



## Cable Testing Tutorial



### Cable Testing Explained

Cable testing and cable ratings are often not fully understood by those that purchase network grade patch cords and equipment. The type of testing performed and the frequency of that testing is the greatest factor in determining the cost of a cable that you purchase. Sometimes, patch cords that seem to be a good value may not be, due to the usage of low quality components and minimally compliant cable. An explanation of the four most common forms of testing conducted on patch cords can be found in the illustrations below. Each is explained so you can decide what best fits your application and budget. L-com strives to provide a full selection of cable assemblies for all our customers. To make selection simple, we group our cables into one of three different categories to identify the type of testing done. Certified cables require a test report produced for each assembly. Qualified cables are controlled on a lot basis and do not feature an individualized test report. Rated cables feature all category rated components but only a continuity test is performed. If you need help with your project just contact one of our experts today.



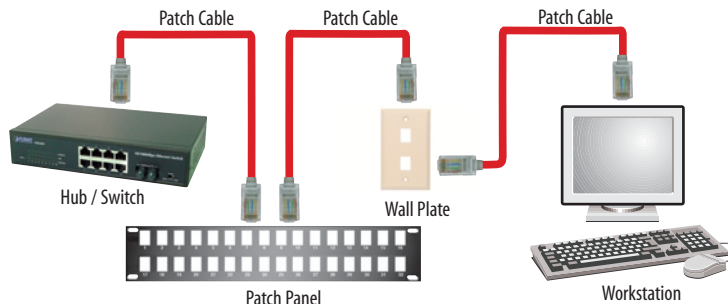
For more useful information go to...  
[www.L-com.com/Resources](http://www.L-com.com/Resources)

### Network Channel Testing

Network Channel Testing is a method used to verify performance from the workstation to the hub/switch including patch cords. Channel Testing is not accurate for individual patch cords. Both installers and IT professionals conduct this type of testing to insure that the entire cable system is capable of handling network traffic. Channel Testing differs from Permanent Link Testing in that it includes the patch cords on both ends of the installation. Often, patch cords are overlooked as the cause of network failures.

### Link Testing Permanent

Permanent Link Testing is the preferred method used by installers to certify a cable installation at a customer site. This type of testing verifies the installation by measuring many factors such as cable lengths, NEXT, FEXT and Return Loss. Several certification testers exist on the market including Fluke Networks DSP4300 Series products. This type of tester features a Permanent Link adapter that connects from a workstation outlet to the telecom closet outlet.



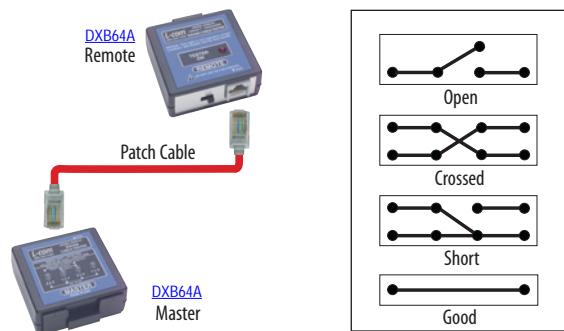
### Patch Cord Certification Testing

Patch Cord Certification Testing is the best method to insure that the cables will meet all of TIA/EIA-568-B.2\_ Standards for data transmission for Ethernet. The TIA/EIA-568-B.2\_ Standard covers many details and requirements for cable quality and performance. This test involves the direct connection of patch cords to a certification tester such as the Fluke Networks DSP4300 Series. The tester will check many aspects of cable performance such as continuity, NEXT, FEXT, and Return Loss. This type of tester along with software provided by Fluke Networks can produce excellent reports for those requiring certification of their cable installation.



### Continuity Testing

Continuity Testing is the most basic form of testing conducted on cables. These types of testers look for opens, shorts or crossed connections. For Ethernet, this type of testing does not confirm network transmission capability. The most common mistake in cable pin-out is an EIA568 A to B cross. A simple continuity tester such as L-com's DXB64A can easily find this error without the expense of a certification tester.



### Cable Testing Terms

**NEXT:** Near End Cross Talk. A signal that crosses between twisted pairs or between conductors. NEXT is measured at the transmission end (near end). Measured in dB, failures for this measurement are often caused by termination problems.

**FEXT:** Far End Cross Talk. Crosstalk that is measured on the conductors that are not being used for transmission at the receiver or far end of the transmission. Measured in

dB, failures for this measurement are often caused by termination problems.

**Propagation Delay Skew:** Used to define the difference in signal speed between the fastest and slowest pair within a cable. It can also define the delay within an individual pair. Must be <45ns for a 4-pair horizontal cable.

**Impedance:** Measure of the total opposition a circuit offers to the flow of alternating current. Target impedance for UTP and

STP cable is 100 Ohms. This can be affected by the twist of the conductors along with the thickness of the insulation around the conductors. Return loss failures are often caused by cable impedance problems.

**Return Loss:** The ratio of reflected power to inserted power. It is the measure of the signal reflections occurring along a network cable system. It is often caused by imperfections in the cable conductors, impedance mismatches or bad contacts in a plug or jack.



| Item # | Description | Code | List Price |
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### DXB66 UTP, FTP and Coaxial Professional Test Set for LAN Cabling and Premise Wiring

L-com's DXB66 Remote Cable Tester provides accurate testing of premise cabling and patch cords used in local area networks. The unit verifies pairing following the EIA/TIA568 standard. It also tests shield continuity of shielded RJ45 connectors which is required in European building installations and areas where noise is prevalent. BNC equipped, coaxial cabling such as Ethernet 10Base-2 can also be tested.

- Sequencing LEDs verify continuity of 4 pair UTP/FTP cabling following EIA/TIA568 A or B pair designations (Ethernet 10Base-T, Token Ring and TP-PMD are all accounted for within the EIA568 code)
- Tests for presence of shield in Foil Twisted Pair (FTP) or Token Ring - Shielded Twisted Pair (STP) cabling
- Internal circuitry is fully protected against live cable damage
- BNC coax test checks Ethernet 10Base-2 busses and patch cords (adapters are available for testing other coaxial terminations)
- Dual colored LEDs identify shorted, open, or reversed pairs
- Remote and master units separate for premise wire tests and reattach for patch cord checking
- Convenient size with exclusive slide lock mechanism allows effortless patch cord and premise cable testing
- Easy to operate with all instructions listed on the faceplate
- Adapters available for testing Token Ring cabling utilizing Type A or B, DB9, or RJ45 connectors
- Runs on one 9V alkaline battery (included)
- Includes belt mountable soft leatherette case, 2 screened patch cords and informative instruction booklet

|                          |   |               |       |
|--------------------------|---|---------------|-------|
| <a href="#">DXB66</a>    | UTP, FTP and Coaxial Professional Test Set    | A, C, D, E, F | 34.95 |
| <a href="#">DXB66-CC</a> | Additional DXB66 Carrying Case with Beltstrap |               | 12.95 |

#### Specifications:

|   |                     |   |                          |
|---|---------------------|---|--------------------------|
| Display .....                           | 5 LEDs Master       | Maximum cable length (4pr.) .....             | tested to 1000 ft        |
|   | 2 LEDs Remote       | Over voltage protection level (max.) .....    | 30 V dc                  |
| Power .....                             | 9V Alkaline battery | Allowable maximum current @ inputs .....      | 0.3 A dc                 |
| Current drain (on) .....                | 25 mA               | Continuous withstand overvoltage rating ..... | 20.0 V dc @ 0.1 A        |
| Normal power consumption .....          | 225 mW              |   | for 5 seconds            |
| Maximum power consumption .....         | 630 mW              | Master & Remote dimensions connected .....    | 6.0 in x 2.3 in x 1.0 in |
| Minimum battery operation voltage ..... | 6.0Vdc              | Master and Remote weight .....                | 6.0 oz.                  |

### DXB64A Triple Function Cable Tester - 10Base-T, Token Ring (RJ45) and EIA568

This easy-to-use sequential scan cable tester provides instant testing and identification of today's most popular UTP cabling schemes. Four, two-color LEDs verify continuity of up to four pairs while instantly detecting opens, shorts and miswires. Specially designed slide attachment allows tester's master and remote sections to be separated when checking installed wiring. Blinking light identifies power on and low battery. Small and light enough to fit neatly in a briefcase, toolbox or pocket. Equipped with 9V alkaline battery and protective leatherette case.

- Equipped with RJ45 jacks
- Tests 4 pair UTP cabling following EIA/TIA568A or B standards
- Master and remote units split apart for premise runs, then reattach for bench testing
- 4 dual polarity LEDs sequence from left to right identifying shorts, opens and miswires
- Supplied with one 9V Energizer alkaline battery and carrying case

|                        |                                   |               |       |
|------------------------|-----------------------------------|---------------|-------|
| <a href="#">DXB64A</a> | EIA568 (RJ45) Remote Cable Tester | B, C, D, E, F | 24.95 |
|------------------------|-----------------------------------|---------------|-------|

### DX45 Modular Patch Cord Tester - USOC RJ11/12/45

The DX45 modular patch cord tester quickly and easily tests the continuity of modular cables. Simply plug both cable ends into the unit and observe the indicators on the faceplate. Dual colored LED's verify if cabling is properly wired for data use (straight through pinning) versus telephone use (crossed pinning). Additionally, the DX45 identifies Opens in a cable. The DX45 is intended for cabling terminated with 8 position modular plugs (RJ45), and 6 position modular plugs (RJ12/11) using the included inserts. The DX45 is powered by a single 9V alkaline battery already installed for instant use. Outside dimensions: 3.8" x 2.4" x 1.1". Features a 1-year manufacturer's warranty.

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| <a href="#">DX45</a> | 8 Position Modular Patch Cord Tester (RJ45) with Inserts | G, H | 22.95 |
| <a href="#">DXBC</a> | Carrying Case for DX Testers                             |      | 3.99  |

### DXR45S Shielded RJ45 Breakout Box - Exclusively Designed and Manufactured by L-com

L-com's DXR45S breakout box is intended for modifying the wiring in modular cords terminated by RJ45 plugs. The unit incorporates two high grade shielded RJ45 jacks, a nine position dip switch and dual nine position headers. Jumper wires are included in the rear compartment. This unit does not utilize a battery, its intention is for modifying modular cable wiring only.

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| <a href="#">DXR45S</a> | Shielded RJ45 Breakout Box |  | 19.95 |
|------------------------|----------------------------|--|-------|

Distributors Wanted - Call 1-800-343-1455

**Code shows tester ability to check:**

|                        |               |                  |                  |                       |          |            |            |
|------------------------|---------------|------------------|------------------|-----------------------|----------|------------|------------|
| <b>A</b>               | <b>B</b>      | <b>C</b>         | <b>D</b>         | <b>E</b>              | <b>F</b> | <b>G</b>   | <b>H</b>   |
|                        |               |                  |                  |                       |          |            |            |
| Ethernet Coax 10Base-2 | RJ45 10Base-T | RJ45 EIA/TIA568A | RJ45 EIA/TIA568B | 8-Position Token Ring | TP-PMD   | RJ12 USOC6 | RJ45 USOC8 |

## See The Video

[www.L-com.com/Videos/A07](http://www.L-com.com/Videos/A07)



Test Shielded RJ45



DXB66



DXB64A



DX45



DXR45S

"Andrea was a tremendous help to me yesterday, and was very patient and informative. A real pleasure to work with someone competent like her! I'll definitely return when I need more hardware like this." - Jim Hilton, Maximus Coffee Group, LP

**L-com Exclusive**



DXL10



| Item # | Description | List Price |
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**MICROPULSE™ Fiber Optic Light Source - Simple Location of Fiber Runs**

This unit eases the difficulty of tracing fiber optic cable runs within a building by using new MICROPULSE technology. Presently, to trace multimode terminated fiber runs, two types of equipment can be used. The first, a laser source, is expensive and potentially dangerous to one's eyesight if viewed directly. These units work well for locating breaks in fiber runs, however, the cost of the units often exceed \$500. The second method is to use an incandescent light source (simple flashlight) with a coupler to connect to the fiber optic termination. These devices produce a low intensity light signal which is difficult to see by the human eye at the far end of the run.

L-com's solution to this problem was simple: Produce a low cost, high intensity light source that is safe to use and easy for the eye to locate. This was done by creating exclusive circuitry that produces an extremely bright red light source which is focused into the fiber optic cable. The light is then pulsed in an on-off manner that is easier for the human eye to locate, especially from a group of fiber runs commonly found in wiring closets or central wiring points. A multi-use coupler is also utilized so that connection to ST, SC, FC, RSD and FSD can be done without additional coupling adapters or cables.

- Ultra High Intensity Red Source LED (660nm, 1400 mcd)
- Exclusive MICROPULSE Signal Pulse Technology (Patent Pending)
- Multi-Use Coupler Accepts Fiber Connectors with 2.5mm Ferrule
- Dual Output - Pulsed or Steady Light Signal
- Runs on One 9V Alkaline Battery (Included)

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| DXL10 | MICROPULSE Fiber Optic Light Source | 19.95 |
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DXL10K1 it

**Micropulse™ Fiber Optic Light Source Kit - Everything for Tracing Multimode Runs**

We now offer in kit form our popular Micropulse Fiber Optic Light Source with common adapters used in identifying fiber optic runs. Included in the kit is the DXL10 Micropulse light source, 2 ST-ST simplex couplers, 1 FC-FC simplex coupler, 1 SC-SC duplex coupler, 1 SC-ST duplex adapter and 1 simplex ST-SC multimode patch cord. Also included is a plastic box for organizing the couplers and a belt mountable carrying case.

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| DXL10K1 | MICROPULSE Fiber Optic Light Source Kit | 69.00 |
|---------|---|-------|

**F Type Pocket Toner - Great for Checking Household Coaxial Cabling Runs**

This Pocket Toner is an extremely handy instrument for identifying and testing coaxial cables terminated with Type F connectors such as those used for cable TV. Ruggedly built, the toner base unscrews creating a remote unit that emits a tone when plugged into the far end of the cable run. Other features include, a bi-colored LED, which indicates 50-75 Ohm termination and a power switch, which prevents accidental battery drain. Uses 1 standard AAA battery for extra-long life and easy replacement. Features a 1-year warranty.

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| DXF11 | Type F Pocket Toner | 34.95 |
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DXF11

**PC Cable Tester Pro ATA**

This flexible cable tester will identify opens, shorts, miswiring and continuity on almost all popular PC cable types! The PC cable tester pro ATA can test the following cable types; DB25 (M/F), DB9 (M/F), HDB15 (M/F), DB15 (M/F), BNC (F), RJ45, Centronics 36 (F), USB (A and B), ATA and Firewire. This tester is a must for installers and IT professionals in any industry. Order today!

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| MULTI-TEST | PC Cable Tester Pro ATA | 139.00 |
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MULTI-TEST

**V.35 Universal Modify and Test Set**

The Universal Modify And Test Set (UMATS) is the ultimate tool for the data communication specialist or engineer's tool bag. The UMATS can be battery or line powered and supports most current WAN communication interface standards. More than just a breakout box, a bank of level shifters allows converting between any pair of interfaces: V.35 can be converted to RS232, RS422 to RS232, or RS530 to V.35, etc. Each level shifter is also connected to a tri-state LED to allow convenient monitoring of signals levels.

- Used to test and troubleshoot cable assemblies
- Tri-State LEDs provide at a glance monitoring of four balanced and four unbalanced signals
- Lightweight hand held design is great for portable applications
- Comprehensive interface design allows for testing of today's most popular WAN interfaces
- Warranty: Returns may be accepted in the first 30 days. After 30 days returns must be handled by the manufacturer.

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|-------|------------------------------------|--------|
| UMATS | V.35 Universal Modify and Test Set | 599.00 |
|-------|------------------------------------|--------|



UMATS

| Item # | Description | 1-9 | 10-24 | 25-99 | 100-249 | 250-499 |
|--------|-------------|-----|-------|-------|---------|---------|
|--------|-------------|-----|-------|-------|---------|---------|

**Inline Tester, RJ12(6X6) M-F with Test LED's and Contact Points**

Use with 2 or 3 pair, RJ11/12 lines. Copper contacts have an angled edge to prevent alligator clips from falling off. Wire color coded for easy identification. Three 2-color LEDs identify activity. Complete with modular jack on the end.

- Network installations
- Cable maintenance and inspection
- Field testing

|         |                              |      |      |      |      |      |
|---------|------------------------------|------|------|------|------|------|
| EC-LMTJ | Test Adapter, 3 Pair Modular | 9.95 | 9.15 | 8.36 | 7.56 | 6.77 |
|---------|------------------------------|------|------|------|------|------|



EC-LMTJ

| Item # | Description | List Price |
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**AEMC CA7024 TDR Fault Mapper**

The AEMC Fault Mapper is a hand-held, alpha-numeric, TDR (Time Domain Reflectometer) Cable Length Meter and Fault Locator, designed to measure the length of electrical and communication cables. It can also indicate the distance to a fault in the cable (open or short), given access to only one end of a two or more conductor cable. By incorporating fast-edge step TDR technology, the CA7024 measures cable length and indicates the distance to open or short circuit faults to a range of 6000 ft (2000m), on virtually any type of cable. The CA7024 indicates the cable length or fault distance and description alpha-numerically on a 128 x 64 graphical LCD. Includes soft carrying case, BNC pigtail cable with alligator clips, four 1.5V AA batteries and user manual.

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| <a href="#">AEMC-CA7024</a> | TDR Fault Mapper | 495.00 |
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**AEMC CA7026 Fault Mapper Pro Tele/Coax/Parallel Cable Tester**

The Fault Mapper Pro is a hand-held graphical TDR (Time Domain Reflectometer) designed for identifying and locating faults on power and communication cables, given access to one end only. The CA7026 measures cable length and indicates the distance to fault cables and terminations to a range of 11,700 ft (3500m) on virtually any type of cable of two or more conductors. The CA7026 shows a reflection profile of the cable under test as an oscilloscope-like trace on a 128 x 64 pixel graphical LCD. A movable cursor can be aligned with points on the trace; the distances displayed will automatically update the cursor position. Includes soft carrying case, BNC pigtail cable with alligator clips, four 1.5V AA batteries and user manual.

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| <a href="#">AEMC-CA7026</a> | Fault Mapper Pro Tele / Coax / Parallel Cable Tester | 795.00 |
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**AEMC CA7028 Wire Mapper Pro LAN Cable Tester**

The Wire Mapper Pro is a hand-held structured cable mapping and troubleshooting tester designed for use on UTP, STP, FTP and SSTP cabling equipped with RJ45 connectors and wired to either TIA568A/B (ISO 11801 and EN 50137), USOC or ISDN specifications. It detects open circuit pairs, shorts, crossed wires, crossed pairs, reversed pairs, split pairs and shield faults. The CA7028 has the ability to measure and indicate the length of the cable under test, using a Vp (Velocity of Propagation) set by the user, from a built-in library or manually. It will measure and report the length of all four pairs of wires in the cable under test. It also generates an audible tone that is transmitted into all four pairs on the cable under test. Includes soft carrying case, remote ID (#1), two patch cords, four 1.5V AA batteries and user manual.

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| <a href="#">AEMC-CA7028</a> | Wire Mapper Pro LAN Cable Tester | 495.00 |
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**Fluke Networks MicroMapper™ Network Tester**

The MicroMapper quickly and easily tests twisted pair cabling, giving you visibility of opens, shorts, crossed, reversed and split pairs. Just push the TEST button and MicroMapper will automatically scan all wire pairs for any existing faults in your cable. MicroMapper's built-in tone generator works with the IntelliTone Probe allowing you to trace cable through walls, floors, and ceilings. The MicroMapper also includes a remote unit that allows one person to test installed cabling or patch cords. The MicroMapper kit includes: MicroMapper and MicroMapper Remote, patch cable, 6-volt alkaline battery and user guide.

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| <a href="#">FNMT8200-49A</a> | Fluke Networks MicroMapper Network Tester | 139.00 |
| <a href="#">FNMT8200-53A</a> | Fluke IntelliTone 100 Probe               | 89.00  |

**Fluke Networks IntelliTone 100 Toner and Probe Kit**

The Fluke Networks IntelliTone 100 Toner and Probe Kit allows users to quickly identify network ports and cables using digital signaling methods. Simply attach the IntelliTone Toner to a cable and set the sensing mode on the IntelliTone Probe. IntelliTone technology energizes cable conductors with a smart, synchronized digital signal. Multiple tone types occur in the signal that help you to locate, isolate and validate a cable. Includes: IntelliTone 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, (2) 9 volt batteries.

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| <a href="#">FNMT8200-50A</a> | Fluke Networks IntelliTone 100 Toner and Probe Kit | 159.00 |
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**Fluke Networks NetTool™ Inline Network Tester**

Fluke Networks NetTool Inline Network Tester comes packed with the features IT professionals need. The NetTool can be connected inline between two network devices, listen to the traffic between them and detect common connectivity problems. The NetTool can also automatically ping key devices to verify connection to routers, servers and printers. Users will be able to spot available network resources by seeing MAC and IP addresses, subnet and services offered by active servers, routers and printers. The NetTool Tester can also look for the common wiring problems by testing for cable length, shorts, split pairs or opens, including pin-to-pin wiremap. Users will be able to download test results to document network performance and generate network resource reports. Includes 4 AA batteries and a 1-year manufacturer's warranty.

|                         |  |         |
|-------------------------|--|---------|
| <a href="#">FNT-PRO</a> | Fluke Networks NetTool Inline Network Tester | 2100.00 |
|-------------------------|--|---------|

**Fluke Networks MicroScanner2 Cable Verifier**

The MicroScanner2 Cable Verifier presents a revolutionary change in voice, data and video cable testing. It starts by taking results from what was four different test modes and displaying them all at once - graphical wiremap, pair lengths, distance to fault, cable ID and far end device. What's more, its integrated RJ11, RJ45 and coax test ports support virtually any type of low-voltage cable testing with no need for awkward adapters. The end result is reduced test time and technician error. That makes high-quality installations more efficient than ever.

|                               |                               |        |
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| <a href="#">MICROSCANNER2</a> | Fluke Networks Cable Verifier | 499.00 |
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**We answer your technical questions**

See a complete list of frequently asked questions at [L-com.com/FAQS](http://L-com.com/FAQS)



FOM120



FOS420



FOS430



**Did you know...**

Cleaning your fiber connectors takes only seconds and can greatly improve your signal!

FTK51MM  
FTK51SM



TBX51MM



FTK51POF



| Item #  | Description  | List Price |
|---|--|------------|
| <b>FOM120</b>   | <b>Fiber Optic Power Meter for Multimode and Single mode Cabling</b><br>The FOM120 is a general-purpose power meter suitable for both premise and outside plant applications. This unit is ideal for measurement of optical power and optical loss/attenuations in a fiber optic network. The FOM120 meter is calibrated at the four most common industry standard wavelengths 850nm, 1300nm, 1310nm and 1550nm for both single mode and multimode transmitters. The 1mm Germanium detector offers a broad dynamic range of ~60dB which far exceeds the requirements of the majority of users. The FOM120 utilizes a 2.5mm universal connector for both ST and SC connections (other connector styles available upon request). The compact handheld meter (4.94" x 2.75" x 1.2") has an auto-shutdown feature to preserve battery life. Runs on 2AA batteries and includes a 1-year manufacturer's warranty. | 495.00     |
| <b>FOS420</b>   | <b>Fiber Source for 850/1300nm Fiber Optic Cables</b><br>The FOS420 light source is for premises and campus cabling networks with multimode fiber, or single mode fibers under 5km. The ST connector outputs can be adapted to any cable plant with hybrid adapters or hybrid cables. The FOS420 becomes a powerful low cost troubleshooting and maintenance tool when used with an Advanced Fiber Solutions FOM120 power meter.   | 595.00     |
| <b>FOS430</b>   | <b>Fiber Source for 1310/1550nm Fiber Optic Cables</b><br>The FOS430 laser source is designed for testing single mode fiber cabling in premise or outside plant environments where long wavelengths are used. The single output allows the user to test at both 1310nm and 1550nm without disconnecting and reconnecting the cable. When used with an Advanced Fiber Solutions FOM120 or FOM220 the FOS430 is ideal for testing insertion loss for single mode fiber optic cables and connectors. Lightweight, ergonomic design is great for field use.  | 1495.00    |
| <div style="border: 1px solid black; padding: 5px;"> <p> <b>Tip</b> <i>Common test methods</i></p> <div style="display: flex; justify-content: space-around;"> <div style="width: 30%;"> <p><b>Setting 0 dB Loss Reference for Testing</b></p> <ol style="list-style-type: none"> <li>1. Attach Launch Cable to the output of the source and input of the meter.</li> <li>2. Make sure the output power level from the source is over -30 dBm.</li> <li>3. With meter in "dB" mode, hit the zero reference key. When the meter zeros out as illustrated in the above setup, the launch reference power has been stored and the user is now ready to start testing cables.</li> <li>4. Once the zero reference power has been set, do not remove the Launch Cable from the source as reattaching it may change the output power level.</li> </ol> </div> <div style="width: 30%;"> <p><b>Fiber Optic Cable Testing Per EIA/TIA FOTP-171</b></p> <ol style="list-style-type: none"> <li>1. Attach the Cable Under Test to Launch Cable via the Connector Coupler.</li> <li>2. Attach the other end of the cable to the meter and read the value.</li> <li>3. The indicated value on the display will be the loss of the mated connector of the Cable Under Test (CUT) and the actual test cable itself. To test the other connector on the test cable simply reverse the CUT test and read the loss from the power meter.</li> </ol> </div> <div style="width: 30%;"> <p><b>Fiber Optic Cable Testing Per EIA/TIA OFSTP-14</b></p> <ol style="list-style-type: none"> <li>1. A loss reading for the Receive Cable should already be established by doing a single ended test on it as specified in the FOPT-171 illustration. The loss of the Receive Cable should be added on to the loss of the Cable Under Test (CUT) when the test is completed or zeroed out before the CUT is placed between it and the Launch Cable.</li> <li>2. Attach the Cable Under Test to the Launch Cable via Connector Coupler 1.</li> <li>3. Attach the other end of the Cable Under Test to the Receive Cable via Connector Coupler 2.</li> <li>4. The power indicated on the meter is the loss of the Cable Under Test.</li> </ol> </div> </div> </div> |  |            |
| <b>FTK51MM</b>  | <b>Multimode Fiber Optic Test Kit</b><br>The FTK51MM multimode fiber optic test kit allows users to quickly test multimode fiber cabling. The kit features a power meter and light source in a convenient carry case. The power meter supports 850/1300/1310/1550nm light sources and features a 2.5mm universal connector for both ST and SC connections (other connector styles available upon request). The kit's power meter is calibrated at the four most common industry standard wavelengths 850nm, 1300nm, 1310nm and 1550nm for both single mode and multimode transmitters. The 1mm Germanium detector offers a broad dynamic range of ~60dB which far exceeds the requirements of the majority of users.   | 1095.00    |
| <b>FTK51SM</b>  | <b>Single mode Fiber Optic Test Kit</b><br>The FTK51SM single mode fiber optic test kit features a fiber optic power meter and light source to quickly and economically test 9/125 single mode fiber cabling. The power meter supports 850/1300/1310/1550nm light sources and features ST, SC, FC, 2.5mm Universal, LC and 1.25mm Universal connection options. The 2 mm Germanium detector offers a broad dynamic range of ~60dB which far exceeds the requirements for most applications. The kit's power source supports both 1310nm and 1550nm laser sources for single mode cable testing. Includes a convenient carrying case.   | 1990.00    |
| <b>TBX51MM</b>  | <b>Fiber Optic Test Kit with Power Meter, Light Source and Tool Kit</b><br>The TBX51MM features the OS420 light source for use with premises and campus cabling networks that utilize multimode fiber, or single mode fibers under 5km. The ST connector outputs can be adapted to any cable plant with hybrid adapters or hybrid cables. The OS420 becomes a powerful low cost troubleshooting and maintenance tool when used with an Advanced Fiber Solutions OM120 (included with this kit) or OM220. Tool kit includes: Safety glasses, sapphire scribe, armored tubing cutters, Kevlar scissors, needle nose pliers, rotary cable stripper, fiber optic stripper, buffer tube stripper, crimp tool, tweezers, polishing puck, polishing plate, continuity tester and a 100x microscope. This kit contains everything you need to test and repair multimode and single mode fiber cables.                | 1695.00    |
| <b>FTK51POF</b>   | <b>Plastic Optical Fiber (POF) Test Kit</b><br>The Advanced Fiber Solutions POF test kit is the perfect, portable solution for testing both plastic and glass optical fiber cables. The FTK51POF includes the OM110 power meter, which is designed for POF (plastic optical fiber) and short wavelength applications (visible and near infrared). The OM110 optimizes a silicon detector suitable for large core fibers. It is the ideal tool for working with shorter wavelengths used with glass, plastic or multimode fibers. Additionally, the FTK51POF features the OS417-MD source which houses a 665nm LED in a modular adapter, which makes it adaptable to any connector style. Order this versatile test kit today!  | 899.00     |

"No matter how small the order or how complicated the problem, I have always received the best service possible. I am very comfortable in requesting something new to L-com. They always do the best job to satisfy the customer." - Diane D.

| Item #   | Description  | List Price |
|--|--|------------|
| <b>✓RoHS</b> <a href="#">Brady TLS2200™ Premium Thermal Transfer Label Printer</a> |  |            |
| <a href="#">TLS2200</a>  | 200 system offers the lightweight of a hand-held printer (2.75lbs), while providing the superior capabilities of thermal transfer printing. The Brady printer features a two-line liquid crystal display and produces smear proof, ultra clear print quality and faster output than most other printers on the market. Useful for printing barcodes as well as text and numbers with crystal clear accuracy on labels up to 2 inches wide. This means you can now print labels for wire markers, patch panels, circuit boards, cable markers and more, faster and easier than ever before. Includes a 6-month manufacturer's warranty. |            |
| <a href="#">TLS2200</a>  | Premium Brady Thermal Transfer Printer   | 849.00     |
| <a href="#">TLS2200</a>  | Replacement Ribbon for TLS2200   | 23.95      |
| <a href="#">TLS2200-BP</a>   | Replacement Battery  | 95.00      |

**✓RoHS** [Brady IDXPART Handheld Labeling System](#)

The IDXPART is the first handheld cartridge based labeling system that can print die-cut labels, self-laminating labels and sleeves as well as continuous tapes...You name it IDXPART prints it! Choose from two keyboard layouts, then select from a wide range of label materials engineered just for your application. That includes wire and cable markers, panel, rack and frame ID, facilities labels and specialty labels for labs and workspaces. The IDXPART can be used with self-lams, sleeves and 90+ label styles including continuous tapes. Additionally, the IDXPART can print on materials up to 1.5" wide and prints characters up to 1.25". It also provides 82 symbols plus bar codes.

|                             |  |        |
|-----------------------------|--|--------|
| <a href="#">IDXPART-ABC</a> | Brady IDXPART Handheld Labeling System (ABC Layout)      | 399.95 |
| <a href="#">IDXPART-KEY</a> | Brady IDXPART Handheld Labeling System (Keyboard Layout) | 399.95 |

**✓RoHS** [Brady IDPAL™ Thermal Printer](#)

Brady IDPAL hand-held labeling tool offers electrical installers an unbeatable combination - superior labels designed for outstanding adherence to round and curved surfaces - at an affordable price. Weighing only 1.2 lbs. fully loaded (cartridge and batteries), it fits comfortably in the hand, features all the standard electrical symbols and is easy to use. The label cartridge is top-loaded. Built-in intelligence senses tape size and automatically formats the label. A choice of performance tested labeling materials, label widths and lengths and fonts ensures a good match with a variety of applications. It's the ideal tool for wire and cable marking, component marking and general identification. Includes a 6-month manufacturer's warranty.

|                       |                       |       |
|-----------------------|-----------------------|-------|
| <a href="#">IDPAL</a> | Brady Thermal Printer | 99.00 |
|-----------------------|-----------------------|-------|

| Item # | Description | Labels per Roll | 1-9 | 10-24 | 25-99 | 100-249 | 250-499 |
|--------|-------------|-----------------|-----|-------|-------|---------|---------|
|--------|-------------|-----------------|-----|-------|-------|---------|---------|

**Brady Roll, Cartridge and Wraparound Cable Labels**

Brady cable labels are made from durable, high quality vinyl and can be used in any cable labeling application. Please refer to the label dimensions sizing chart located on the bottom right hand side of this page.

**✓RoHS** [TLS2200 Labels are Available in a Variety of Sizes](#)

|                          |                                      |     |       |       |       |       |       |
|--------------------------|--------------------------------------|-----|-------|-------|-------|-------|-------|
| <a href="#">PTL1942Z</a> | Cable Labels, 1.0"L x 1.0"W x .375"H | 250 | 29.95 | 29.35 | 28.75 | 28.15 | 27.55 |
| <a href="#">PTL3142Z</a> | Cable Labels, 1.0"L x 1.5"W x .50"H  | 250 | 39.95 | 39.15 | 38.35 | 37.55 | 36.75 |
| <a href="#">PTL2142Z</a> | Cable Labels, 1.0"L x 2.5"W x .75"H  | 100 | 24.95 | 24.45 | 23.95 | 23.45 | 22.95 |

**Note:** Many other label types available, call your L-com Sales Representative for free Brady Literature.

**✓RoHS** [Brady IDXPART Voice/Data Cable Markers](#)

These labels are Ideal for marking data cabling. The B-427 vinyl self-laminating material offers superior abrasion resistance and resists dirt, oils, solvents and water. Each label features a clear, non-printed area, which wraps around and over laminates the printed text. The IDXPART automatically "multiple repeats" your text in the white print area. These labels are UL Recognized and support a temperature range of -94°F to 158°F (-70°C to 70°C).

|                             |   |     |       |       |       |       |       |
|-----------------------------|---|-----|-------|-------|-------|-------|-------|
| <a href="#">XSL-102-427</a> | Vinyl Labels, 0.50"L x 1.25"W x 0.375"H | 250 | 27.95 | 27.39 | 26.83 | 26.27 | 25.71 |
| <a href="#">XSL-103-427</a> | Vinyl Labels, 1.00"L x 1.25"W x 0.50"H  | 250 | 44.95 | 44.05 | 43.15 | 42.25 | 41.35 |
| <a href="#">XSL-115-427</a> | Vinyl Labels, 1.50"L x 1.25"W x 0.50"H  | 250 | 39.95 | 39.15 | 38.35 | 37.55 | 36.75 |
| <a href="#">XSL-29-427</a>  | Vinyl Labels, 0.50"L x 1.25"W x 0.50"H  | 500 | 49.95 | 48.95 | 47.95 | 46.95 | 45.95 |
| <a href="#">XSL-30-427</a>  | Vinyl Labels, 0.75"L x 1.25"W x 0.50"H  | 250 | 37.95 | 37.19 | 36.43 | 35.67 | 34.91 |

**Note:** Many other label types available, call your L-com Sales Representative for free Brady Literature.

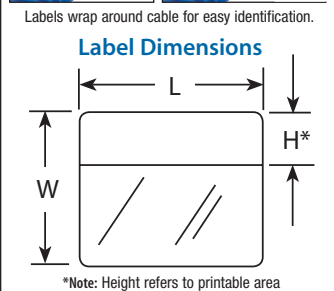
**✓RoHS** [Cable Labels for the IDPAL](#)

|                           |                                |      |       |       |       |       |       |
|---------------------------|--------------------------------|------|-------|-------|-------|-------|-------|
| <a href="#">PAL375439</a> | Label Cartridge, 21"L x .375"W | N.A. | 18.00 | 17.64 | 17.28 | 16.92 | 16.56 |
| <a href="#">PAL500439</a> | Label Cartridge, 21"L x .50"W  | N.A. | 18.00 | 17.64 | 17.28 | 16.92 | 16.56 |
| <a href="#">PAL750439</a> | Label Cartridge, 21"L x .75"W  | N.A. | 21.00 | 20.58 | 20.16 | 19.74 | 19.32 |

**✓RoHS** [Cable Labels - Wraparound Style, 3 Sizes to Choose From](#)

|                        |                                      |    |      |      |      |      |      |
|------------------------|--------------------------------------|----|------|------|------|------|------|
| <a href="#">CL0515</a> | Cable Labels, .50"L x 1.5"W x .50"H  | 30 | 5.95 | 5.83 | 5.71 | 5.59 | 5.47 |
| <a href="#">CL1150</a> | Cable Labels, 1.0"L x 1.5"W x .50"H  | 30 | 7.95 | 7.79 | 7.63 | 7.47 | 7.31 |
| <a href="#">CL1375</a> | Cable Labels, 1.0"L x 3.75"W x 1.0"H | 30 | 5.95 | 5.83 | 5.71 | 5.59 | 5.47 |

**Note:** CL Series labels are not intended for use with Brady printers.



**Tip** *What size cable label is appropriate for the cable that I am using?*

| SS DSS SECTION | IF YOU HAVE:                    | THEN USE:   |
|----------------|---------------------------------|---|
|                | 8 conductor flat silver satin   | <a href="#">PTL1942Z</a> 7 or <a href="#">CL0515</a>  |
|                | Duplex fiber cord (zipcord)     | <a href="#">PTL1942Z</a> 7 or <a href="#">CL0515</a>  |
|                | RG59 coaxial cable              | <a href="#">CL1150</a> 127, <a href="#">CL0515</a> or <a href="#">CL1150</a>                          |
|                | Cat. 5/5E/6 4 pair twisted pair | <a href="#">CL1150</a> 127, XSL Series, <a href="#">CL0515</a> or <a href="#">CL1150</a>              |
|                | Category 3 25 pair              | <a href="#">CL1375</a> 127, <a href="#">CL0515</a> , <a href="#">CL1150</a> or <a href="#">CL1375</a> |

For more useful information go to....  
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