FLUKE networks

# EtherScope™ Series II

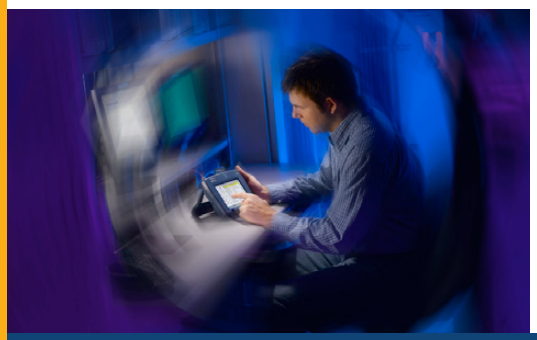
*Network Assistant*

***With EtherScope Series II, you can:***

- **Solve gigabit Ethernet problems fast on copper and fiber optic networks** – test at Gigabit speeds with the full-duplex 10/100/1000 twisted pair interface or optional SX, LX or ZX optical fiber interface.
- **View wireless networks** – add the 802.11 a/b/g wireless network analysis option to troubleshoot today's mixed wired and wireless networks. A full suite of tests including detailed information about RF signal strength, access point and client configurations, and network utilization.
- **Discover switches fast** – locate available interfaces, active ports, MAC, IP, SNMP name, and link speed.
- **Capture detailed network information** – locate, view, and store 1,000 network devices in the on-board database. Drill down on any device to see its configuration, addressing, and status.
- **Analyze data instantly** – pinpoint duplicate IP addresses, network misconfigurations, frame errors, collisions, high-utilization segments, and cable problems.
- **Identify vital network stats** – view Ethernet utilization, collisions and errors. Use the data to fine tune your network.
- **Monitor client access -** troubleshoot the cause of 802.1X security authentication, dynamic addressing and WLAN association problems.
- **Measure performance** - the Internetwork Throughput Option (ITO) enables IP performance testing for deployment and maintenance of enterprise networks. Verify the available bandwidth between two points in a network or simulate the impact of additional network users or applications.
- **Grab and go** – easy to use and carry, featuring a small, lightweight ruggedized platform, a bright color touch-screen, intuitive user interface and context sensitive help.

*You are working on one of many top-priority projects when you get the call. The network is down. Your company looks to you to bring its business-critical network back up quickly.*

*There's no time to waste. You grab your trusted assistant and rush off to solve the problem, confident you have the essential set of tools you need to analyze, isolate, and solve the problem... or at least prove it's not the network.*

**Helping first responders solve network problems fast.**

## Powerful vision into your network

Whether a copper, fiber optic or a wireless LAN, the EtherScope Series II Network Assistant delivers the information you need to quickly analyze, isolate and troubleshoot network problems. EtherScope excels at troubleshooting access network issues, with advanced diagnostics that simplify troubleshooting in switched environments. When problems require a visit to the user's work area, the switch closet or the equipment room, EtherScope is the portable tool you should bring with you. It is engineered to be small, lightweight and durable for field use. And it is packed with the features you need so you can leave your laptop PC back at your desk.

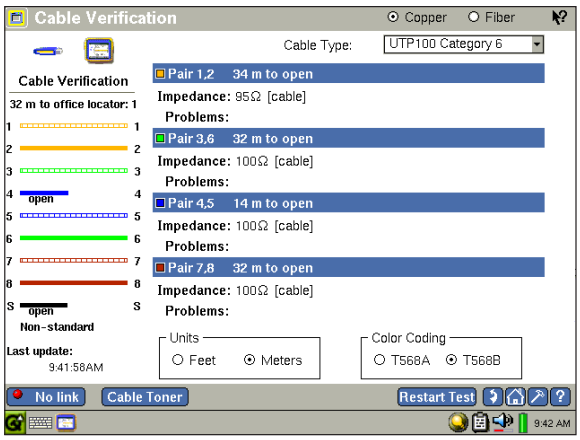
## Verify cabling infrastructure quality

High-performance cabling is the backbone of a high-speed network. Do not let simple cabling problems bring your network down. Several built-in tools, like TDR fault location, wiremap and digital toning, help you troubleshoot common cabling issues.

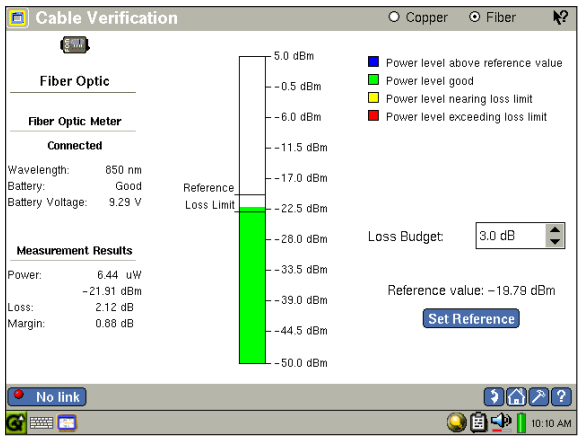
If your network includes gigabit links, you likely have multimode or singlemode fiber optic cabling. Verify the quality of these links by measuring the power from fiber optic NICS and the loss of optical fiber cables.

### Infrastructure cabling

- UTP/STP wiremap
- Fault location
- Toning
- Jack identification
- Fiber optic power/loss




*Cable verification*




*Fiber optic power measurement*

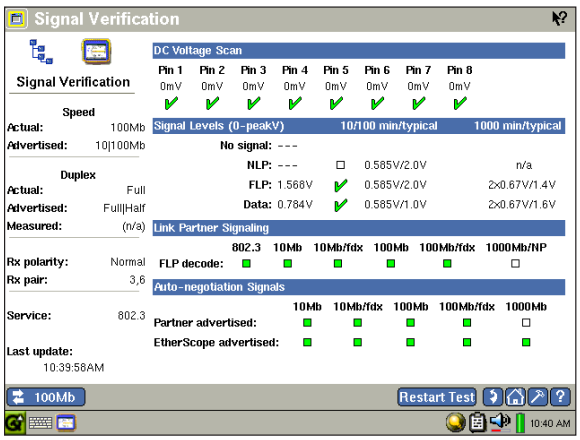
## Validate signaling and connectivity

A speed or duplex mismatch is a common cause of collisions and errors. Easily observe the link negotiation signaling of PC NICs and network devices.

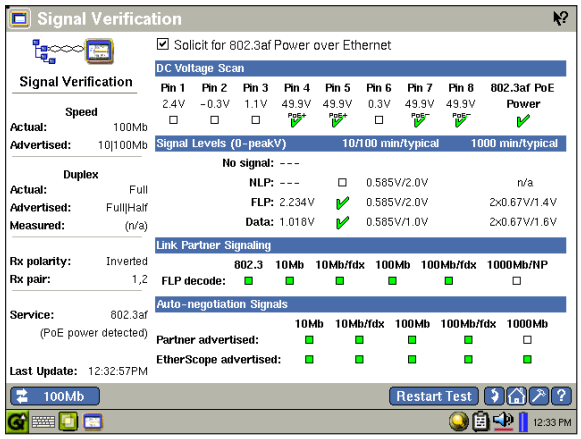
Emulate a powered device (PD) to troubleshoot problems with 802.3af Power over Ethernet (PoE) systems. Solicit and measure DC voltage on each pin.

### Connectivity and configuration

- Signaling
- PoE troubleshooting




*Signaling*




*Power over Ethernet (PoE)*

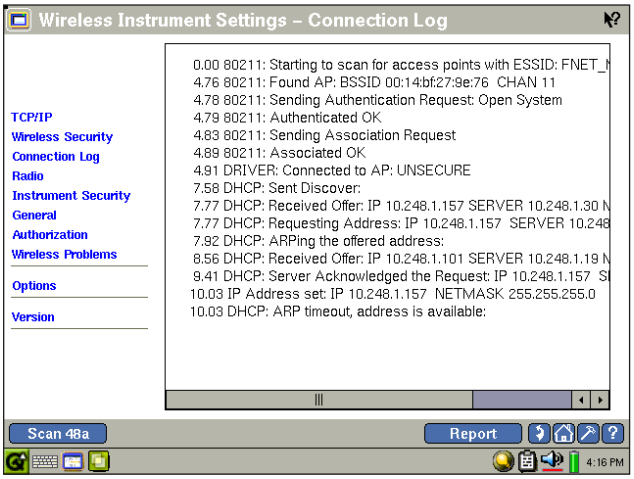
## Observe association and authentication

Monitor and record the client-network connection process: association (if wireless), security authentication and dynamic IP addressing (DHCP). Isolate problems to identify what needs repair.

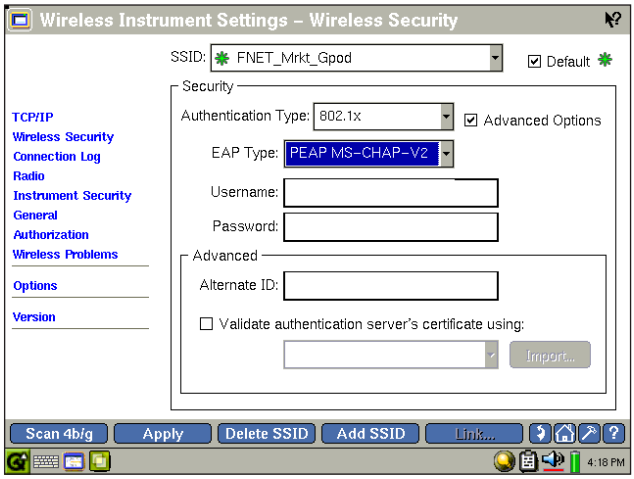
Supported authentication types include IEEE 802.1X (more than 10 EAP types) for LAN and WLAN and WPA and WEP for WLAN.

### Association and authentication

- WLAN association
- Security authentication
- DHCP addressing




*Wireless association*




*802.1X authentication*

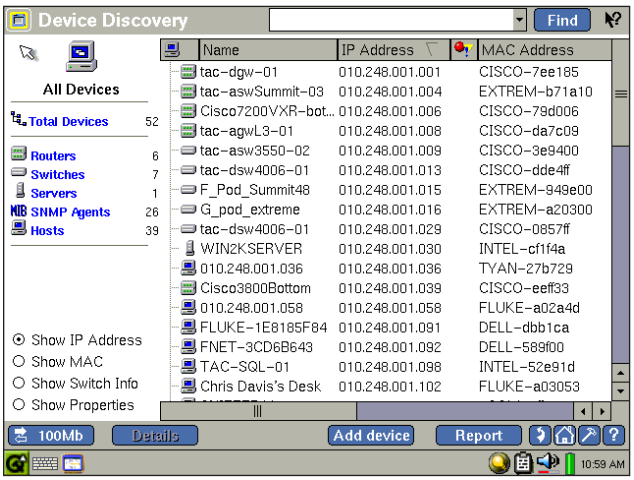
## Discover what and where

Discover up to 1000 devices automatically as soon as you connect to the network. Extract switch port/slot and VLAN information showing you where users are connected. Save time troubleshooting connection and congestion issues.

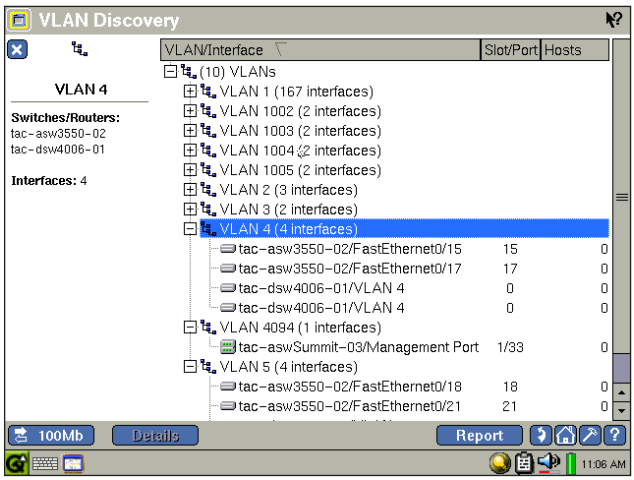
Managing VLANs has never been easier. See the switch interfaces that comprise each VLAN. In addition, "nearest switch discovery" speeds troubleshooting by identifying the slot and port to which you are connected while "network discovery" organizes devices by IP subnet and domain.

### Discovery

- Devices and details
- Networks
- VLANs
- Switch interfaces and port stats
- Switch trace route




*Device discovery*




*VLAN discovery*

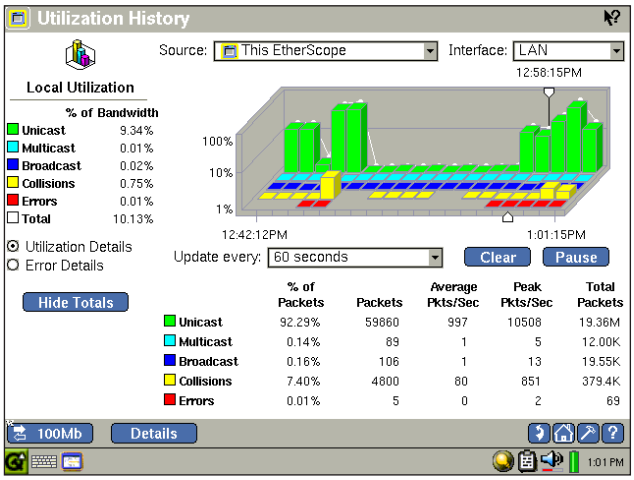
## Monitor network health

Identify capacity trends and needs. Switch port statistics and trending show steady and bursty traffic, allowing you and your staff to pinpoint problems quickly.

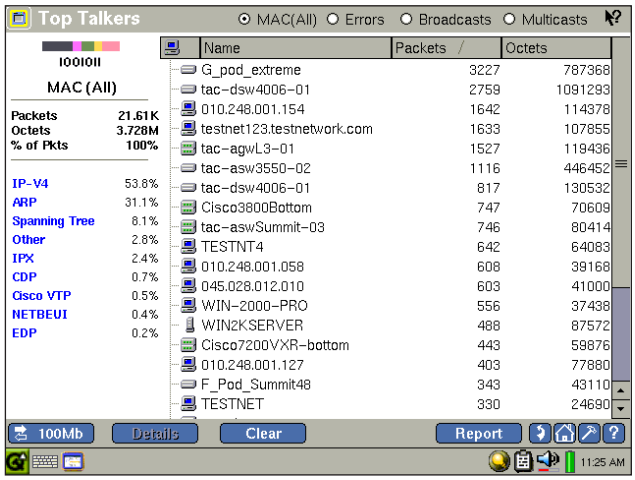
See who the top bandwidth users are at a glance. Select specific frame types such as errors, broadcasts or multicasts. Then see the traffic displayed by protocol, such as IPV4, ARP, spanning tree, IPX and others. Drill-in on suspicious activity, identify the source, and quickly solve the problem.

### Health

- Switch port scanning
- Utilization history
- Protocol statistics
- Top talkers
- Key devices
- Problem log




*Utilization history*




*Top talkers*

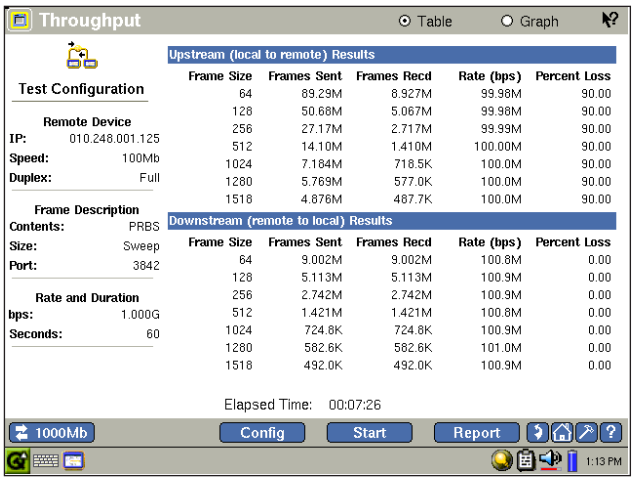
## Measure network performance

Test performance across your enterprise network. The Internetwork Throughput Option (ITO) enables IP performance testing for deployment and maintenance of enterprise networks. With this feature, you can verify the available bandwidth between two points in a network. Test at rates from 1 Kpbs to 1000 Mbps.

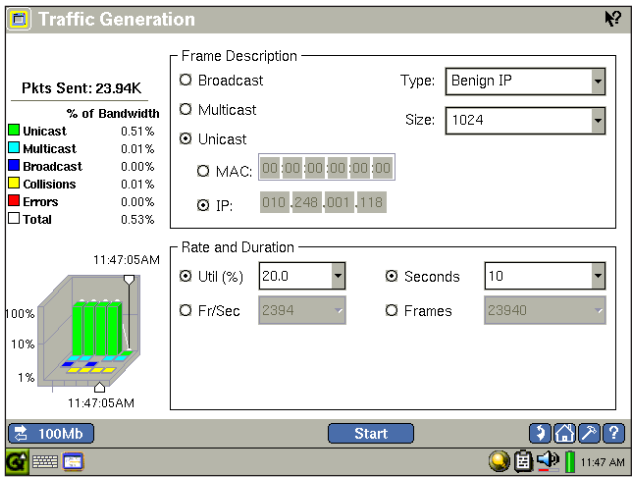
Understand how your network reacts to various stress levels. Simulate the impact of additional network users or applications by generating traffic.

### Performance

- Internetwork throughput
- Traffic generation




*ITO*




*Traffic generation*

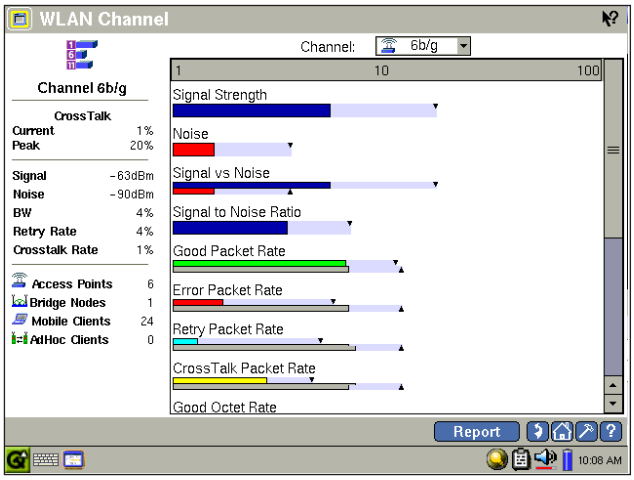
## 802.11 a/b/g wireless analysis

Ensure that your network is secure by performing periodic wireless network audits. With the wireless option enabled, scan both 2.4 and 5GHz frequencies, providing the visibility you need to identify, locate and disable rogue access points and unauthorized ad-hoc networks. Wireless EtherScope lists the security settings of all discovered wireless devices and alerts you to potential security problems.

Troubleshoot RF coverage and performance issues. Measure key performance metrics such as signal to noise ratio, utilization and retry rates for all a/b/g channels.

**Wireless 802.11 a/b/g**

- Channel analysis
- Device discovery
- Network discovery
- Site survey
- Security scan
- Key devices




*Channel scan*


*Security scan*

***Network reports***

Document your network with XML-coded reports. Record network attributes, baseline performance, device inventory, a problem log, and switch-port statistics – all in web-viewable files.

***Network maintenance***

Built-in tools let you review and edit device configurations. EtherScope includes Telnet, SSH Telnet, terminal emulator, FTP, TFTP, CDP Port Reporter and a web browser so you can leave your notebook PC on your desk.

***Diagnose problems from anywhere via the web***

EtherScope fully supports secure remote access and control. So no matter where the problem is, all you need is an active web browser to diagnose remote locations – just ship an EtherScope to that location and instruct a person on the other end to simply plug it in to the local network.

## Future enhancements

EtherScope is designed for the future, with a robust processor, plenty of memory, a forward-looking Linux® operating system and a software update procedure that is a snap. As your network and your troubleshooting needs evolve, EtherScope grows with you. Your investment in EtherScope will serve you for years to come.

## EtherScope™ Series II Pro LAN Vision Suite

The EtherScope Series II Pro LAN Vision Suite gives you the fast troubleshooting power and portability of the EtherScope Series II Network Assistant. Teamed with OptiView™ Console and OptiView™ Protocol Expert, this suite provides portable network troubleshooting plus monitoring and protocol analysis capabilities.

OptiView Console network monitoring software quickly discovers and continuously monitors network devices while documenting their connectivity. With one look at the clearly organized data, you can quickly identify where the problem is and access the detailed information you need to resolve it quickly.

OptiView Protocol Expert software provides protocol analysis directly through the network interface card in the PC on which it is running. Its expert analysis feature pinpoints problems quickly and suggests corrective action. Extensive seven-layer decodes make it easy to identify and solve the toughest problems on switched segments.

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**EtherScope™ Network Assistant**

**Device Discovery - All Devices**

Sep 3 09:09:36 2004

| Name | MAC Address | IP Address | Properties | Switch | Slot/Port | VLAN |
|---|---|---|---|---|---|---|
| 010.000.004.001 | PRIMRY-06c588 | 010.000.004.001 | --- | --- | --- | --- |
| tacvision2 | LITEON-1c7b1a | 010.248.001.110 | --- | Catalyst 2800 | 9 | --- |
| 010.248.001.233 | Linksy-580c95 | 010.248.001.233 | --- | TAC_C-pod | 2 | 100 |
| WIN2KSERVER | INTEL-cf1f4a | 010.248.001.030 | DHCP,DNS | TAC_C-pod | 2 | 100 |
| 010.248.001.116 | INTEL-cf17e1 | 010.248.001.116 | --- | Cisco1900_JT | 1 | --- |
| TESTNET | INTEL-cf13dd | 010.248.001.106 | --- | TAC_C-pod | 2 | 100 |
| WIN-2000-PRO | INTEL-bcc7a4 | 010.248.001.103 | --- | TAC_C-pod | 2 | 100 |
| CONCORD | INTEL-9f00ce | 010.248.001.134 | --- | --- | --- | --- |
| TAC-QGF330DGIE2 | INTEL-751f5a | 010.248.001.111 | --- | Catalyst 2800 | 10 | --- |
| SIMULATION_SERV | INTEL-7505ab | 010.248.001.089 | MB | TAC_C-pod | 9 | 100 |
| W2K3SERVER | INTEL-52e91d | 010.248.001.098 | --- | TAC_C-pod | 2 | 100 |
| NPIC63722 | HP-c63722 | 010.248.001.099 | --- | TAC_C-pod | 2 | 100 |
| Catalyst 2800 | GrdJun-e82c53 | 010.248.001.195 | --- | TAC_C-pod | 9 | 100 |
| 010.248.001.100 | FLUKE-c00074 | 010.248.001.100 | --- | --- | --- | --- |

*Network reports*

*EtherScope Series II Pro LAN Vision Suite*

## Network SuperVision Gold Support

Sign up for our Network SuperVision Gold Support plan and you'll enjoy privileges to protect and add value to your equipment. These include unlimited 24x7 technical assistance and an exchange unit at no cost in the event something happens to your unit. Support also includes web based training, unlimited access to the knowledgebase, product discounts and "members only" promotions.

See **www.flukenetworks.com/goldsupport** for details.

FLUKE networks

# EtherScope Series II Network Assistant Specifications

| General specifications | |
|---|---|
| Weight, with battery | 0.86 kg (1.9 lb) |
| Dimensions | 19.1 x 15.2 x 4.4 cm (7.5 x 6.0 x 1.75 in) |
| Display | LCD touch screen, 640 x 480 pixels, TFT (active) color panel, touch pad |
| LED indicators | 6 (including power LED) |
| **Power** | |
| Battery | Lithium Ion 7.2V DC (nominal), 4.2Ah, removable/rechargeable |
| Battery life | 4 hr typical, 10 hr in standby mode |
| External AC adapter/ battery charger | AC input: 90 to 264 V ac, 48 to 62 Hz; 1.5 A<br>DC output: 15 V dc, 1.2 A (isolated output) |
| **Ports** | |
| Communication and accessory ports | 1 USB, 1 PCMCIA/Cardbus (PC Card type II), 1 SFP cage, 1 Compact Flash (Card Type I/II), 1 DB-9 serial, headphone jack, microphone jack, Kensington lock receptacle |
| Network analysis port | RJ-45 10/100/1000 BASE-T Ethernet (must be enabled) |
| **Environmental and safety** | |
| Operating temperature | 0° to +40°C (32° to 104°F) with up to 95% relative humidity |
| Storage temperature | -20° to +60°C (-4° to 140°F) |
| Shock and vibration | Meets requirements of MIL-PRF-28800F for Class 3 equipment |
| Safety | CSA Canada and United States, CE, FCC Part 15 Class A, C-TICK N10140; UL and CSA approvals for universal AC adapter. |
| EMC | Complies with EN61326, Class A, Criteria C |
| **Copper media (LAN/Pro models)** | |
| Cable types | Unshielded twisted pair LAN cables (100 and 120 Ohm UTP), Foil-screened twisted pair LAN cables (100 and 120 Ohm ScTP) |
| Cable length | 1 to 305 m (3 to 1000 ft), accuracy dependent upon the cable type selected |
| Length resolution | ± [5% of reading + 1 m (3 ft)], with open, shorted, with wire map adapter, or terminated with reflection ≥ 20% |
| Receive level | 100 to 5000 mVp-p |
| Datalink signal | 500 to 4000 mVp-p |
| Power over Ethernet (PoE) | Solicit for IEEE 802.3af PoE, measure DC voltage (mV) on each pin, remove solicitation |
| Measuring terminated cables | |
| The Cable Verification feature tests the individual twisted-pairs of a cable that are terminated into most equipment vendor's Ethernet ports such as on a hub, switch or NIC. All cable tests other than WireView wire map and office locator ID are operational in the presence of datalink signal. | |
| Wiremapper/office locator compatibility | |
| Detects combinations of shorts, opens, and connector miswires. Compatible with Fluke Networks WireView wire map adapter/office locator. | |
| Fault tolerance | |
| The RJ-45 Ethernet connection on the analyzer is designed to withstand a maximum of 100 volts. The RJ-45 connection is not for connection of public telephone systems and should only be connected to the public phone network through regulatory agency-compliant modem devices. | |

| Fiber optic power meter (LAN/Pro models) | |
|---|---|
| The analyzer supports the Fluke Networks DSP-FOM optical power meter. Connection to the DSP-FOM is through the RF-45 Ethernet connection. | |
| **Internetwork Throughput Option (option for LAN/Pro models)** | |
| Compatible remote device | OptiView v4 Integrated Network Analyzer, EtherScope, EtherScope Series II, OneTouch Series II |
| Frame content | All 0s, all 1s, alternation 1s and 0s, Pseudo Random Bit Sequence (PRBS) |
| Frame size | 64, 128, 256, 512, 1024, 1280, 1518, sweep of all sizes |
| Rate (bps) | 672 to 1000 M (max. rate using two EtherScopes) |
| Duration (s) | 1 to 64,800 (18hr) |
| Results | Frames sent, received, rate and percent loss for both upstream and downstream directions |
| Results format | Tabular, graphical, xml-based report |
| **Traffic generator (included with Internetwork Throughput Option)** | |
| Traffic type | Broadcast, multicast or unicast |
| Frame type | Benign Ethernet, Benign LLC, NetBEUI, Benign IP, IP/ICMP Echo, IP/UDP Echo, IP/UDP Discard, IP/UDP Chargen, IP/UDP NFS, IP/UDP NetBIOS |
| Frame size | 64, 128, 256, 512, 1024, 1280, 1518 |
| Rate | Utilization (%): >0 - 100<br>Frames/second: 1 – 1488095 |
| Duration | Seconds: 1 – continuous<br>Frames: 1 – continuous |
| **Wireless LAN Adapter Card (Wireless/Pro models)** | |
| Specification compliance | IEEE 802.11a, 11b, 11g |
| Certifications | FCC part 15, Telec, CTICK, ETSI, EN301893, EN60950 |
| Interoperability | WECA compliant |
| Interface | 32-bit Cardbus |
| Outdoor operating range | Up to 515 m (1690 ft) |
| Indoor operating range | Up to 85 m (279 ft) |
| Data rate | 802.11a: up to 54 Mbps<br>802.11b: up to 11 Mbps<br>802.11g: up to 54 Mbps |
| Output power | 18 dBm peak power |
| Infrastructure mode | BSS |
| **Fiber Optic Transceiver (option for LAN/Pro models)** | |
| Ethernet rate | 1000Mbps |
| Type | Small Form-factor Pluggable (SFP) |
| Connector | Duplex LC |
| **Security** | |
| Authentication types | LAN: 802.1X, WLAN: 802.1X, 802.11i, WEP, WPA, WPA2 |
| EAP types | TLS, GTC, MD5, MS-CHAP-V2, LEAP, PEAP-GTC, PEAP-MD5, PEAP-MS-CHAP-V2, PEAP-TLS, TTLS-PAP, TTLS-CHAP, TTLS-MS-CHAP, TTLS-MS-CHAP-V2, TTLSEAP-MD5, TTLS-EAP-GTC, TTLS-EAP-MS-CHAP-V2, TTLSEAP-TLS |

## Ordering Information

| Model | 10/100/1000 twisted pair | 1000 Mbps fiber optic | 802.11a/b/g wireless | ITO | PE | OVC—500 | InterpretAir | Contents |
|---|---|---|---|---|---|---|---|---|
| **ES2-LAN** | • | | | | | | | **LAN analyzer** Mainframe, rechargeable Li-Ion battery pack (installed), protective holster, carrying strap, AC adapter/battery charger, remote wire map (WireView #1), 64MB CompactFlash® card, patch cable, RJ-45 coupler, CD containing user manuals and other useful files, carrying case |
| **ES2-LAN-SX** | • | • | | | | | | **LAN analyzer, SX Fiber** ES2-LAN plus SX Fiber Option |
| **ES2-LAN-SX-I** | • | • | | • | | | | **LAN analyzer, SX Fiber, ITO** ES2-LAN plus SX Fiber Option and Internetwork Throughput Option (ITO) |
| **ES2-WLAN** | | | • | | | | | **Wireless LAN analyzer** ES2-LAN plus Cardbus WLAN adapter (note: only wireless analysis enabled) |
| **ES2-PRO** | • | | • | | | | | **LAN and Wireless LAN analyzer** ES2-LAN plus Cardbus WLAN adapter |
| **ES2-PRO-I** | • | | • | • | | | | **LAN and Wireless LAN analyzer, ITO** ES2-PRO plus Internetwork Throughput Option |
| **ES2-PRO-SXLX-I/S** | • | • | • | • | | | | **LAN and Wireless LAN analyzer, SX and LX Fiber, ITO, accessories kit** ES2-PRO plus SX Fiber Option, LX Fiber SFP, Internetwork Throughput Option (ITO), replacement battery, external battery charger, USB mini keyboard, WireView outlet IDs #2 - #6 and large carrying case. |
| **ES2-PRO-PE** | • | | • | | • | | | **Pro LAN Vision Suite/PE** ES2-PRO plus Protocol Expert software package |
| **ES2-PRO-OVC** | • | | • | | | • | | **Pro LAN Vision Suite/OVC** ES2-PRO plus OptiView Console 500 node software package |
| **ES2-PRO-OVC/PE** | • | | • | | • | • | | **Pro LAN Vision Suite** EtherScope Pro LAN Vision Suite, includes ES2-PRO, Protocol Expert and OptiView Console 500 node software packages |
| **ES2-PRO-INTAIR** | • | | • | | | | • | **LAN and Wireless LAN analyzer and InterpretAir WLAN Survey Software suite** ES2-PRO plus InterpretAir WLAN Survey Software |
| **ES2-PRO-IA-AA** | • | | • | | | | • | **LAN and Wireless LAN analyzer, InterpretAir WLAN Survey and AnalyzeAir Wi-Fi Spectrum Analyzer software suite** |
| **ES2-LAN-CIQ100** | • | | | | | | | **LAN analyzer and CableIQ 100 kit** ES2-LAN plus CableIQ Qualification Tester |

## Options & Accessories

| Model | Option |
|---|---|
| **ES-WLAN-OPT** | 802.11a/b/g wireless upgrade option for all LAN-only models |
| **ES-LAN-OPT** | 10/100/1000 LAN upgrade option for all Wireless LAN-only models |
| **ES2-SX-OPT** | SX Gigabit Fiber Option for all LAN-enabled models |
| **ES-ITO-OPT** | Internetwork Throughput Option for all LAN-enabled models |
| **Model** | **Accessory** |
| **ES2-SX** | SX Gig Fiber SFP Transceiver (850nm VCSEL, replacement item) |
| **ES2-LX** | LX Gig Fiber SFP Transceiver (1310nm FP laser, SX Fiber Option required) |
| **ES2-ZX** | ZX Gig Fiber SFP Transceiver (1550nm DFB laser, SX Fiber Option required) |
| **ES-ACCY-KIT** | Kit containing an EtherScope battery, external battery charger, AC charger and line cord, USB mini keyboard, WireView identifiers #2 - #6, and a larger carrying case |
| **DSP-FTK** | Fiber optic test kit, 850nm and 1300nm LED source and 850/1300/1550 nm meter |
| **ES-BATTERY** | Replacement battery |
| **ES-BATT-CHG** | External battery charger |
| **WIREVIEW 2-6** | Remote identifiers 2 – 6 |
| **OPVS2-KB** | Mini USB keyboard |
| **ES-WCARD** | Replacement WLAN card (hardware only) |
| **DTX-ACUN** | AC charger, universal |
| **OPV-POE** | Power Over Ethernet adapter |
| **MT-8200-63A** | IntelliTone 200 Probe |
| **MT-8200-53A** | IntelliTone 100 Probe |
| **944806** | Null modem cable (DB9) |

**Side Interfaces –** RS-232C serial port, USB port, microphone and headphone jacks, Kensington lock (opposite side).

**Top Interfaces –** 10/100/Gigabit twisted pair copper port, Gigabit Fiber SFP transceiver, CompactFlash® memory card and 802.11a/b/g WLAN adapter.

NETWORKSUPERVISION

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**Fluke Networks** operates in more than 50 countries worldwide. To find your local office contact details, go to **www.flukenetworks.com/contact**.


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