig Kit measures the performance for 10 Gigabit Ethernet and Alien Crosstalk (ANEXT and AFEXT) in full compliance with industry standards to 500 MHz.
- **Zero to certified in 9 seconds.**
This unheard-of Cat 6 test speed lets you move from link to link three times faster than with previous testers.
- **Level IV Accuracy.** Get the most accurate test results in the shortest possible time.
- **900 MHz frequency range.** Prepares you for future applications, such as 10 Gigabit Ethernet, Class F and CATV.
- **Advanced time-saving diagnostics.** Pinpoints the location of a failure and is the only tester that suggests corrective action, saving troubleshooting time.
- **Complete fiber certification**
Certifies fiber to Tier 1 (Basic) and Tier 2 (Extended) specifications using DTX Fiber Modules and the DTX Compact OTDR.
- **12-hour battery life.** Gives you the power to complete any job.
- **Save time managing results.**
From setup to reporting, LinkWare™ Cable Test Management Software's user interface and time-saving features increase productivity.

Significantly reduces total time to certify.

The DTX Digital CableAnalyzer Series gives you a complete solution that streamlines every aspect of the certification job – from setup, to record-fast testing and troubleshooting, to reporting results to the customer. All told, DTX can save you considerable time and money – up to four hours a day.

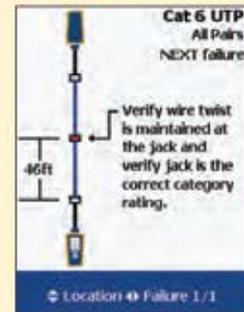
Cat 6 certification in 9 seconds

The DTX-1200 and DTX-1800 perform Cat 6 certification tests in just 9 seconds – in full compliance with industry standards and with superior accuracy. That's *several times faster* than existing testers. This incredible speed means you can test up to 170 more links in an eight-hour shift.

Troubleshoot faults twice as fast

When a link fails, the DTX Series provides quick, easy-to-understand directions to identify the point of failure (distance from the tester) and the possible reason(s) for the failure.

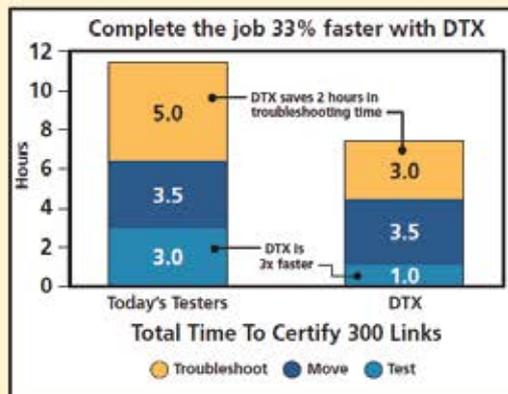
These directions not only tell you the problem, but also *identify corrective actions* your test technicians can take to solve the problem quickly – all without having to consult the project manager. Instead of spending time executing trial and error corrections – and re-testing to find out



whether the problem has been resolved – the technician knows exactly where to look and what to do to fix the failing link. *Even if only two percent of the cables certified in one shift fail Autotest, you'll save as much as two hours of labor time per day of certifying.*

Fast even when you're not testing

The DTX Series isn't just a faster way to test. It cuts setup and reporting times. Its ease-of-use lowers training time. Extended battery life means you can do more on a single charge. And a bright color display, ample memory, and built-in talk set all contribute to overall productivity while enhancing the user experience. **This all adds up to save you time and money every day.**



The DTX CableAnalyzer: a visionary approach to testing.

Level IV Accuracy – Exceeds spec requirements for Cat 6 and beyond.

Fiber ready at all times – optional fiber loss/length test modules and Compact OTDR module fit snug and protected in DTX module cavity.



Advanced time-saving diagnostics pinpoint problems anywhere on the link and suggest corrective action to help you get the job done on time.

Field tough Permanent Link Adapter delivers repeatable accuracy and Cat 5e, Cat 6 and Cat 6A interoperability.

12-hour battery life – Lithium ion battery provides full day of testing.

Internal memory stores up to 250 graphical Cat 6 test results or up to 2000 reports in text format.

Memory Card for instant data hand-off – each multiple of 128 MB stores 2000 Cat 6 graphical link test results.

Talk feature saves time by allowing you to communicate with your test partner at the other end of the link over both copper and fiber.

Rugged overmold bonded to case stands up to tough field conditions.

Bandwidth support to 900 MHz – supports video distribution, Class F, and 10 Gigabit Ethernet.

9-second Cat 6 Autotest – speeds you through testing three times faster than any other tester.

Large color display with bright backlight for easy viewing.

12-second fiber Autotest – performs dual fiber, dual-wavelength certification test.

Save full graphical test results to Fluke Networks' LinkWare PC software.

USB Port for high-speed test data downloads.

Portable, lightweight ergonomic design for easy field use.

Rotary knob makes learning easy and operation simple – you always know what test mode is selected.



Enhance the power of DTX.

Test and certify 10 Gig Ethernet over copper

The DTX 10 Gig over Copper Test Solution enables testing and certification of twisted pair cabling for 10 Gigabit Ethernet deployments – whether it is a Cat 6 or Augmented Cat 6 cabling system. The DTX-10GKIT, together with DTX-1800 CableAnalyzer, is the first field test solution that measures performance for 10 Gig and Alien Crosstalk (ANEXT and AFEXT) in full compliance with the industry standards to 500 MHz.

Test and certify 10 Meg to 10 Gig Ethernet over fiber

With optional on-board fiber modules and the DTX Compact OTDR, complete fiber certification is ready whenever you need it. Our certification solution includes loss length, polarity measurements and fiber traces. You can validate fiber link performance and installation quality as well as locate sources of loss and reflectance. Measure optical loss at multiple wavelengths without swapping near and far-end units. Perform a single-end OTDR test to identify latent problems in a fiber link. The only cable tester that lets you switch between copper and fiber with the touch of a button or perform a comprehensive suite of tests from one platform.

Verify network service availability

Improve the services you offer your customers with the DTX CableAnalyzer and Network Service Module (DTX-NSM). Simply plug the DTX-NSM module into the back of the main unit and you're ready to verify network service availability and link connectivity up to 1 Gigabit Ethernet. Verify if a link is active, identify its data rate, duplex capabilities and whether power is available for PoE. Then document all the network connectivity tests executed as an integrated part of the cable certification documentation provided by LinkWare.

Test cabling with Midspan PSEs for POE applications

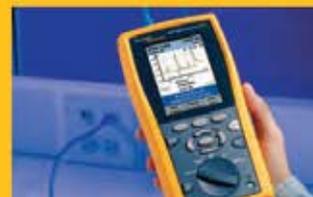
Midspan power sources block DC power from traveling to the Ethernet switch or other active equipment in the wiring closet. This prohibits Wiremap tests of the link with conventional DC test methods. The DTX Series CableAnalyzer has the capability to test cabling using AC signals. This unique feature allows full certification to ISO and TIA standards where Midspan Power over Ethernet supplies are used.

Certify patch cord performance

Test patch cords to ensure optimal network performance with greater channel throughput and greater system margin. Attach the optional DTX Patch Cord Adapters (DTX-PCU6S) to the DTX main and remote units and you're ready to certify patch cord performance to TIA Cat 6/5e specifications and also ISO class D/E.

Test coaxial cable quickly and easily

Extend the capabilities of your DTX CableAnalyzer to test coaxial cabling systems including legacy data cabling (such as 10BASE-2 or 10BASE-5 Ethernet) and video distribution coaxial cabling. Test coax cable length, propagation delay, cable (input) impedance and insertion loss as a function of signal frequency.



DTX-1800 with DTX 10 Gig Kit to test Alien Crosstalk performance

Get more done in less time with fiber on-board.

Record-fast fiber certification

The DTX fiber modules accelerate testing through exclusive technology and an easy-to-use interface. Press the Autotest button and you get standards compliant certification automatically – test two fibers, each at two wavelengths, measure length, and determine the pass or fail status – all in about 12 seconds. Our fiber modules let you test more fibers in less time, cutting testing costs and freeing you up for other tasks. You can easily save more than 100 hours per year.

Test copper and fiber with a touch of a button

Only the DTX platform offers optional on-board fiber modules – so you'll never lose time searching for your fiber adapter. And fiber certification is always ready when you are. No other solution lets you switch between copper and fiber with a touch of a button.

Deliver Basic Tier 1 fiber certification

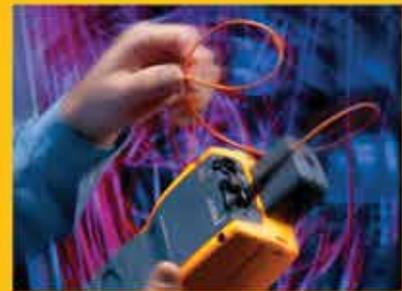
Our comprehensive Tier 1 certification solution includes loss, length, and polarity measurements for singlemode and multimode fiber. You can validate fiber link performance and installation quality. Measure optical loss at multiple wavelengths. Measure fiber length and verify polarity. And bi-directionally test fibers at two wavelengths without swapping near and far-end units.

Deliver Extended Tier 2 fiber certification

The DTX Compact OTDR shoots traces to measure the loss and reflectivity of connectors, splices and other events on multimode and singlemode fiber links. With it, you can ensure high quality workmanship of fiber installations.

Find faults faster

The optional DTX Compact OTDR module identifies breaks in the fiber link, connections or splices with excessive loss. The fiber loss/length modules as well as the Compact OTDR module offer an integrated visual fault locator (VFL) – a tool that makes troubleshooting simple link problems fast and incredibly easy. The bright laser-driven VFL helps you locate many near-end fiber faults and can be used to verify continuity and polarity. Our exclusive integrated design ensures that the VFL is always on-hand when you need it.



DTX copper/fiber kits available

If you certify twisted pair copper and fiber optic cabling, we have a kit for you. These kits bundle a DTX CableAnalyzer with DTX Fiber Modules and/or a DTX Compact OTDR so you have all you need to certify both copper and fiber media.

DTX Copper/Fiber kits

	DTX-1200 -M	DTX-1200-MS	DTX-1800-M	DTX-1800-MS	DTX-1800-MSO
DTX-1200	•	•			
DTX-1800			•	•	•
DTX-MFM2	•	•	•	•	•
DTX-SFM2		•		•	•
DTX-OTDR					•

Time is money. DTX saves you both.

The DTX CableAnalyzer Series delivers superior performance that can reduce your total certification costs by as much as 33% per year. This dramatic reduction is the result of not just faster testing, but also improved accuracy, superior diagnostics, longer battery life, simple user interface, and fast setup and reporting. **DTX – it's all about time.**

DTX CableAnalyzer Series

Product Features	DTX-1800	DTX-1200
Cat 6 Autotest time (seconds)	9	9
Maximum bandwidth (MHz)	900	350
Accuracy level	IV	IV
Color display	•	•
Stores graphical results data	•	•
Internal memory capacity (graphical Cat 6)	250	250
Removable memory card interface	•	•
Cat 6 graphical results for each of 32 MB multiple	600	600
Lithium ion batteries – battery life	12 hours	12 hours
Advanced diagnostics	•	•
AC Wire Map capability	•	•
USB interface	•	•
Serial interface	•	•
Cat 6A permanent link adapter	•	•
Cat 6 channel adapter	•	•
Accepts resident fiber module	•	•
Start autotest at smart remote	•	•
Talk between main and smart remote	•	•
Standard Accessories		
DTX Compact OTDR Module	option	option
Fiber Loss/Length Test Module (multimode, singlemode, or gigabit multimode)	option	option
Fiber Compact OTDR Module	option	option
DTX 10 Gig Kit	option	n/a
Network Service Module	option	option
Patch Cord Test Adapters	option	option
Class F Adapters	option	n/a
Coax Cable Test Adapters	option	option
Multimedia memory card	•	option
USB cable	•	•
Serial computer interface cable	•	option
Talk headset	•	•
Carrying case	•	•

Note:

- Feature or accessory is available in the standard product configuration.
- n/a The feature is not available; the accessory is not applicable.
- option The accessory can be purchased as an optional item.

The DTX Series gives you a clear and simple upgrade path from any of the models to any higher performance model, including the DTX-1800.

Enhance your DTX tester with service, support, and training.

Register your DTX and receive a bonus gift. Plus access to our Technical Assistance Center (TAC) and extensive on-line Knowledge Base for fast answers. Register today at www.flukenetworks.com/register

Customer Support is easy with our NetworkSuperVision™ Gold Support. It ensures peace-of-mind with free annual calibration, free loaner units, 24/7 TAC support and special discounts on training and promotions. See www.flukenetworks.com/goldsupport for more information. Or contact your country sales organization for Gold program availability and pricing.

Train your installers at our one-day CCTT training and certification program. This BICSI-accredited course includes classroom training, hands-on labs, and exam certification exercises. Visit www.flukentetworks.com/CCTT for more information. Or contact the country sales organization nearest you for availability.



Experience the power of DTX.

We invite you to experience the unique capabilities of our DTX CableAnalyzer by taking a virtual test drive at www.flukenetworks.com/DTXlive.

Or in the U.S. and Canada, call us at **1-800-508-0490** and let a Fluke Networks Systems Engineer show you how DTX technology can work for you. Other countries, visit www.flukenetworks.com/contact for a sales organization near you. You can also sign up for a free half-day workshop covering the latest in testing and standards overview, DTX product demonstration, and hands-on operation. To find a workshop in your area, go to www.flukenetworks.com/workshops.

The DTX Series from Fluke Networks. The revolutionary platform that significantly reduces total time to certify – today and tomorrow.

NETWORKSUPERVISION

Verify the Quality of Your Installation

Verification is the minimum indicator of installation quality for many cabling types, and plays an important role in the success of any Voice, Datacom, or Video (VDV) cabling installation. Whether you're performing new cabling installations or working with existing cabling infrastructure for moves, additions, or configuration changes, you can quickly verify your work with an affordable test tool and have confidence in a quality installation.

What is verification testing?

Verification testing confirms that a cable meets established national or international standards of conductor configuration and passes basic continuity testing. Verification may be performed on two conductors or multi-conductor twisted pair cabling. Look to Fluke Networks' MicroScanner Pro and MicroMapper to perform basic verification testing, as well as troubleshoot and solve wiring mistakes before they become real problems. Both award-winning products are backed by the superior support you've come to expect from Fluke Networks, the leader in network testing.



MicroScanner™ Pro

The essential cable verification tester

The MicroScanner™ Pro is a powerful verification tool designed to confirm basic installation quality of multiple cable types. It automates the testing of cable conductor continuity and configuration, and provides necessary information to rapidly solve problems including the location of cable faults. MicroScanner Pro tests coaxial cable (RG6, RG59, etc., for CATV/CCTV), twisted pair cable (UTP/STP/SSTP), and other wiring for audio, control, security or basic telephone service. The MicroScanner Pro speeds basic live network testing with powerful network tap service and speed identification.

Quickly identify problems

Use the MicroScanner Pro for verification to ensure basic continuity and correct terminations. The wiremap test checks end-to-end continuity on all UTP cable four-wire pairs to quickly verify if the cable under test has the correct wiring scheme (either 568A or 568B) and identifies any cabling problems. MicroScanner Pro quickly identifies a fault (see Figure 1), allowing you to see opens, shorts, crossed pairs, split pairs or any miswires.

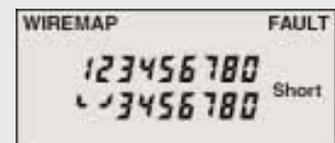


Figure 1. Pairs 1-2 are shorted.

See how to ensure cable configuration quality with
Fluke Networks verification tools

Troubleshooting tools save you time

What happens when a fault is detected? You waste valuable time with visual inspection or troubleshooting by process of elimination. With the push of a button, MicroScanner Pro's length function uses Time Domain Reflectometry (TDR). TDR acts like "cable radar" to measure the distance to an open or short in each conductor pair, or the overall length of the cable. TDR provides the critical information necessary to determine whether to repair punched down conductors at the block, replace a port or connector, or pull a new cable. Overall cable length measurement is useful for tracking cable usage for billing and inventory purposes.



Figure 2. Showing 1-2 pair length.

TDR even identifies the distance to active network taps such as hubs or nic cards.

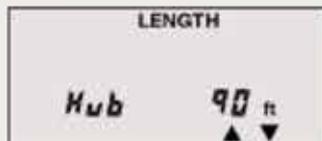


Figure 3. Active network hub detected at 90 ft.

Identify active network connections

MicroScanner Pro's active network identification mode flashes hub ports and shows you if a network tap is operating at 10 Mbps or 10/100 Mbps and whether it is full or half duplex capable. It also identifies workstation network interface cards.



Figure 4. 10 Base-T signal detected, wired to PC.

Tracing and locating cables

MicroScanner Pro's toner function allows you to generate a 1000 Hz tone detectable by standard analog probes to trace and locate hidden cabling in walls, ceilings or distribution boxes. Four unique selectable tones help identify different users toning at the same time.

Identify cabling links from the wiring closet

MicroScanner Pro Office/Room Identifier allows you to identify cabling drops for an office or room during adds, moves and changes, and it helps determine routing at the patch panel and documents twisted pair and coaxial cabling installations. Use the Office Identifier Plugs (shown below)

to attach to the far end of the link (at the workstation/office) and the MicroScanner Pro will display the office number on the display (see Figure 5).

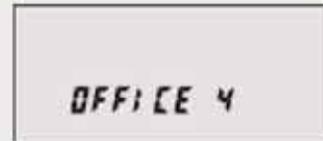


Figure 5. Office/Room #4 termination ID.

MicroScanner Pro features

- Tests all common copper cable types: bare wire, coaxial cabling, UTP and STP cabling
- Checks wire configuration (wiremap) to ANSI/TIA/EIA 568A, 568B standards
- Speeds identification and troubleshooting of common miswires such as opens, shorts, crossed and split pairs
- Uses patented TDR technology to ensure accurate pair length measurements
- Flashes hub light to help identify pairs
- Generates four unique tones for locating cables hidden in walls, ceilings, or wiring closets
- Identifies active networking 10 Base-T/100Base-T hubs
- Identifies half or full duplex capability
- Matches (UTP or coaxial) cables to offices during adds, moves and changes
- Enables patch cable testing without couplers or external adapters
- Comes with one-year warranty

MicroScanner Pro Accessories



Bare-wire Adapter
(MT-8203-16)



Coax Adapter
(MT-8203-15)



Wiremap Adapter
(MT-8203-14)



Office Identifier Plugs
(MT-8203-17)



Carrying Case
(MT-8202-04)



MicroMapper™

The fast, comprehensive LAN wiremap checker

The MicroMapper is a small, handheld cable tester that enables network professionals to verify the integrity of Ethernet twisted-pair cabling in one quick step. The MicroMapper quickly and easily tests twisted-pair cabling, allowing you to see opens, shorts, crossed, reversed and split pairs. Simply push the TEST button, and the MicroMapper will automatically scan all wire pairs for any existing faults in your cable. The MicroMapper also includes a remote unit to easily enable one-person testing of installed cabling or patch cords. The MicroMapper includes a built-in tone generator that allows you to trace cable through walls, floors, and ceilings when used with IntelliTone Probe, or any other analog probe.

Features

- Verifies UTP/STP network cable to ANSI/TIA/EIA 568A and 568B
- Tests twisted-pair cables for open circuits, shorts, crossed pairs, reversed pairs and split pairs
- Easy-to-read LED fault display
- Tone generator works with IntelliTone Probe or any other analog probes
- Conducts shield integrity testing
- Features self-storing remote unit to allow one-person testing of installed cables
- Includes extended battery life with automatic sleep mode
- Low-battery LED
- Comes with one-year warranty

Specifications

Product	Specs
MicroScanner Pro	<p>Dimensions: 5.5" x 3.25" x 1" (139.7 x 82.5 x 25.4 mm)</p> <p>Battery: 9-volt alkaline battery; low battery indication</p> <p>Display: custom LCD, 1.75" x .85" (44.45 x 21.59 mm)</p> <p>Applications: shielded (STP) and UTP cable; 75 or 50 Ohm Coaxial cable; 10 Base-T or 10/100 Base-T networks</p> <p>Main tester interface: modular 8 connector for length, 10/100 link identification, wire map, office identifier, toner; loopback interface: module 8 connector used for patch cable wiremap</p> <p>Length measurement: measures length on all 4 pairs and displays in feet or meters; $\pm 4\%$ or ± 2 ft whichever is greater, max length 1500 ft (457 m)</p> <p>Length calibration: user selectable NVP, NVP calculation based on known cable length (min. length 50 ft (15 m) and max. length 1500 ft (457 m)</p> <p>Wiremap and Office/Identifier: faults detected: opens, shorts, reversed pairs, swapped pairs, and split pairs, distance maximum length: 656 ft (200M)</p> <p>Office Identifier: 6 passive test plugs attached to far end (identified as #1-3 and #5-7); distance maximum length 656 ft (200 m)</p> <p>Toner frequency: user may select 1 of 4 predefined tone sequences</p> <p>Toner Interface: main Mod8 port for tone generation on all 4 pairs. Ground jack provided for grounding MicroScanner Pro during trace operations.</p> <p>High voltage input/protection: the test interface withstands input hazard conditions that arise from normal telephone interfaces (48 VDC at less than 80 mA) or 24 VAC power used to power many telephone keysets.</p>
Wiremap Adapter	Dimensions: 2.25" x .5" x .625" (57.15 x 12.7 x 15.875 mm)
Coax Adapter	Dimensions: 3" x .63" x .58" (76.2 x 16 x 14.7 mm)
MicroMapper	<p>Dimensions: 4.93" x 2.05" x 1.18" (125 x 52 x 30 mm)</p> <p>Weight: 0.28 lbs (130 g)</p> <p>Minimum length for split pair detection: 2 ft (0.6 m)</p> <p>Maximum Testing length for twisted pair cables: 656 ft (200 m)</p> <p>Battery: (4) 1.5-volt AAA alkaline batteries; low battery indication by LED</p>

Fluke Networks delivers Network SuperVision

Fluke Networks offers the most comprehensive line of premises network testing tools for the inspection, verification, certification, and documentation of copper and fiber optic cabling systems. Network owners, installers and maintainers alike choose our products because they provide superior vision into their networks. From products that stay ahead of your technology needs, to responsive service to keep you up and running, Fluke Networks has everything you need to keep pace in today's fast moving networked world.

Ordering Information

Model Number	Items Included
MT-8200-32A	MicroScanner Pro Includes: MicroScanner Pro, Wiremap Adapter (Office ID 4), Coax Adapter (CATV type, F-connector), 9-volt Alkaline battery, Quick Reference Guide, and User CD
MT-8200-24A	MicroScanner Pro VDV Kit Includes: MicroScanner Pro, IntelliTone Probe, wiremap adapter, coax adapter (CATV type, F-connector), office/room ID kit, 9-volt alkaline battery, Quick Reference Guide, and User CD
MicroScanner Pro Accessories	
MT-8202-04	MicroScanner Pro Carrying Case
MT-8203-15	Coax Adapter Replacement Part (RJ45 to F Connector)
MT-8203-17	Office/Room ID Kit (IDs 1 - 3, 5 - 7)
MT-8203-14	Wiremap Adapter Replacement Part (Office ID 4)
MT-8203-16	Bare Wire Adapter (with alligator clips)
MT-8200-49A	MicroMapper Includes: MicroMapper and MicroMapper Remote, RJ45 patch cable, (4) 1.5 Volt AAA alkaline batteries, Quick Reference Guide, and User CD

MicroScanner² Cable Verifier

Raising cable verification to a higher power

For more than a decade, cabling installation and maintenance technicians have relied on MicroScanner to verify terminations and troubleshoot continuity faults. A lot has changed in the cabling world since the original MicroScanner was introduced. Industry economics require that installations be done fast and accurately with no callbacks. And converging voice, data, and video technologies have given rise to new requirements for service testing and multimedia support.

MicroScanner² recognizes these trends and presents a much-needed revolution to the way testing is done. It streamlines every aspect of the verification job. From its time-saving user interface and integrated multimedia support to its expanded service detection capabilities, MicroScanner² gives technicians the power to perform their jobs faster and more accurately than ever.

High power vision to verify voice/data/video cabling and services. That's Network SuperVision.™ That's Fluke Networks' promise to you.

Reduce test time and user error

Yesterday's cable verification testers force users to toggle between different modes (up to four) to view all test results. This not only slows the test process, but also causes user frustration and error. MicroScanner² has defied this convention by displaying key test results – wiremap, pair lengths, distance to fault, cable ID, and far-end devices – all on one screen.

Eliminate awkward test adapters

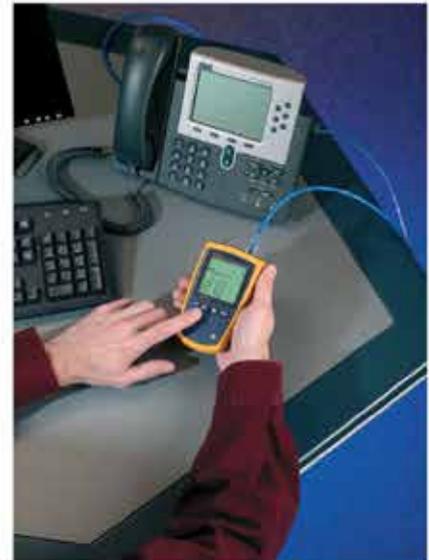
Tired of losing or breaking all the adapters needed for testing the various voice, data, and video media types? MicroScanner² makes these adapters things of the past with built-in RJ11, RJ45, and coax support. Both the main unit and the far-end identifiers can be used to test telephone jacks, Ethernet jacks, and CATV outlets right out of the box.

Rule out service problems fast

Today's communications technicians have more problems to deal with than just the cabling. They have to rule out a whole host of cable and service issues before determining the cause of a connectivity problem. Is there telephone voltage? What's the polarity? Is there a switch at the far end? Is PoE available? MicroScanner² gives technicians high power vision to verify today's most common voice, data, and video services.

Locate elusive cables in seconds

MicroScanner² features built-in IntelliTone digital and analog toning to precisely locate



virtually any cable or wire pair, regardless of work environment. Use digital mode to locate high-grade data cabling (Cat 5e/6/6a) in bundles, or at switches, patch panels, or wall outlets. Or, use analog mode on voice-grade cabling (Cat 3 and below), as well as coax, security/alarm, and speaker wiring.

Repair or replace tools less often

With all the abuse you put your tools through, you can't afford for them to be delicate. MicroScanner² features a rubber wrap-around holster that makes it the right tool for even the toughest jobs. Toss it into your toolbox. Drop it from a ladder. It can handle it. Plus, it now comes standard with a vinyl carry pouch for enhanced protection and convenience.

High power vision into voice/data/video cabling

Technical Data

Datacom Cabling | Copper Certification & Testing
MicroScanner² Cable Verifier

MicroScanner² Cable Verifier



Ordering Information

Model	Description
MS2-100	MicroScanner ² Cable Verifier Includes MicroScanner ² Cable Verifier with main wiremap adapter, multi-language Getting Started Guide, user CD, batteries, and Fluke Networks carry pouch
MS2-KIT	The MicroScanner ² Professional Kit Includes MicroScanner ² Cable Verifier with main wiremap adapter, IntelliTone™ Pro 200 Probe, Remote Identifiers #2-7, patch cords (shielded RJ45, RJ11, coax), multi-language Getting Started Guide, User CDs, batteries, and deluxe Fluke Networks carry case
MS2-TTK	The MicroScanner ² Termination Test Kit Includes MicroScanner ² Cable Verifier with main wiremap adapter, IntelliTone™ Pro Probe, IS60 Pro-Tool™ Kit, multi-language Getting Started Guide, User CDs, batteries, and deluxe Fluke Networks carry case
MS2-KIT-IE	MicroScanner ² Industrial Ethernet Includes MicroScanner ² Cable Verifier with main wiremap adapter, IntelliTone™ Pro 200 probe, Remote Identifiers #2-7, patch cords (shielded RJ45, RJ11, coax), clip-set RJ45-to-8 alligator clip bare wire adapter, multi-language Getting Started Guide, User CDs, batteries, accessory soft, packaged in a deluxe Fluke Networks carry case plus (1) M12-to-RJ45 patch cable

Accessories	Description
MS2-IDK27	MicroScanner ² Remote Identifier Kit #2-7
MT-8200-63A	IntelliTone Pro 200 Probe
CLIP-SET	RJ45 to 8 – Clip Test Lead
CIQ-RJA	RJ45/11 Modular Adapter
CIQ-COAX	Coax Adapter Kit for RCA, BNC
MS2-CPK	MicroScanner ² Professional Kit Carry Case

Specifications and availability subject to change.

Specifications

Test Connectors	Twisted-pair: UTP, FTP, SSTP 8-pin modular jack accepts RJ45 and RJ11 Coax: F-connector for 75 Ω, 50 Ω, 93 Ω cables
Cable Tests	Length (460 m or 1500 ft), wiremap to TIA-568A/B standards, remote ID locators
Tone Generator	IntelliTone digital tone: [500 KHz]; analog tones: [400Hz, 1KHz]
PoE Detection	Solicits and detects the presence of 802.3af compatible PoE devices
Ethernet Port Test	Advertised speed of 802.3 Ethernet ports (10/100/1000)
Power Source	Battery type: 2 AA alkaline batteries
Dimensions	3 in x 6.4 in x 1.4 in (7.6 cm x 16.3 cm x 3.6 cm)
Weight	13 ounces; 363 grams (batteries included)
Warranty	One year
M12/ RJ45 Cable Specifications:	
Cable type	Ethernet cable, Cat5e, shielded, 2 Pair AWG 26 stranded (7 wire), RAL 5021 (water blue), M12 4 pos. D- coded on RJ45 connector
Number of positions	4
Fixed cable length	2 m
Volume resistance	≤ 5 mΩ
Insulation resistance	≥ 100 MΩ
Ambient temperature	-20 °C to 50 °C
Inflammability class acc to UL 94	V0
Surge voltage category	II
Pollution degree	3
Degree of protection	IP20/IP67
External cable diameter	6.7 mm
Transmission characteristics	Cat 5 (IEC 11801:2002), Cat 5e (TIA 568B:2001)

CableIQ™ Qualification Tester

The network tech's vision into cabling bandwidth.

CableIQ, the first cabling bandwidth tester for network technicians.

As an IT professional, you have a tough balancing act. You're an on-the-spot problem solver. And you've got your eye on future enhancements, seamlessly upgrading the network to higher speeds, while optimizing the current infrastructure. All this without adding staff and while working with smaller budgets.

That's why Fluke Networks designed CableIQ – an easy-to-use cable troubleshooting and bandwidth qualification tester specifically for network technicians. It has all the power you need to see whether your cable is qualified to support 10/100, VoIP or Gigabit Ethernet and quickly solve network connectivity problems in one intuitive, handheld tool.

CableIQ: See network infrastructure problems quickly

- **Isolate cabling problems from network problems.** Save time and money by escalating fewer trouble tickets.
- **See existing cabling bandwidth.** Four-second test quickly determines if your existing cabling can support voice/10/100, VoIP or Gigabit Ethernet.
- **Troubleshoot cabling performance faults.** Determine why the existing cabling plant cannot support the desired network speed (e.g. connection fault at 7 feet).
- **Free up 10% or more of your switch ports.** Discover what is at the far end of any cable, whether it is an open cable, a PC, an analog phone, or switch.
- **Detect speed/duplex mismatches in a matter of seconds.** Determine a PC's duplex settings and compare settings to the connected switch – all from one location.
- **Isolate faults easier with intelligent wiremap.** Test for wiremap, length, shorts, split pairs or opens, and graphically see the distance to specific pin faults, such as "pin 1 break at 37 feet."
- **Locate cables and wires with superior accuracy.** Breakthrough IntelliTone™ digital signaling technology precisely locates cables in even the most chaotic wiring closet.
- **Empower frontline techs with an easy-to-use tool.** Intuitive user interface and graphical display guides users with little or no training required.
- **Avoid disputes over cause of network problems.** Save results or upload them to a PC with Cable IQ Reporter Software (included).



CableIQ gives network techs new vision into cabling bandwidth

CableIQ is the first cabling tool designed for network technicians who need to troubleshoot and qualify cabling bandwidth. It gives even the most novice tech vision to see what speeds existing cabling can support, quickly isolate cabling from network problems, and discover what is at the far end of any cable. That means network techs can close trouble tickets faster, reduce on-call time, and save money by better utilizing their existing infrastructure.

Technical Data

The network tech's vision into cabling bandwidth



Reduce escalated problems by as much as 30%

CableIQ's powerful troubleshooting capability and intuitive interface enable frontline technicians to identify and troubleshoot a wider range of infrastructure problems. Is the port active? Are the duplex settings matched? Is it a network problem or a cable problem? Can the cable support the required network bandwidth? CableIQ is the only tool that can answer all these questions before trouble tickets are escalated to the next level.

Troubleshoot cabling faults in half the time

CableIQ shows you whether your cabling is qualified to support the network's required bandwidth, and provides detailed information on the nature and location of cabling performance faults. Intelligent wiremap graphically displays the cable's wiring configuration, and shows the distance to opens and shorts. Advanced diagnostics also identifies and locates non-wiremap related connection faults, such as crosstalk or large impedance changes. Built-in IntelliTone digital technology allows you to tone and trace without disconnecting from the network. With CableIQ, your techs can close trouble tickets faster by cutting cable troubleshooting time in half.



Ensure a smooth transition to VoIP or Gigabit Ethernet

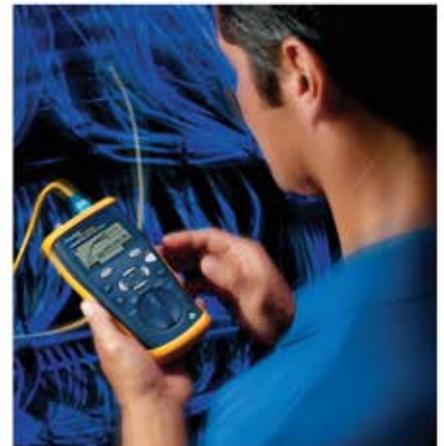
When you deploy Voice over IP (VoIP) or Gigabit Ethernet, you want to make sure the existing cabling will support the bandwidth requirements of your new equipment. Your cabling was certified, but moves adds and changes have rendered many links incapable of running desired speeds. CableIQ quickly reveals whether a link, including patch cords, is qualified for voice, 10/100BASE-T, VoIP, or Gig. Knowing your cabling's bandwidth capabilities before upgrading can prevent countless hours of future downtime and labor hours wasted on unnecessary troubleshooting.

See what customers are saying about CableIQ:

"CableIQ's best feature is its ability to see cabling bandwidth. I had a PC that was locking up intermittently. I plugged CableIQ into the link and found a Cat 3 patch cord. After swapping out the cord, the problem went away." – *Network Specialist*

"The ability to troubleshoot an active port is a timesaver – reducing the total time needed for problem resolution." – *Electronic Communications Staff Associate*

"If we put one of these in the hands of every frontline tech, we could save ourselves 30% in on-call time." – *Network Administrator*



See the power of CableIQ in action

Experience the unique capabilities of CableIQ by taking a virtual test drive at www.flukenetworks.com/seecableiq. Or call us at 1-800-508-0490 (US and Canada), and let a Fluke Networks Systems Engineer show you how CableIQ technology can work for you. Visit www.flukenetworks.com/contact to locate Fluke Networks' sales organizations worldwide.

Free bonus gift with registration

Register your CableIQ and receive a bonus gift. Plus access to our Technical Assistance Center (TAC) and extensive online Knowledge Base for fast answers. Register today at www.flukenetworks.com/register.



CableIQ™ Qualification Tester

Unparalleled vision into cabling bandwidth

From the **worldwide leader** in network test.

Portable, lightweight, rugged ergonomic design for easy field use.

Discover mode detects and locates switches and shows link configuration (speed/duplex/pairing).

Cable bandwidth qualification. Find out in four seconds what bandwidth your cable can support.

Intelligent wiremap graphically shows distance to specific conductor fault.

Four AA batteries. Long lasting battery life for several weeks of testing.

Graphical display. Backlit for viewing in all environments.

Safely test on active network. Perform most cabling or network tests without having to disconnect.

Store 250 results for later reviewing.

Digital or analog toning. Compatible with IntelliTone Probe for finding cables with superior precision.

Expert cabling diagnostics gives you detailed information on bandwidth faults.

Rotary knob makes learning easy and operation simple – you always know what test mode is selected.

USB port for fast transfer of data to PC or to reflash software.



Remote adapter for testing existing copper cabling – doubles as a protective endcap.

RJ45 and F-Connector tests voice/data/video/audio cabling.

Ordering Information

Model	Description
CIQ-100 	CableIQ Qualification Tester Includes CableIQ with remote adapter and soft carrying case
CIQ-KIT 	CableIQ Advanced IT Kit Includes CableIQ with remote adapter, IntelliTone 200 Probe, six remote office IDs, rugged carrying case
CIQ-SVC 	CableIQ Service Kit Includes cable with remote adapter, LinkRunner Network Multimeter, IntelliTone 200 Digital Probe, six remote IDs, rugged carrying case.
CIQ-IDK57 	CableIQ Remote Identifier Kit includes three remote identifiers numbers 5-7
CIQ-KIT-IE 	CableIQ Industrial Ethernet Kit Includes CableIQ main unit with remote adapter, CableIQ Reporter software CD, IntelliTone 200 Digital Probe, Remote IDs #2-7, (2) RJ45-RJ45 patch cord, USB cable, coax "F" push-on adapter, 75-ohm coax patch cord, RJ45/11 universal coupler, RJ11-RJ11 patch cord, owners CD and quick start guide, (4) AA batteries, test accessory soft pouch, hard carry case, (1) M12-to-RJ45 patch cable
CIQ-GSV-IE 	CableIQ Gigabit Service Kit includes CableIQ Qualification Tester, LinkRunner Pro Network Multimeter, IntelliTone Pro 200 Probe, CableIQ Remote Identifiers #1-7, WireView Cable ID #1, CableIQ Reporter software CD, RJ45-RJ45 shielded patch cords (2), USB cable, coax "F" push-on cable, RJ45/RJ11 universal coupler, USB cable, test accessory soft pouch, CableIQ Getting Started Guide, LinkRunner Pro Getting Started Guide, IntelliTone Pro Getting Started Guide, eight (8) AA batteries, one 9 V battery, packaged in a deluxe Fluke Networks carry case and (2) RJ45-to-M12 patch cables

Specifications

Cable types supported	UTP, STP, FTP, SSTP, RG6, RG59, audio, security
Qualification autotests	1000BASE-T, 100BASE-TX, 10BASE-T, VoIP, 1394b S100, TELCO, Wiremap only, Coax
Supported tests	Wiremap, length, cable signal performance, digital toner, analog toner, Ethernet port detection and identification, analog telephone detection, blink port light, continuity, speaker test, cable fault finding, video signal detection
Wiremap	Can detect single wire faults and supports MultiMap mode with up to seven remote office identifiers. Draws proportional wire length to breaks. Detects Split Pairs.
Find fault	Measures crosstalk and impedance and compares against appropriate limits based on qualification test selected. Detects location of large point sources as well as distributed sources in the cabling if they are sufficient to disqualify the application.
Results storage	Up to 250 qualification test results
Power	Battery type: 4 AA (NEDA 15A, IEC LR6) alkaline batteries
Battery life	20 hours of typical use, without backlight
Other battery types supported	4AA photo lithium, NIMH, NICAD
Dimensions and weight	7 in x 3.5 in x 1.75 in (17.8 cm x 8.9 cm x 4.5 cm) 1.2 lb (0.55 kg)
M12/ RJ45 Cable Specifications	
Cable type	Ethernet cable, Cat5e, shielded, 2 Pair AWG 26 stranded (7 wire), RAL 5021 (water blue), M12 4 pos. D- coded on RJ45 connector
Number of positions	4
Fixed cable length	2 m
Volume resistance	≤ 5 mΩ
Insulation resistance	≥ 100 MΩ
Ambient temperature	-20 °C to 50 °C
Inflammability class acc to UL 94	V0
Surge voltage category	II
Pollution degree	3
Degree of protection	IP20/IP67
External cable diameter	6.7 mm
Transmission characteristics	Cat 5 (IEC 11801:2002), Cat 5e (TIA 568B:2001)

COPPER CABLE TEST SOLUTIONS



	DTX CableAnalyzer™ Series	CableIQ™ Qualification Tester	MicroScanner² Cable Verifier
Supports structured cabling warranties	✓		
Meets TIA/ISO certification standards requirements	Levels IIe, III, IIIe and Level IV		
Provides pass/fail results	9-second Cat 6		
Documents test results	✓	✓	
Qualifies cabling speed (10/100/VoIP/Gig)		✓	
Advanced troubleshooting: HDTDX, HDTDR, AxTalk	✓		
Troubleshoots distance to connection fault	✓	✓	
Basic troubleshooting: distance to break or short	✓	✓	✓
Continuity and wiremap	✓	✓	✓

Pocket Toner®

The Pocket Toner® tools are pocket-sized, durable test devices that allow users to quickly and easily test voice, data, video cables for open and short circuits, continuity, AC/DC voltage* and dial tone*



The Pocket Toner® comes in three models and several different kit configurations so no matter what your job, you can safely install and test.

All models of the Pocket Toner include these features:

- Low voltage protection for both the main body and detachable toner unit
- Dual audible indicators
- Bi-gender adaptable toner section
- Removable push-on connector
- Removable Speed 81™ connector
- Lightweight, durable anodized aluminum
- Auto shut off
- Replaceable parts
- Uses one AAA battery
- One-year warranty

*Varies by model/kit configuration



Cable
Professional



Satellite



Audio
& Video



LAN



Voice



Security
& Fire



Cable &
Telephone

Pocket Toner® NX1

Pocket Toner® NX1 is ideal for identifying and testing low voltage, singular coax cables for continuity, opens and shorts. Low voltage protection and verification up to 52 volts.

- 2 buzzers to indicate continuity
- Bi-gender toner unit with Speed 81™
- Removable toner unit
- Extra bright dual colored LED (red=short, green=continuity, clear=open)
- Low voltage circuit protection

Pocket Toner® NX2

Pocket Toner® NX2 offers all the features of the NX1 plus more. The PTNX2 tests VDV cables for continuity, AC and DC voltage (low voltage protection and verification up to 52 volts), opens, shorts, 50-75 Ω termination, and polarity with the optional Dial Tone Detective™ adapter. The Pocket Toner® NX2 easily confirms if there is AC or DC voltage, an open circuit on the line, if a short exists or if continuity is achieved. Pocket Toner NX2's key feature is the ability to know if the cable being tested is connected to any device with a voltage output of up to 52 volts. The Pocket Toner® NX2 can be purchased separately and comes in two different kit configurations; PTNX2-DLX and PTNX2-Cable (see chart for kit contents)

- Beeps when line condition changes
- Displays 5 different test results
- Low voltage circuit protection
- Auto shut-off
- Removable bi-gender toner unit with Speed 81™
- *Dial Tone Detective adapter (available with the DLX model)
- *Deluxe case with belt clip (available with the DLX model) or small case (available with the Cable model)

	Blinking [-] Indicates an open circuit
	Blinking [S] Indicates a short
	Solid [C] indicates continuity with either a 50-75 ohm ID cap or the toner unit
	Blinking [A] indicates AC voltage (>6 volts) Solid [V] indicates DC voltage (>6 volts)



Removable Speed 81™

Versatile bi-gender detachable buzzer



	PTNX1	PTNX2	PTNX2-Cable	PTNX2-DLX
Cable Professional	✓	✓	✓	✓
Audio/Video				✓
Cable & Telephone				✓
Satellite				✓
Voice			✓	✓
LAN				✓
Security/Fire				✓
8 x Faster Testing				

Dial Tone Detective adapter

The Dial Tone Detective, is a low-cost, must have adapter that determines the presence of a dial tone. The bi-colored LED turns green indicating a dial tone – attach the adapter to one of the tone sections on any PTNX device to emit a sound at the same time. If the adapter turns red, there is a reversed pair on the jack under test.



Pocket Toner® NX8

Pocket Toner® NX8 this advanced and versatile Pocket Toner tool tests VDV cables 8 times faster for continuity, AC and DC voltage (low voltage protection and verification up to 52 volts), opens, shorts, 50-75 Ω termination, and polarity with optional Dial Tone Detective™ adapter. It has all the features of the NX1 and NX2 including the ability to test eight outlets at once. The eight segment LED display shows if a short exists, if there is an open circuit, AC or DC voltage (up to 52 volts), simple, direct continuity or which of the eight ID caps matches the line being tested.

Each of the ID caps serves as a universal connector with an F-male port for our line of patented adapters. The Pocket Toner NX8 is available four different kit configurations (see chart for kit contents).

- 8 ID caps with built-in LED (available with the Cable, CT, DLX and VV-Pro kits)*
- Beeps when line condition changes
- Displays 5 different test results
- Low voltage circuit protection
- Auto shut-off
- Removable bi-gender toner unit with Speed 81™
- Dial Tone Detective adapter (available with the CT, DLX, VV-Pro kits)*
- Deluxe case available with the PTNX8, Cable, CT, DLX and VV-Pro kits)*



	Blinking [-] indicates an open circuit
	Blinking [5] indicates a short
	Solid [C] indicates continuity with either a 50-75 ohm ID cap or the toner unit
	A solid matching number indicates continuity with one of the 8 ID caps
	Blinking [⚡] indicates AC voltage (>6 volts) Solid [⚡] indicates DC voltage (>6 volts)



	PTNX8	PTNX8-Cable	PTNX8-CT	PTNX8-DLX	PTNX8-VV-Pro
Cable Professional	✓	✓	✓	✓	✓
Audio/Video			✓	✓	✓
Cable & Telephone			✓	✓	✓
Satellite				✓	✓
Voice		✓	✓	✓	✓
LAN				✓	✓
Security/Fire				✓	✓
8 x Faster Testing		✓	✓	✓	✓

IntelliTone™ Pro Toner and Probe Series

Every day, cabling installers and network technicians deal with the shortcomings of cable location tools based on 40-year-old technology. **Until now.**

The **IntelliTone™ Pro Toner and Probe Series** from Fluke Networks gives you cutting-edge digital and analog cable locating technologies that are as advanced as the systems you work with. IntelliTone is a breakthrough solution – and the only solution – that locates and isolates the most elusive, hidden or bundled voice, data and video cables and wire pairs quickly and reliably – even on active networks.

Breakthrough digital and analog toning in one

IntelliTone™ Pro is the first toner and probe to offer digital and analog toning all in one tool. That means it's equipped with the most powerful cable location and verification technologies for any work environment – even active networks.

- Eliminates confusion over cable location; decisively rejects noise and false signals
- Locates the correct cable bundle
- Isolates a cable within the bundle, despite cable bleed
- Verifies twisted-pair installation with visual end-to-end continuity test (opens, shorts and reversed pairs)
- Identifies individual wire pairs with new SmartTone™ analog toning
- Simplifies signal interpretation in noisy environments with multiple LED indicators

Locate cables quickly and easily

Fluke Networks has applied decades of cable test engineering expertise to the science of locating copper cables. The result is what we call IntelliTone technology – a digital signal-toning and signal-interpreting process that rapidly zeroes in on cables.



IntelliTone technology energizes cable conductors with a smart, synchronized digital signal. Multiple tone types occur in the signal that help you to:

- **LOCATE** the correct cable bundle using maximum radiation.
- **ISOLATE** a cable within the bundle using a signal with minimum radiation.
- **VERIFY** cable conductor continuity with an automated signal that steps through each conductor.

Locate hidden cables

One of the toughest, most time-consuming parts of locating a cable has been in tracing its path amidst multiple cables and bundles in wiring closets. The IntelliTone digital signal features a LOCATE tone that provides maximum radiation, allowing you to quickly locate hidden and hard-to-find cabling.

Technical Data

Finds the cables the others can't

Datacom Cabling | Copper Certification & Testing
IntelliTone™ Pro Toner and Probe Series

Isolate the right cable or pair – fast

Cabling installations have become increasingly complex, which has made cabling increasingly difficult to locate with traditional technologies.

When cables are run together for even short lengths, a signal from one can bleed over to another. One cable might carry the original signal; other cables might carry the signal as a result of bleed. Isolating cables with traditional tools requires guesswork, training, time for repeated testing – and even the best efforts often result in mistakes.

IntelliTone Pro provides two cutting-edge technologies to isolate cables or wire pairs. Digital mode can be used to isolate twisted-pair cables on a switch or within a bundle. SmartTone™ analog mode can be used to isolate wire pairs at an unterminated outlet or on a telecommunications block.

Overcome noise – and save hours of time

Fluorescent lights, machinery, computer monitors and electrical wiring all produce noise that slows down cable location. Together, the IntelliTone Pro Toner's synchronized digital signal and the IntelliTone Pro Probe's microprocessor controlled signal identification technology reject noise and false signals to clearly identify cable location. This can save you hours every week on cable location projects.

Tone on live networks safely and effectively

Modern network devices use common mode termination for cables connected to their ports. This reduces noise and crosstalk in the cable; but, it can also absorb a traditional toner signal. Unlike traditional signals, the IntelliTone digital signal stays strong despite common mode termination. And the IntelliTone Pro Toner automates toning individual cable conductors, making

it quick, efficient and safe to locate cables on active networks.

Verify conductor continuity with cablemap

Eliminate callbacks during cabling moves, adds and changes with the powerful diagnostic capabilities of IntelliTone™ Pro. The IntelliTone Pro 200 Probe features a Cablemap capability that identifies common cable miswires in twisted pair cabling. IntelliTone technology automates the testing of each conductor for end-to-end continuity; LED lights and tones clearly indicate miswires.

Identify and troubleshoot cable services

Service – Is the RJ45 jack a datacom jack, a phone jack – or a dead jack? IntelliTone

Pro 200 Toner LEDs clearly identify common datacom and telecom services found on today's networks including 10/100/Gigabit Ethernet links.

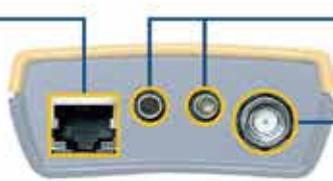
Telecom troubleshooting – Detect Line 1 voltage, polarity, and ring with IntelliTone Pro 100 and 200 Toners. The IntelliTone Pro 200 Toner adds Line 2 troubleshooting. Confirm telecom circuits with the built-in talk battery capability.

Continuity – Once you've located a cable, the next step is to verify cable conductor continuity. IntelliTone Pro 100 and 200 Series Toners make it easy – eliminating the need for a separate diagnostic tool.





IntelliTone provides robust toning into active network equipment while eliminating cable misidentification due to bleed



Banana jacks allow you to use only the leads you need and facilitates easy replacement

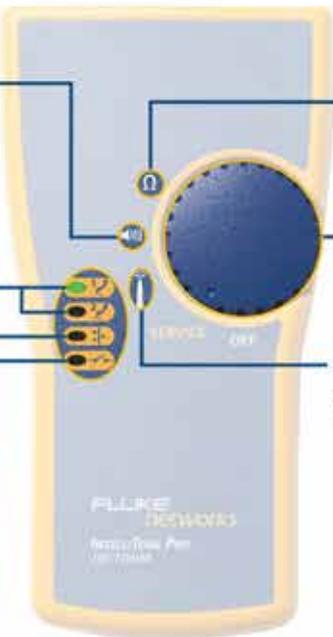
One tool supports all VDV cable types (RJ45, RJ11, coax, and bare wire)

Precisely isolate wire pairs with built-in SmartTone analog toning

Identify and diagnose POTS with multi-line Telco detect, polarity and ring indication (Line 1 and Line 2)

Identify and diagnose Ethernet link connectivity with NIC/hub indication

Cable termination indicator identifies if cable is connected or not.



Test cable continuity, eliminating need for separate diagnostic tool

Knob provides simple, task oriented operation

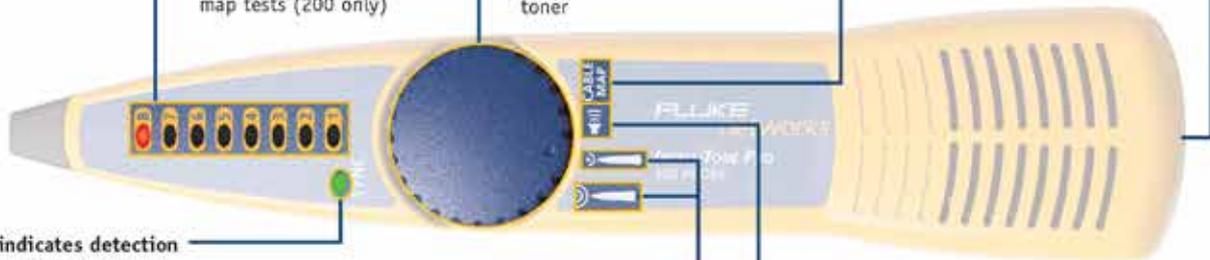
Tone active networks safely and effectively with IntelliTone digital mode

Multiple-level LEDs simplify signal interpretation in noisy environments. Visually steps through wire-map tests (200 only)

Time-saving thumbwheel lets you select desired toning mode on the probe rather than toner

Test cable continuity – eliminating need for separate diagnostic tool

Plug (200 only) works with CableMap function – eliminating the need for a separate wiremap tool



SYNC indicates detection of IntelliTone signal and shows battery status at power-up

Choose between two digital detection modes:

- lets you locate cables at a distance
- lets you isolate cables in bundles or at patch panels

Analog mode used to isolate individual wire pairs with SmartTone

Toner and Probe shared features:

IntelliTone digital technology with advanced signal processing provides **high-resolution measurement**

Auto-Off feature: The toner turns off automatically after 2.5 hours of inactivity. Probe turns off after 1 hour of inactivity

SmartTone™ analog technology - IntelliTone Pro Toners generate four different analog songs which alternate every time the pair under test is shorted; IntelliTone Pro Probes detect this tone or any other analog signal from other testers

Battery status: 3-level battery status indicator LEDs on the toner and probe light for one second at power on

Specifications

General	Operating temperature	32 °F to 104 °F (0 °C to 40 °C)
	Storage temperature	-4 °F to +140 °F (-20 °C to +60 °C)
	Operating relative humidity (% RH without condensation)	95% (50 °F to 95 °F; 10 °C to 35 °C) 75% (95 °F to 104 °F; 35 °C to 40 °C) Uncontrolled < 50 °F (< 10 °C)
	Vibration	Random, 2 g, 5 Hz – 500 Hz
	Shock	1 m drop test with and without module
	Safety	EN 61010-1 1st Edition + Amendments 1, 2
	Altitude	3000 m
	EMC	EN 61326-1
	Battery type and life	9 V alkaline (NEDA 1604A or IEC 6LR61); 20 hours typical
	Applications	Copper cabling media, including shielded (STP) and UTP cable; 75 or 50 Ohm coaxial cable; two conductor control, security, generic cabling; 10 Base-T or 10/100/1000 Base-T datacom networks. POTS telecom service.
Toner 	Dimensions	5.54 in x 2.94 in x 1.25 in (14.1 cm x 7.5 cm x 3.2 cm)
	Display	LED
	Control	Thumbwheel switch
	Toner interface	Main Mod8 port for tone generation on all 4 pairs of UTP / STP cabling, F connector for coaxial cabling, Banana jack plugs (2) - two conductor wiring
	Toner frequency	IntelliTone™ signal: encoded digital signal Analog SmartTone signal: 500-1200Hz, 4 Songs
	Talk battery voltage	6 V into 600 W
	Output power	5 V p-p
	Voltage protection	100 V
	Auto power down	Turns off automatically after 2.5 hours of inactivity
	Probe 	Dimensions
Display		(8) LED indicators, Synch LED indicator
Audio		IntelliTone: Microprocessor controlled audio files, Analog: Detected toner signal
Control		Thumbwheel switch, volume control wheel
Tone detection		Detects IntelliTone™ digital signal for Locate, Isolate and CableMap Detects Analog SmartTone Signal (500-1200Hz) and other analog toners.
Toner interface		Main Mod8 port for cablemap on all four pairs of UTP / STP cabling
Auto power down		Turns off automatically after one hour of inactivity

Ordering Information

Model Number	Items Included
MT-8200-60A	IntelliTone Pro 200 Kit Includes IntelliTone Pro 200 Toner and 200 Probe, coax F connector adapter, two RJ11 and two RJ45 patch cables, test leads with alligator clips, lanyards, owners CD and quick start guide, two 9 volt batteries
MT-8200-50A	IntelliTone Pro 100 Kit Includes IntelliTone Pro 100 Toner and 100 Probe, coax F connector adapter, RJ11 and RJ45 patch cables, test leads with alligator clips, lanyards, owners CD and quick start guide, two 9 volt batteries
MT-8200-61A	IntelliTone Pro 200 Toner
MT-8200-51A	IntelliTone Pro 100 Toner
MT-8200-63A	IntelliTone Pro 200 Probe
MT-8200-53A	IntelliTone Pro 100 Probe
IntelliTone Pro Toner and Probe Accessories	
MT-8202-05	IntelliTone Pro Case
MT-8203-20	Test Leads with Bed of Nails
MT-8203-22	Test Leads with Alligator Clips

IntelliTone Pro 100 Kit

- Finds the cables the others can't
- IntelliTone digital signal processing rejects noise and false signals
- SmartTone analog signal precisely isolates individual wire pairs
- Tones safely and clearly on active networks
- Diagnoses essential cable information with polarity, continuity, and talk battery
- Identifies and diagnoses POTS with Line 1 service and polarity

IntelliTone Pro 200 Kit (adds the following functionality)

- Identifies and diagnoses 10/100/1 Gb Ethernet link connectivity with NIC/Hub indication
- Identifies and diagnoses POTS with Line 2 POTS service and polarity
- Verifies twisted-pair installation with CableMap capability which identifies common cable miswire

Pro3000™ Analog Tone and Probe

The Pro3000 Analog Tone and Probe are your best choice for toning and tracing wire on non-active networks, and specifically for identifying individual pairs with SmartTone™ technology. Angled bed-of-nails clips allow easy access to individual wires, and the RJ11 connector is ideal for use on telephone jacks. The large loud speaker on the probe allows you to hear through drywall, wood or other enclosures to find wires quickly and easily. You can send this loud tone up to 10 miles on most cables! Attach the nylon pouch to your belt, and you will be equipped for any wire identification job.

Pro3000 Analog Tone Generator

Use the SmartTone capability of the Pro3000 Tone Generator to identify the right pair. When touching the wires together and momentarily shorting the far end of a cable pair, the SmartTone technology will change the cadence of the tone generated. This tone change you hear through the probe positively verifies the correct wire pair. SmartTone provides five distinct tones for exact pair identification.

Technical Data

Datacom Cabling | Copper Certification & Testing
Pro3000™ Analog Tone and Probe



Pro3000 Toner and Probe

Tone Generator features:

- SmartTone technology
- Send tone signal up to 10 miles on most cables
- Line cord features angled bed-of-nails clips and ruggedized RJ-11 plug for direct access to phone and data jacks without adapters
- External switch allows selection of solid or alternating tone options, indicated with solid or flashing LEDs
- Continuity testing
- Line polarity confirmation

Pro3000 Analog Probe

The Pro3000's ergonomic sleek design is easy to handle and use. The large speaker on the probe makes the tone easier to hear through walls, enclosures, wood or plaster. A recessed on/off button helps prevent the probe from accidentally being turned on in the pouch. It accommodates a headset (sold separately) for use in noisy environments.

Probe features:

- Loud large speaker amplifies tone through walls, enclosure, wood or plaster
- Easy-to-use adjustable volume control dial
- "Quick-twist" tip for easy replacement
- Free spare tip inside Pro3000 Tone and Probe Kit

Get superior vision into toning and tracing wire, and identifying individual pairs using SmartTone™ technology.

Pro3000 Analog Toner Specifications

User interface	Slide switch selects Continuity or Tone Mode Push button switch selects SOLID, ALT or OFF Tone mode LED Continuity/Polarity LED
Solid Frequency	1000 Hz nominal
Alternating Frequency	1000/1500 Hz nominal
Over Voltage Protection	60 Vdc in Toner/Polarity Mode
Output Power in Tone Mode	8 dbm into 600 ohms
Output Voltage Level in Continuity Mode	8 Vdc with fresh battery
Battery	9V alkaline
Temperature	Operating: -20° C to 60° C, Storage: -40° C to 70° C
Case dimensions	2.7 in. x 2.4 in. x 1.4 in. (6.9 cm x 6.1 cm x 3.6 cm)



Hear the tone change when you short the correct pair on the far end

Pro3000 Analog Probe specifications

User interface	ON/OFF pushbutton Volume dial Replaceable tip 3.5 mm earphone jack
Battery	9V alkaline
Temperature	Operating: -20° C to 60° C, Storage: -40° C to 70° C
Case dimensions	9.8 in. x 1.6 in. x 1.3 in. (24.9 cm x 4.1 cm x 3.3 cm)

Ordering information

Model	Description
26000900	Pro3000 Analog Tone & Probe Kit
26100900	Pro3000 Analog Probe
26200900	Pro3000 Analog Tone Generator
26100103	Pro3000 Probe Tip
26300000	Earpiece, Pro3000 probe



FIBER TESTING, TROUBLESHOOTING AND CERTIFICATION

Complete solutions for the installation, testing, documentation and certification of fiber premises cabling

The Fluke Networks' fiber test family is the industry's broadest range of tools for fiber inspection and cleaning, loss/length (Tier 1) fiber certification, fiber plant characterization and troubleshooting (Tier 2) fiber certification. From OTDRs to cleaning supplies, Fluke Networks' fiber optic tools meet the complex needs of cabling contractors, installers and network technicians. We set the standard for accuracy, ease of use and field toughness. So, whether you need simple continuity testing or advanced certification, Fluke Networks is the right choice.



SimpliFiber® Pro

Optical Power Meter and Fiber Test Kits

SimpliFiber Pro makes testing simple

Fluke Networks' SimpliFiber® Pro Optical Power Meter incorporates new and innovative features to give technicians a tool that performs and reports test results like no other first-line fiber test tool can.

The only way to accurately test and verify the performance of your fiber-optic network is with test equipment designed for the job. The SimpliFiber® Pro Optical Power Meter and Fiber Test Kits is a suite of affordable and easy-to-use fiber verification test solutions. Today's high bandwidth premise networks heavily rely on fiber-optic infrastructure. Proper installation and maintenance of fiber cabling is imperative to improve technician productivity and ensure cabling system performance.

See how Fluke Networks' suite of innovative installation and test solutions improves technician productivity and ensures cabling system performance.

SimpliFiber Pro is an improved fiber test set that simplifies and shortens the front-line testing process by:

- reducing the multiple steps and using a simultaneous dual-wavelength testing feature to measure the range of power levels in just half the time
- allowing for a non-touch solution to check for a live fiber without having to plug into ports
- enabling a network technician to do time-consuming procedures that normally require a team

SimpliFiber® Pro Optical Power Meter and Fiber Test Kits provide you with all the tools you need to help you verify proper installation and maintain fiber-optic cabling systems. Available in kits or a la carte, these tools are simple and effective and provide you with the capability to measure loss and power levels, locate faults and polarity issues, and inspect connector end-faces.



A system approach

SimpliFiber Pro is a product suite that allows you to match products and functionality to your needs. SimpliFiber Pro is made up of five unique fiber platforms: the power meter, the multimode source, two singlemode sources, and the FindFiber™ Remote ID source. Each platform has uniquely competitive features, bundled in convenient kits, to meet the needs of today's technicians.

The optical power meter is included in all kits and is calibrated for accuracy at six different wavelengths (850, 1300, 1310, 1490, 1550, 1625). The meter features the ability to save a reference power level, allowing a direct display of fiber loss. It also has an intuitive four-button panel, a large LCD display screen, and a serial port. The meter's single connector permits simple network connection and straightforward reference power measurement. Interchangeable connector adapters are available in the most popular connector styles.

Technical Data

SimpliFiber Pro makes fiber-link verification and troubleshooting even simpler.

The multimode source is a dual wavelength 850/1300 source and incorporates an 850 nm LED and a 1300 nm LED, perfect for multimode fiber testing. You can add an optional singlemode 1310/1550 and/or 1490/1625 source to any kit as your testing needs evolve. These laser sources are ideal for all singlemode fiber testing. All sources are compatible with the SimpliFiber Pro optical power meter.

The FindFiber™ Remote ID source is a new platform in the Fluke Networks family. When used with the optical power meter, these remote ID sources allow for quick and easy cable-routing identification.

User-friendly

Although they are effective as separate tools, the SimpliFiber Pro optical power meter and sources are engineered to work together. The automatic wavelength-sensing feature of the meter identifies the source wavelength and sets itself appropriately so you do not have to. This simplifies multi-wavelength tests and saves at each wavelength to prevent costly measurement errors. The compact SimpliFiber Pro optical power meter and sources are durable and rugged. They feature textured, impact-resistant covers and a compact, ergonomic shape for a comfortable and secure grip. Long battery life assures hours of trouble-free operation.

Verify optical loss and power levels

The SimpliFiber Pro optical power meter is calibrated for accuracy at 850 nm, 1300 nm, 1310 nm, 1490 nm, 1550 nm and 1625 nm. The meter features the ability to save a reference power level, allowing a direct display of fiber loss. It has an intuitive four-button panel, a large LCD display screen, and a USB port to upload test results to a PC running LinkWare™ Cable Test Management Software. SimpliFiber Pro sources include a dual-wavelength 850/1300 nm source, a dual-wavelength 1310/1550 nm source, and a dual-wavelength 1490/1625 nm source. The FindFiber™ Remote ID sources transmit at 1310 nm.

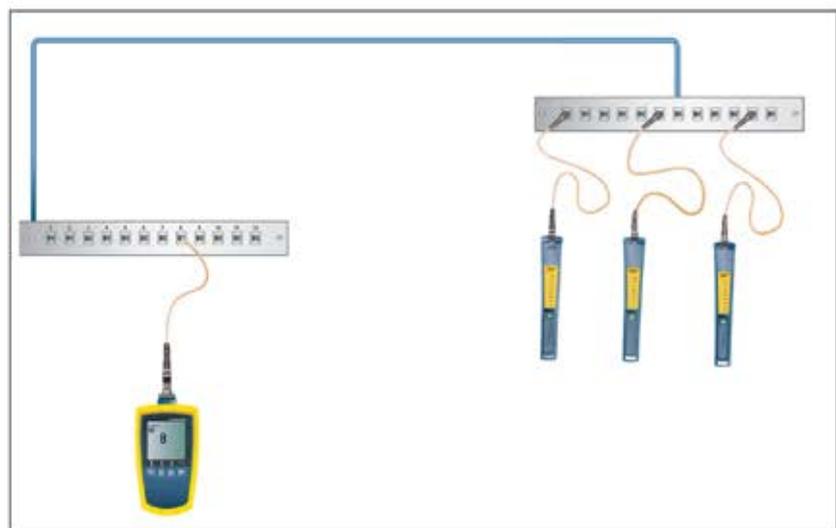
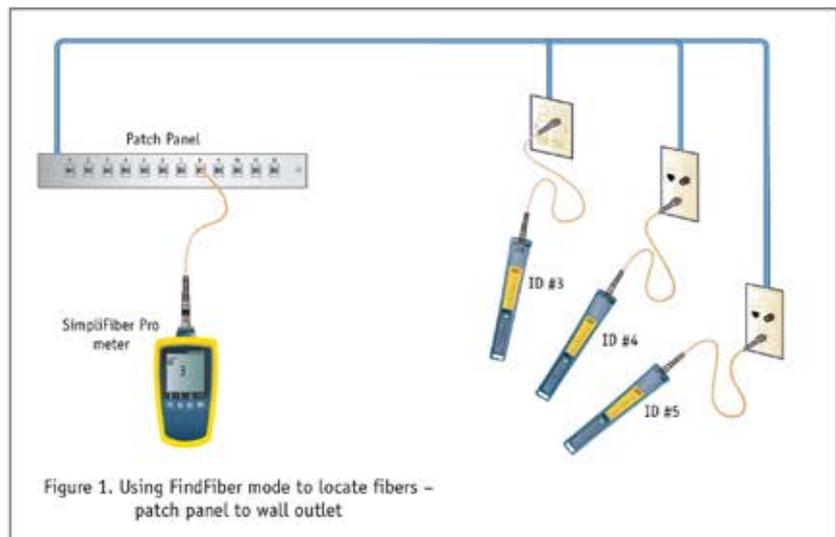
Conduct pre-testing with minimal resources

The FindFiber™ remote ID sources allow you to identify the physical location of cabling runs to ensure polarity and the correct location on each fiber drop (Figure 1 and Figure 2). This time-saving feature enables a single technician to quickly perform double-ended testing – ideal for pre-testing a job site before any adds, moves, or changes.

Ensure smooth, clean fiber connections

Inspect the ends of fiber-optic connectors with Fluke Networks' handheld FiberInspector™ Mini video microscope or FiberViewer™

microscopes. All options ensure your termination is smooth, clean, and ready for optical transmission. The FT500 FiberInspector Mini can be used in any live fiber installation and provides 200x viewing. The FT120 FiberViewer provides 200x magnification for inspecting multimode fiber end-faces while the FT140 FiberViewer offers 400x viewing for singlemode installations. Both FiberViewer microscopes contain a special safety filter to minimize the risk of eye exposure to harmful infrared rays.



Verify and locate faults

Diagnose and repair simple fiber link problems with Fluke Networks' VisiFault™ Visual Fault Locator (VFL). The laser-powered VisiFault locates fibers, verifies continuity and polarity, and helps find breaks in cables, connectors, and splices. Continuous and flashing modes make for easier identification. Compatible with 2.5 mm and 1.25 mm (with optional adapter) connectors for easy connection.

Reporting made simple

Manage test results, print professional reports, or export data into spreadsheet formats. SimpliFiber Pro can internally store up to 1000 test results which can then be uploaded to your PC using the included LinkWare™ Cable Test Management Software.

Features

- Dual-wavelength testing
- Tests multimode and singlemode fiber
- Measures optical power and loss at 850, 1300, 1310, 1490, 1550, 1625 nm wavelengths
- Offers quick remote identification of cabling runs with FindFiber Remote IDs
- Conduct pre-testing and qualify cabling runs
- Auto-senses source wavelength
- Saves 1000 test results
- Single port testing for simple network connection
- Ruggedly built for demanding field use
- LinkWare™ Cable Test Management Software documents, reports, and manages all test data

Feature	Description	Benefit
Dual-wavelength testing	Simultaneously test and save records from two wavelengths	Cuts testing time in half by eliminating the need to test at each wavelength separately.
CheckActive™	Connect to a fiber without any setup and show with a simple icon and an audible tone whether that fiber is active.	Know for sure if connectors and ports are live. Allows quick visual and audible identification of a live link or port on a switch.
FindFiber™ Remote ID	Identify the physical location of cabling runs to ensure polarity and the correct location on each fiber drop. Encoded source signal 1-8.	Allows for quick and easy cable-routing identification and reduces confusion. Allows double-ended testing with only 1 technician. Ideal for pre-testing a job site before any adds, moves, or changes. Allows for mapping verification and easy documentation.
Auto wavelength	Automatic identification of wavelength being transmitted.	Eliminates time-consuming mistakes by automatically detecting which source wavelength is transmitting. Allows measurements from both wavelengths at to be saved in one record.
USB port	Data connectivity via USB 2.0.	Download results faster – no specialty cables required.
Saves 1000 results	Save and label each test conducted.	Collects test results from multiple building sites in a day and requires only one download.
Min/max	Allows immediate access to power range highs and lows in a testing session.	Precisely identifies intermittent power fluctuations. Eliminates unreliable and inaccurate guesswork.
Six calibrated wavelengths	Calibrated to extend from typical enterprise wavelengths to two new popular wavelengths.	Power meter can be used for broader applications, including FTTx testing.



FKT1450 Complete Fiber Verification Kit



SimpliFiber Pro Kit Ordering Information	
Model	Description
SFPOWERMETER	SimpliFiber Pro optical power meter
SFMULTIMODESOURCE	SimpliFiber Pro multimode 850/1300 source
SFSINGLEMODESOURCE	SimpliFiber Pro singlemode 1310/1500 source
SFSINGLEMODE2	SimpliFiber Pro singlemode 1490/1625 source
FTK1000	Basic Fiber Verification Kit: Includes SimpliFiber Pro optical power meter, 850/1300 multimode source, and carrying case
FTK1300	Multimode Fiber Verification Kit: Includes SimpliFiber Pro optical power meter, 850/1300 multimode source, VisiFault VFL, FT120 FiberViewer, FindFiber Remote ID sources, and carrying case; ST and LC adapter
FTK1350	Multimode Fiber Verification Kit with FT500 FiberInspector Mini: Includes SimpliFiber Pro optical power meter, 850/1300 multimode source, VisiFault VFL, FT500 FiberInspector Mini, FindFiber Remote ID sources, and carrying case; ST and LC adapter
FTK1450	Complete Fiber Verification Kit with FT500 FiberInspector Mini: Includes SimpliFiber Pro optical power meter, 850/1300 multimode source, 1310/1550 singlemode source, VisiFault VFL, FT500 FiberInspector Mini, two (2) FindFiber Remote ID sources, and carrying case; ST and LC adapter, NFC-Kit-Box fiber optic cleaning kit
FTK2000	Singlemode Fiber Verification Kit: Includes SimpliFiber Pro optical power meter, 1310/1550 singlemode source, and carrying case
FTK2100	Singlemode Fiber Verification Kit: Includes SimpliFiber Pro optical power meter, 1310/1550 and 1490/1625 singlemode sources, and carrying case
FindFiber	One (1) FindFiber Remote ID source
FindFiber-6	Set of six (6) FindFiber Remote ID sources

SimpliFiber Pro Accessories Ordering Information	
Model	Description
NFK1-SMPLX-SC	62.5 μ m simplex reference cord set (SC/SC x 2); special patented damage-resistant end-faces
NFK1-SMPLX-LC	62.5 μ m simplex reference cord set (SC/LC, LC/LC); special patented damage-resistant end-faces
NFK1-SMPLX-ST	62.5 μ m simplex reference cord set (SC/ST, ST/ST); special patented damage-resistant end-faces
NFK2-SMPLX-SC	50 μ m simplex reference cord set (SC/SC x 2); special patented damage-resistant end-faces
NFK2-SMPLX-LC	50 μ m simplex reference cord set (SC/LC, LC/LC); special patented damage-resistant end-faces
NFK2-SMPLX-ST	50 μ m simplex reference cord set (SC/ST, ST/ST); special patented damage-resistant end-faces
NFK3-SMPLX-SC	SM simplex reference cord set (SC/SC x 2); special patented damage-resistant end-faces
NFK3-SMPLX-LC	SM simplex reference cord set (SC/LC, LC/LC); special patented damage-resistant end-faces
NFK3-SMPLX-ST	SM simplex reference cord set (SC/ST, ST/ST); special patented damage-resistant end-faces
NFA-SC-SINGLE	SC interchangeable adapter
NFA-LC-SINGLE	LC interchangeable adapter
NFA-ST-SINGLE	ST interchangeable adapter

General Specifications	
Temperature range	Operating: -10 °C to 50 °C Storage: -20 °C to 50 °C
Humidity range	95% (10 °C to 35 °C) non-condensing; 75% (35 °C to 40 °C) non-condensing; uncontrolled <10 °C
Certifications	CE, CSA, N10140, Class 1 laser-safe
Dimensions	Power meter: 6.4 in x 3.2 in x 1.5 in (16.5 cm x 8.0 cm x 3.9 cm) MM/SM sources: 5.6 in x 3.2 in x 1.6 in (14.2 cm x 8.1 cm x 4.1 cm)
Weight	Power meter: 11.5 oz (325 g) MM/SM sources: 9.8 oz (278 g)

Optical Sources	
Optical output connector	Fixed SC
Emitter type	850/1300: LED 1310/1550: FP Laser FindFiber: Laser
Emitter wavelengths	850, 1300, 1310, 1490, 1550, 1625
Power output (minimum)	MM: \geq -20 dBm SM: \geq 8 dBm minimum; -7 dBm nominal
Power output stability (8 hours)	MM: +/- 0.1 dB over 8 hours SM: +/- 0.25 dB over 8 hours
MM battery life (2 x AA IEC LR6)	40 hours typical
SM battery life (2 x AA IEC LR6)	30 hours typical
FindFiber battery life (2 x AA IEC LR6)	80 hours typical

Optical Power Meter	
Power measurement accuracy	+/-0.25 dB
Optical connector	Removable adapter; SC adapter standard; Optional adapters include LC, ST
Detector type	InGaAs
Calibrated wavelengths	850, 1300, 1310, 1490, 1550, 1625
Power measurement range	850: 10 to -52 dBm 1300, 1310, 1490, 1550, 1625: 10 to -60 dBm
Power measurement linearity	850 nm: +/- 0.2 dB; +/- 0.2 dB for power from 0 dBm to -45 dBm, +/- 0.25 dB for power < -45 dBm; 1300 nm, 1310 nm, 1490 nm, 1550 nm, 1625 nm: +/- 0.1 dB; +/- 0.1 dB for power from 0 dBm to -55 dBm, +/- 0.2 dB for power > 0 dBm and < -55 dBm
Resolution	0.01 dB
Battery life	>50 hours typical
Memory	1000 loss or power measurements
Serial communication physical interface	USB



SimpliFiber Pro Multimode and Singlemode Sources

Sturdily built and encased in a durable molding, the next generation SimpliFiber Pro LED multimode and laser singlemode sources* retain the familiar intuitive four-button functionality from the popular workhorse SimpliFiber line, while incorporating additional features that make fiber testing even more simple. When combined with a SimpliFiber Pro optical power meter, these sources enable you to:

- Quickly and efficiently measure power and loss at SC, LC, and ST connections using the dual-wavelength testing feature in which both 850 and 1300 nm, 1310 and 1550 nm, or 1490 and 1625 wavelengths can be transmitted simultaneously
- Conveniently save measurements taken at both wavelengths into one record
- Eliminate time-consuming mistakes with the automatic wavelength detection ability
- Quickly identify patch panel cable routing without the assistance of a talk set and another technician

*The multimode source is standard in the FTK1000, FTK1300, FTK1350, and FTK1450 kits; the 1310/1550 nm singlemode source is standard in the FTK2000 and FTK1450 kits or available separately as a standalone module. The FTK2100 includes both the 1310/1550 and 1490/1625 nm sources.



Both 1310/1550 nm and 1490/1625 nm singlemode sources are available in the FTK2100 Singlemode Fiber Verification Kit



The 850/1300 nm multimode and 1310/1550 nm singlemode sources are available in the FTK1450 Complete Verification Kit

Specifications

Multimode Optical Source	
Emitter Type	LED
Central Wavelength	850 nm, 1300 nm
Wavelength Accuracy	<ul style="list-style-type: none"> • 850 nm: +30/- 10 nm • 1300 nm: +/- 20 nm
Spectral Width (FWHM)	<ul style="list-style-type: none"> • 850 nm: 50 nm (typical) • 1300 nm: 135 nm (typical)
Minimum Output Power	850/1300 nm: ≥ -20 dBm
Power Output Stability ¹	± 0.1 dB over 8 hours
Auto Dual-Wavelength Switching	Yes. Can be enabled/disabled by user.
Optical Output Connector	Fixed SC ²
FindFiber Code Generation	Yes. Fixed at ID 1.
Modes	CW, 2 kHz modulated, Auto-wavelength
Power Requirement	2 AA Alkaline batteries.
Battery Life ³	40 hrs (typical)
Automatic Power Off	30 minutes (can be disabled by user)
Low Battery Warning	Yes, LED blinks
Size (L x W x H)	5.6 in x 3.2 in x 1.6 in (14.2 cm x 8.1 cm x 4.1 cm)
Weight	9.8 oz (278 g)



Specifications (continued)

Singlemode Optical Source	
Emitter Type	1310 nm/1550 nm: dual FP laser 1490 nm/1625 nm: dual DFB Laser
Central Wavelength	1310 nm: ± 20 nm; 1550 nm: ± 30 nm 1490 nm: ± 3 nm; 1625 nm: ± 5 nm
Wavelength Accuracy	1310 nm: ± 20 nm; 1550 nm: ± 30 nm 1490 nm: ± 3 nm; 1625 nm: ± 5 nm
Spectral Bandwidth (RMS)	<ul style="list-style-type: none"> • 1310 nm: 2 nm (maximum) • 1490 nm/1625 nm: 1 nm (maximum) • 1550 nm: 3 nm (maximum)
Minimum Output Power	1310/1550 nm: ≥ -7 dBm (typical) 1490/1625 nm: ≥ -3 dBm (typical)
Power Output Stability ¹	± 0.25 dB over 8 hours
Auto Dual-Wavelength Switching	Yes. Can be enabled or disabled by user.
Optical Connector	Fixed SC ²
Launch Condition	9/125 μ m fiber
FindFiber Code Generation	1310/1550 source is fixed at ID 2 1490/1625 source is fixed at ID 3
Modes	CW, 2 kHz modulated, Auto-wavelength
Power Requirement	2 AA Alkaline batteries.
Battery Life ³	30 hrs (typical)
Automatic Power Off	30 minutes (can be enabled or disabled by user)
Low Battery Warning	LED blinks.
Size (L x W x H)	5.6 in x 3.2 in x 1.6 in (14.2 cm x 8.1 cm x 4.1 cm)
Weight	9.8 oz (278 grams)

¹ 23° C \pm 2° C, after 5 minutes warm-up time

² LC and ST connectors can be tested using hybrid test-reference cord accessories.

³ In auto-wavelength mode, battery life depends on the condition and type of batteries used. Fluke Networks recommends alkaline batteries.

New time-saving capabilities, same simple functionality

Technical Specifications

Datacom Cabling | Loss / Length (Tier 1) Fiber Certification
SimpliFiber® Pro Optical Power Meter and Fiber Test Kits



Fiber Inspection and Cleaning Series

Because 85% of fiber optic cabling failures are due to contaminated end-faces, it is imperative that all optical fiber connections are clean and free of contaminants. Fluke Networks' Fiber Inspection & Cleaning Tools are the solution. Whatever your particular needs are, Fluke Networks provides you with the solution to ensure your fiber connections don't bring your network down.

Eliminate the #1 cause of fiber failure

In a survey of installers and network owners commissioned by Fluke Networks, end-face contamination was found to be the leading cause of fiber failures. Dirt and contaminants cause insertion loss and back-reflection that inhibit the light transmission and causes havoc with transceivers. And because dirt can migrate from one end-face to another upon mating, both sides of any connection must be inspected. Further, mating contaminated connectors can cause permanent damage as microscopic debris is crushed between end-faces in physical contact. Therefore, you must always inspect and clean before mating as a preventative measure and not only after experiencing problems. Even factory-terminated patch cords or pigtailed must be inspected as protective caps do not keep end-faces clean. Avoiding this common cause of failure starts with inspecting the end-face and eliminating any contamination before insertion into a bulkhead or piece of equipment.

Range of inspection options

With a range of solutions, Fluke Networks always has the right tool for you to easily inspect end-faces on a wide variety of connectors. The FT120 and FT140 FiberViewer™ microscopes allow for straightforward inspection. To inspect end-faces both on patch cords and inside ports,



the FT500 FiberInspector™ Mini and FT600 FiberInspector™ Pro video microscopes are required.

Safely inspect live fiber without harming eyes

Using Fluke Networks' microscopes ensures your eyesight is protected from harmful laser light on live fibers. Each FiberViewer is factory tested to verify performance of an internal safety filter. Even still, users should avoid inspecting live fibers with FiberViewer microscopes. For total assurance of eye safety, FiberInspector video probes project crisp, clear images onto portable screens. The video displays allow you to inspect the fiber end-face without looking directly at the fiber itself, eliminating any chance of harmful laser light from ever reaching your eye.



Technical Data

See how to improve network performance and reliability with Fluke Networks' Inspection & Cleaning Tools

Save valuable time inspecting fiber

FiberInspector Pro and FiberInspector Mini video microscopes give you superior vision into your network by enabling you to inspect all types of fiber in switches, routers, interface cards, patch panels, wall outlets and patch cables. They save time by eliminating the need to access the back of patch panels or disassemble hardware devices for inspection. Instead of removing each individual fiber, you only need to insert the video probe to inspect the end-face while it is still in place. This is the only practical way to inspect many hardware devices, where disassembly is not a realistic option. Plus, the FiberInspector microscopes never touch the termination so there's no risk of contamination or damage.

Ultimate tool for challenging environments

The FiberInspector Pro is the ultimate inspection tool. Its 3.5" screen provides a larger image from its dual magnification probe. The small probe fits in the palm of your hand and can be switched between 250x and 400x magnification with the turn of a dial. The Pro unit also has a protective boot for rougher outdoor environments and offers a greater range of adapter tips for specialized applications, such as multi-fiber connectors.



Capture images for storage and reports

The FiberInspector Pro dual magnification probe can be attached to the OptiFiber® OTDR or the OptiView™ Integrated Network Analyzer to save and store images for reference and report generation. Use these captured images to prove the condition of the installation or as future reference if problems arise.

Proper cleaning of contaminants

Once end-face contamination is discovered, proper procedures are required to eliminate it. Shirtsleeves are not acceptable! In fact, improper cleaning processes are not only ineffective, but also potentially damaging. Though canned air has been used for years to blast dust away, it will not dislodge smaller static-charged particles. Also, it can leave behind propellants and tends to blow larger particles around rather than remove them. Proper fiber optic end-face cleaning involves two key components: specialized solvent and lint-free wipes or swabs.

Clean wet and finish dry

Always use proper solvent in conjunction with either a wipe for a patch cord or a swab for a port. Solvent is required to dissolve any one of the many contaminants that may be present, such as finger oil or buffer gel. Further, wiping an end-face with just a dry wipe or swab can generate static electricity that draws more dust out of the air onto the end-face. Even worse, a dry wipe can drag debris across the end-face causing damage. Effective solvents will act as a lubricant for the safe removal of debris. Conversely, using too much solvent or only a wet application will result in the leftover solvent drying out and leaving behind the dissolved contaminants as a residue. Best practice is to clean wet and finish dry. After cleaning, always inspect the end-face again before insertion to guarantee all contaminants were



removed. If necessary, repeat your cleaning steps to remove any lingering soils not removed by the first cycle.

Effective cleaning requires specialized solvent

For years, isopropyl alcohol (IPA) was used to clean fiber end-faces, but now there are customized solvents that are far superior, such as Fluke Networks' Fiber Optic Solvent Pen. Most importantly, this specialized solvent is more effective than IPA at dissolving all contaminants, especially non-ionic compounds such as buffer gel and pulling lube. You will get a better clean every time and with every contaminant. Next, our solvent has a lower surface tension that allows it to envelop particles and debris, effectively lifting them from the surface of the

end-face as they are carried away

by a wipe or swab.

Many smaller particles carry a charge that bonds them to the ferrule or end-face. This solvent is oxygenated to neutralize this charge so the charged particle can be wiped away and additional particles are not attracted onto the end-face. When cleaning end-faces inside ports or equipment, the evaporation rate of solvents become significant as it is harder to guarantee removal of all solvent. Fluke Networks' customized solvent has an evaporation rate tailored to stay long enough to work yet still disappear before mating. It evaporates much faster than IPA. Last, IPA is highly hygroscopic and therefore draws water vapor that can then dry on the end-face and leave a residue, which sometimes appears as a "halo." Using Fluke Networks' solvent will avoid this problem.



Cleaning Instructions:

A. Fiber Optic Cleaning Cards



After removing one plastic cover, apply a small spot of solvent to the starting corner of the cleaning zone.



Holding the connector perpendicularly, swipe the end-face from the wet spot into a dry zone.

B. Fiber Optic Cleaning Cube



After pulling a clean wipe from the cube, apply a small spot of solvent to the starting edge of the wipe.



Holding the connector perpendicularly, swipe the end-face from the wet spot into a dry zone.

C. Fiber Optic Solvent Swabs



After pulling a clean wipe from the cube, apply a small spot of solvent to the starting edge of the wipe.



Touch the swab to the wet spot on the wipe for 3 seconds to absorb a minimal amount of solvent. A damp swab works better than a wet one. Applying solvent from the pen directly to the swab will likely result in excessive solvent.



Insert the swab into the port and turn several times while applying gentle pressure. Follow the damp swab with a dry one, using the same procedure to remove any remaining solvent from the end-face and alignment sleeve.



Fiber Optic Cleaning Kit
NFC-Kit-Case

Ordering Information

Model	Description
NFC-Kit-Case	Fiber Optic Cleaning Kit includes cleaning cube with wipes, ten cards with sealed cleaning zones, solvent pen, 2.5 mm port cleaning swabs and 1.25 mm port cleaning swabs in a rugged carrying case.
NFC-Kit-Box	Fiber Optic Cleaning Kit includes cleaning cube with wipes, five cards with sealed cleaning zones, solvent pen and 2.5 mm port cleaning swabs.
NFC-Cube	Cleaning cube with wipes cleans up to 500 end-faces
NFC-Cards-5pack	5 cards with 12 sealed cleaning zones each – perfect for troubleshooting
NFC-SolventPen	Special solvent dispensed from pen (9g)
NFC-Swabs-1.25mm	LC and MU port cleaning swabs (25 count)
NFC-Swabs-2.5mm	SC, ST, 2.5 mm port cleaning swabs (50 count)
NFC-SWABS-MULTI	MTP/MPO port cleaning swabs (25 count)
NFC-Case	Carrying case for cleaning accessories
Support	GLD-FTINSPECTOR 1-Year Gold Support coverage for the FiberInspector and kits: Models - FT500, FT525, FT600

Copper and Fiber Basic Technician's Kit

As an IT professional responsible for managing a hybrid copper and fiber network, you have a challenging job. You are an on-the-spot problem-solver and are always planning for future enhancements, working with both copper and fiber to seamlessly upgrade the network to higher speeds while continuously troubleshooting and optimizing the current infrastructure. As your project requirements grow and your personnel and budgetary resources shrink, Fluke Networks' Copper and Fiber Basic Technician's Kit (MS2-FTK) provides a robust set of tools to help you expertly manage your network to it keep it running smoothly – and inexpensively. The MS2-FTK has all the testing and troubleshooting instruments you need to:

Copper

- Graphically display wiremap, length, cable ID, and distance to fault on one screen
- Test all common copper media types including RJ11, RJ46, Coax, with no need for adapters
- Locate virtually any cable or wire pair with IntelliTone™ digital and analog toning
- Verify today's media services, including 10/100/1000 Ethernet, POTS, and PoE

Fiber

- Quickly verify optical loss and power levels with single-port, simultaneous dual wavelength testing over six wavelengths (850, 1300, 1310, 1490, 1550, 1625)
- Conduct efficient cable routing identification with SimpliFiber Pro's FindFiber® capability
- Save up to 1000 test results and upload and manage them on your personal computer via Fluke Networks' popular LinkWare Cable Test Management Software
- Track intermittent power fluctuations with the Min/Max feature

Ordering information

Model	Description
MS2-FTK	Copper and Fiber Basic Technician's Kit includes MS2-100 and FTK1000
SFSINGLEMODESOURCE	SimpliFiber Pro singlemode source
FT525	Video microscope and supplies to inspect and clean fiber end-faces for the #1 cause of link failures – microscopic contamination
FT120	Optical microscope to inspect fiber end-faces for the #1 cause of link failures – microscopic contamination
VISIFAULT	Verify and locate faults
NFC-KIT-BOX	Fiber end-face cleaning supplies



MicroScanner² Specifications

Test Connectors	Twisted-pair: UTP, FTP, SSTP 8-pin modular jack accepts RJ45 and RJ11 Coax: F-connector for 75 Ω, 50 Ω, 93 Ω cables
Cable Tests	Length (460 m or 1500 ft), wiremap to TIA-568A/B standards, remote ID locators
Tone Generator	IntelliTone digital tone: [500 KHz]; analog tones: [400Hz, 1KHz]
PoE Detection	Solicits and detects the presence of 802.3af compatible PoE devices
Ethernet Port Test	Advertised speed of 802.3 Ethernet ports (10/100/1000)
Power Source	Battery type: 2 AA alkaline batteries
Dimensions	3 in x 6.4 in x 1.4 in (7.6 cm x 16.3 cm x 3.6 cm)
Weight	13 ounces; 363 grams (batteries included)
Warranty	One year
M12/ RJ45 Cable Specifications:	
Cable type	Ethernet cable, Cat5e, shielded, 2 Pair AWG 26 stranded (7 wire), RAL 5021 (water blue), M12 4 pos. D- coded on RJ45 connector
Number of positions	4
Fixed cable length	2 m
Volume resistance	≤ 5 mΩ
Insulation resistance	≥ 100 MΩ
Ambient temperature	-20 °C to 50 °C
Inflammability class acc to UL 94	V0
Surge voltage category	II

Copper and Fiber Basic Technician's Kit

Technical Specifications

Datacom Cabling | Fiber Inspection and Cleaning
Fiber Inspection and Cleaning Tools



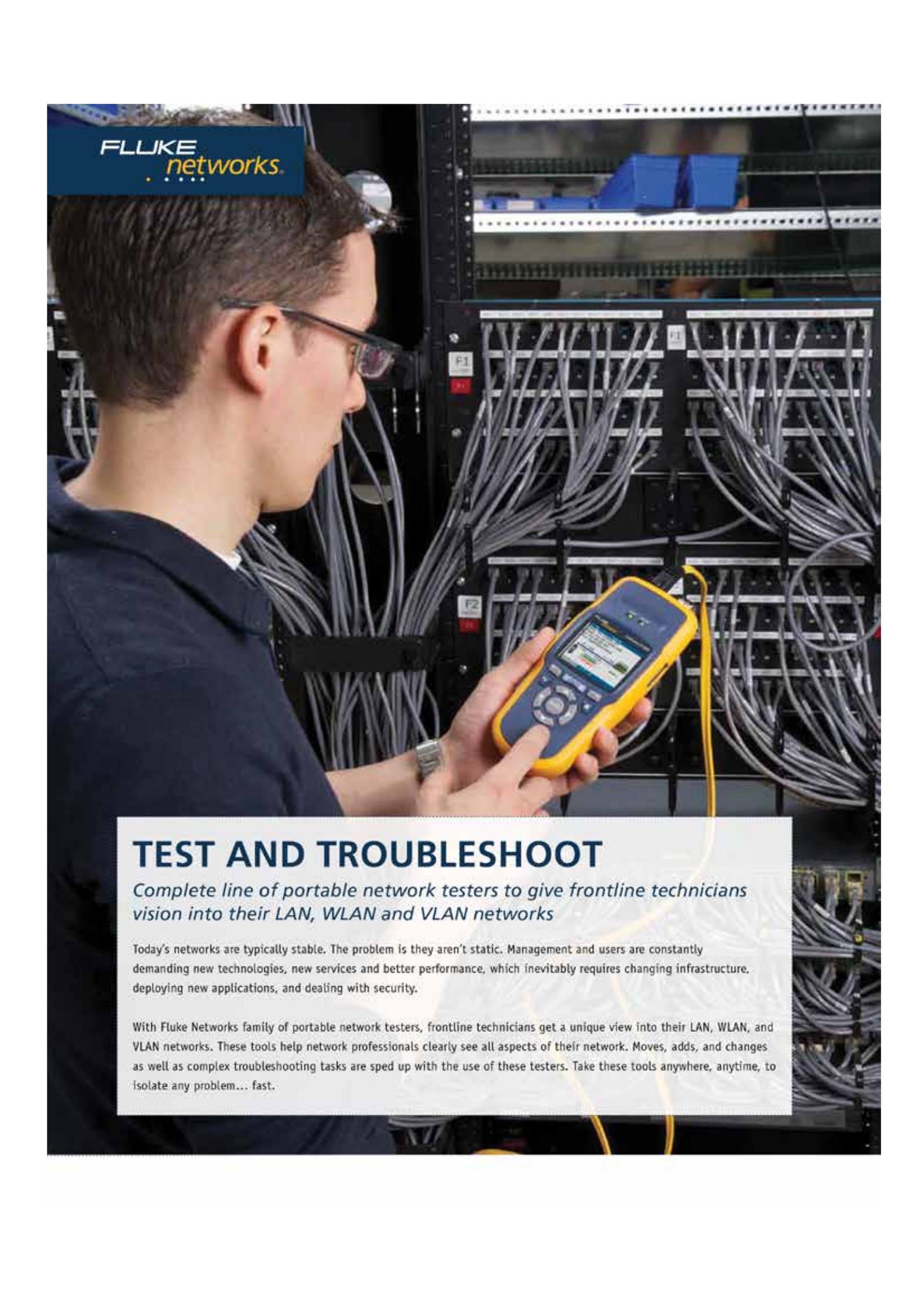
FIBER TESTING, TROUBLE-SHOOTING AND CERTIFICATION	Inspection & Cleaning		Loss Length (Tier 1) Certification		
	FiberInspector™ Pro/Mini Video Microscopes	Fiber Optic Cleaning Kits	SimpliFiber® Pro Optical Power Meter & Fiber Test Kits	DTX-CLT CertiFiber® Optical Loss Test Set	DTX Series with Fiber Module
Check for fiber end-face contamination or damage	✓				
Clean contamination		✓			
Check connectivity			✓	✓	✓
Check polarity			✓	✓	✓
Verify loss over entire link to ensure loss budget not exceeded			✓	✓	✓
Dual-fiber loss testing				✓	✓
Basic (Tier 1)			✓	✓	✓
Locate faults					
Extended (Tier 2)					
Pass/fail results				✓	✓
Document test results			✓	✓	✓
Fiber types supported	Multimode Singlemode	Multimode Singlemode	Multimode Singlemode	Multimode Singlemode	Multimode Singlemode
Source type	LED		LED, FP Laser	LED, FP Laser, and VCSEL	LED, FP Laser, and VCSEL





Plant Characterization & Troubleshooting				Certification (Tier 2)	
VisiFault™ Visual Fault Locator	FindFiber Remote ID	Fiber QuickMap™	Fiber OneShot™ Pro	DTX Series with Compact OTDR Module	OptiFiber™ Pro OTDR
					✓
✓	✓	✓	✓	✓	✓
✓	✓				
✓		✓	✓	✓	✓
				✓	✓
				✓	✓
			✓	✓	✓
Multimode Singlemode	Multimode Singlemode	Multimode	Singlemode	Multimode Singlemode	Multimode Singlemode
Laser	Laser	Laser	Laser	LED, FP Laser	LED, FP Laser





FLUKE
networks

TEST AND TROUBLESHOOT

Complete line of portable network testers to give frontline technicians vision into their LAN, WLAN and VLAN networks

Today's networks are typically stable. The problem is they aren't static. Management and users are constantly demanding new technologies, new services and better performance, which inevitably requires changing infrastructure, deploying new applications, and dealing with security.

With Fluke Networks family of portable network testers, frontline technicians get a unique view into their LAN, WLAN, and VLAN networks. These tools help network professionals clearly see all aspects of their network. Moves, adds, and changes as well as complex troubleshooting tasks are sped up with the use of these testers. Take these tools anywhere, anytime, to isolate any problem... fast.



OneTouch™ AT

Network Assistant

Based on a recent Fluke Networks' study¹, network professionals spend 25 percent of their time troubleshooting – that's time taken away from deploying new technologies and optimizing network performance. With most problems requiring an hour or more to solve, end-user productivity suffers across the enterprise.

The OneTouch™ AT Network Assistant greatly reduces troubleshooting time through a streamlined, three-step approach:

1. The unique AutoTest replaces multiple tools and an hour of troubleshooting time – pass/fail analysis instantly identifies the most common problems from the end-user's perspective
2. A powerful set of network performance measurements – accessible through a graphical, touch-screen interface – to troubleshoot wired and Wi-Fi networks
3. Since 40 percent of problems span multiple organizations, it enhances team collaboration through a simple web-remote interface and easy-to-use inline packet capture capabilities

By improving each step of the process, the OneTouch AT frees up nearly a week of time each month historically spent troubleshooting problems.² The OneTouch AT makes everyone in your organization – from novice technicians to seasoned experts – a more effective troubleshooter.

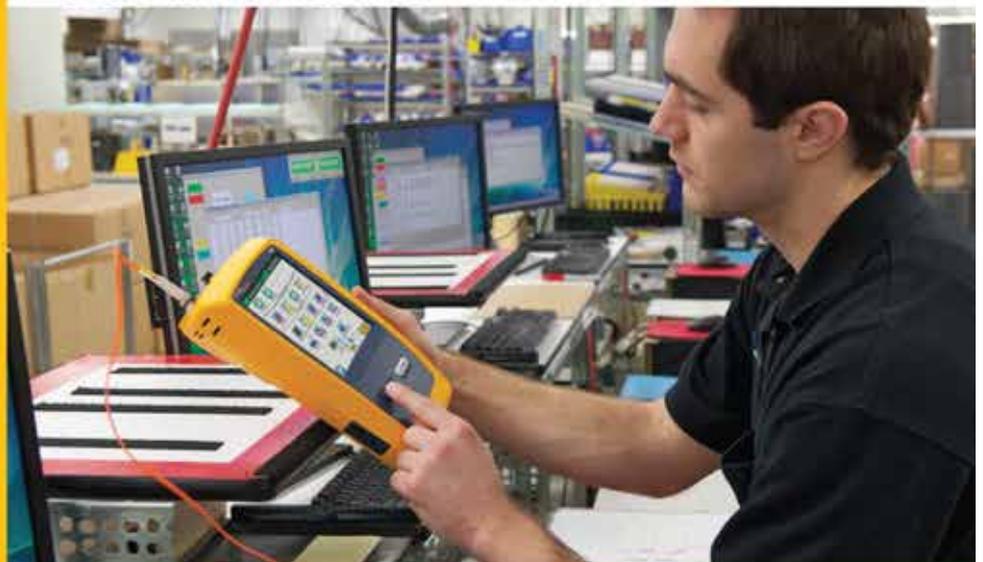
¹, A New Paradigm for Network Problem Solving, (Fluke Networks, 2012).
², Ibid., 6

The OneTouch™ AT Network Assistant is an all-in-one Gigabit Ethernet troubleshooter for copper, fiber optic and Wi-Fi networks. It provides a client view of network performance so you can resolve problems fast and complete deployment projects on time.

- Reduce troubleshooting time with a one touch AutoTest and an intuitive user interface
- Identify the source of a network problem by measuring the performance of essential network infrastructure and services
- Increase the troubleshooting expertise of your network support staff with standardized test profiles tailored to your network, services and users
- Resolve the most difficult problems faster by streamlining collaboration between your support staff, consultants and manufacturers by utilizing inline packet captures and remote control
- Deploy network infrastructure and services more efficiently and validate and optimize its performance with a comprehensive AutoTest and the Veri-Fi™ wireless LAN operational performance test



OneTouch AT features



One-touch troubleshooting of network performance from client to cloud

Technical Data

All-in-one

The OneTouch AT incorporates two 10/100/1000 Mbps RJ-45 Ethernet test ports, two 100/1000 Mbps SFP fiber optic transceiver ports and an internal 802.11 a/b/g/n dual band radio. Simultaneously test your wired Ethernet and wireless Wi-Fi networks and easily compare performance with side-by-side test results.

Understand performance from the client connection

Most network trouble tickets start where the client device is connected to the network – where the device could be a PC, IP phone, printer, POS terminal, industrial equipment controller or a medical imager. Common issues include “doesn’t work,” “can’t connect,” “files unreachable,” “application unresponsive,” and “the network is slow.” The OneTouch assists you in troubleshooting these issues – or proving that the network is not the cause – by emulating the client device and assessing network performance.

Performance measurement from the cable to the cloud

The cause of a network problem can be elusive. The OneTouch AT identifies problem root cause by measuring and analyzing the performance of the critical network components: the network cabling, the delivery of Power over Ethernet (PoE), the connection to the nearest switch, the connection to the nearest access point, and the performance of key network services and server-based applications.

Copper and fiber optic cable testing

Understand cable performance by measuring twisted pair cable wiremap and length. Use cable identifiers and IntelliTone™ toning to locate and identify cables. Measure the optical power received through fiber optic cables. Verify the cleanliness of fiber optic connections by viewing connector end faces with the FiberInspector™ USB video probe.

PoE testing

Verify the successful delivery of PoE with the TruePower™ load test. Measure PoE unloaded and under load. Emulate a 802.3at (PoE+) class 1 - 4 powered device and measure power up to 25.5 watts.

Wired and Wi-Fi client connectivity testing

Understand how a client connects to the wired infrastructure by testing the link between the client and the nearest switch, identifying the nearest switch, slot, and port and monitoring key switch port statistics. Or understand how a client connects to the Wi-Fi infrastructure by testing the link between the client and the nearest access point, identifying the AP name, channel and security, observing the authentication and association process and monitoring key AP and network statistics.

Network service and application testing

Determine if a network service or server-based application is the root cause of a



Figure 1. The AutoTest provides a comprehensive measurement of network performance from the end user point-of-view – from cable to services and applications



reported problem by measuring availability and responsiveness. Choose the performance test appropriate for your service or application: ping (ICMP), connect (TCP), web (HTTP), file (FTP), multicast (IGMP), video (RTSP) or email (SMTP). Touch the icon on the home page to get a detailed breakdown of application performance including DNS lookup time, server response time and data rate. The measurements are presented side-by-side for easy wired/Wi-Fi and IPv4/IPv6 performance comparisons. A few examples: ping your WLAN controller, connect to port 2000 on your VoIP call manager, download a page of an application with a web interface, upload or download a file from a server, subscribe to a multicast group, access video content from an on-demand streaming video server or email a text message to your mobile phone.

Test local and cloud-based services

Understand the performance of network services and server-based applications hosted locally in the datacenter, on a corporate intranet server or on a server reached via the public internet. Organize the tests by location by placing the test icon within the appropriate tier on the OneTouch AT home page. Measure service levels to the different tiers to spot problems.

Become a troubleshooting expert

Use the intuitive touch interface to create test profiles, or test scripts, tailored to your network, services, and applications. Create simple profiles with only a few tests or advanced profiles consisting of dozens of tests. You can build profiles to accommodate different types of users, devices, locations or technologies. Once created, profiles can be saved for quick and easy reuse later. Create a library of standardized profiles to elevate the troubleshooting know-how of network support staff and to establish best practices for faster, more productive troubleshooting.

Get answers in seconds

Test everything defined in a profile automatically with the one-touch AutoTest. As the AutoTest progresses from the physical layer, through the wired and wireless infrastructure, to network services and applications, clear pass/fail indicators appear next to the network element under test. Each network element – cable, switch, AP, service, application, Wi-Fi communication bands – is represented graphically. A top-level pass/fail indicator provides the overall status at a glance. Touch an icon to get detailed performance information.

Prove that your Wi-Fi network is operating at peak levels

The unique Veri-Fi™ test provides comprehensive verification of the Layer 1 through 3 network infrastructure by sending test traffic between the OneTouch AT's wireless and wired connections. Measure throughput, loss, latency and jitter at rates up to 100Mbps in upstream and downstream directions.

Solve complex issues

Capture traffic when a packet-level view is required to solve a network or application

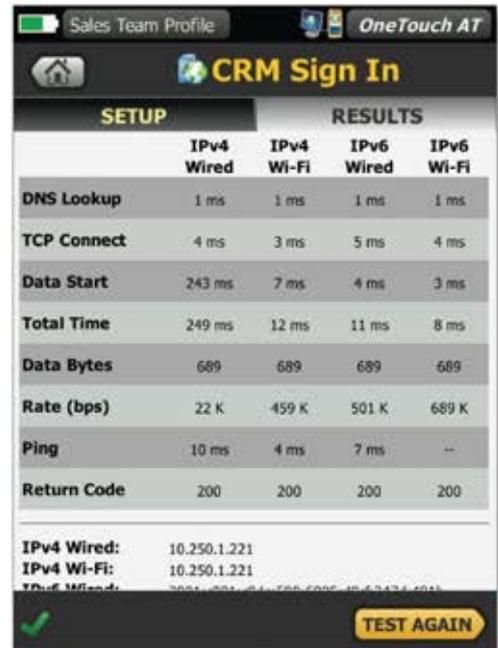


Figure 2. Detailed breakdown of network service and application performance

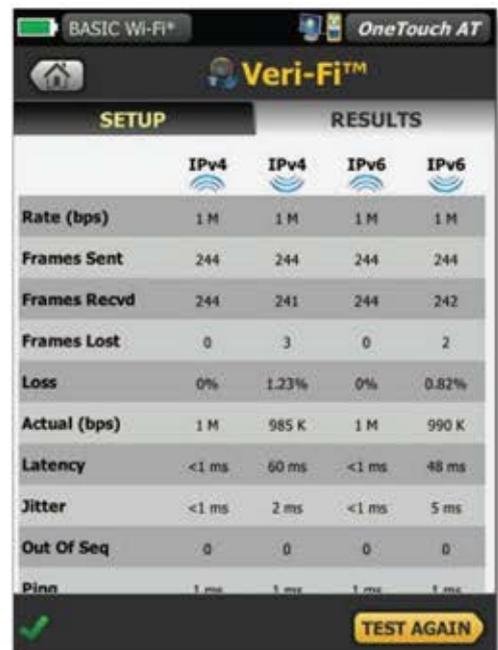


Figure 3. Proof of successful Wi-Fi operation



issue. Filter the traffic to capture what is most important. Export the capture file via the management port or SD card to your favorite protocol analyzer for decoding and analysis.

Tap into the relevant traffic easily

Use the built-in inline aggregating copper and fiber optic TAP to access the traffic running between the client and the network. Avoid the complexity, time and cost required to configure switch mirror ports or to install standalone TAPs.

Streamline collaboration

Collaborate with peers, consultants, integrators and vendors more effectively by sharing packet captures, screen shots and AutoTest reports. The OneTouch user interface can even be viewed and controlled remotely through a PC. Attach a web cam to the OneTouch AT to share a view of the test environment.

Analyze the wired LAN infrastructure

Ensure that your wired LAN is configured correctly and is performing as designed. Find the nearest switch, port and VLAN. Monitor the traffic to and from that switch port. Identify performance issues with your DHCP and DNS servers. Find the gateway and monitor discards and errors. Discover devices connected to the LAN.

Analyze the Wi-Fi infrastructure

Ensure that your wireless LAN is configured correctly and is performing as designed. Find the nearest access point. Validate the channel, security type, transmit rates and signal and noise levels. Identify performance issues with your DHCP and DNS servers, and compare wireless and wired results side-by-side. Find the gateway. Discover devices connected to the WLAN.

Troubleshoot your IPv6 network

The OneTouch AT service tests support IPv6 so you can easily compare and contrast the performance for your IPv4 and IPv6 wired and wireless networks.

Save test results

Save the AutoTest performance data in a PDF report to share with colleagues or outside parties, for trouble ticket documentation, as a record of historical performance for benchmarking and as a certification report after a new infrastructure deployment.

Purpose-built for field testing

The OneTouch AT is engineered specifically for network testing and network support professionals. Useful test and management tools include a web browser, Telnet/SSH client, cable toner, optional fiber optic connector inspection camera and webcam support. The durable platform provides years of reliable operation in tough environments.

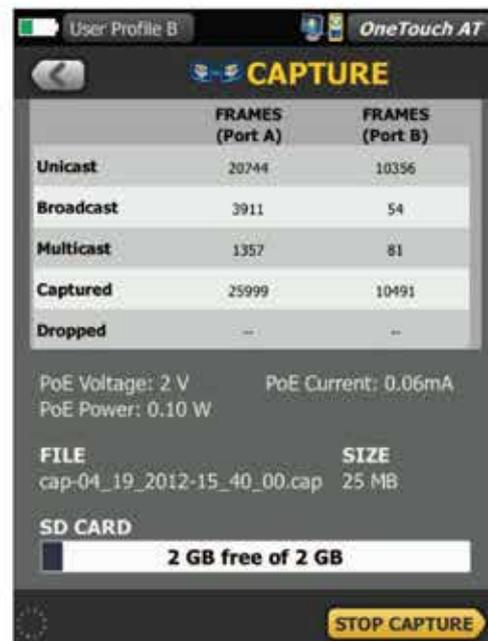


Figure 4. Capture packets to solve complex issues.

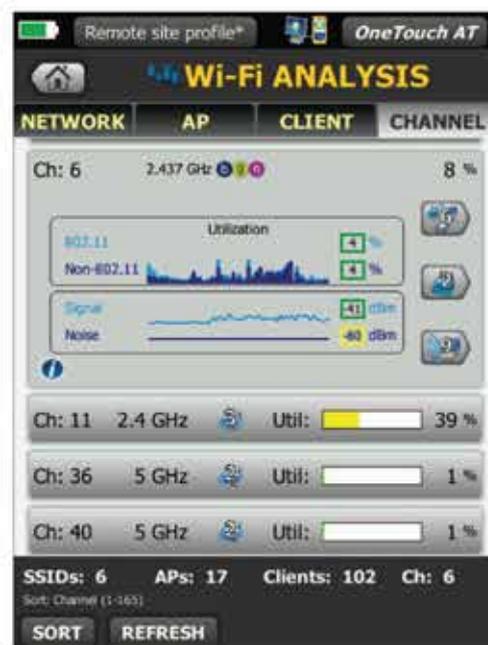


Figure 5. Visibility into Wi-Fi networks, access points, clients and channels

Technical Specifications

General	
Dimensions (with module and battery installed)	10.3 in x 5.3 in x 2.9 in (26.2 cm x 13.5 cm x 7.3 cm)
Weight (with module and battery installed)	3.5 lb (1.6 kg)
Display	5.7 in (14.5 cm) LCD with projected capacitance touch screen, 480 x 640 pixels
AC adapter	Input: 100-240 Vac, 50-60 Hz, 1.0 A Output: +15 Vdc, 2.0 A
Battery type	Lithium ion battery pack, 7.2 V
Battery life	Approximately 3-4 hours depending on type of usage, 4 hours to charge from 10% capacity to 90% capacity with the unit powered off
Memory	Internal: 2 GB shared between system and user files
	SD card: 4 GB, brand and model selected for optimal performance
	USB 2.0 type A port: for use with USB mass storage devices
Network analysis ports	Two RJ-45 10/100/1000BASE-T Ethernet
	Two SFP 100BASE-FX/1000BASE-X Ethernet
Management port	One RJ-45 10/100BASE-T Ethernet
Wi-Fi adapter data rate	802.11a: 6/9/12/24/36/48/54 Mbps
	802.11b: 1/2/5.5/11 Mbps
	802.11g: 6/9/12/24/36/48/54 Mbps
	802.11n (20 MHz): MCS0-23, up to 216 Mbps
	802.11n (40 MHz): MCS0-23, up to 450 Mbps
Wi-Fi adapter operating frequency	2.412 ~ 2.484 GHz (Industrial Scientific Medical Band)
	5.170 ~ 5.825 GHz
Wi-Fi security	64/128-Bit WEP Key, WPA, WPA2, 802.1X

Environmental and Regulatory	
Operating temperature	32°F to 122°F (0°C to 50°C)
Battery charging temperature	32°F to 104°F (0°C to 40°C)
Storage temperature	-40°F to 160°F (-40°C to 71°C)
	-4°F to 122°F (-20°C to 50°C) for periods longer than 1 week
Operating relative humidity (% RH without condensation)	5% to 45% at 32°F to 122°F (0°C to 50°C)
	5% to 75% at 32°F to 104°F (0°C to 40°C)
	5% to 95% at 32°F to 86°F (0°C to 30°C)
Shock and vibration	Meets the requirements of MIL-PRF-28800F for Class 3 Equipment
Safety	CAN/CSA-C22.2 No. 61010-1-04, IEC 61010-1:2001
Operating altitude	13,123 ft (4,000 m), 10,500 ft (3,200 m) with AC adapter
Storage altitude	39,370 ft (12,000 m)
Pollution degree	2
EMC	EN 61326-1:2006

Certifications and Compliance	
	Conformite Europeene. Conforms to the requirements of the European Union and the European Free Trade Association (EFTA).
	Listed by the Canadian Standards Association.
	Conforms to relevant Australian standards.

Visit www.flukenetworks.com/OneTouchAT for complete specifications.



Ordering Guide

Model	Description
1T-1000	OneTouch AT Network Assistant with the Copper/Fiber LAN option includes module and test frame, frame carry strap, AC adapter and line cord, wiremap adapter #1, RJ45 coupler, RJ45 patch cable, accessories pouch, carrying case, getting started guide, and resource CD with user manual
1T-2000	OneTouch AT Network Assistant with Copper/Fiber LAN and Wi-Fi options includes module and test frame, frame carry strap, AC adapter and line cord, wiremap adapter #1, RJ45 coupler, RJ45 patch cable, external directional antenna with mounting clip, accessories pouch, carrying case, getting started guide, and resource CD with user manual
1T-3000	OneTouch AT Network Assistant with Copper/Fiber LAN, Wi-Fi, inline and capture options includes module and test frame, frame carry strap, AC adapter and line cord, wiremap adapters #1 - #6, RJ45 coupler, RJ45 patch cable, external directional antenna with mounting clip, SD card, USB SD card reader, USB flash drive, two 1000BASE-SX SFP fiber transceivers, accessories pouch, carrying case, getting started guide, and resource CD with user manual
1T-3000-FI	OneTouch AT 1T-3000, plus FI-1000 FiberInspector™ USB video probe with video probe tips
1T-3000-CSA	OneTouch AT 1T-3000, plus ClearSight™ Analyzer Software on CD for decoding packet captures on a Microsoft Windows PC
1T-3000-LRAT2KIT	OneTouch AT 1T-3000, plus LinkRunner™ AT 2000 Extended Test Kit
1T-3000-ACK-LRAT2	OneTouch AT 1T-3000, plus Network Tech Troubleshooting Kit with an AirCheck™ Wi-Fi tester and a LinkRunner™ AT 2000 tester
1T-3000-ESLSI-LRAT	OneTouch AT 1T-3000, plus an EtherScope™ LAN analyzer with Fiber and ProVision™/RFC2544 options, and a LinkRunner™ AT 2000 tester
1T-WLAN-OPT	OneTouch AT Wi-Fi upgrade option includes external directional antenna with mounting clip, and option activation instructions (for 1T-1000 models)
1T-IN-CAP-OPT	OneTouch AT inline and capture upgrade option includes wiremap adapters #2 - #6, SD card, USB SD card reader, USB flash drive, two 1000BASE-SX SFP fiber transceivers, and option activation instructions (for 1T-1000/2000 models)
1T-WLAN-IN-CAP-OPT	OneTouch AT Wi-Fi, inline and capture upgrade option includes external directional antenna with mounting clip, wiremap adapters #2 - #6, SD card, USB SD card reader, USB flash drive, two 1000BASE-SX SFP fiber transceivers, and option activation instructions (for 1T-1000 models)
1T-3000-0FP-QUAD	OneTouch AT 1T-3000 plus OptiFiber Pro Quad OTDR module, four launch cables (50 um SC/LC, 50 um SC/SC, 9 um SC/LC, 9 um SC/SC), two IBC fiber cleaners (1.25 mm, 2.5 mm) and an accessories carrying case
1T-1000/GLD*	OneTouch AT 1T-1000, plus 1 year of Gold support
1T-2000/GLD*	OneTouch AT 1T-2000, plus 1 year of Gold support
1T-3000/GLD*	OneTouch AT 1T-3000, plus 1 year of Gold support
GLD-1T	1 year of Gold support for the OneTouch AT 1T-1000/2000/3000 models
GLD3-1T	3 years of Gold support for the OneTouch AT 1T-1000/2000/3000 models

*Only for sale in the United States

Fluke Networks' Gold Support

Our support plans give you exclusive services and 24/7 technical assistance. Sign up for our Gold Support plan and you'll enjoy outstanding privileges to protect and add value to your investment in Fluke Networks equipment. They include unlimited technical assistance seven days a week, 24 hours a day via phone or at our web support center. Repairs on covered items and "next day" dispatched loaner units for uninterrupted service. Free software upgrades. Scheduled annual performance verification service. Web-based training. Access to our extensive Knowledge Base library of operation and application related technical articles. And Gold "Members Only" special prices and promotions. Some benefits are not available in all countries.

See www.flukenetworks.com/goldsupport for more information.

Visit www.flukenetworks.com/OneTouchAT for a complete listing of models, options and accessories

LinkRunner™ AT

Network Auto-Tester

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 the fastest way to solve network connectivity problems. Powering up in under three seconds, its one-button AutoTest performs your required set of connectivity tests in seconds, enabling you to quickly and accurately identify and solve network problems.

Key features include:

- Verification of Ethernet on copper or fiber up to 1 GB/s
- TruePower™ over Ethernet (PoE) testing up to 802.3at (25.5W)
- Cable testing and fault identification
- IPv4/IPv6 ready
- Powers up in 3 seconds
- Stores up to 50 reports



Overview

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

- Where does this cable or jack go?
- How is this switch port provisioned?
- Can I negotiate a Gigabit link?
- Are there 802.1x security conflicts?
- Are the DHCP and DNS servers working?
- Can I get enough power from this port?
- Can I connect to servers and the Internet with IPv4 and IPv6?
- Can I connect over copper or fiber links?
- Is this patch cable good?

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 with two quick keystrokes to prove the job's done right. With a six hour battery life and rugged design, LinkRunner 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.

Verify connection at 10/100/1 G over copper or 100/1 G 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 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.

Fastest way to solve network connectivity problems

Technical Datasheet

Key device and application availability—instead of a ping, which is often blocked or disabled, LinkRunner performs a TCP port open test to verify application connectivity using IPv4 and IPv6. Router, DNS and DHCP servers are reported.

Document results—store up to 50 complete test results and download to your PC with the push of a button.

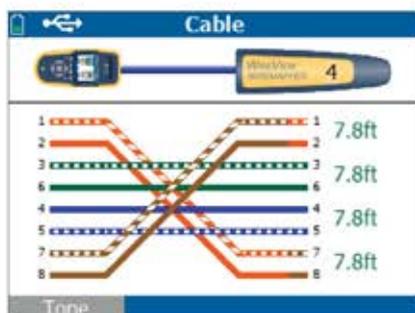
Designed for field use—six-hour battery life, one-handed operation and a rugged design.

Easy upgrades—the mini-USB port allows software upgrades in the field in minutes.

LinkRunner AT Functions

Graphical Cable Wiremap and Cable Details

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



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

Cable Tests

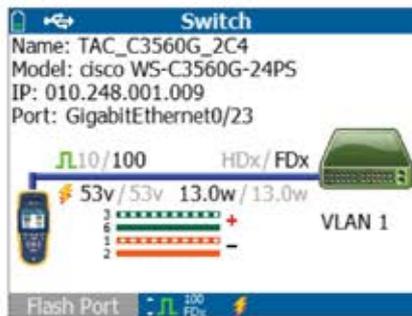
Locate cable runs with toning, port advertisement, link blinking and wiremapping with up to six cable identifiers. Toning supports both analog and digital IntelliTone™ modes.

Switch Information

LinkRunner AT displays 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. 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



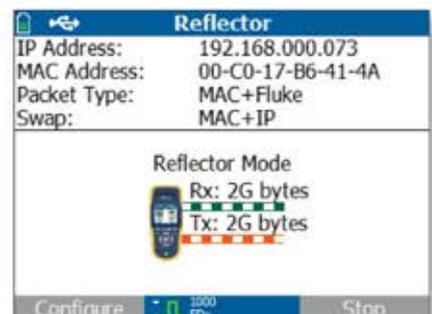
Ping and TCP Port Connectivity

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 LinkRunner packet reflector mode allows it to be used as a remote device during throughput tests to validate LAN and WAN throughput capabilities.



LinkRunner Manager Software

Included with LinkRunner, the LinkRunner Manager software gives you the ability to manage LinkRunner profiles and manage recorded sessions.

Profiles

The Profiles feature allows you to standardize your critical tests into one or more profiles making it easy for staff to produce consistent test results. For example, use one profile to verify connectivity to key devices or applications and another to verify connectivity to other locations. You can also name and transfer up to 10 profiles between LinkRunner and your PC.

The Profiles feature also allows you to configure, manage and control the use of your LinkRunner—or an entire fleet of them—with the following settings:

- Enable IPv6 addressing
- IP configuration including DHCP or static addresses
- VLAN and connection configuration including 802.1x security, speed/duplex settings and VLAN ID and priority
- AutoTest configuration for 10 devices
- PoE configuration and loading
- Reflector mode configuration

Record Test Results

Document what LinkRunner is seeing to share or archive. Creating reports allows you to

quickly close trouble tickets or provide documentation for problem escalation. Press one key to record all the collected details for:

- AutoTest results
- Switch results
- Cable results

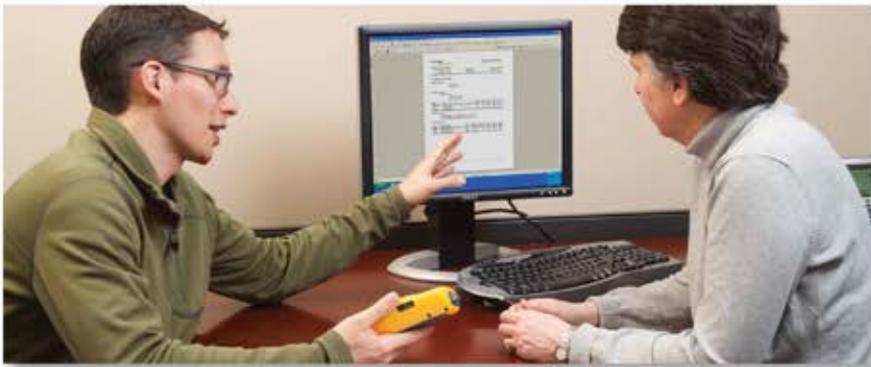
Transfer sessions to a PC and easily view or store them using LinkRunner Manager.

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 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 unlimited tech assistance seven days a week, 24 hours a day via phone or our website support center; free software upgrades; unlimited web-based training; discounted pricing on instructor-led and custom onsite training; access to our extensive Knowledgebase library that includes operation and application-related technical articles; and Gold “members only” special pricing and promotions. Some benefits are not available in all countries. See www.flukenetworks.com/goldsupport for more information.



Family Comparison

	LinkRunner AT 1000	LinkRunner AT 2000
AutoTest	✓	✓
10/100/1G Copper	✓	✓
Color Display	✓	✓
Key Devices & TCP Connectivity	✓	✓
Verify 802.1x Settings	✓	✓
Identify Switch Ports and VLANs	✓	✓
PoE Voltages	✓	✓
IPv4 Support	✓	✓
Graphical, Color Wiremap and Cable Details	✓	✓
WireView Cable Identifier #1	Optional	✓
6-hour Battery Life (Lithium Ion Battery)	Included until June 30, 2012	Included until June 30, 2012
Reports	10	50
100/1G Fiber		✓
IPv6 Support		✓
True PoE Loading		✓
Reflector Option		✓



Technical Specifications

Environmental	
Operating Temperature and Relative Humidity	32°F to 113°F (0°C to +45°C) <i>Note: 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 2nd edition
Safety (LR-AT 2000 only)	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); 100BASE FX and 1000
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)
Battery	Removable, rechargeable lithium-ion battery pack (18.5 Watt-hrs) (included with introductory special)
Battery Life	Typical operating life is 6 hours; Typical charge time is 3 hours
External AC Adapter/Charger	AC input 90 to 264 Vac 48 to 62 Hz input power DC output 15 Vdc at 1.2 amps
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 Manager Software	
Supported Operating Systems	Windows® Vista, Windows® XP, Windows® 7
Processor	400 MHz Pentium processor or equivalent (minimum); 1 GHz Pentium processor or equivalent (recommended)
RAM	96 MB (minimum); 256 MB (recommended)
Hard Disk	Up to 500 MB of available space may be required
Display	1024 x 768 high color, 32-bit (recommended)

Ordering Guide

Item Name	Description
LRAT-2000	Includes LinkRunner AT 2000 with Li-ion battery (until June 30, 2012), Wireview Cable ID #1, LinkRunner Manager software CD, USB cable, RJ45 coupler, Getting Started Guide and soft case.
ACK-LRAT2000	Includes AirCheck™ tester, LinkRunner AT 2000 tester, AirCheck external directional antenna, spare Li-ion battery for either AirCheck or LinkRunner and deluxe carrying case.
LRAT-2000-FTK	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.
LRAT-2000-KIT	Includes LinkRunner AT 2000, IntelliTone™ Pro 200 Probe, WireView Cable IDs #1-6, LinkRunner Manager software CD, test accessory soft pouch, USB cable, LinkRunner AT Getting Started Guide, IntelliTone Pro Getting Started Guide, one 9 V alkaline battery—packaged in a deluxe Fluke Networks' carrying case.
LRAT2000-5PK	Includes 5 LRAT-2000s and 5 LinkRunner AT Mobility Kits. Each Mobility Kit includes an auto charger and a holster. <i>Note: Available only in the US, Canada and Europe.</i>
LRAT2000-10PK	Includes 11 LRAT-2000s and 11 LinkRunner AT Mobility Kits. Each Mobility Kit includes an auto charger and a holster. <i>Note: Available only in the US, Canada and Europe.</i>
CIQ-GSV2	Includes CableIQ™ Qualification Tester, LinkRunner AT 1000, IntelliTone Pro 200 Probe, CableIQ Remote Identifiers #1-7, WireView Cable ID #1, CableIQ Reporter software CD, RJ45-RJ45 shielded patch cords (2) and USB cable, coax.
LRAT-1000	Includes LinkRunner AT 1000 tester with Li-ion battery (until June 30, 2012) LinkRunner Manager software CD, USB cable, Getting Started Guide and soft case.
GLD-LR	LinkRunner Gold Support Services, 1 yr.

For a complete listing of LinkRunner AT models and accessories, visit www.flukenetworks.com/LinkRunnerAT



LinkRunner™ Network Multimeter

Frontline PC and network technicians are the first line of defense against problems at the physical and link layers of the network. Typical problems the technician checks for include determining whether the drop is active, whether they can "ping" other network resources, finding any cable problems and tracing the cable path.

Designed for the frontline technician, LinkRunner improves troubleshooting and escalation accuracy by helping to quickly identify if a problem is in the network or the PC NIC. LinkRunner performs essential tests for troubleshooting and solving problems in the physical and link layers, the source of 80% of network problems.

Instant vision into the network drop. That's Network SuperVision™. That's Fluke Networks' promise to you.

LinkRunner helps you answer questions like:

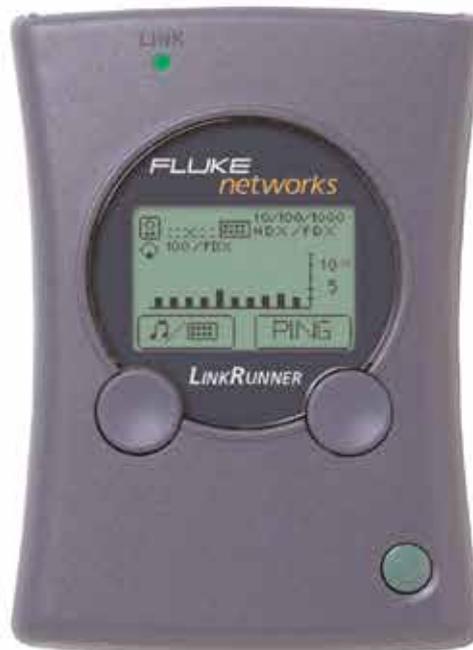
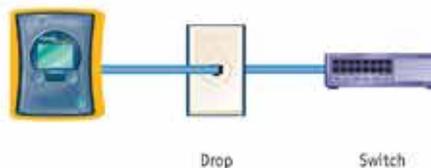
- Is this an active Ethernet port?
- What speed/duplex is the hub/switch/PC NIC configured for?
- Am I seeing traffic from this connection?
- Is the PC NIC okay?
- Where does the cable go?
- Am I connected to the Internet?

Perform the following tests quickly

Link – determine whether the drop is active, identify its speed, duplex capabilities, service type (e.g., Ethernet, Token ring, Telco), and location on a switch (supports Cisco and Extreme Discovery Protocols). Users can then reconfigure these settings on the hub or NIC as needed. Now detects up to Gigabit Ethernet.

Length – determine whether the cable length is within specifications, what type it is (straight or crossover), and whether it has any faults. These tests, which work for both structured and patch cables, eliminate the need for a separate cable tester.

Ping – verify connectivity to key network resources and determine whether a PC NIC is responding.



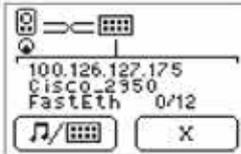
Actual size.



Technical Data

Quickly verify and troubleshoot network drops with this essential, personal tool.

CDP/EDP – precisely determine where a network drop is connected at the far end (available for Cisco and Extreme switches). Eliminates guesswork that can arise from toning or blinking the switch.



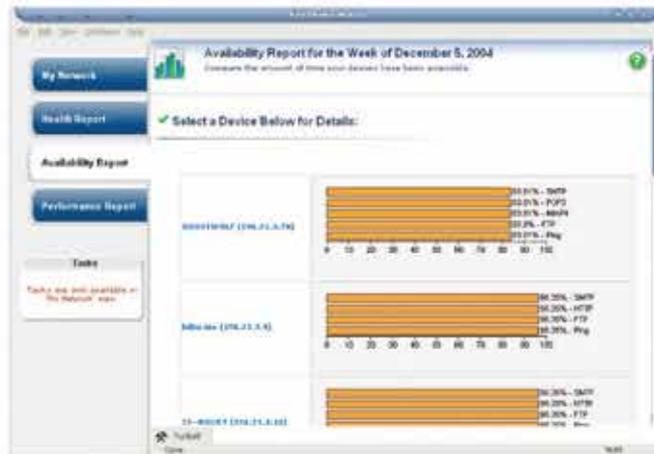
Cable ID – identify unknown cabling paths using the optional Cable ID by seeing which numbered plug is on the other end of the wire.



Proactively monitor and reactively troubleshoot

WhatsUp Key Device Watch software is an easy-to-use solution that maps the network, monitors key devices, and alerts of failures before they become catastrophes. Key Device Watch software, LinkRunner and your knowledge give you a powerful combination to help keep your resources up and running.

Key Device Watch monitors up to 10 networked resources, waiting for something to go wrong. When something does go wrong with your networked devices, a notification is sent to the proper party letting them know where to go and what to fix. Key Device Watch doesn't solve the problem but alerts those who can. That information combined with the handheld network tester allows the troubleshooter to quickly fix the problem.



Availability Report



Health Report

WhatsUp Key Device Watch:

- Discovers devices automatically
- Monitors key devices 24x7
- Notifies troubleshooter with problem location and type
- Speeds-up the troubleshooting process
- Provides trend analysis of network diagnostics

Order the software bundled with LinkRunner and save on this powerful combination over individual purchases.



Ordering Information

Model Name	Description
LINKRUNNER	LinkRunner Network Multimeter
LR-KDW	LinkRunner Network Multimeter packaged with Key Device Software
LINKRUNNER-KIT	LinkRunner extended test kit packaged with Key Device Software (Includes LinkRunner and all accessories listed below including custom carrying case)
KDW-CD	Standalone mini-CD with Key Device Software
CABLE ID KIT	Cable ID Kit (numbers 1-8)
LRUN-WM	Wiremap Adapter
RJ-45 COUPLER	RJ-45 Coupler
MT-8200-53A	IntelliTone 100 Probe
CLIP SET	Clip adapter to test unterminated cables
BATT-AA-NIMH	NiMH Battery Pack
NT-BATT-CHG	NiMH Battery Charger
LR-CASE	Custom Carrying Case for LinkRunner Extended Test Kit
PC-INSP	PC Inspector

Specifications

Media access	10BASE-T and 100BASE-TX
Identifies	10BASE-T, 100BASE-TX (full or half-duplex), Gigabit Ethernet, Token Ring, Telco, Cable ID, un-powered PC or hub, Auto-MDIX ports and Auto-Negotiation or strapped port
Cable tests	Length, open, short, splits, wiremap, crossed, straight through
Ports	RJ-45 LAN, RJ-45 Wiremap
Interface	Push button navigation of icon/menu driven view
Power	2 AA batteries standard. Optional NiMH batteries and battery charger available. Approximately 20 hours continuous use with 4 hours of pinging.
Dimensions	2.75" w x 3.75" h x 1.25" d (6.98cm x 9.52cm x 3.17cm)
Weight	4.5 oz/128 grams with batteries installed
Warranty	One year

FREE Belt clip holster when you register your LinkRunner



Visit www.flukenetworks.com/linkrunner and www.flukenetworks.com/keydevice for more information.

LinkRunner KDW

- LinkRunner Network Multimeter
- Key Device Watch Software
- Quick Reference User Guide
- 2 AA alkaline batteries



LinkRunner Extended Test Kit Includes:

All available accessories and the custom carrying case

LinkRunner™ Pro & Duo Network Multimeter

Quick network connectivity and cabling answers for the frontline technician

Network technicians and desktop support professionals are the first line of defense against problems at the physical and link layers of the network. They are tasked with resolving basic connectivity problems fast, and preventing unnecessary escalations to higher levels.

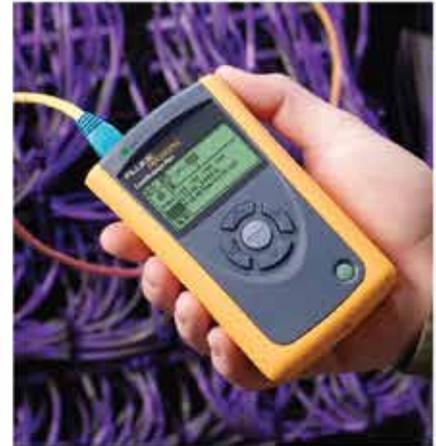
Today's connectivity problems are more complex than ever. Users demand Gigabit connectivity. IT departments enforce stronger standards like 802.1X. And technologies like VoIP and WLAN have given rise to a greater reliance on PoE for power.

The LinkRunner Pro and Duo recognize this, and empower technicians to address today's challenges with powerful new features and reporting capabilities. And, following the tradition of the original LinkRunner, they are designed for simplicity and ease-of-use to ensure rapid deployment and concise answers.

Vision to resolve a broader range of today's link connectivity problems. That's Network SuperVision.™ That's Fluke Networks' promise to you.



LinkRunner Duo for both copper and fiber



LinkRunner Pro for copper

Count on LinkRunner Pro and Duo for answers

- Can I negotiate at Gigabit?
- Are there 802.1X security conflicts?
- Is the DHCP server responding?
- Do I have PoE voltage on the right pairs?
- Can I link with key devices or the Internet?
 - Over copper links (Pro & Duo)
 - Over fiber links (Duo only with optional SFP)
- Which port number am I plugged into?

Empower techs to troubleshoot gig links

The LinkRunner Pro and Duo are the first frontline tools to establish links at Gigabit speeds. That means frontline technicians now have the power to troubleshoot Gigabit link problems before they're escalated to higher levels, giving network engineers more time to focus on optimization, planning, and expansion.

Quickly resolve 802.1X security conflicts

The LinkRunner Pro and Duo not only will discover the presence of 802.1X, but can also gain authentication on 802.1X networks. The

included LinkRunner Connect Software can be used to select EAP type, provide certificates, and enter passwords. Technicians can now resolve 802.1X conflicts and get users back up and running fast.

Eliminate guesswork over port locations

The LinkRunner Pro and Duo are the first connectivity tools to support the new IEEE Link Layer Discovery Protocol (LLDP) in addition to the Cisco and Extreme Discovery Protocols (CDP and EDP). That allows technicians to speed problem resolution by precisely locating the nearest switch model, slot, and port.

Document problems with link status reports

When no test documentation is available, closing trouble tickets can be a frustrating and time-consuming process. Finger pointing and redundant testing are just a couple of the wastes that occur. The LinkRunner Pro and Duo eliminate these wastes by generating objective, professional test reports that can be printed or routed electronically.

Technical Data

Quick network connectivity and cabling answers for the frontline technician on today's copper and fiber Gigabit Ethernet, PoE, and 802.1X networks.

Ordering information

Model Number	Description
LRDUO	Includes LinkRunner Duo, Wireview Cable ID #1, LinkRunner Connect Software CD, USB cable, RJ45 coupler, LinkRunner Duo getting started guide, four (4) AA alkaline batteries.
LRDUO-FTK	Includes LRDUO, SimpliFiber Pro optical power meter, 850/1300 multimode source, VisiFault VFL, FT120 FiberViewer, FindFiber Remote ID source, and carrying case; SC, ST, and LC power meter adapters
LRPRO-1000	LinkRunner Pro Network Multimeter.
LRPRO-KIT	LinkRunner Pro Extended Test Kit (see image below for contents)
LRPRO-1000-IE	LinkRunner Pro Network Multimeter – Industrial Ethernet Includes: LinkRunner Pro, WireView Cable ID #1, LinkRunner Connect software CD, USB cable, LinkRunner Pro Getting Started Guide (English, Spanish, French, German, Portuguese, Japanese, Simplified Chinese), four (4) AA alkaline batteries, (1) M12 to RJ45 (M12PCP-IE)
CIQ-GSV	CableIQ Gigabit Service Kit (see image below for contents)
CIQ-GSV-IE	CableIQ Gigabit Service Kit – Industrial Ethernet includes: CableIQ Qualification Tester, LinkRunner Pro Network Multimeter, IntelliTone Pro 200 Probe, CableIQ Remote Identifiers #1-7, WireView Cable ID #1, CableIQ Reporter software CD, RJ45-RJ45 shielded patch cords (2), USB cable, coax "F" push-on cable, RJ45/RJ11 universal coupler, USB cable, test accessory soft pouch, CableIQ Getting Started Guide, LinkRunner Pro Getting Started Guide, IntelliTone Pro Getting Started Guide, eight (8) AA batteries, one 9 V battery, packaged in a deluxe Fluke Networks carry case and (2) RJ45-to-M12 patch cables
Accessories	Description
MS-SX	Gig Fiber SFP transceiver (Not included in Duo. SFP required for fiber testing on Duo)
LRPRO-REFLECT-OPT	Reflector option
LRPRO-LION	Lithium-Ion Battery Pack with AC adapter
WIREVIEW 2-6	WireView Cable IDs #2-6
CLIP-SET	RJ45 to 8-clip test lead
CIQ-RJA	RJ45/11 Modular Adapter
MT-8200-63A	IntelliTone 200 Probe

LinkRunner Family Comparison

Features	LinkRunner	LinkRunner Pro & Duo
Link/Ping Speed	10/100	10/100/1000
POTS/ISDN/Ethernet Detection	•	•
Cable Wiremap	•	•
Discovery Protocols	CDP/EDP	CDP/EDP/LLDP
IntelliTone Digital Toning		•
PoE Verification		•
Configurable Ping List		10 IP Addresses
802.1X Authentication		•
Link Status Reports		4 reports on Pro 8 reports on Duo
USB Application Port		•
Protective Rubber Mold		•



LinkRunner Duo



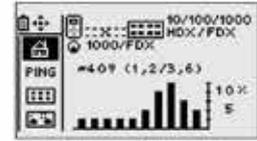
LinkRunner Pro



CableIQ Gigabit Service Kit



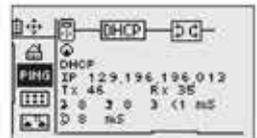
LinkRunner Pro Extended Test Kit



See device capabilities, link speed, PoE power, and utilization levels.



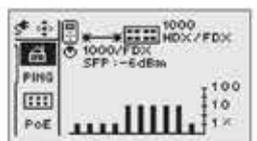
Precisely locate switch ports with CDP, EDP, and LLDP discovery.



Ping DNS server or other key devices, and observe response time.



Quickly authenticate and identify potential 802.1X security conflicts.



Provides indication of link on active fiber link and indication of power based on manufacturer's SFP specifications.



Specifications

Media Access	10BASE-T, 100BASE-TX, 1000BASE-T (IEEE 802.3), and PoE (IEEE 802.3af)
Cable Tests	Pair lengths, opens, shorts, splits, crossed, straight through, and cable ID
Tone Generator	IntelliTone digital tone: [500 KHz]; analog tones: [400Hz, 1KHz]
Ports	Test ports: RJ45 ports; Application port: mini-USB
Power Source	4 AA batteries
Weight	10 oz (311 grams) with batteries installed
Dimensions	5.3" h x 3.1" w x 1.3" d (13.46cm x 7.87cm x 3.30cm)
LinkRunner Connect Software	Operates on Windows XP and 2000; supports English, Spanish, French, German, Simplified Chinese, and Japanese
Warranty	One year
M12/ RJ45 Cable Specifications:	
Cable type	Ethernet cable, Cat5e, shielded, 2 pair AWG 26 stranded (7 wire), RAL 5021 (water blue), M12 4 pos. D- coded on RJ45 connector
Number of positions	4
Fixed cable length	2 m
Volume resistance	≤ 5 mΩ
Insulation resistance	≥ 100 MΩ
Ambient temperature	-20 °C to 50 °C
Inflammability class acc to UL 94	V0
Surge voltage category	II
Pollution degree	3
Degree of protection	IP20/IP67
External cable diameter	6.7 mm
Transmission characteristics	Cat 5 (IEC 11801:2002), Cat 5e (TIA 568B:2001)

For more information, visit www.flukenetworks.com/linkrunnerpro

AirCheck™ Wi-Fi Tester

Wi-Fi is a complex technology, but testing it doesn't have to be.

The AirCheck Wi-Fi tester allows network professionals to quickly verify and troubleshoot

802.11 a/b/g/n networks.

Designed specifically for dispatched troubleshooting, AirCheck simplifies wireless testing by providing:

- *A one-button AutoTest, which quickly provides a pass/fail indication of the wireless environment and identifies common problems - for any level of Wi-Fi expertise.*
- *An instant view to required test results including network availability, connectivity, utilization, security settings, rogue hunting, and interference detection*
- *A rugged, purpose-built Wi-Fi tester that's easy to use and easy to carry*

Its intuitive design and standardized AutoTest makes it simple for anyone to quickly master AirCheck. Instant power-up, automated testing, and quick access to more detailed information, so you can close trouble tickets faster - making technicians and users alike more productive. Easily manage test results and documentation using AirCheck Manager software. From start to finish, AirCheck helps take the guesswork out of everyday wireless troubleshooting.

Overview

AirCheck integrates all Wi-Fi technologies plus interference detection, channel scanning, and connectivity tests. The one-button AutoTest and instant access to detailed information provides fast troubleshooting for the most common Wi-Fi pain points, including:

- Coverage problems
- Overloaded networks or channels
- Interference
- Connectivity problems
- Failed access points
- Rogue access points
- Security settings
- Client problems

In addition to generating instant reports and documentation, AirCheck Manager software allows you to set up multiple profiles and manage network and security settings for a single unit, or an entire fleet of AirCheck testers.

AirCheck Features

Supports 802.11a/b/g/n - All in one handheld tool.

Instant-on operation - Powers up in less than three seconds and automatically starts discovering networks, access points (APs), and channel activity.

Get answers fast - The one-button AutoTest quickly provides a pass/fail indication of the wireless environment and identifies common problems - for any level of Wi-Fi expertise.



Identifies security settings for each Network and Access Point: Open, WEP, WPA, WPA2, and/or 802.1x.

Pinpoints Wi-Fi traffic and interference - Shows how much of each channel's bandwidth is consumed by 802.11 traffic and interference, and the APs using each channel.

Finds rogue APs and misbehaving clients - Flags unauthorized APs and clients. Hunt them down with the LOCATE function or find them even faster with the optional directional antenna.

Wi-Fi Troubleshooting Made Simple

Technical Data



Connection tests – Connects to networks or specific APs using WEP, WPA, WPA2, and/or 802.1x. Acquires an IP address and pings the router, gateway, and user-defined addresses to verify connectivity and network access inside and outside the firewall. Verifies connection quality.

Designed for the field – Five-hour battery life. One-handed operation. Rugged design.

Documents results – Saves complete results of the current troubleshooting session for download to your PC.

Easy upgrades – The mini-USB port allows software upgrades in the field in just minutes. And with Gold support, you'll automatically receive upgrades at no additional charge.



AirCheck Functions

AutoTest

Performs three essential WiFi tests and a pass/fail indication of the wireless environment and identifies common problems - for any level of expertise.

Air Quality - Checks for Wi-Fi and non Wi-Fi utilization by channel, plus co-channel interference.

Network Quality - Verify coverage, interference, security and ability to connect to specified networks.

Rogue Access Points - Identify AP's not listed in the profile

AutoTests are user configurable and based on the multiple profiles which can be stored in AirCheck and selected for different sites or requirements. Results may also be stored for export to AirCheck Manager.



List Networks

Find security issues, rogue APs and coverage problems and view a list of all wireless networks heard by AirCheck. Instantly see the following for each network:

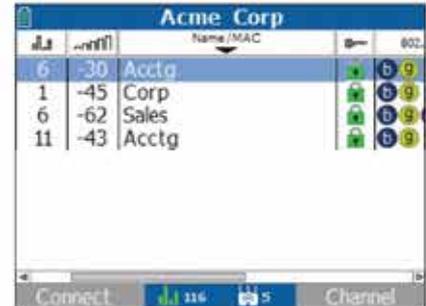
- Signal level
- Security / encryption
- Number of APs in network
- SSID name
- Type of network



List Access Points

Find configuration and coverage problems as well as rogue APs. View a list of all physical APs heard by AirCheck or clients connected to a specific AP, and see the following:

- Channel
- Signal level
- AP name or MAC address
- SSID name (or count of SSIDs for virtual APs)
- Security / encryption
- Type of network

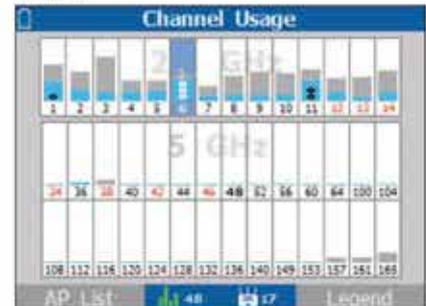


Channel Usage

Quickly determine if channels are overloaded due to Wi-Fi traffic (displayed in blue) or interference (displayed in gray). Verify channel-usage pattern or overlap and flag illegal use of channels.

With AirCheck, you can also detect the presence of interference. Devices that can cause interference include microwave ovens, cordless phones and headsets, Bluetooth® devices, and analog video cameras.

Drill in further to see the level of Wi-Fi traffic and interference over the last 60 seconds on a selected channel, as well as the access points using this channel.





Access Control Settings

Quickly determine which access points are known and which are not by setting the authorization status for each AP seen by AirCheck. You may also define access control settings in AirCheck Manager and download them in a profile.



Locate Access Points and Clients

Track down rogue and other APs or clients by graphing the signal strength over time, or by using an audible indication which can be muted.



Access Point Details

Quickly identify AP configuration problems. View the following information for each physical AP:

- Signal / noise/ signal-to-noise ratio
- SSID and BSSID
- ACL status, security and encryption
- Connected clients



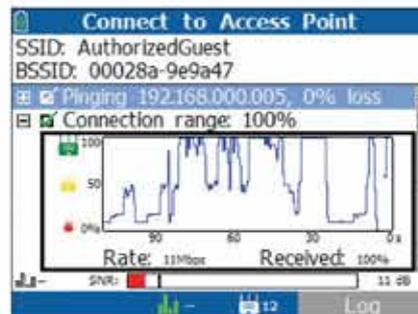
Connect

Verify network availability and access by connecting to a network (SSID) or specified AP using three simple steps:

- Associate with AP
- Request IP address from DHCP server
- PING gateway, DHCP server and user-defined addresses



View the process steps on the display and store them in a log for troubleshooting. Quickly test performance and quality of the connection by using the continuous ping response, loss-rate, and connection-range features.



Client Details

Easily find misconfigured or failed client devices. Quickly drill into client details to see signal level, AP MAC and name, channel, SSID, type and determine the channels and frequencies on which the client is probing.



AirCheck Manager Software

This software is included with AirCheck and provides two capabilities: the ability to manage AirCheck profiles and manage sessions recorded with AirCheck.

Profiles

Easily configure, manage, and control the use of your AirCheck – or an entire fleet of them – with the Profiles feature, which allows configuration of security settings, AutoTest limits, and target devices for connectivity.

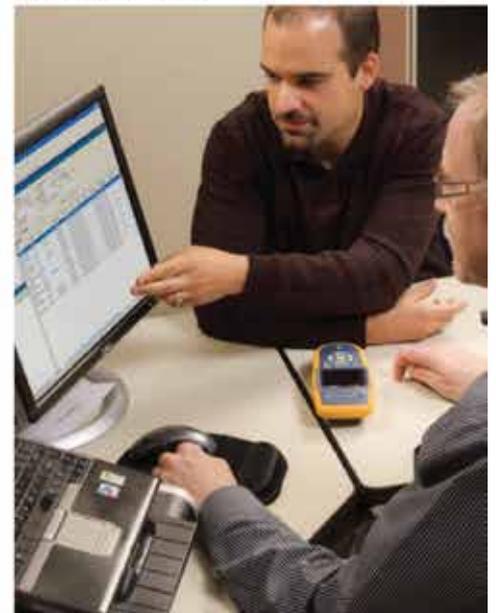
Name and transfer multiple profiles into AirCheck, as needed for different facilities. You can also transfer profiles from AirCheck to AirCheck Manager software.

Profiles are password protected, both in AirCheck and in AirCheck Manager, eliminating worry about unauthorized access to your network if your AirCheck is lost or stolen.

Record Session

Document what AirCheck is seeing to share or archive. Create summary or detailed reports allowing you to quickly close a trouble ticket or provide documentation for problem escalation. Press one key to record all collected details including AirCheck configuration, AutoTest results, lists of APs / clients and channel usage. Transfer sessions to a PC and easily view/store them using AirCheck Manager software.

AirCheck Manager Software





Technical Specifications

Environmental

Operating temperature and relative humidity	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	Random, 2 g, 5 Hz-500 Hz (Class 2) 1 m drop test
Safety	EN 61010-1 2nd edition
Altitude	4,000 m; Storage: 12,000 m
EMC	FCC Part 15 Class A, EN 61326-1
Certifications and compliance	<ul style="list-style-type: none"> CE Conforms to relevant European Union directives Conforms to relevant Australian standards Listed by the Canadian Standards Association FC Conforms to FCC Rules, Parts 15.107, 15.109

Wireless

Specification compliance	IEEE 802.11a, 11b, 11g, 11n
Receive Channel Frequencies	2.4 GHz Band* 2412-2484 MHz (Channel 1 to Channel 14) 5 GHz Band* 5170-5320 MHz, 5500-5700 MHz, 5745-5825 MHz (Channels 34, 36, 38, 40, 42, 44, 46, 48, 52, 56, 60, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 149, 153, 157, 161, 165)
*Notes: 1. AirCheck receives on all of these frequencies in every country. 2. These are the center frequencies of the channels that AirCheck supports.	
Transmit Channel Frequencies	2.4 GHz Band** <ul style="list-style-type: none"> • 802.11b 2412-2484 MHz (Channel 1 to Channel 14) • 802.11 g/n 20 MHz BW (HT20) 2412-2472 MHz (Channel 1 to Channel 13) • 802.11n 40 MHz BW (HT40) 2422-2462 MHz (All legal bonded channel pair combinations) 5 GHz Band** <ul style="list-style-type: none"> • 802.11 a /n 20 MHz BW (HT20) 5180-5320 MHz, 5500-5700 MHz, 5745-5825 MHz (Channels 36, 40, 44, 48, 52, 56, 60, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 149, 153, 157, 161, 165) • 802.11 n 40 MHz BW (HT40) 5190-5310 MHz, 5510-5670 MHz, 5755-5795 MHz (All legal bonded channel pair combinations)
**Notes: 1. AirCheck transmits only on frequencies allowed in the country where it operates. 2. These are the center frequencies of the channels that AirCheck supports.	
Regulatory domain	World Mode, 802.11d compliant
External uni-directional antenna	Frequency range: 2.4 GHz to 2.5 GHz and 4.9 GHz to 5.9 GHz; Minimum gain: 5.0 dBi in the 2.4 GHz band and 7.0 dBi in the 5 GHz band. Connector: Reverse-polarity SMA plug

AirCheck does not support mesh/bridge APs

AirCheck Manager Software

Supported operating systems	Windows Vista; Windows XP; Windows 7
Processor	400 MHz Pentium processor or equivalent (minimum); 1 GHz Pentium processor or equivalent (recommended)
RAM	96 MB (minimum); 256 MB (recommended)
Hard disk	Up to 500 MB of available space may be required
Display	1024 x 768 high color, 32-bit (recommended)
Hardware	USB Port

General

Dimensions	3.5 in x 7.8 in x 1.9 in (8.9 cm x 19.8 cm x 4.8 cm)
Weight	14 oz (0.4 kg)
Battery	Removable, rechargeable lithium-ion battery pack (18.5 Watt-hrs)
Battery life	Typical operating life is 5.5 hours; Typical charge time is 3 hours
External AC adapter/charger	AC input 90 to 264 Vac 48 to 62 Hz input power DC output 15 Vdc at 1.2 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
Wireless antenna	Internal
External antenna port	Input only; Reverse-polarity SMA connector
Language support	English, French, German, Spanish, Portuguese, Russian, Japanese, Simplified Chinese, and Korean

Ordering Information

Model	Description
AirCheck	AirCheck Wi-Fi Tester includes: AirCheck tester, USB cable, soft case, Getting Started Guide, and CD with AirCheck Manager software and User Manual
AIRCHECK-LE	AirCheck Wi-Fi Tester for Law Enforcement includes: AirCheck tester, AirCheck holster, External directional antenna, Auto charger and AirCheck Getting Started Guide for Law Enforcement
AIRCHECK-5PK*	AirCheck 5 Pack: includes five (5) AirCheck testers and five (5) free external directional antennas
AIRCHECK-10PK*	AirCheck 10 pack: includes a bonus free AirCheck tester, so you receive 11 AirCheck testers, and 11 free directional antennas
ACK-LRAT2000	Includes AirCheck™ tester, LinkRunner AT 2000 tester, AirCheck external directional antenna, spare Li-ion battery for either AirCheck or LinkRunner and deluxe carrying case.
ACK-LRAT-CIQ	Includes AirCheck™ tester, LinkRunner AT 2000 tester, AirCheck external directional antenna, spare Li-ion battery for either AirCheck or LinkRunner, deluxe carrying case and a CableIQ™ Qualification tester.
GLD-ACK	AirCheck Gold support services, 1 yr

*These bundles are only available in the US, Canada, Europe, the Middle East, and Africa.



MONITORING, ANALYSIS AND TROUBLESHOOTING

Get the complete picture for monitoring, analyzing and troubleshooting networks and applications

Managing today's networks requires a range of visibility – from overall network health, to end-user experience, to in-depth “on-the-wire” analysis. Performance needs to be monitored and root causes pinpointed for key devices, links and applications anywhere on the network.

To do this with confidence, you need a complete picture of what's happening on your network. Fluke Networks' family of analyzers delivers the breadth of visibility and depth of analysis you need for monitoring, analyzing and troubleshooting networks and applications.

OptiView™ Protocol Expert

Total integration.

Total control.

Total Network SuperVision.™

No one knows the value of an integrated solution better than network engineers – and Fluke Networks.

*Our **OptiView Network Analysis Solution** is a breakthrough in integrated portable and distributed monitoring and analysis hardware and software. It gives you quick, complete visibility into your entire Ethernet network – from portable devices to workgroup analyzers to high-performance gigabit line-rate link analyzers. For more information visit www.flukenetworks.com/netanalysis.*

Standard key features

- Complete seven-layer packet capture, decode for Ethernet and Token Ring Networks
- Decode packets captured by any OptiView Analyzers
- Real-time monitoring of network traffic
- Expert Analysis System
- Cisco ISL, 802.1Q VLAN Traffic Analysis
- Powerful alarm system with 150 preset alarms that trigger notifications via email, paging and SNMP Trap
- Advanced multi-stage filtering enables triggering or capturing of specific events
- Decodes more than 250 protocols

OptiView™ Protocol Expert Plus adds:

- Control of remote OptiView Protocol Expert Plus and OptiView Link Analyzers while monitoring local traffic activities
- Multiple user access level privileges
- Packet editing and creation
- Replay of captured packet file and traffic pattern generation to load network segment

VoIP Option:

- Support H.323, Cisco SCCP, SIP and other VoIP related protocols
- User definable “Quality Grades” and alarm threshold for real-time QoS assessment: R-Factors, Jitter, Packet Drop and Setup Time
- Real-time call and channel parameter summary table for more than 2000 calls
- Audio playback and store as .wav file

OptiView Protocol Expert (PE) is a Windows-based (95/98/2000/NT) application that provides seven-layer visibility to your network. OptiView PE provides comprehensive information about your network for quick problem detection and resolution. With extensive decodes and expert analysis, OptiView PE allows you to easily identify and solve tough problems on switched segments, including those on Inter-switch Links.

OptiView PE can be directly launched from OptiView™ Inspector Console. OptiView Inspector Console can auto-discover device name to network address correlation information and pass it to the OptiView PE's name table. When analyzing traffic captured by remote OptiView Analyzers, DNS or IPX user names will be shown in place of MAC or IP addresses for quicker packet source identification and reduction in troubleshooting time.

The **OptiView Protocol Expert Plus** software adds a sophisticated traffic generation function, and the ability to remotely monitor one or more OptiView PE Plus and OptiView Link Analyzers. This distributed analysis feature allows users to see activities on other parts of the network maintaining visibility of activities on the local segment. It also facilitates collaboration between IT staff to speed isolation of tough problems.

The **OptiView Protocol Expert Plus** can remotely control the OptiView Link Analyzer, which offers full line-rate traffic monitoring, alarm and packet capture even on Gigabit Ethernet links. Together, they provide the timing accuracy and performance required to solve tough problems such as slow application response or poor quality of service on highly utilized switch links.

Add the **VoIP Option** to troubleshoot VoIP call setup problems in Cisco AVVID, SIP or H.323 based VoIP deployment. Use the OptiView Link Analyzer and OptiView PE Plus for the real-time QoS assessment of multiple VoIP calls.



Real time expert analysis for 10/100/1000 Mbps Ethernet and Token Ring networks.

Technical Data

Comprehensive network monitoring

OptiView PE provides seven-layer packet decode and real-time network health statistics. Many network vital signs can be monitored such as:

- Utilization and error rate
- Frame size distribution
- Protocol distribution
- Top senders/receivers
- Conversation matrices
- VLAN traffic analysis
- Expert analysis
- Application response time analysis

Advanced Packet Decode and Filtering

OptiView PE decodes packets captured by OptiView™ Analyzers. Multiple sessions of the packet decode window can be opened simultaneously. Traffic analysis tools, such as conversation matrix and protocol mix view can be used to help quickly narrow down packets of interest. Advanced filters and display filters are easy to setup, using a combination of protocol types, source/destination addresses, TCP/UDP port numbers and bit patterns.

Powerful alarm system

The OptiView PE offers 150 predefined alarm conditions to effectively trap abnormal or intermittent problems. Custom alarm conditions are easily created using capture filters and the OptiView PE's unique custom counter feature. Multiple thresholds can be set for each alarm condition to trigger different actions based on severity.

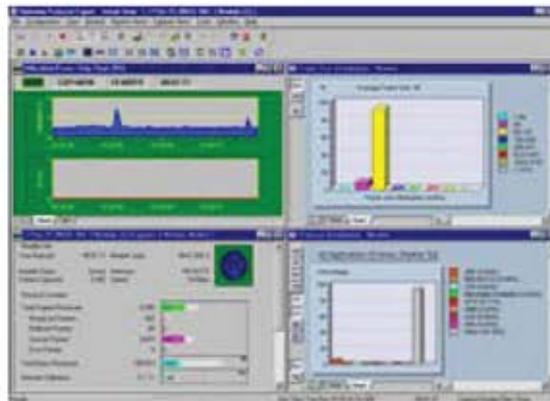
The OptiView actions include:

- Saving alarm messages into a log file
- Restarting a monitoring or capture session
- Stopping and saving a capture session
- Sending email or paging notification
- Sending an SNMP trap
- Launching an application program

Data storage and reporting

The traffic analysis results from monitoring or packet decoding, such as conversation matrix or protocol mix, can be exported to comma-separated (CSV), or saved as bitmap (BMP) file formats.

The data logging function can store key traffic utilization and error statistics, and data sampled at user defined intervals over a long period of time. A Microsoft Excel® report template is available for quick graphical report generation from the stored data.



Detail View shows multiple network health statistics simultaneously (by simply clicking on a resource in the Monitor View area of the main window.)

Alarm Name	Sample Count	Policy Value	Filtering Value	Severity	Action	Enabled
802.1Q VLAN Mismatch	100	1000	1000	Normal	Message	<input type="checkbox"/>
802.1Q VLAN Config	100	1000	1000	Normal	Message	<input type="checkbox"/>
802.1Q VLAN Mismatch	100	1000	1000	Normal	Message	<input type="checkbox"/>
802.1Q VLAN Config	100	1000	1000	Normal	Message	<input type="checkbox"/>
802.1Q VLAN Mismatch	100	1000	1000	Normal	Message	<input type="checkbox"/>
802.1Q VLAN Config	100	1000	1000	Normal	Message	<input type="checkbox"/>
802.1Q VLAN Mismatch	100	1000	1000	Normal	Message	<input type="checkbox"/>
802.1Q VLAN Config	100	1000	1000	Normal	Message	<input type="checkbox"/>
802.1Q VLAN Mismatch	100	1000	1000	Normal	Message	<input type="checkbox"/>
802.1Q VLAN Config	100	1000	1000	Normal	Message	<input type="checkbox"/>

Alarm Editor allows multiple levels of alarm actions to be set for each of the 150 different preset alarm conditions based on severity.



Advanced Filter conditions can be easily set to capture only packets of interest or to specify a packet from a large amount of captured data.

Expert Analysis speeds up troubleshooting

The Expert View of the OptiView PE automatically detects problems while monitoring real-time traffic, or analyzing captured packets collected by the OptiView PE or the OptiView™ Analyzers.

The Expert View categorizes the problems detected by OSI layers. It summarizes the address or name of the stations involved, and the position of frames in the capture file that trigger the Expert System to identify the problem.

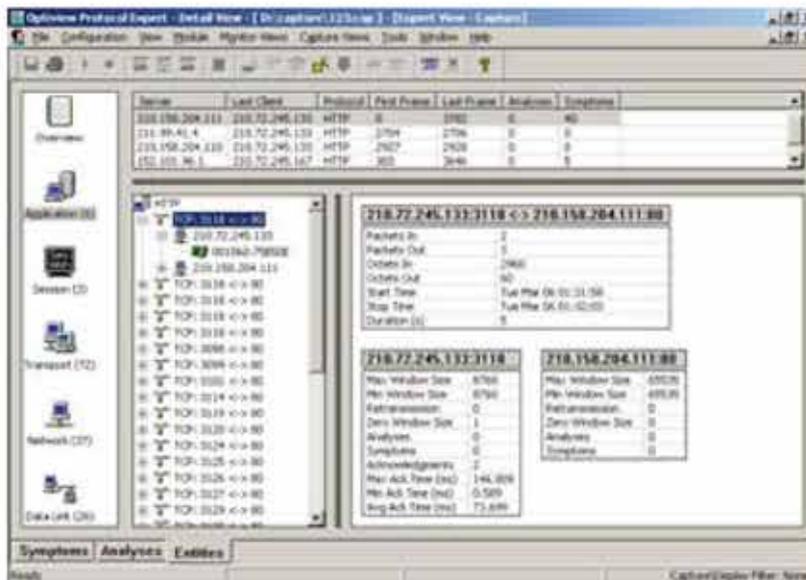
The Expert System will identify symptoms such as:

- **Application Layer:** Excessive ARP, Excessive BOOTP, NFS Retransmission, HTTP Get Response, HTTP Post Response, Slow Server Connect, Slow Server Response
- **Transport Layer:** Non-responsive station, TCP/IP checksum error, TCP/IP fast retransmission, TCP/IP retransmission, TCP/IP frozen window, TCP/IP long Ack and TCP/IP SYN attack
- **Network Layer:** ICMP Errors and Unstable MST
- **Datalink Layer:** Illegal MAC source address, broadcast/multicast storms and physical errors

Double clicking on the Expert Symptom button displays the Expert Diagnosis window that provides a description of the station symptom, a probable cause and recommended action(s). Click on any of the stations listed in the Expert View to get a detailed view of the traffic captured.

Integrated Alarm System

The Expert System is integrated into the OptiView PE's alarm system to trigger necessary actions. Problems detected by the Expert System can trigger a Stop and Auto-Save of a captured session. The Traffic that caused the problem is stored and available for detailed analysis.



Expert View detects problem spots, categorizes the problem types and provides device level analysis for quick problem isolation.



Expert Diagnosis provides a description of the problem detected, possible cause(s) and recommended corrective actions.

OptiView™ Protocol Expert Plus

Key features:

Contains all functions of the OptiView Protocol Expert and

Remote Access

- Peer-to-peer distributed analysis architecture
- Integrated portable and distributed analysis
- Four levels of password protected, user-access security
- Optional packet encryption for additional security when communicating over non-secure network links

Traffic Generation

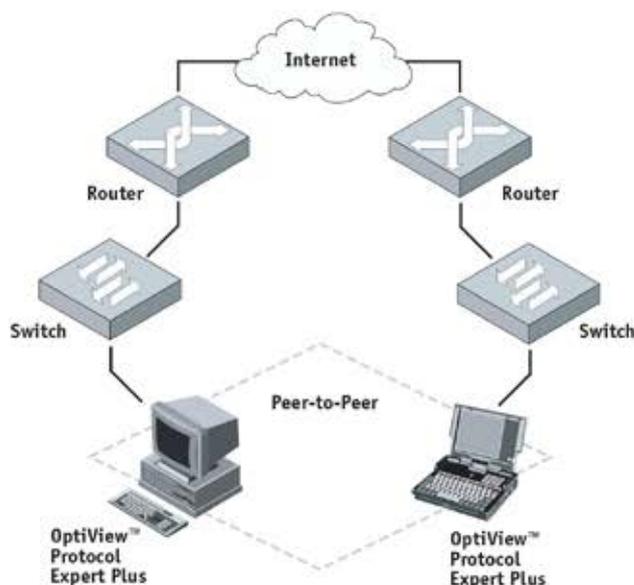
- Traffic pattern generation speed can be specified by frame rate, percentage of utilization, or packet gap
- Protocol templates are available for creating quick, custom traffic patterns
- Flexible packet editor allows you to add "bad" packets for testing your network's response
- Automatically generates CRC and recalculates checksum during packet editing or generation
- Supports burst count and auto-sequence number generation to send traffic streams for packet loss and out-of-sequence testing
- Retransmits previously captured real-time traffic to test network response under "real world" load

Integrated portable and distributed analysis

OptiView PE Plus can analyze traffic monitored by one or more remote units or OptiView Link Analyzers while maintaining visibility of local traffic. Unlike other distributed analysis platforms that use a

console-agent architecture, OptiView PE Plus uses a unique peer-to-peer architecture to conduct distributed monitoring while allowing mutual monitoring between peers.

Network engineers in the field can collaborate with peers in the IT center while troubleshooting network problems.



Each copy of OptiView Protocol Expert Plus can monitor remote stations and monitor the output from the SPAN port on the local switch. (Assuming that the Switch will allow the software to communicate through the SPAN port)



OptiView Link Analyzer (OPV-LA) with a 8-port Fiber Top (FTAP-8M)

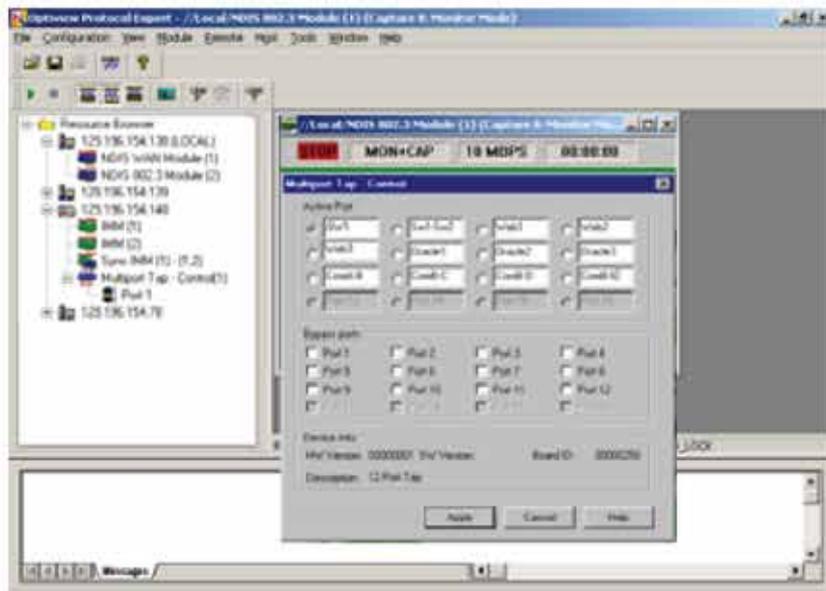
Multi-port taps offer more flexibility

Fluke Networks offers multi-port copper and fiber taps that provide access to traffic on multiple switch lines. When a multi-port tap is connected to an OptiView Link Analyzer, the switch links monitored by the taps can be remotely selected from the OptiView PE Plus. Just one OptiView Link Analyzer can monitor up to 16 100/1000 Mbps fiber links or 12 10/100 Mbps copper links. Combining this flexible hardware architecture with the real-time expert analysis feature of the OptiView PE Plus software, it is easy and economical to isolate problems on a switched Ethernet network.

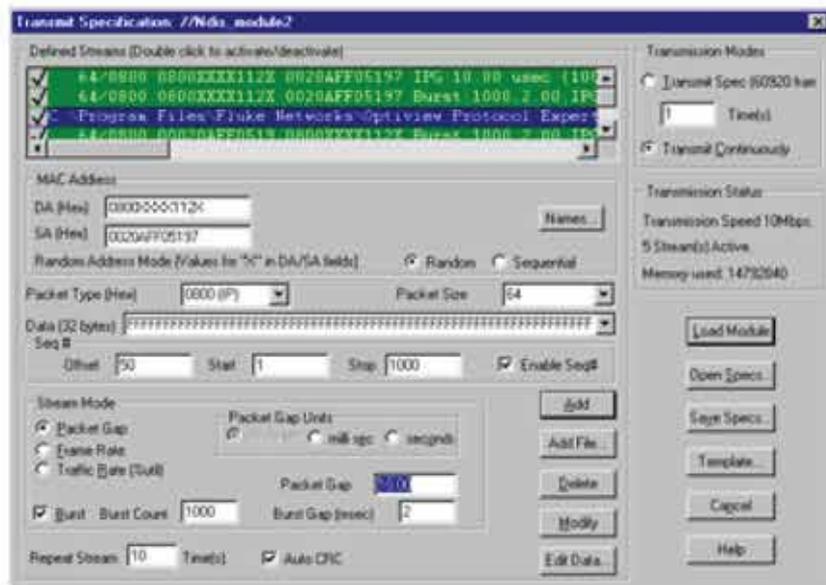
Sophisticated Traffic Generator reviews hidden problems

When utilization is low, the bandwidth and resources available can mask most network problems. OptiView PE Plus can generate traffic by replaying captured data streams to review hidden problems before applications are deployed.

Predefined protocol templates are available for quick traffic pattern creation. Custom packets can be created from scratch, or by editing captured packets. For precise inter-packet time gap or utilization control to simulate live traffic, a packet stream can be loaded onto the OptiView Link Analyzer hardware utilizing the line-rate traffic generation feature in its ASIC based interface.



Remote selection of port monitored through a Multi-port Tap that is connected to OptiView Link Analyzer (IP address 129.196.154.148)



Traffic Generation configuration window with data stream consists of several repetitions of frames and two different previously captured traffic patterns (capture files)

Voice Over IP Option

Key features:

- Supports decoding of a wide range of VoIP protocols, including ASN.1, MGCP, SGCP, H.323, Cisco SCCP, SIP et al
- Real-time view of key QoS parameters by completed calls, active calls, and calls initiated using H.323, Cisco Skinny and SIP
- User-definable "Quality Grades" for R-Factor, Jitter, Packet Loss, and Setup Time
- Real-time bar charts showing calls that fall within "Quality Grades" for each QoS parameter
- Call playback
- Calls exceeding a user-definable threshold can trigger alarm
- Easy to configure capture or display filters from call view to capture VoIP packets between two stations participating in the call
- Export call and channel information to CSV file
- Call playback feature will be available in the future

Real-time VoIP QoS Analysis with Quality Grading

Service providers need to ensure QoS meets Service Level Agreements (SLA). By monitoring traffic in each Point of Presence (POP), the VoIP option and the OptiView™ PE Plus work with the OptiView™ Link Analyzer. You will see real-time QoS assessment on every call without the need to perform detailed decoding.

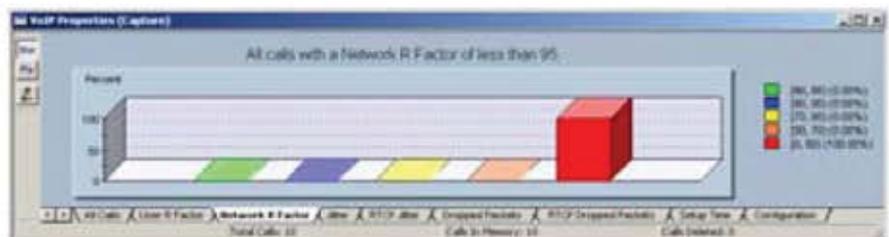
"Quality Grading" thresholds can be set for key VoIP QoS parameters, such as R-Factor, Jitter, Packet Drop and Call Setup Time. The number of calls that fall within each Quality Grade is shown for key QoS parameters. Detailed VoIP call information for calls in each grade are clearly shown in a tabular view to allow quick identification of the route taken and the gateway involved, allowing you to troubleshoot quickly. The R-Factor is based on ITUG.107/G.108 offering near MOS assessment.

Call ID	User R-Factor	Network R-Factor	Jitter	RTCP	Status
H323 4912	96	47	237	0	Complete
H323 4920	96	47	237	0	Complete
H323 2598	20	25	236	4	Complete
H323 4376	96	47	237	0	Complete
H323 4236	96	47	237	0	Complete
H323 3894	96	47	237	0	Complete
H323 1386	96	47	237	0	Complete
H323 9622	96	47	237	0	Complete
H323 4911	96	47	237	0	Complete
H323 14	0	0	268	0	Complete

All Call View shows key QoS metrics for all calls monitored. Buttons on the left select the type of call displayed: completed calls, active calls, and calls initiated using H.323, Cisco Skinny and SIP.

Range	Start	End	Enabled
Range 1	1000	∞	<input checked="" type="checkbox"/>
Range 2	600	1000	<input checked="" type="checkbox"/>
Range 3	200	600	<input checked="" type="checkbox"/>
Range 4	100	200	<input checked="" type="checkbox"/>
Range 5	10	100	<input checked="" type="checkbox"/>

Jitter Threshold Range Editor allows users to define "Quality Grades" to rank call QoS performance



User R-Factor summarizes the User R-Factor quality grading of all monitored calls. Detailed VoIP related parameters for calls that fall within a quality grade can be reviewed by double clicking on the respective bars on the chart. Similar charts are available for Network RTP Jitter, R-Factor, RTP Dropped Packets, RTCP Jitter, RTCP Dropped Packets and Call Setup Time.

Performance you can rely on

When conducting a QoS analysis of VoIP traffic, the measurement device must have accurate timing and keep up with high traffic rates regardless of the load size. Standard NICs may not have the accuracy and performance for the task, especially when the network is under high load. The OptiView Link Analyzer uses custom ASIC to provide nano-seconds of timing resolution and real-time monitoring without missing a packet, even at high utilization.

Solve Call Setup problems

The VoIP option provides a detailed decode of the most commonly used VoIP protocols. Detailed information supports quick isolation of call setup problems. Combined with the easy-to-use single call filter and Call and Channel Table Views, call setup failures commonly caused by configuration errors, network equipment incompatibilities, or interoperability can be easily solved.

VOIP Call Playback Audio data in VOIP calls that use PCMU or PCMA codec can be saved as .wav files for playback.

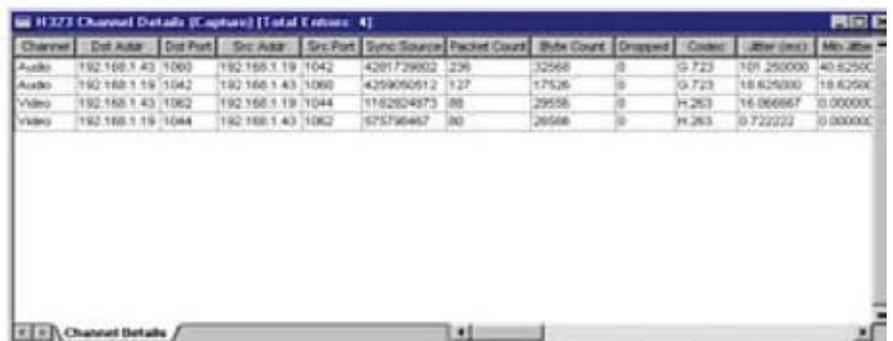
VoIP QoS Problem Alarm

The VoIP option's QoS analysis is integrated into its powerful alarm system. Calls exceeding alarm conditions can trigger an auto-save of captured data to ensure that problem traffic patterns are available for detailed analysis.

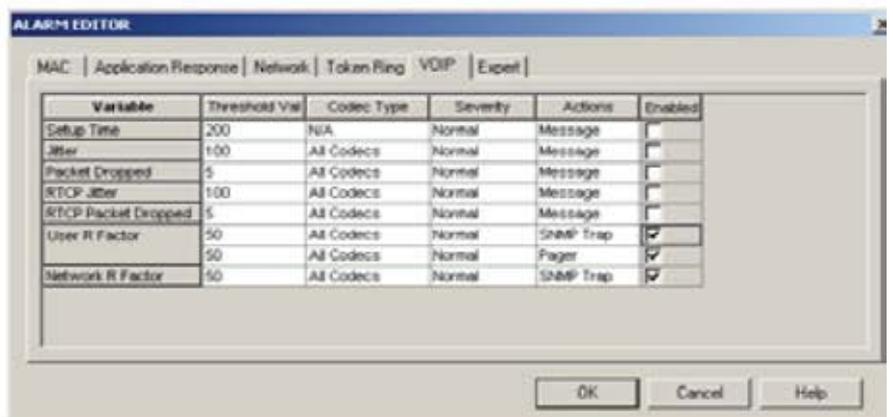
For instance, when a call exceeds the Jitter threshold by a large number, the VoIP Option stops the capture session and saves the packets that displayed the problem, then restarts the capture session to continue monitoring for other problem calls.



H.323 Detail Call View shows real-time key call setup parameters using H.323 protocols. Similar tables are available for calls initiated using SIP and SCCP.



SCCP Channel Detail View shows key VoIP parameters associated with each logical channel used by a multimedia signal for each monitored call.



VoIP Alarm can trigger different actions based on the severity of a QoS violation. Different thresholds can be set for each type of Codec supported.

OptiView™ Protocol Expert Specifications

Minimum system requirements

Item	Description
Processor	Minimum: Pentium® 400 MHz, Recommended: Pentium III 800 MHz or above
Operating system	Microsoft Windows® 95/98/2000 or NT 4.x with SP-5 or higher (Administration privilege required)
Hard disk	24 MB free space for installation
RAM	256 MB minimum; 512 MB recommended
Virtual memory	See table below
CD ROM	Required for installation
Display	800 x 600 (SVGA)
Network interface	NDIS 10/100/1000 Mbps Ethernet Adapters or NDIS 4/16 Mbps Token Ring Adapter and must be in promiscuous mode (not all Token Ring Adapters are supported)

Traffic Analysis Statistics available

Metric	Summary View (Single View)	Detail View (Multiple Views)	Capture View (Static Data)
MAC Statistics	Y	Y	N
Utilization/Errors Strip Chart	Y	Y	N
Frame Distribution	Y	Y	Y
Protocol Distribution	Y	Y	Y
MAC Layer Host Table	Y	Y	Y
Network Layer Host Table	Y	Y	Y
Application Layer Host Table	Y	Y	Y
MAC Layer Host Matrix	Y	Y	Y
Network Layer Matrix	Y	Y	Y
Application Layer Matrix	Y	Y	Y
VLAN	Y	Y	Y
Address Map	Y	Y	Y
Duplicate Address	Y	Y	Y
Expert View	N	Y	Y
Application Response Time	Y	Y	Y
Packet Summary (real-time protocol decode)	Y	Y	N
Ring Statistics (Token Ring only)	Y	Y	Y
Capture View (protocol decode)	N	Y	Y
VoIP View (VoIP Option Only)	N	Y	Y

Y = Data View Supported

N = Data View Not Supported

VoIP QoS Metrics (available only with VoIP Option)

Cisco SCCP QoS metrics in Call Table View

Field Name	Description
FID	Frame ID of the first frame from which the conversation was detected. This field is useful when doing post capture analysis. If there is a need for in-depth analysis of a specific call, the first frame associated with the call can be quickly determined.
Caller Addr	IP address of the end point initiating the call
Caller Port	TCP port of the end point initiating the call
Caller Name	Caller's name
Caller Number	Phone number of the calling party
Callee Addr	IP address of the end point receiving the call
Callee Port	TCP port of the end point receiving the call
Callee Name	Callee's name
Callee Number	Phone number of the called party
Start Time	Time at which the call was started
Stop Time	Time at which the call was completed
Setup Time	Time that was taken for the call to be setup (the time taken from the start of the call until the phone rings.)
SCCP Version	SCCP Protocol Version used in this call
Call Status	Status of the call. An active call has the status of "Setting up" or "Setup complete". A completed call has the status of "Set up failed", "Aborted", or "Complete".

Cisco SCCP QoS metric in Channel Table View

Field Name	Description
Channel	Channel type: Audio, Video or Data
Src Addr	IP address of the caller
Src Port	UDP port of the caller
Dst Addr	IP address of the callee
Dst Port	UDP port of the callee
Sync Source	Synchronization Source. Internal number identifying the source
Packet Count	This value is calculated by the OptiView Protocol Expert VoIP Option.
Byte Count	This value is calculated by the OptiView Protocol Expert VoIP Option.
Dropped Packets	This value is calculated by the OptiView Protocol Expert VoIP Option.
Codec	Codec/Decoder type. (DataType in H.245)
Jitter (ms)	Average Jitter in milliseconds. This value is calculated by the OptiView Protocol Expert VoIP Option. It uses the formula described in RFC 1889 to calculate jitter.
Min Jitter (ms)	Minimum Jitter in milliseconds. This value is calculated by the OptiView Protocol Expert VoIP Option. It uses the formula described in RFC 1889 to calculate jitter.
Max Jitter (ms)	Maximum Jitter in milliseconds. This value is calculated by the OptiView Protocol Expert VoIP Option. It uses the formula described in RFC 1889 to calculate jitter.
Low Seq Num	Lowest Sequence Number. Lowest RTP sequence number seen
High Seq Num	Highest Sequence Number. Highest RTP sequence number seen

SIP QoS metrics in Call Table View

Field Name	Description
FID	Frame ID of the first frame from which the conversation was detected, i.e. the frame ID of the first INVITE message.
Call-ID	Globally unique ID to identify an SIP call.
Caller	SIP URL or other URI of the caller, i.e. the addr-spec in the "From" parameter.
Caller Name	Display name of the caller, i.e. the display name in the "From" parameter, if it exists.
Caller Tag	The tag of "From," if it exists.
Caller IP	The IP address of the initiator of the call.
Callee	SIP URL or other URI of the callee, i.e. the addr-spec in the "To" parameter.
Callee Name	Display name of the callee, i.e. the display name in the "To" parameter, if it exists.
Callee Tag	The tag of "To," if it exists.
Callee IP	The IP address of the receiver of the call.
SIP Ver	The version of SIP being used.
Start Time	Time at which the call was started, i.e. the time of first INVITE message of the call.
Stop Time	Time at which the call was complete.
Setup Time	Time that was taken for the call to be setup. This is the duration from "INVITE" to 180 or 183 (ringing) response if available, or to 200 response otherwise. If none of these responses are received this field value is set to "Unknown."
Response Code	The status code from the latest response. This is useful to identify the cause if setup fails.
Call Status	Status of the call. An active call has the status of "Setting up" or "Set up complete". A complete call has the status of "Set up failed," "Aborted" or "Call complete."

H.323 QoS metrics in Call Table View

Field Name	Description
FID	Frame ID of the first frame from which the conversation was detected. This field is useful when doing post capture analysis. If there is a need for in-depth analysis of a specific call, the first frame associated with the call can be quickly determined.
Source Reference Value	The Call Reference Value used by H.225.0 at the source side.
Src Addr	The IP address of the initiator of the call
Src Q.931 Port	The Q.931 TCP port of the sender of the call
Src H.245 Port	The H.245 TCP port of the initiator of the call
Src Number	Phone number of the initiator of the call
Src Alias	An alias of the initiator of the call
Src H.323 Ver	The version of H.323 being used by the initiator of the call
Src Product	The product being used by the initiator of the call
Src Version	The product version being used by the initiator of the call
Destination Reference Value	The Call Reference Value used by H.225.0 at the destination side.
Dst Addr	The IP address of the receiver of the call
Dst Q.931 Port	The Q.931 TCP port of the receiver of the call
Dst H.245 Port	The H.245 TCP port of the receiver of the call
Dst Number	Phone number of the receiver of the call
Dst Alias	An alias of the receiver of the call
Dst H.323 Ver	The version of H.323 being used by the receiver of the call
Dst Product	The product being used by the receiver of the call
Dst Version	The product version being used by the receiver of the call
Fast Start	Indicates whether or not Fast Start was used during call setup
Release Code	Code indicating the status of the call when it was completed
Start Time	Time at which the call was started
Stop Time	Time at which the call was completed
Setup Time	Time that was taken for the call to be setup

H.323 and SIP QoS metrics in Channel Table View

Field Name	Description
Channel	Channel type: Audio, Video or Data
Dst Addr	The destination IP address
Dst Port	The destination UDP port
Src Addr	The source IP address
Src Port	The source UDP port
Syn Source	Synchronization source. Internal number identifying the source
SID	Session Identifier. (Session ID in H.245)
Direction	Stream origination. Forward – stream originating at the caller Reverse – stream originating at the callee
Packet Count	This value is calculated by the OptiView Protocol Expert VoIP Option.
Byte Count	This value is calculated by the OptiView Protocol Expert VoIP Option.
Dropped Packets	This value is calculated by the OptiView Protocol Expert VoIP Option.
Codec	Codec/Decoder type. (DataType in H.245)
Jitter (ms)	Jitter in milliseconds. This value is calculated by the OptiView Protocol Expert VoIP Option. It uses the formula described in RFC 1889 to calculate jitter
Min Jitter (ms)	Minimum Jitter in milliseconds. This value is calculated by OptiView Protocol Expert VoIP Option. It uses the formula described in RFC 1889 to calculate jitter
Max Jitter (ms)	Maximum Jitter in milliseconds. This value is calculated by the OptiView Protocol Expert VoIP Option. It uses the formula described in RFC 1889 to calculate jitter
Low Seq Number	Lowest Sequence Number. Lowest RTP sequence number seen
High Seq Number	Highest Sequence Number. Highest RTP sequence number seen
RTCP Packet Count	Real-time Transport Control Protocol (RTCP) Packet Count
RTCP Byte Count	RTCP Byte Count
RTCP Rtp Packet Count	Real-time Transport Control Protocol (RTCP) RTP Packet Count
RTCP Rtp Byte Count	RTCP RTP Byte Count
RTCP Jitter (ms)	RTCP reported jitter. Average reported RTCP interarrival jitter
RTCP Min Jitter (ms)	RTCP reported minimum jitter. Minimum reported interarrival jitter
RTCP Max Jitter (ms)	RTCP reported maximum jitter. Maximum reported interarrival jitter
RTCP High Seq Num	High Sequence Number reported by RTCP
RTCP Sender Report Count	Number of RTCP Sender Reports seen
RTCP Receiver Report Count	Number of RTCP Receiver Reports seen
RTCP Source Description Count	Number of RTCP Source Descriptions seen
RTCP Goodbye Count	Number of RTCP Goodbyes seen
RTCP Application Definition Count	Number of RTCP Application Definitions seen
RTCP Unknown Report Count	Unknown Report Count. Count of all other RTCP reports seen
RTCP CName	Canonical Name. (RTCP Source Description, CNAME field)
RTCP Name	User's Name. (RTCP Source Description, NAME field)
RTCP Email	User's electronic mail address. (RTCP Source Description, EMAIL field)
RTCP Phone	User's phone number. (RTCP Source Description, PHONE field)
RTCP Location	User's geographic location. (RTCP Source Description, LOCATION field)
RTCP Tool	Name of application or tool. (RTCP Source Description, TOOL field)
RTCP Note	Notice about the source. (RTCP Source Description, NOTE field)

Protocols supported by OptiView Protocol Expert V4.0

AppleTalk Phase 2	Codec	FM			NNTP
AARP	CellB	NC	IPX/SPX	MPLS	NTP
ADSP	G.711	NetBEUI	Diagnostic	CR-LDP	OSPF
AEP	G.721	NetBIOS	Error	RSVP-TE	PH
AFP	G.722	SC	IPX	Oracle	POP3
ASP	G.723	XID	IPX BCAST	TNS (TCP/IP only)	PORT MAPPER
ATP	G.728	IETF	IPX EIGRP	SOLNET	RARP
AURP	G.729	MGCP	IPX Ping	PPP Suite	RIP (Version 2)
DDP	H.261	RTCP	IPX RIP	PPPCHAP	RPC
DDP EIGRP	H.263	RTP	IPX WAN	PPPIPCP	RTSP
LAP	JPEG	RTSP	NBCAST	PPPIPX	SGCP
NBP	MPEG (v1, v2)	SGCP	NCP	PPPLCP	SLP
PAP	PCMA	SIP	NDS	PPPNBFCP	SMTTP
RTMP	PCMU	Intel	NetBIOS	PPP over Ethernet	SNMP (v1, v2, v3)
ZIP	DECnet Phase IV	MGCP	NLSP	Sybase	TCP
Banyan Vines	CTERM	MTP2	Packet Burst	TDS (TCP/IP only)	TELNET
VARP	DAP	MTP3	SAP	TCP/IP Suite	TFTP
VICP	DRP	RTSP	Serialization	ARP	TPKT
VIP	FOUND	SCCP	SPX	BGP (Version 4)	UDP
VIPC	LAT	SIP	SPX II	BOOTP	Unix Remote Services (lpr, rcp, rexec, rlogin, rsh)
VRPC	LAVC	TCAP	Watchdog	CharGen	
VRTP	MOP	IP Multicast Suite	ISO	DHCP	VRRP
VSPP	NICE	DVMRP	CLNP	Discard	WebNFS
Bridge Protocols	NSP	MOSPF	CONP	DNS	WhoIs
BPDU	Extreme	PIM-DM	ESIS	Echo	XDMCP
GARP (802.1p)	EDP	PIM-SM	ISIS	EGP	XDR
GMRP	ESRP	RSVP	ISO	Finger	Xwindows
GVRP	Fujitsu Suite	IpSec/Security	LOA	FTP	VPN
IEEE 802.1D	FNA	AH	LOA	GGP	L2TP
IEEE 802.1Q VLAN	LNDFC	ESP	MAC Layer	Gopher	LDP
Cisco	H.323v2 and V4	ISAKMP	Ethernet type II	HTTP	PPPOEDS
CDP	ASN.1	KERBEROS	IEEE 802.1x	HTTPS	PPPOESS
DISL	GK DISC	RADIUS	IEEE 802.2	ICMP	XNS
EIGRP	H.225.0	SOCKS	IEEE 802.3	Ident	Echo Protocol
HSRP	H.245	SSH	IEEE 802.5	iFCP	Error Protocol
IGRP	H.450.1	TACACS	IEEE SNAP	IGMP	IDP
ISL	Q.921	TLS	Loopback	IMAP	NetBIOS over SPP
VTP	Q.931	IPV6	MAC Control Frame	IMSP IP	PEP
RUDP	RAS	DHCPng	SNAP	iSGSI	RIP
SCCP	T.120	ICMPng	Microsoft	LDAP	SPP
SSP	T.38	IDRng	NMPI	MIME	Other
	IBM & SNA Suite	IPng	SMB	Mobile-IP (A11)	CCMAIL
	3270	OSPFng	SMB+ (CIFS)	MOUNT	Fluke Networks RSP
	FDC	RIPng	WebNSF	NetBIOS	Lotus Notes
	FID2	RSVPng		NFS	iFeP Mobile-IPT-38
				NIS	XWIN

Highlighted protocols are supported with the purchase of the VoIP option only.



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