

990DSL CopperPro™ Loop Tester



The next generation in test performance —
Network SuperVision™ for your local loop.

12 test sets in one

CopperPro packs all the test, analysis and troubleshooting capabilities an OSP technician needs into one integrated hand-held tool for a new view of your local loop:

1. **Digital Multimeter** — AC/DC Voltage, Resistance
2. **Opens Meter** — measure capacitive length of pair
3. **RFL Meter** — locate shorts, crosses or grounds
4. **Noise Meter** — VF & WB, Gaussian & Impulse
5. **Time Domain Reflectometer** — precisely locate and identify faults
6. **Dial Set** — set up or monitor calls
7. **Leakage Tester** — “punch” through resistance faults not detected by other tests
8. **Ammeter** — test DC loop current
9. **Loss Meter** — VF & WB. Measure signal loss over a pair in voice or wideband frequency ranges
10. **VF & WB Precision Signal Generator** — generate precisely controlled signals in single tones, swept sets or composite signals
11. **Tracing Tone Generator** — identify pairs
12. **ANI & CID Tester** — identify telephone numbers and verify proper Caller ID operation

Productivity tool.

CopperPro™ brings the power of Fluke Networks SuperVision™ to your local loop.

The more complex and competitive your business becomes, the more difference the right test equipment makes. In one rugged, easy-to-use tool, CopperPro brings together the test sets a technician needs to handle subscriber loop installation, expert troubleshooting, precision fault location and xDSL/broadband-services testing. Quickly. Easily. Cost-effectively. With less training than yesterday's test tools require. CopperPro is all you need to test for the most demanding services that other tools can't. That's because it's configured around the way your network, and your testing needs, have changed. Just grab CopperPro and go. You're up and running fast. And so is your local loop.

A power-packed advance in subscriber line test sets

From everyday installation and maintenance to troubleshooting the most elusive local loop problem, CopperPro increases productivity with every use. In an industry where the smartest win, that's not only good service; it's good business.

- Integrates a dozen test sets in one tool for quick, complete troubleshooting, precise fault location and ADSL/digital services qualification.
- Fast, accurate results increase efficiency on every job.
- Easy for the novice; powerful and flexible for the expert. That keeps training time and costs low, productivity high.

- Scalable architecture adds flexibility and protects your investment.

CopperPro is a product of Fluke Networks SuperVision™ — our ongoing commitment to bringing you professional tools that optimize the performance and profitability of today's network. And tomorrow's.

The next generation in subscriber line test sets



Integrates today's top OSP testing and troubleshooting tasks in one tool; less to buy, maintain and train on

Configurable one-button auto-test "toolboxes" support techs of all skill levels for higher productivity and consistency

Built tough for rugged field use and low cost of ownership: sealed to resist moisture, drop tested 1 meter

Large graphic interface is fast and easy to read whether your frontline tech is up a telephone pole or down a manhole

Serial interface for downloading software and uploading or printing reports quickly and easily

Single test modes support the needs of more expert techs

Handheld - weighs in at less than 4 lbs. (1.8 kg)

Local hero.

Profit from providing better loop service.

Now one tool is all it takes

CopperPro's handheld portability and versatile performance make it the right tool for running local loop tests. Any time. Anywhere. You can identify, locate and repair line faults and qualify loop performance—all at the push of a button. And CopperPro can capture the test results for complete documentation. The result? Better and faster service. Higher productivity—and profitability.

As a standalone tool, CopperPro's handheld design makes it easy to carry and operate wherever testing takes you.

CopperPro is easily automated for even greater testing speed and consistency—with documented test results.

Scale up as you need to

CopperPro's unique scalable architecture lets you tailor its testing capabilities to your specific needs—even as they evolve.

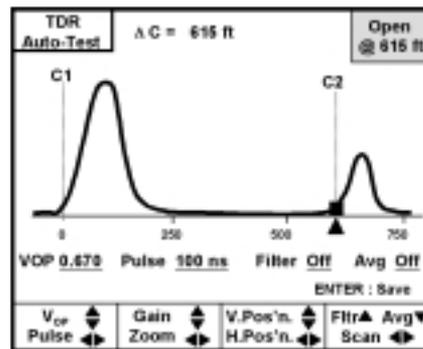
CopperPro's basic configuration is designed for POTS applications including voltage, opens, shorts, balance, RFL, VF noise and loss, terminated and dial-up tests, as well as load coil detection and line monitoring.

The TDR feature delivers accurate fault location capability in a handheld test set. With it, you can test and compare pairs, store measurements, and test for crosstalk between pairs.

The Wideband feature includes everything you need to qualify and troubleshoot lines for all standard digital services, including HDSL, HDSL2, T1, E1, ISDN BRI, ISDN PRI and DDS. Single-ended special analysis tool makes it easy to identify interference, cross-talk and any other problems on active circuits. And, within seconds, the unique ADSL AutoTest determines whether a pair can provide ADSL service—even predicts upstream and downstream rates and bits per tone.

Do more with less training

Sophisticated inside, simply smart outside—CopperPro combines an easy-to-use



Results of CopperPro's exclusive TDR Auto-Test on a balanced pair, with Tip and Ring open at 615 feet (187.45m), showing the bottom line condition of the pair.

toolbox interface with programmable AutoTests for fast, easy testing.

Integrated tests combine functions to help the user understand what's causing a problem and pinpoint the location. Results are displayed graphically on CopperPro's large bitmapped display, which you can easily view in any light conditions.

CopperPro lets you equip more technicians of all skill levels to perform complex tasks faster, with higher precision and less training than ever before. That optimizes your investment in people as well as equipment.

Dependability pays

With CopperPro's reliable accuracy and expert analysis at their fingertips, technicians can find and fix the real problem the first time. That reduces expensive call-backs. And because CopperPro is built with the rugged durability of all Fluke Networks' professional test tools, you can count on it to stand up to the abuse of daily field use—rain, heat and cold included.



Fluke Networks: working for you

CopperPro™ is part of our Network SuperVision Solutions™—a complete family of leading-edge tools, services and training from Fluke Networks that equips you to stay on top of your fast-moving networked world. Our loop recovery, troubleshooting and record management solutions are the choice of local exchange carriers who want to reduce held orders. Increase revenue. Lower OSP operating expenses. Improve workforce efficiency. Reduce OSP defects rates. And increase customer satisfaction.

With Fluke Networks working for you, your local loop is more than a service. It's a strategic advantage that allows you to meet customer demand in a competitive marketplace. That's keeping your eye on the future. That's Network SuperVision™. And it's yours only from Fluke Networks.

Get a better look at your local loop

In one integrated handheld tool, CopperPro gives your OSP technicians the insight they need to provide the quality of subscriber loop service you want:

- Quickly identify and locate such common physical cable faults as shorts, crosses, opens, splits, pair imbalances caused by bad splices, and corroded metallic faults on unused pairs.
- Find the root causes of transmission problems, such as excessive noise or signal loss.
- Help locate and identify loop treatment devices such as range extenders, network interface devices and maintenance termination units.
- Qualify POTS services including Caller ID, Automatic Number Identification and dial-up modems.
- Qualify digital broadband services including ADSL (DMT and CAP), T1, E1, DDS, ISDN, HDSL and HDSL2.
- Zero in on noise, loss and crosstalk measurements, predicted data rates, and location of impairments such as load coils or bridge taps.

Specifications

Physical

Size	(H x W x D): approximately 24.9 cm x 13.5 cm x 8.1 cm (9.8" x 5.3" x 3.2")
Weight	1.81 kg (4.0 lb.)
Display	320 x 240 pixel graphic LCD with backlight and adjustable contrast
LED Indicator	Charging status indicator (located on side connector panel)
Communication Port	RS-232 PC/Printer port (DB-9)

Power

AC Operation	Operates from an external AC adapter/charger
Battery Type	Operates from an internal removable NiMH rechargeable battery pack (installed)
Battery Life	A fully charged battery provides approximately 16 hours of normal use
Battery Recharge Time	2 to 3 hours (in the tester) for a fully discharged battery pack

Environmental

Operating Temperature	-20° to 60°C (-4° to 140°F)
Storage Temperature	-40° to 70°C (-40° to 158°F)
Humidity Tolerance	95% (operation without condensation)
Rain Resistance	IEC60529 IP02, international protection water dripping
Vibration	Random, 2 g, 5-500 Hz
Shock	1 Meter Drop Test (3 ft.)
Altitude	4500 m (15,000 ft.)

Standards Compliance

Analog Transmission Parameter Measurement	IEEE 743-1994
ADSL Metallic Interface	ANSI T1.413-1998

Regulatory Compliance

Safety	CSA C22.2 No.1010.1
CE	EN 61326 Emissions and immunity Class A; En 61010-1 + 2nd Amendment

Specifications: Basic 990DSL

Function	Range	Accuracy
AC Voltage	0 to 250 V	1% ± 0.5 V
DC Voltage (R _{IN} = 100 kΩ, 10 MΩ)	0 to ±150 V 150 to 300 V	1% ± 0.5 V 2%
DC Loop Current (430Ω)	0 to 120 mA	2% ± 0.3 mA
Resistance (shorts & grounds)	0 to 100Ω 100Ω to 4000 Ω 4 kΩ to 100 MΩ	0.1% ± 0.10Ω 0.3% ± 0.10Ω 3%
Leakage Stress	2 kΩ to 100 MΩ	3%
Opens	0 to 3000 ft. (0 to 9144m) 3 to 50 kf (914.4 to 15240m) 50 to 80 kf (15240 to 24384m)	1% ± 5 ft. (1.5m) 3% 5%
Splits	0 to 50 kf (0 to 15240m)	10% of Cable Length
RFL		
Fault Resistance	0 to 30 MΩ	=
Loop Resistance	0 to 4000Ω	=
Resistance to Fault (at r _f = 100 kΩ) (RTS = Res.To Strap)	0 to 100Ω 100Ω to 4 kΩ	0.1% RTS ± 0.10Ω 0.3% RTS ± 0.10Ω
Load Coils		
Count	0 to 6	± 1
Tracing Tone		
Frequency	577.5 Hz	0.1%
Level	>3.5 Vpp	10%
VF Noise		
Impedance	600Ω, Bridged	1%
Filters	C, CN, 3k, 15k, Psophometric	=
Metallic Noise	0 to 10 dB _{rn} 10 to 100 dB _{rn} 40 to 120 dB _{rn}	± 2 dB ± 1 dB ± 2 dB
Power Influence		
VF Loss		
Signal Level	-40 to 10 dBm	± 0.5 dB
Frequency	100 Hz to 20 kHz	0.1% ± 2 Hz

Specifications: Basic 990DSL (continued)

Function	Range	Accuracy
VF Longitudinal Balance	0 to 70 dB	± 2 dB
Disturbing Frequency	200 to 2500 Hz	0.1%
Impedance	600Ω	1%
Send VF Tone		
Frequency	100 Hz to 20 kHz	0.1%
Amplitude (Settable)	-20 to 3 dBm (1 dB increments)	± 0.5 dB
Impedance	600Ω, 900Ω	1%

Specifications: 990DSL Wideband Feature

Function	Range	Accuracy
WB Noise/Level		
Impedance	100Ω, 135Ω, (Bridged)	1%
Filters	E, F, G, None	=
Frequency	10 kHz to 1200 kHz	0.1% ± 508 Hz
Amplitude	-50 to 3 dBm	± 1 dB @ 135Ω
	-90 to -50 dBm	± 3 dB @ 135Ω

WB Loss		
Impedance	135Ω	1%
Frequency	10 to 1200 kHz	0.1% ± 508 Hz
Magnitude	0 to 50 dB	± 1 dB
	50 to 70 dB	± 2 dB

WB Longitudinal Balance	0 to 70 dB	± 5 dB
Disturbing Frequency	20 kHz to 1104 kHz	0.1%
Impedance	135Ω	1%
Filters	E, F, G, None	=

Send WB Tone		
Frequency	10 to 1200 kHz	0.1% ± 508 Hz
Amplitude (fixed)	0.0 dBm	± 0.5 dB
Impedance	100Ω, 135Ω	1%

WB Impulse Noise		
Impedance	100Ω, 135Ω, Bridged	1%
Filters	E, F, G, None	=
Test Time	1 to 1440 Minutes	1%
Impulse Counter	0 to 9999	=
Counter Threshold	-40 to 0 dBm	± 1 dB

ADSL Auto-Test		
Impedance	100Ω	=
Noise Filters	E, F, G, None	=
ADSL Standard	ANSI Full, G, Lite	=

Data Rate Prediction		
Resolution	32 kb/s	
Downstream Rate	0 to 8192 kb/s	± 96 kb/s (3 units of resolution)
Upstream Rate	0 to 1024 kb/s	± 64 kb/s (2 units of resolution)

Specifications: 990DSL TDR Feature

Function	Range	Accuracy
Impedance	135Ω	1%
Pulse-width	20, 100, 500, 1000, 2500, 5000 ns	10% ± 5 ns
Vop Selection	0.300 to 0.999	=
Range (Vop = 0.64)	30,000 ft. (9144m)	=
Range Selection (Auto.)	10 ft. to 48 kf (3 to 14630m)	=
Horizontal Resolution	0.5 to 156 ft. (0.1524 to 47.5m)	=
Distance to Reflect.	0 to 30,000 ft. (0 to 9144m)	1% ± Vop uncertainty
Vertical Gain	80 dB	2 dB
Power Filter	5 kHz Highpass	=
Averaging Filter	4x Waveform Avg.	=
Input Protection	± 400 Vp	=

Ordering Information

Model	Description
990DSL	Loop Tester
990DSLWT	Loop Tester with Wideband and TDR
990TL-N	Test Lead Set (Plain)
990TL-S	Test Lead Set (Spike)
990TL-B	Test Lead Set (Bed of Nails)
990TL-SB	Test Lead Set (Spike and Bed of Nails)
990-Printer	990DSL Serial Graphics Printer (Seiko DPU-414)
990-CASE	Deluxe Transport Bag
GOLD-TEL-LOOP	Extended Warranty and Service Option

Go with the Pro

Put CopperPro to the test

See CopperPro in action where it matters most—on your own local loop. Call us at 1-800-283-5853 (U.S. and Canada) for a CD-ROM demo. A Fluke Networks Systems Engineer will evaluate your network on-site and show you how to make the most of CopperPro in your own local loop. Or visit our Web site at www.flukenetworks.com/copperpro for a virtual product demo.

Due to continuous product improvement, specifications can change without notice. For the latest information, contact your Fluke Networks representative.

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