

LinkIQ™ Industrial Ethernet Cable+Network Tester

Solves the #1 cause of Industrial Ethernet failures

LinklQ™ enables you to:

- Validate cable performance to support Ethernet/IP, PROFINET, EtherCAT
- Identifies miswired and split pairs on RJ45, M12X, M12D, and M8D terminated cables
- Identify connected switch information (Switch Name, Port Number, and VLAN)
- Test connectivity to TCP/IP network through IP configuration and ping
- · Verify Gateway and DNS server responsiveness and availability
- Install and troubleshoot PoE devices via Switch Negotiation and PoE Load test. Ethernet Alliance Certified for reliable multivendor interoperability
- Document your work through LinkWare™ PC



Overview

Operational Technology professionals responsible for maintaining and/or managing an industrial network have a challenging job. They are on-the-spot problem-solvers and are always planning for future enhancements to seamlessly upgrade the network to higher speeds. All while continuously troubleshooting and



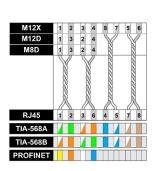


optimizing the current infrastructure. Fluke Networks' LinklQ™ provides a fast and robust tool to help expertly manage the network to keep it running smoothly and efficiently. By qualifying and troubleshooting cabling - the #1 cause of Industrial Ethernet problems – LinklQ can prevent and save hours of production downtime.

The LinklQ™ Industrial Ethernet Cable + Network Tester verifies cable performance up to 10 Gb/s and solves network connectivity problems. Using frequency-based measurements, LinklQ™ provides distance to fault information along with a wire map of the cable under test. The LinklQ™ also performs ping tests to verify connectivity and nearest switch diagnostics to identify key network issues and validate switch configuration, eliminating the need for another device. Additional features include Analog and Digital Toning, Port Blink, Remote Office Locators, and the ability to manage results via LinkWare™ PC.

Cable Testing You Trust

The LinkIQ™ is capable of measuring lengths up to 1000 feet (305 m) and provides distance to faults such as opens, shorts, and unterminated cable. Using the Industrial Ethernet Remote Adapter allows for a complete wire map of the cable pairs which helps identify miswired and split pairs on RJ45, M12X, M12D, and M8D terminated cables. The LinkIQ™ supports EtherNet/IP, PROFINET, EtherCAT and other Industrial Ethernet and qualifies the cabling bandwidth from 10BASE-T to 10GBASE-T (10 Mb/s up to 10 Gb/s). It qualifies the cabling bandwidth by taking multiple frequency-based measurements. Using IEEE-standards-based measurements ensures that tested links meet performance requirements as opposed to transmission testers which only prove that the specific test devices can communicate over the link.

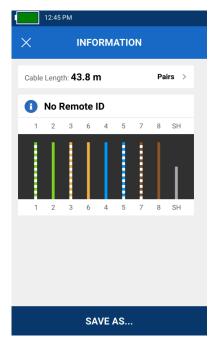




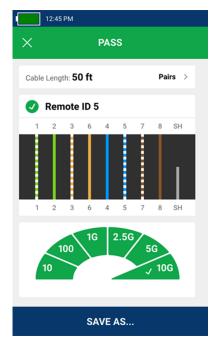
How the LinkIQ™ identifies the wire map of M12X, M12D, M8D terminated cables.

Operators may set performance requirements from 10 Mb/s to 10 Gb/s for a simple pass/fail indication.



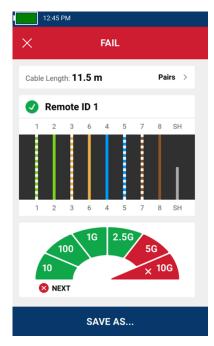


Cable test without remote attached shows length and pairing of each wire



Cable test with remote attached shows remote ID number 5, length and pairing of each wire and cable performance of up to 10 Gb/s

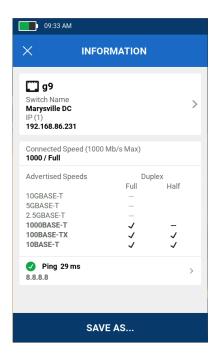




Cable test with remote attached shows remote ID number 1, length and pairing of each wire and cable performance of up to 2.5 Gb/s but failed the test due to a user-set limit of 10 Gb/s performance.

Network Testing You Need

Along with the robust cable testing features, the LinkIQ™ also provides detailed information on the nearest connected switch and connectivity testing with IP ping. The LinkIQ negotiates with the switch to identify the advertised data rate (up to 10GBASE-T), half/full duplex identification, the switch name and IP address, port number, and VLAN info.

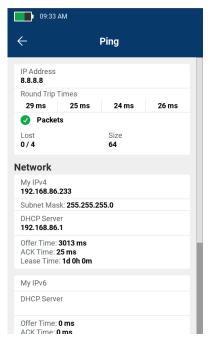






Switch port test shows switch name and IP address, connected port, and VLAN along with advertised speed and duplex settings. If a ping test is configured, the target address and average response time are shown. Scrolling down shows Power over Ethernet results.

The ping test verifies connectivity to devices on the local network or the internet and supports both IPv4 and v6. The LinklQ's address may be set up manually or through DHCP. Once set up, the ping test is run as part of the Autotest when a switch is detected. Results of the ping test include identification and response time of each of four pings to the target, the DNS server and gateway.



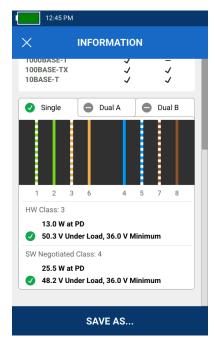
Ping result screen shows response time to target for each of four pings. Scrolling down displays DHCP, DNS and gateway information.

In-Depth PoE Testing

While Power over Ethernet makes installation of devices such as security cameras and access points simpler, a survey by the Ethernet Alliance of over 800 installers, integrators and end users found that four of five respondents experienced difficulties in integrating PoE systems. Part of this can be traced to the fact that the IEEE offers three PoE standards, the term "PoE" is not registered and there are a variety of non-standards-compliant implementations as well.







Switch port Power over Ethernet settings shows pairs used, power and class available and results of the PoE test under load.

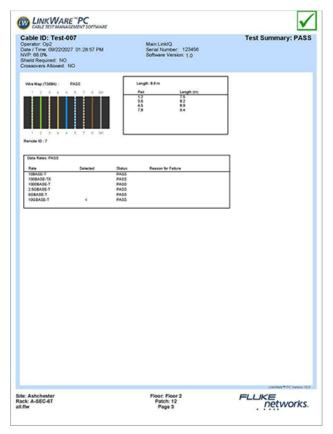
To simplify PoE installation and troubleshooting, the LinklQ displays the pairs where power is provided, including the different power levels and pairs for dual-signature implementations. Further, the LinklQ will actually place a load on the connection to ensure that the advertised power is actually being delivered by the switch across the cabling infrastructure. The LinklQ has been certified by the Ethernet Alliance to IEEE-802.3™ standards for reliable multivendor interoperability.

LinkWare™ Documentation

The LinklQ provides complete documentation for the tests it performs. Up to 1,000 results can be stored in the tester with descriptive names and recalled. Test names and numbers automatically increment as each is saved ("Annex B-1", "Annex B-2", "Annex B-3", etc.) saving lots of time when testing cables in sequence.

Report data may be exported to a PC for documentation purposes. The LinklQ uses LinkWare™ PC, Fluke Networks' reporting software which supports a variety of testers going back 20 years and is the industry's de facto reporting solution with tens of thousands of active users. LinkWare can be used to store the results as well as generate PDF reports.





Use LinkWare PC to generate PDF test reports.

Additional Features

- $\bullet \ Language \ support \ for \ English, \ German, \ French, \ Japanese, \ Thai, \ Spanish, \ Traditional \ Chinese, \ Simplified \ Chinese, \ Korean, \ Russian, \ Italian, \ Portuguese$
- Generates Analog or Digital tones compatible with the IntelliTone™ Probe or Pro3000™ to assist in locating cables in a wall or telecommunications room
- Blink Port light on switch to help identify the connected switch port
- Compatible with MicroScanner™ PoE Remote Identifiers for Ethernet outlet identification
- Touch Sensitive gesture-based display
- Rechargeable Li-Ion battery
- Easy Feature and Network Testing Upgrades via USB-C via LinkWare™ PC
- Charging via standard USB-C port





LinkIQ-IE (LIQ-100-IE) with accessories including M8, M12 D and M12 X adapter cables.

Fluke Premium Care (Gold) eligible

When you invest in your Fluke test tools, you want your money to go as far as possible. Fluke Premium Care is a paid offering that provides coverage above and beyond the original product warranty, so you don't need to worry about unexpected downtime caused by damaged test equipment, accessories, or tools in need of calibration or repair.

LinkIQ™ Feature Breakout







- 1. RJ45 Port
- 2. PASS/FAIL frequency-based measurement results
- 3. Touch Screen Color Display
- 4. Length measurement shows distance to termination, open or short
- 5. Wiremap shows type and location of fault (miswires, split pairs, shorts, breaks)
- 6. USB-C port for data export, software updates and charging
- 7. Cable "Speedometer" provides bandwidth information up to 10G
- 8. Save up to 1000 test results on the unit and export to LinkWare™ PC

Ordering Information

| MODEL | DESCRIPTION |
|----------------------|---|
| LIQ-100-IE | LinkIQ Cable + Network Tester with Multi-Connector Adapter with magnetic strap, RJ45 Remote-ID #1, Quick Reference Guide, USB-C to USB-A cable, Charging cable, Cat 6A patch cord, RJ45 male to RJ45 female patch cord, RJ45/M12X patch cord, RJ45/M12D patch cord, RJ45/M8D patch cord, RJ45/11 Modular Adapter, Hanging strap with Remote ID holder, and duffle bag |
| LIQ-100-IE/FPC3 | LINKIQ IE with 3 yrs of premium care standard for main unit (Available in US and limited regions) |
| LIQ-KIT-IE | LinkIQ Cable + Network Tester with Multi-Connector Adapter with magnetic strap, RJ45 Remote-IDs #1-7 with case, IntelliTone Probe, Quick Reference Guide, USB-C to USB-A cable, Charging cable, Cat 6A patch cord, RJ45 male to RJ45 female patch cord, RJ45/M12X patch cord, RJ45/M12D patch cord, RJ45/M8D patch cord, RJ45/11 Modular Adapter, hanging strap with Remote ID holder, and duffle bag |
| LIQ-KIT-IE/FPC3 | LINKIQ IE Kit with 3 yrs of premium care standard for main unit (Available in US and limited regions) |
| REMOTEID-1 | Replacement ID for LinkIQ Remote ID #1 |
| REMOTEID-KIT | Remote ID Kit (IDs #2-#7) for LinkIQ and MicroScanner PoE |
| MS-IE-ADAPTER SET | Industrial Ethernet Adapter for testing of M12X, M12D, M8D terminated cables for the MicroScanner2, MicroScanner PoE, and LinkIQ |
| LIQ-BATTERY | LinkIQ Replacement Battery |
| FPC1S-LIQ-1 | 1 Year Premium Care (Gold) Standard for LinklQ |
| FPC3S-LIQ-1 | 3 Year Premium Care (Gold) Standard for LinklQ |
| GLD-LIQ | 1 Year Gold Support LinklQ Cable Performance & Network Tester (order in regions where FPC1S-LIQ-1 not available) |
| GLD3-LIQ | 3 Year Gold Support LinklQ Cable Performance & Network Tester (order in regions where FPC3S-LIQ-1 not available) |

General Specifications

| Feature | Description |
|---------------------------|--|
| Languages supported in UI | English, German, French, Japanese, Spanish, Thai, Traditional Chinese, Simplified Chinese, Korean, Russian, Italian, |





| | Portuguese |
|--------------------------------|---|
| Weight | 1 lbs 6 oz (624g) |
| Battery | Type: Lithium-ion, 3.6 V, 6400 mAh; Life: 8 hours typical; Charge time: 4.5 hours; Charging temperature range: 0 °C to +40 °C |
| Power Adapter | Input: 100 to 240 VAC ±10%, 50/60Hz; Output: 15 VDC, 2 A maximum; Class II |
| Host Interface | USB type C |
| Display | 800 x 480 color capacitive multi-touch |
| Dimensions | 8.5 in x 4.5 in |
| Operating Temperature | 0°C to 45°C |
| Storage Temperature | -10°C to 60°C (-14°F to 140°F) |
| Operating Relative Humidity | 0 % to 90 %, 0°C to 35°C; 0 % to 70 %, 35°C to 45°C |
| Operating Altitude | 4,000 m; 3,200 m with ac adapter |
| Vibration | Random, 2 g, 5 Hz-500 Hz |
| Drop | 1 m drop, 6 sides |

Active Network Diagnostics

| Feature | Description |
|---|--|
| Diagnostic Protocols | Link Layer Discovery Protocol (LLDP), Cisco Discovery Protocol (CDP), Fast Link Pulses (FLP) Internet Control Messaging Protocol (ICMP) Dynamic Host Configuration Protocol (DHCP) |
| IP Address Setup | LinkIQ address, DNS Server, Gateway for IPv4 or v6 either manually or via DHCP. |
| IP Ping Test Results | Four response time results for target, DNS Server(s), Gateway, plus average and number lost. |
| Nearest Device Diagnostics, (If available through diagnostic protocols) | Switch Name / IP + MAC Address, Port Number, VLAN Name, Advertised Data Rates, Advertised Duplex |
| Power Over Ethernet Compatibility | Ethernet Alliance Certified to IEEE 802.3af/at/bt, Hardware negotiation with signature resistance, Software negotiation with LLDP/CDP |
| Power Over Ethernet Diagnostics | Advertised Power Class (0-8), Advertised Available Power, Powered Pairs, Diagnostics for both Single and Dual signatures |
| Power Over Ethernet Measurements | Loaded Voltage (V), Loaded Power (W) |
| Port Blink | Blink the light of the connected port |

Cable Test Specifications





| Feature | Description |
|--|---|
| Test Port | Shielded 8-pin modular jack accepts 8-pin modular (RJ45) plugs |
| Commissioning Autotests | 10GBASE-T, 5GBASE-T, 2.5GBASE-T, 1000BASE-T, 100BASE-TX, 10BASE-T, Wire map Only. Test Speed: 6 seconds for lengths < 70 m |
| Cable Types | Balanced twisted-pair cabling; Unshielded twisted-pair; Screened twisted-pair; 2-pair and/or 4-pair |
| Wire Map-Only Tests | Document wire map, Length of each pair, Diagnose split pairs, User selectable T568A or T568B, User selectable crossover settings (Straight through, Half-crossover, Full-crossover). Test speed: 1 second for lengths < 120 m |
| Length (Maximum) | 305 m (1000 ft) |
| Nominal Velocity of Propagation (NVP) | User settable |
| Tone Generator | Generates digital tones compatible with Fluke Networks IntelliTone probe. Generates analog tones compatible with general analog probes. |
| Remote ID Locators | Use remote ID terminations to identify up to 7 unique ports or office outlets |



About Fluke Networks

Fluke Networks is the worldwide leader in certification, troubleshooting, and installation tools for professionals who install and maintain critical network cabling infrastructure. From installing the most advanced data centers to restoring service in the worst weather, our combination of legendary reliability and unmatched performance ensure jobs are done efficiently. The company's flagship products include the innovative LinkWare™ Live, the world's leading cloud-connected cable certification solution with over fourteen million results uploaded to date.

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1-425-446-5500 (International)

http://www.flukenetworks.com

Descriptions, information, and viability of the information contained in this document are subject to change without notice.

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