FLUKE networks

Versiv™ Series

Cabling Certification Product Family

Users Manual

Versiv Software Version 6.5

February 2018, Rev. 8, 2/2020

LIMITED WARRANTY AND LIMITATION OF LIABILITY

Each Fluke Networks product is warranted to be free from defects in material and workmanship under normal use and service unless stated otherwise herein. The warranty period for the mainframe is one year and begins on the date of purchase. Parts, accessories, product repairs and services are warranted for 90 days, unless otherwise stated. Ni-Cad, Ni-MH and Li-Ion batteries, cables or other peripherals are all considered parts or accessories. The warranty extends only to the original buyer or end user customer of a Fluke Networks authorized reseller, and does not apply to any product which, in Fluke Networks' opinion, has been misused, abused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation or handling. Fluke Networks warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke Networks does not warrant that software will be error free or operate without interruption.

Fluke Networks authorized resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Fluke Networks. Warranty support is available only if product is purchased through a Fluke Networks authorized sales outlet or Buyer has paid the applicable international price. To the extent permitted by law, Fluke Networks reserves the right to invoice Buyer for repair/replacement when a product purchased in one country is submitted for repair in another country.

For a list of authorized resellers, visit **www.flukenetworks.com/wheretobuy**.

Fluke Networks warranty obligation is limited, at Fluke Networks option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to a Fluke Networks authorized service center within the warranty period.

To obtain warranty service, contact your nearest Fluke Networks authorized service center to obtain return authorization information, then send the product to that service center, with a description of the difficulty, postage and insurance prepaid (FOB destination). Fluke Networks assumes no risk for damage in transit. Following warranty repair, the product will be returned to Buyer, transportation prepaid (FOB destination). If Fluke Networks determines that failure was caused by neglect, misuse, contamination, alteration, accident or abnormal condition of operation or handling, or normal wear and tear of mechanical components, Fluke Networks will provide an estimate of repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the Buyer transportation prepaid and the Buyer will be billed for the repair and return transportation charges (FOB Shipping point).

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. FLUKE NETWORKS SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY.

Since some countries or states do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any provision of this Warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

4/15

Fluke Networks
PO Box 777
Everett, WA 98206-0777
USA

Contents

Chapter 1 Get Acquainted

Chapter 14 Sync Projects with LinkWare™ Live

Chapter 15 Maintenance

Chapter 1: Get Acquainted

Overview of Features

The Versiv and Versiv™ 2 main and remote testers are rugged, hand-held instruments that you configure to certify, troubleshoot, and document copper and fiber optic cabling. The Versiv platform includes these features:

Note

Feature descriptions in the Versiv Series documentation apply to Versiv and Versiv 2 testers unless stated otherwise.

- Operates with DSX CableAnalyzer™ modules to certify twisted pair cabling. See Chapter 2.
- Operates with CertiFiber® Pro Optical Loss Test Set (OLTS) modules to measure optical power loss and length on dual-fiber, multimode and single-mode cabling. See Chapter 6.
- Operates with OptiFiber® Pro OTDR modules to locate, identify, and measure reflective and loss events in multimode and single-mode fibers. See Chapter 7.
- Operates with OptiFiber Pro HDR modules to do tests on OSP (Outside Plant) installations that include optical splitters. See Chapter 8.
- The optional FI-1000, FI-3000, or FI-3000-NW FiberInspector™ Pro video probe connects to the type A USB port on the main tester to let you inspect the endfaces in fiber optic connectors. See Chapter 5.
- Gives a PASS or FAIL result based on a test limit that you specify.

- Taptive™ user interface lets you quickly navigate through different views of the results and see more information about cables.
- ProjX™ management system lets you set up projects to specify the types of tests and the cable IDs necessary for a job and monitor the progress and status of the job.
- You can connect the tester to a wired or Wi-Fi network and use the LinkWare™ Live web application to manage your projects from a desktop or mobile device.
- LinkWare PC software lets you upload test results to a PC and make professional-quality test reports.
- LinkWare Stats software makes browsable, graphical reports of cable test statistics.

Versiv 2 Compatibility

Versiv 2 mainframes do not support the OptiView XG Performance Test Remote or the OneTouch AT Network Assistant modules.

Contact Fluke Networks


www.flukenetworks.com/support


info@flukenetworks.com


1-800-283-5853, +1-425-446-5500


Fluke Networks
6920 Seaway Boulevard, MS 143F
Everett WA 98203 USA

Fluke Networks operates in more than 50 countries worldwide. For more contact information, go to our website.

Register Your Product

Registering your product with Fluke Networks gives you access to valuable information on product updates, troubleshooting tips, and other support services. If you purchased a Gold Support plan, registration also activates your plan.

To register your product, use LinkWare PC software.

Technical Reference Handbook

The *Versiv Series Technical Reference Handbook* has more information about the tester. The Handbook is available on the Fluke Networks website.

Additional Resources

The Fluke Networks Knowledge Base answers common questions about Fluke Networks products and provides articles on cable testing techniques and technology.

To access the Knowledge Base, log on to **www.flukenetworks.com**, then click **SUPPORT** > **Knowledge Base**.

Supplements and Updated Manuals

If necessary, Fluke Networks will put a supplement for this manual, or an updated manual, on the Fluke Networks website. To see if a supplement or updated manual is available, log on to **www.flukenetworks.com**, click **SUPPORT** > **Manuals**, then select a product.

Kit Contents

For a list of the contents of your Versiv or Versiv 2 kit, see the list that came in the product's box or see the lists of models and accessories on the Fluke Networks website. If something is damaged or missing, contact the place of purchase immediately.

Symbols

Table 1 shows the symbols used on the tester or in this manual.

Table 1. Symbols

	Warning: Risk of fire, electric shock, or personal injury.
	Warning or Caution: Risk of damage or destruction to equipment or software. See explanations in the manuals.
	Warning: Class 1 (OUTPUT port) and Class 2 (VFL port) lasers. Risk of eye damage from hazardous radiation.
	Consult the user documentation.
	40 year Environment Friendly Use Period (EFUP) under China Regulation - Administrative Measure on the Control of Pollution Caused by Electronic Information Products. This is the period of time before any of the identified hazardous substances are likely to leak out, causing possible harm to health and the environment.
	Conforms to the Appliance Efficiency Regulation (California Code of Regulations, Title 20, Sections 1601 through 1608), for small battery charging systems.

Table 1. Symbols (cont.)

	This product complies with the WEEE Directive marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste. Product Category: With reference to the equipment types in the WEEE Directive Annex I, this product is classed as category 9 "Monitoring and Control Instrumentation" product. Do not dispose of this product as unsorted municipal waste. To return unwanted products, contact the manufacturer's web site shown on the product or your local sales office or distributor.
 Li-ion	This Product contains a lithium-ion battery. Do not mix with the solid waste stream. Spent batteries should be disposed of by a qualified recycler or hazardous materials handler per local regulations. Contact your authorized Fluke Service Center for recycling information.
	Conformite Europeene. Conforms to requirements of European Union directives. Safety requirements for electrical equipment for measurement, control, and laboratory use.
	Conforms to relevant North American standards.
	Conforms to relevant Australian standards.
	Conforms to relevant Russian standards.
	EMC approval for Korea. Class A Equipment (Industrial Broadcasting & Communication Equipment). This product meets requirements for industrial (Class A) electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and is not to be used in homes.
	This key turns the tester on and off.

Safety Information

For the Main and Remote Units

Warning

To prevent possible fire, electric shock, or personal injury:

- **Read all safety information before you use the Product.**
- **Carefully read all instructions.**
- **Do not open the case. You cannot repair or replace parts in the case.**
- **Do not modify the Product.**
- **Use only replacement parts that are approved by Fluke Networks.**
- **Do not touch voltages > 30 V AC rms, 42 V AC peak, or 60 V DC.**
- **Do not use the Product around explosive gas, vapor, or in damp or wet environments.**
- **Charge the battery indoors.**
- **Use the Product only as specified, or the protection supplied by the Product can be compromised.**
- **Do not use and disable the Product if it is damaged.**
- **Do not use the Product if it operates incorrectly.**
- **Batteries contain hazardous chemicals that can cause burns or explode. If exposure to chemicals occurs, clean with water and get medical aid.**

- **Remove the batteries if the Product is not used for an extended period of time, or if stored in temperatures above 50 °C. If the batteries are not removed, battery leakage can damage the Product.**
- **Replace the rechargeable battery after 5 years of moderate use or 2 years of heavy use. Moderate use is defined as recharged twice a week. Heavy use is defined as discharged to cutoff and recharged daily.**
- **Disconnect the battery charger and move the Product or battery to a cool, non-flammable location if the rechargeable battery becomes hot (>50 °C, >122 °F) during the charge period.The battery door must be closed and locked before you operate the Product.**
- **The battery door must be closed and locked before you operate the Product.**
- **Repair the Product before use if the battery leaks.**
- **Recharge the batteries when the low battery indicator shows to prevent incorrect measurements.**
- **Turn off the Product and disconnect all test leads, patch cords, and cables before you replace the battery.**
- **Do not disassemble or crush battery cells and battery packs.**
- **Do not put battery cells and battery packs near heat or fire. Do not put in direct sunlight.**
- **Have an approved technician repair the Product.**
- **Use only AC adapters approved by Fluke Networks for use with the Product to supply power to the Product and charge the battery.**
- Do not keep cells or batteries in a container where the terminals can be shorted.

⚠ Caution

To prevent damage to the tester or cables under test and to prevent data loss:

- **Keep modules attached to the testers to give protection to the module connectors.**
- **Do not remove the USB flash drive while the LED on the drive flashes. Doing so can corrupt the data on the drive.**
- **You can lose a USB flash drive, cause damage to it, or accidentally erase the contents of the drive. Thus, Fluke Networks recommends that you save no more than one day of test results on a flash drive, or that you upload results to LinkWare Live. See Chapter 14.**

For DSX Modules

⚠ Warning ⚠

To prevent possible fire, electric shock, or personal injury:

- **Do not connect the tester to telephony inputs, systems, or equipment, including ISDN inputs. Doing so is a misapplication of this product, which can cause damage to the tester and make a possible shock hazard for the user.**
- **Always turn on the tester before you connect it to a link. Doing so activates the tester's input protection circuitry.**
- **Do not operate the Product with covers removed or the case open. Hazardous voltage exposure is possible.**
- **Remove the input signals before you clean the Product.**
- **Do not put metal objects into connectors.**

⚠ Caution

To prevent damage to the tester or cables under test, to prevent data loss, and to make sure your test results are as accurate as possible:

- **Do not connect the tester to an active network. Doing so causes unreliable test results, can disrupt network operations, and can cause damage to the tester.**
- **Connect to the adapters only plugs that are made for Ethernet applications, such as RJ45, ARJ45, and Cat 7 plugs. Other types of plugs, such as RJ11 (telephone) plugs, can cause permanent damage to the jacks.**
- **To make sure your test results are as accurate as possible, do the reference procedure every 30 days. See "Set the Reference" on page 43.**
- **Do not operate portable transmitting devices, such as walkie-talkies and cell phones, during a cable test. Doing so can cause errors in test results.**
- **For permanent link adapters, do not twist, pull on, pinch, crush, or make kinks in the cables. See Figure 10 on page 36.**

For CertiFiber Pro OLTS Modules

⚠ Warning: Class 1 and Class 2 Laser Products

To prevent possible eye damage caused by hazardous radiation:

- **Do not look directly into optical connectors. Some optical equipment emits invisible radiation that can cause permanent damage to your eyes.**

- Keep the module's OUTPUT ports covered with a dust cap or keep a test reference cord attached. The OUTPUT ports can emit radiation even when you do not do a test.
- When you inspect fiber endfaces, use only magnification devices that have the correct filters.
- Use the Product only as specified or hazardous laser radiation exposure can occur.

⚠ Caution

To prevent damage to the tester or cables under test and to prevent data loss:

- Do not connect the tester to an active network. Doing so causes unreliable test results, can disrupt network operations, and can cause damage to the module's receiver.
- Use proper cleaning procedures to clean all fiber connectors before every use. Neglecting this step or using improper procedures can cause unreliable test results and may permanently damage the connectors. See Chapter 4.
- Use a video probe to periodically inspect the module's optical connectors for scratches and other damage.
- Do not connect APC (angled physical contact) connectors to the output ports. Doing so can damage the port's UPC endface and cause unreliable test results.
- To make sure your test results are as accurate as possible, do the reference procedure frequently. See "About the Reference for Fiber Tests" on page 143.
- Use only high-quality test reference cords that comply with the standards. See "About Test Reference Cords and Mandrels" on page 146

For OptiFiber Pro OTDR Modules

⚠ Warning: Class 1 and Class 2 Laser Products

To prevent possible eye damage caused by hazardous radiation:

- **Do not look directly into optical connectors. Some optical equipment emits invisible radiation that can cause permanent damage to your eyes.**
- **Do not do any tests that activate the outputs on the tester unless a fiber is attached to the output.**
- **When you inspect fiber endfaces, use only magnification devices that have the correct filters.**
- **Use of controls, adjustments, or procedures not stated herein can possibly result in hazardous radiation exposure.**

⚠ Caution

To prevent damage to the tester or cables under test:

- **Do not connect the OTDR port to an optical source. Doing so can cause damage to the OTDR receiver.**
- **Do not connect the tester to an active network. Doing so causes unreliable test results, can disrupt network operations, and can cause damage to the OTDR receiver.**
- **Do not touch reflective surfaces (such as metal) to the end of a fiber cable connected to the OTDR when the OTDR is operating. An open fiber connector endface has about a 4% reflection. Holding a reflective surface near the connector endface can cause more than a 4% reflection, which can damage the photodetector in the OTDR.**

- Do not connect APC (angled physical contact) connectors to the OptiFiber Pro OTDR ports. Do not connect PC or UPC connectors to the OptiFiber Pro HDR OTDR ports. Doing so can damage the port's endface, and the large reflection at the OTDR port can cause unreliable test results.
- Use proper cleaning procedures to clean all fiber connectors before every use. Neglecting this step or using improper procedures can cause unreliable test results and may permanently damage the connectors. See Chapter 4.
- Use a video probe to periodically inspect the OTDR connectors for scratches and other damage.
- Read the instructions for splice machines before using the OTDR to monitor splicing procedures. The OTDR can interfere with the light injection detection techniques used by some splicers.

For FiberInspector Pro Video Probes

⚠ Warning ⚠

To prevent possible electrical shock, fire, or personal injury and for safe operation of the Product:

- Read all safety information before you use the Product.
- Carefully read all instructions.
- Do not alter the Product and use only as specified, or the protection supplied by the Product can be compromised.
- Do not use the Product if it operates incorrectly.
- Do not use the Product if it is altered or damaged.
- Disable the Product if it is damaged.

- **Use only Fluke Networks approved power adapters to supply power to the Product and charge the battery.**
- **Charge the battery indoors.**
- **If the Product gets hot, disconnect the battery charger and move the Product to a cool, non-flammable location.**
- **Replace the rechargeable battery after 5 years of moderate use or 2 years of heavy use. Moderate use is defined as recharged twice a week. Heavy use is defined as discharged to cutoff and recharged daily. To replace the battery, send the Product to an authorized Fluke Networks Service Center.**
- **Have an approved technician repair the Product.**
- **Do not open the case. You cannot repair or replace parts in the case.**

AC Adapter and Battery

You can use the AC adapter (model PWR-SPLY-30W) or the lithium ion battery (model VERSIV-BATTERY) to supply power to the tester.

To remove the battery, see “Remove the Battery” on page 366.

Charge the Battery

Before you use the battery for the first time, charge it for about 2 hours with the tester turned off.

To charge the battery

Connect the AC adapter to the 15V jack on the left side of the tester.

Versiv 2: The LED in the power button shows the status of the battery charging process. See Table 2.

Versiv: The LED near the AC adapter connector is red when the battery charges, and green when the battery is fully charged. The LED is yellow if the battery will not charge.

A fully-charged battery operates for approximately 8 hours of typical use. The battery takes approximately 4 hours to fully charge when the tester is turned off.

Notes

You do not need to fully discharge the battery before you recharge it.

The battery will not charge if its temperature is outside the range of 32 °F to 104 °F (0 °C to 40 °C). The LED is yellow if the battery will not charge.

Table 2. Power Button's LED Indications for Versiv 2 Testers

	Green, steady: The tester is on and the AC adapter is not connected, or the AC adapter is connected and the battery is fully charged. Green, flashing: The tester is off, the AC adapter is connected, and the battery is fully charged.
	Red, steady: The tester is on and the battery is charging. The LED stays red for a few minutes after the battery status icons show that the battery is fully charged. Red, flashing: The tester is off and the battery is charging.
	Red steady or alternating red/green: The AC adapter is connected, but the battery is not installed.
	Yellow, steady: The tester is on and the AC adapter is connected, but there is an issue with the battery: • The battery voltage is very low. The AC adapter will trickle-charge the battery until the voltage increases, then charge the battery at the normal rate. • The battery will not charge because its temperature is outside the range of 32 °F to 104 °F (0 °C to 40 °C). Yellow, flashing: Same as above, but the tester is off.
 **x5**	Yellow, flashes 5 times: This occurs when the tester reboots after a software update, or if tester reboots because it had an unrecoverable error.

Check the Battery Status

On a main tester

The battery status icon is in the upper-left corner of the screen:

Battery is full. The LED stays red for a few minutes after the battery status icons show that the battery is fully charged.

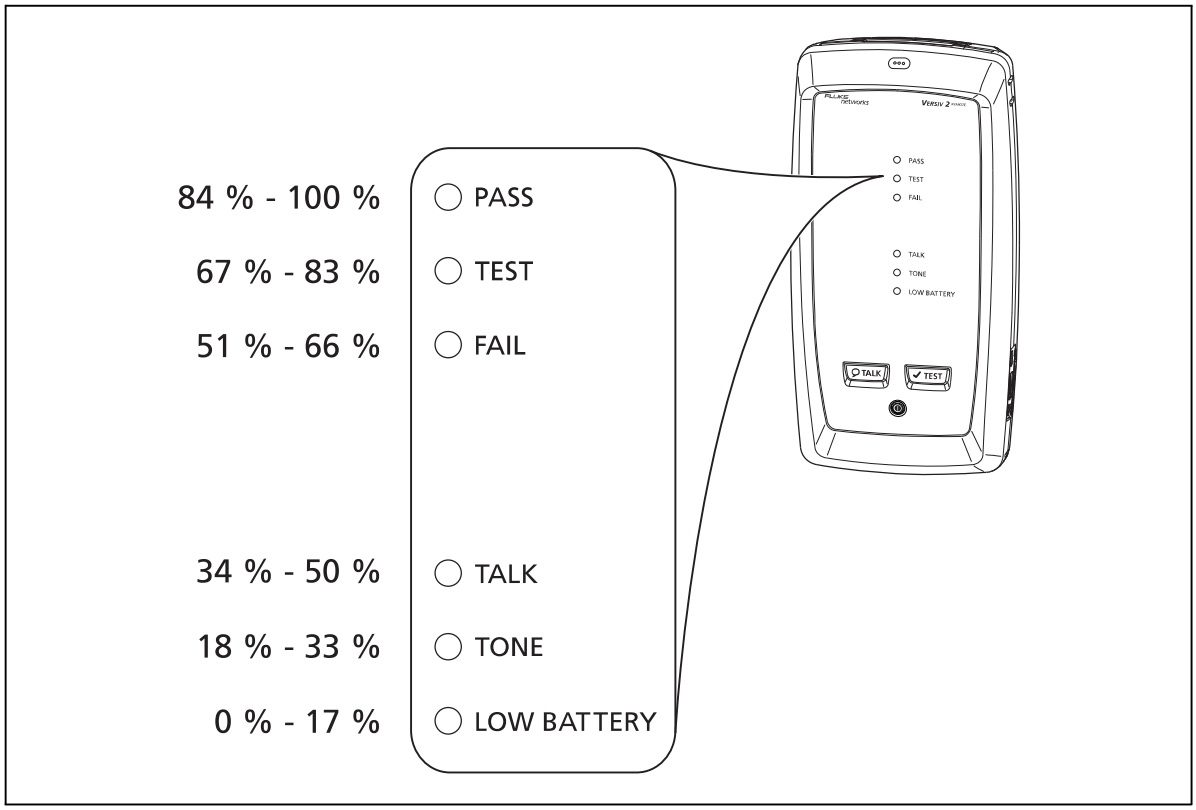
Battery is approximately half full.

If the AC adapter is not connected, the red bar shows that the battery is low. Connect the AC adapter to charge the battery and make sure the tester continues to operate.

The red bar also shows if the AC adapter is connected, but the battery is not installed.

On a remote

The LEDs show the battery status at the end of the power-up sequence, as shown in Figure 1.



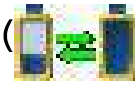
GPU102.EPS

Figure 1. LEDs Show the Remote's Battery Status

To see more information about a remote's battery status

1 Make the connections shown in Figure 2 and turn on both testers.

2 For CertiFiber Pro testers, select **Smart Remote** or **Loopback** mode.

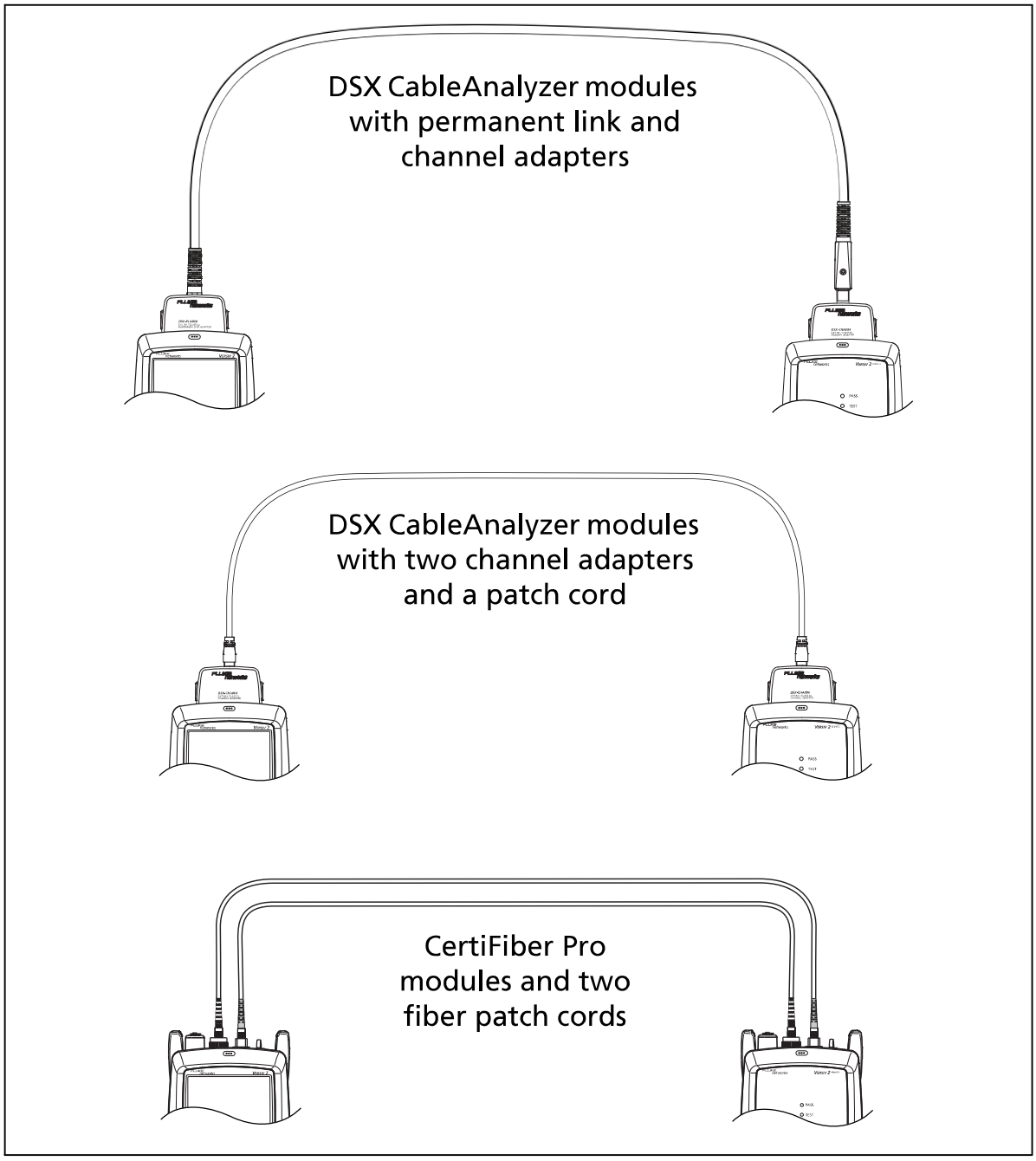
3 Make sure the connection icon shows at the top of the screen ().

4 Tap **TOOLS**, then tap **Battery Status**.

When the AC adapter is not connected, the screen shows the **Time Remaining**, which is the approximate battery life at the present rate of use.

Verify Operation

The tester does a self test when you turn it on. If the tester shows an error or does not turn on, refer to "If the Tester Does Not Operate as Usual" on page 367.



GPU148.EPS

Figure 2. Connections to See the Status of a Remote's Battery

How to Use the Touchscreen

The main tester's Taptive™ user interface lets you use a touchscreen to control the tester. You can operate the touchscreen with your fingertip or with a stylus that is made for projected capacitance touchscreens.

⚠ Caution

For correct operation and to prevent damage to the touchscreen:

- **Touch the screen only with your fingers or with a stylus that is made for projected capacitance touchscreens. Do not use too much force.**
- **Do not touch the screen with sharp objects.**

Note

The touchscreen will not respond if you tap it with your fingernail or an incorrect type of stylus or if you wear non-conductive gloves.

To use the touchscreen

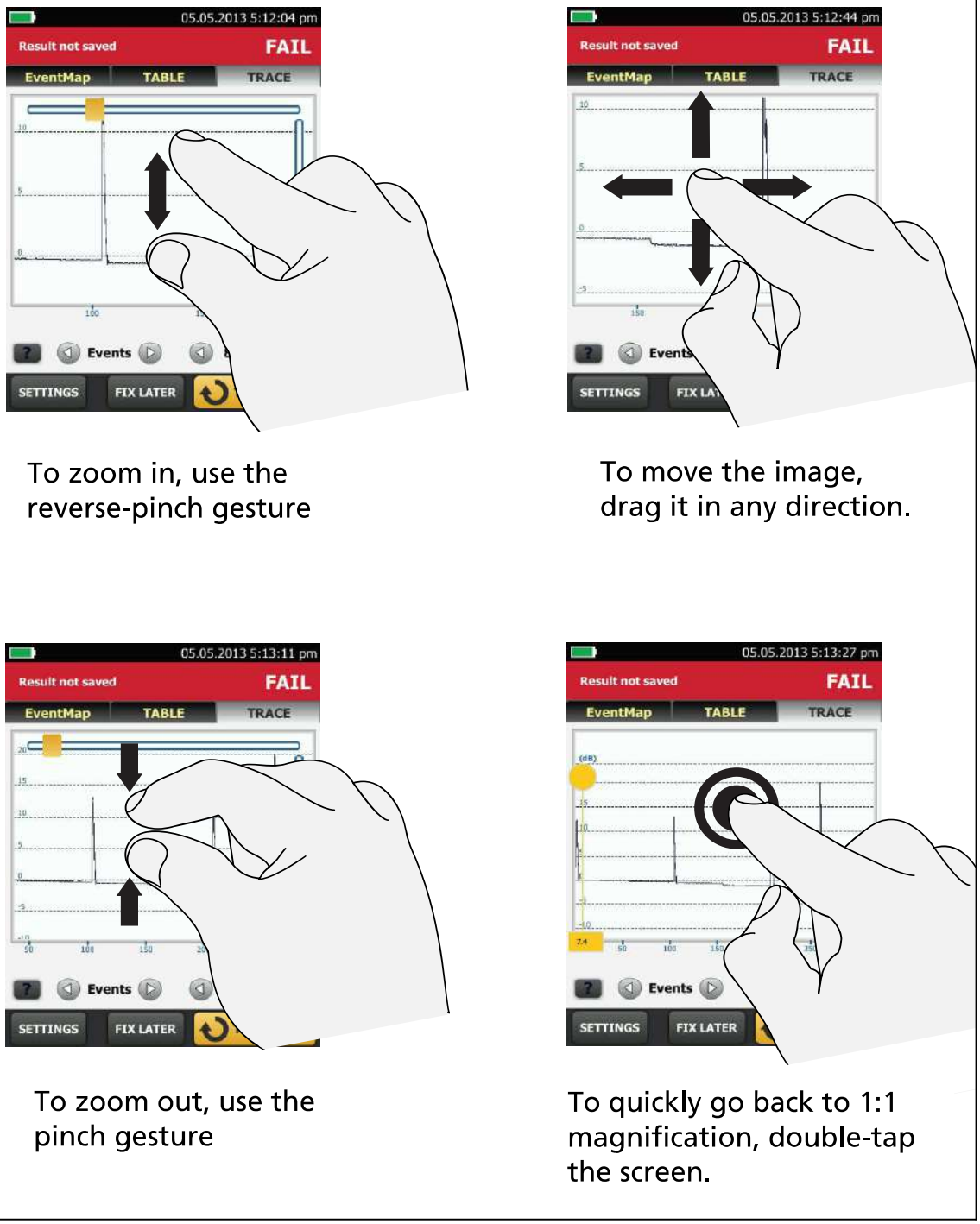
- To select an item on the screen, tap the item lightly with your fingertip.
- To scroll a screen, lightly touch the screen then move your fingertip in the direction you want the screen to move.
- On screens that show a plot, trace, or FiberInspector image, you can drag some items, such as the measurement cursor on a plot or trace or the image on a FiberInspector screen. These screens also have a zoom function, as shown in Figure 3.

To clean the touchscreen

Turn off the tester, then use a soft, lint-free cloth that is moist with a mild detergent.

⚠ Caution

When you clean the touchscreen, do not let liquid get under the plastic around the touchscreen.



GPU45.EPS

Figure 3. How to Zoom the Screen

Change the Language

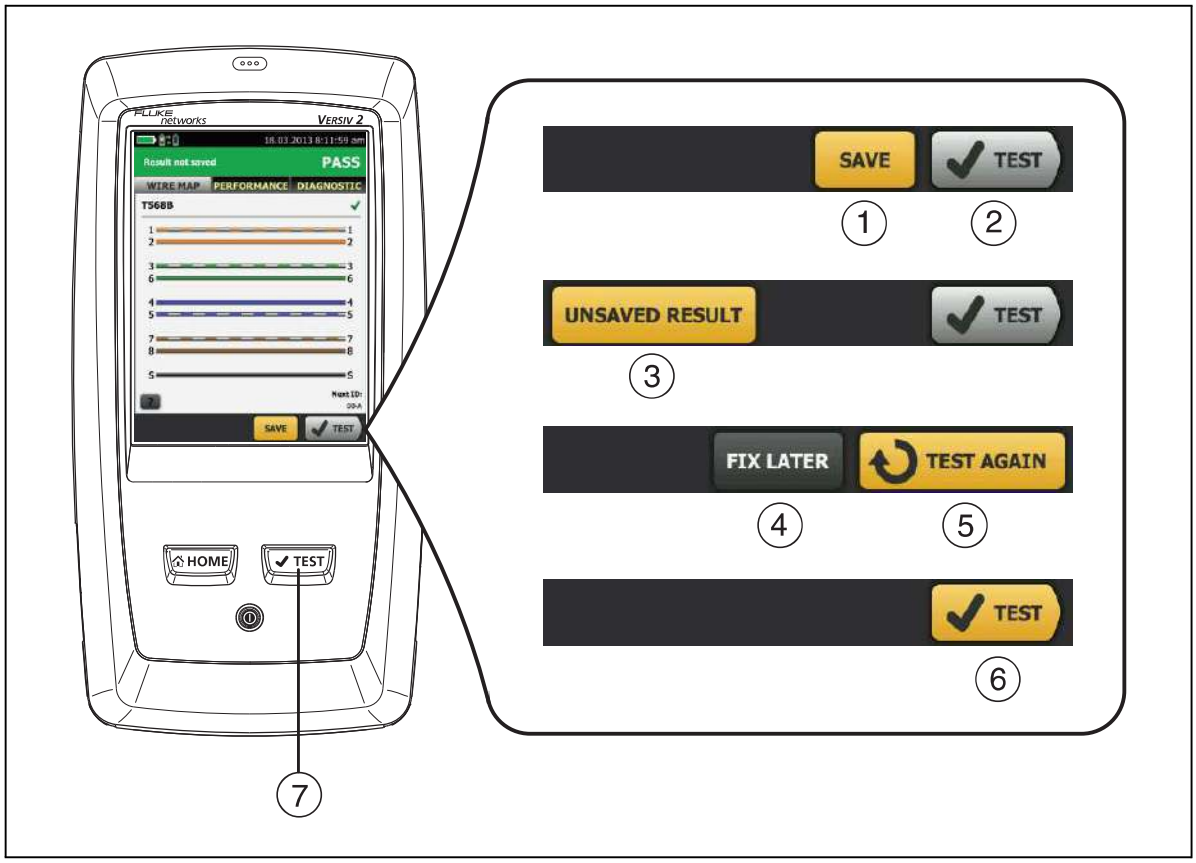
On the home screen, tap the **TOOLS** icon, tap **Language**, then tap a language.

Buttons to Do Tests and Save Results

When a test is completed and more than one button shows at the bottom of the screen, the tester highlights one in yellow to recommend which one to tap. Figure 4 shows the buttons you will see.

Note

*To change the **Auto Save** setting, tap the **Next ID** panel on the home screen.*



GPU40.EPS

Figure 4. FIX LATER, TEST AGAIN, and TEST Buttons and the TEST Key

① **SAVE** (yellow), ② **TEST** (gray): These buttons show if the test passed and **Auto Save** is off. When you tap **SAVE**, you can save the results with an ID that you make or select. When you tap **TEST**, you can select to save the results or do the test again and not save the results.

③ **UNSAVED RESULT**: This button shows if **Auto Save** is off and you go to the home screen when a test is completed. Tap this button to see the result.

④ **FIX LATER:** This button shows if the test failed or had a PASS* result and the result has not been saved.

⑤ **TEST AGAIN:** This button shows if the test failed or had a PASS* result. Tap this button to do the test again. If **Auto Save** is on, the tester saves subsequent results with the same ID. If the test fails again, you can tap FIX LATER to save the result if necessary.

When you look at a saved result that failed, tap **TEST AGAIN** to do the test again for the same ID and with the same test settings as the saved result.

⑥ **TEST** (yellow): This button shows if the test passed and **Auto Save** is on. When **Auto Save** is on, the tester saves results with the next available ID when the test is completed. When you tap **TEST**, the tester does a test for the next available ID.

⑦ ✔TEST: The ✔TEST key does the same function as the TEST button. When TEST AGAIN shows, you can press ✔TEST to do a test on the next ID.

Options for Cable IDs

When you save the test results for a cable, you usually give the results the name that is the ID for the cable. There are several methods you can use to make IDs for test results:

- You can use the **CABLE ID SETUP** screen to make a set of sequential IDs. The tester uses the IDs in sequence as the names for the results you save. When **Auto Save** is on, the tester automatically saves each result with the next available ID in the set.

  A cable ID set also lets you use IDs again so you can add different results to tests you saved before.

- You can enter an ID each time you do a test. To do this, turn off the **Auto Save** function (see page 26). Each time a test is completed, tap **SAVE** (if the test passed) or **FIX LATER** (if the test failed), then enter an ID manually.

- You can use LinkWare PC software to make a set of IDs, download the set to the tester, then import it into a project.

- After you do a test, you can enter the ID for a test you saved before. This lets you replace results or add different results to a test you saved before.

- If the test failed before, and you saved the results, you can select it on the **RESULTS** screen, then press **TEST AGAIN** to replace the results for that ID.

Notes

Cable IDs are case-sensitive. For example, the tester saves result with the names "A0" and "a0" in two different records.

A cable ID can have a maximum of 60 characters.

If you delete all the ID sets in a project, the tester makes a default set that starts with 001.

To turn the Auto Save function on or off

1 On the home screen, tap the **Next ID** panel.

2 On the **CHANGE ID** screen, tap the **On/Off** control next to **Auto Save.**

3 Tap **DONE.**

How to Install a Strap

Two types of straps are available for the tester: a hand strap that helps you hold the tester, and an optional carrying strap that lets you carry and hang the tester. Figure 5 shows how to install a strap and how to use the hand strap.

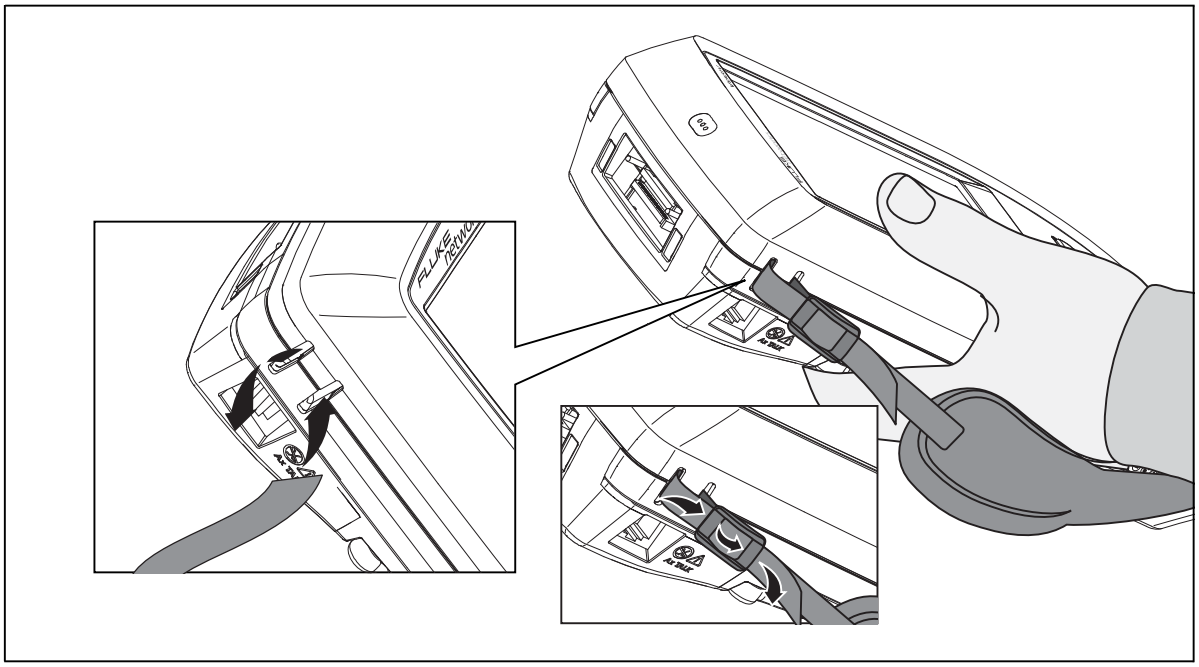


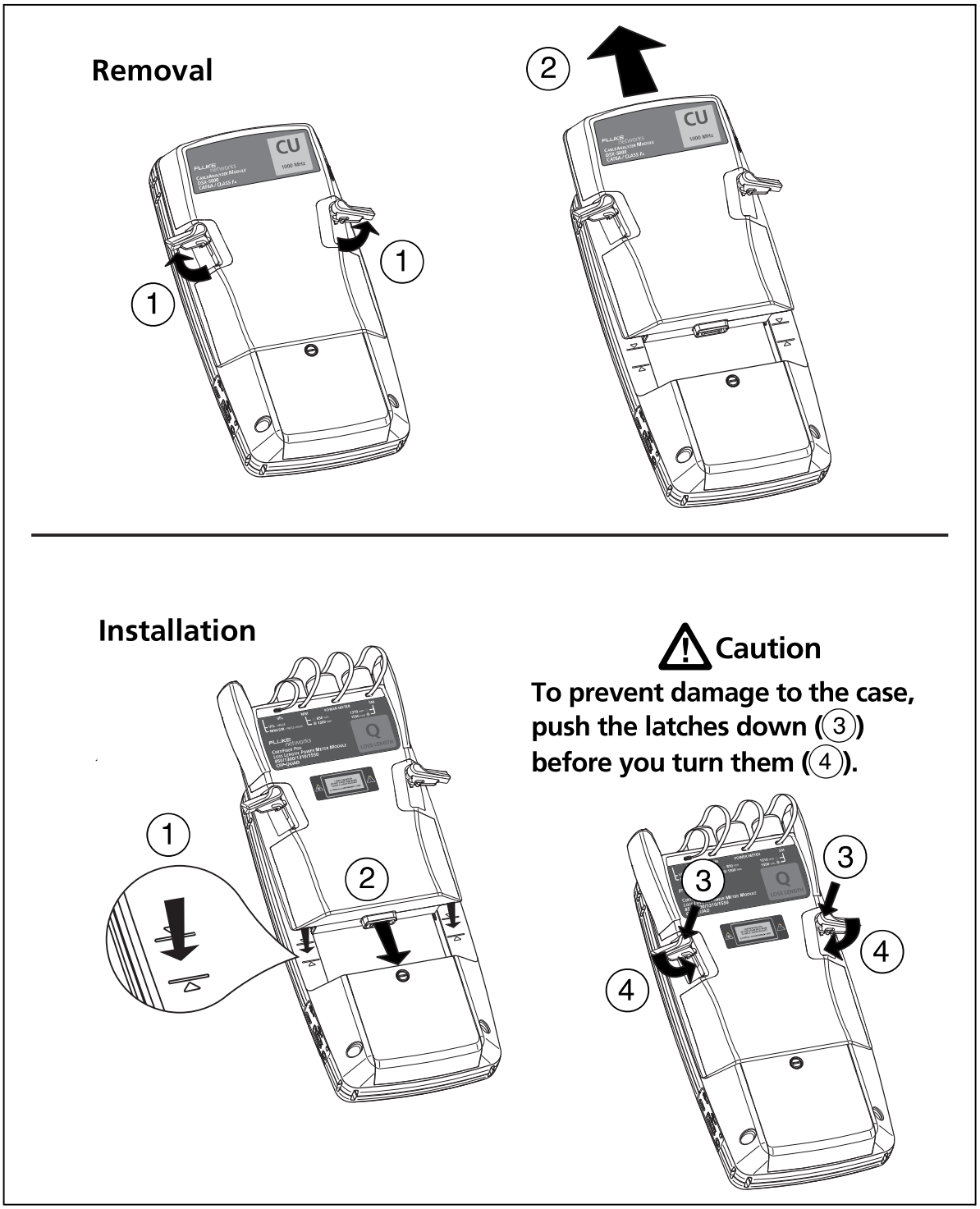
Figure 5. How to Install a Strap and Use the Hand Strap

How to Remove or Install a Module

Figure 6 shows how to remove and install the module.

Note

It is not necessary to turn off the tester before you remove or install a module.



GPU20.EPS

Figure 6. How to Remove and Install a Module

About LinkWare Applications

LinkWare PC Cable Test Management Software

The LinkWare PC Cable Test Management software lets you upload test records to a PC, organize and examine test results, print professional-quality test reports, and do software updates and other maintenance procedures on your tester.

You can download LinkWare PC from the Fluke Networks website.

The LinkWare Live Web Application

The LinkWare Live web application lets you manage your projects from a desktop or mobile device.

To get started with LinkWare Live, see Chapter 14.

LinkWare Stats

The LinkWare Stats Statistical Report software that is included with LinkWare PC software provides statistical analysis of cable test reports and generates browsable, graphical reports.

For instructions about LinkWare PC and LinkWare Stats software, see the guides for getting started and the online help available under **Help** on the LinkWare PC and LinkWare Stats menus.

Chapter 2: Certify Twisted Pair Cabling

⚠ Warning ⚠

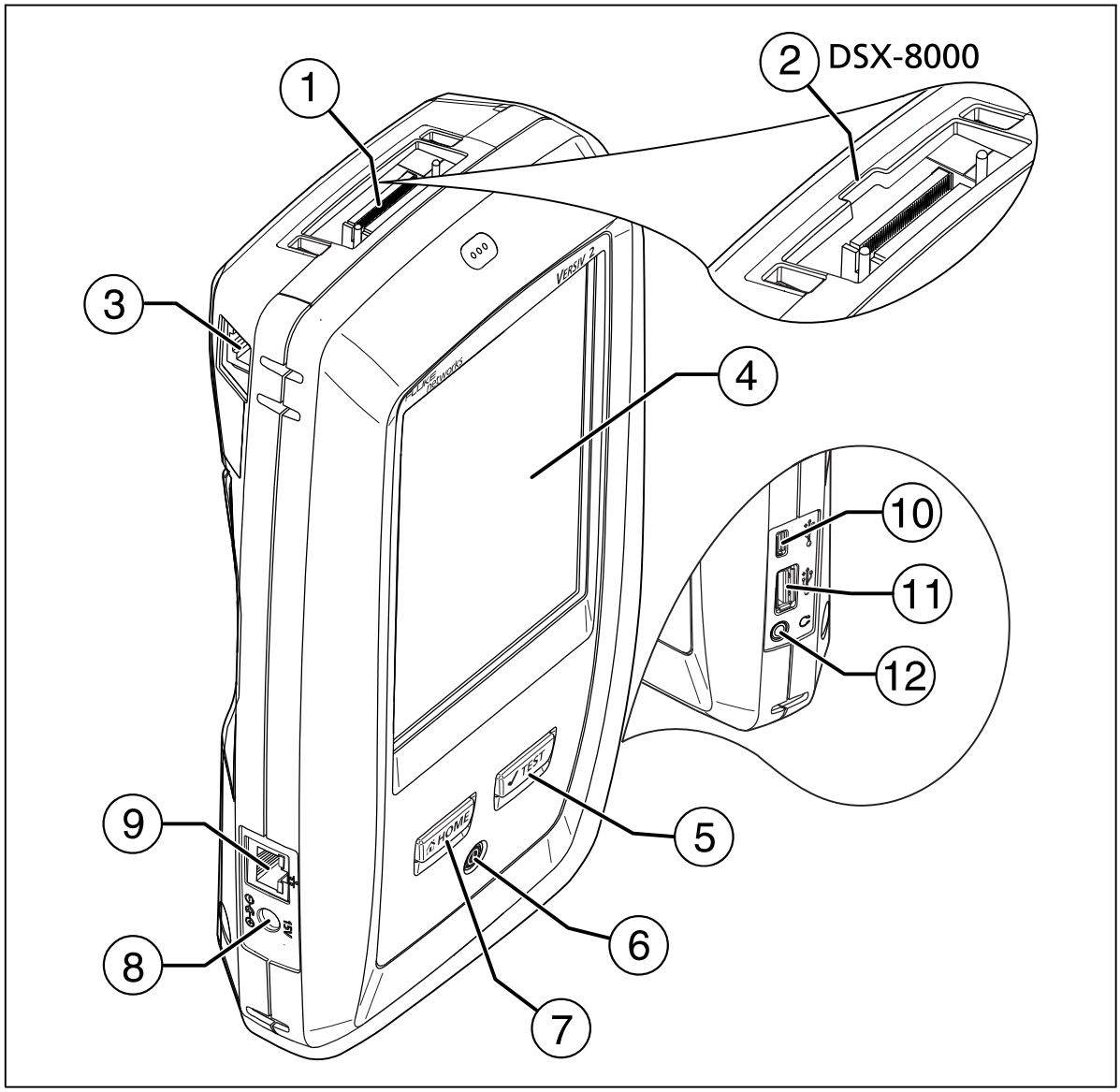
Before you use the DSX CableAnalyzer, read the safety information that starts on page 6.

Overview of Features

The Fluke Networks DSX CableAnalyzer™ modules attach to Versiv and Versiv™ 2 main and remote units to make rugged, hand-held testers that let you certify, troubleshoot, and document twisted pair network cabling. The testers includes these features:

- DSX-8000 modules certify twisted pair cabling to Cat 8/Class I/II limits (2000 MHz) in less than 16 seconds.
- DSX-5000 modules certify twisted pair cabling to Cat 7_A/Class F_A limits (1000 MHz) in less than 16 seconds.
- Gives a **PASS** or **FAIL** result based on a test limit that you specify.
- AxTalk software, which is available on the Fluke Networks website, lets you do tests for alien crosstalk.

Connectors, Keys, and LEDs



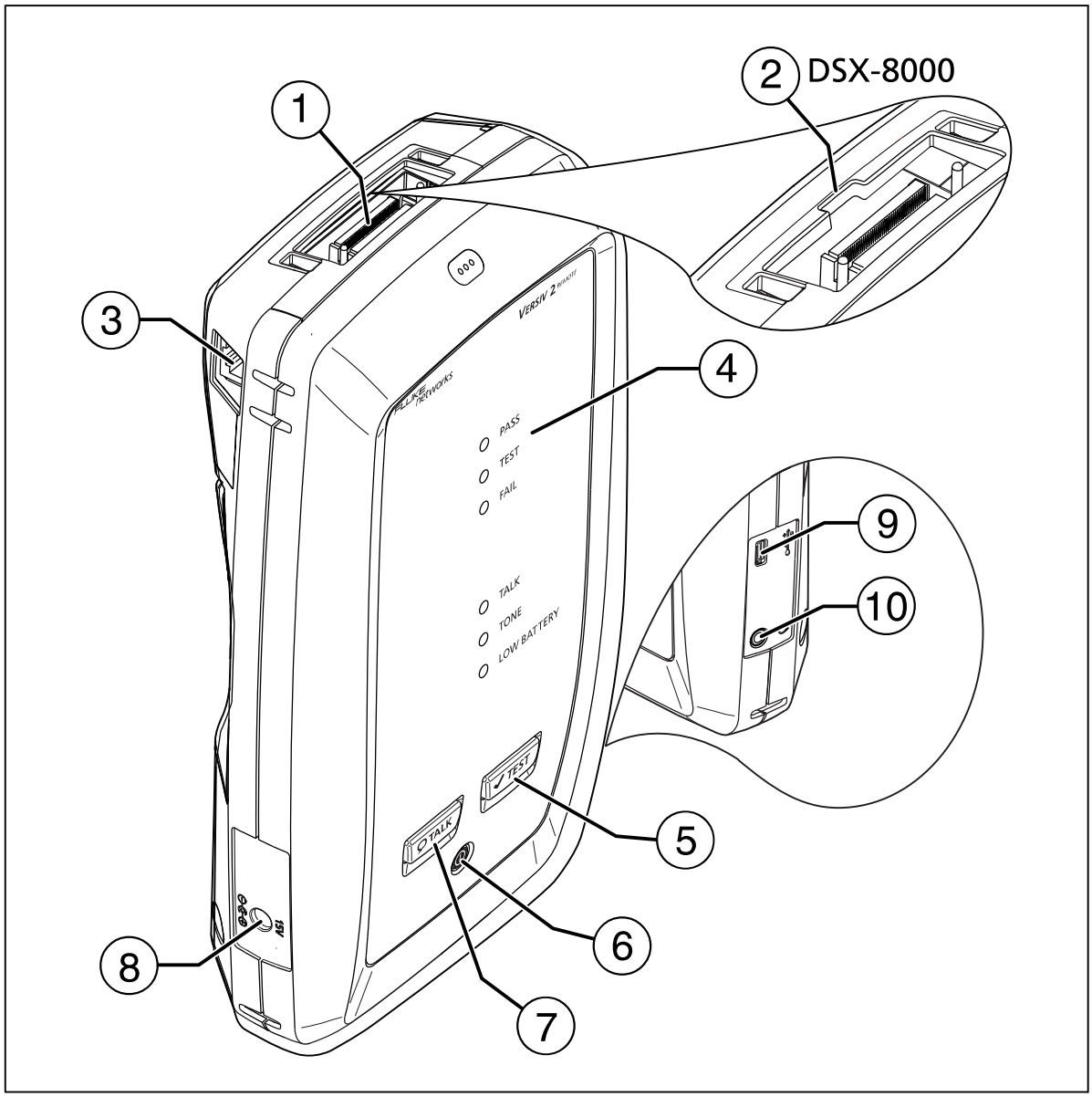
GPU88.EPS

Figure 7. Main Tester Connectors, Keys, and LEDs (Versiv 2 shown)

1. Connector for a link interface adapter
2. DSX-8000 modules have a recess for the tabs on Cat 8/Class I/II adapters. You cannot attach Cat 8/Class I/II adapters to DSX-5000 modules.
3. RJ45 jack for communications between the main and remote testers when you do alien crosstalk measurements. See "About the AxTalk Analyzer Kit" on page 73.
4. LCD display with touchscreen
5. TEST: Starts a test. Turns on the tone generator if a remote tester is not connected to the main tester. To start a test, you can also tap **TEST** on the display.
6. ⏻: Power button. Versiv 2: The LED in the button shows the status of the battery charging process. See Table 2 on page 15.
7. HOME: Press HOME to go to the home screen.
8. Connector for the AC adapter. Versiv: The LED is red when the battery charges, and green when the battery is fully charged. The LED is yellow if the battery will not charge. See "Charge the Battery" on page 14.
9. RJ45 connector: Lets you connect to a network for access to Fluke Networks cloud services.
10. Micro USB port: This USB port lets you connect the tester to a PC so you can upload test results to the PC and install software updates in the tester.
11. Type A USB port: This USB host port lets you save test results on a USB flash drive and connect the FiberInspector Pro video probe to the tester. On a Versiv main tester, this port lets you or connect a Wi-Fi adapter for access to the Fluke Networks cloud service LinkWare Live. (Versiv 2 testers have an internal Wi-Fi radio.)
12. Headset jack

Note

If you have two main testers, you can use one as a remote. To select the remote function, tap ***TOOLS*** *>* ***Main as Remote****.*



GPU42.EPS

Figure 8. Remote Tester Connectors, Keys, and LEDs (Versiv 2 shown)

① Connector for a link interface adapter

② DSX-8000 modules have a recess for the tabs on Cat 8/Class I adapters. You cannot attach Cat 8/Class I adapters to DSX-5000 modules.

③ RJ45 jack for communications between the main and remote testers when you do alien crosstalk measurements. See "About the AxTalk Analyzer Kit" on page 73.

④ **PASS** LED comes on when a test passes.

TEST LED comes on during a test.

FAIL LED comes on when a test fails.

TALK LED comes on when the talk function is on (⑦). The LED flashes until the main tester accepts the request to talk.

TONE LED flashes and the tone generator comes on if you press TEST when a main tester is not connected to the remote.

LOW BATTERY LED comes on when the battery is low.

The LEDs also have these functions:

- Battery gauge (see Figure 1 on page 17)
- Volume indicator for the **TALK** function
- Progress indicator for software updates

⑤ TEST: Starts a test. Turns on the tone generator if a main tester is not connected to the remote.

⑥ ⏻: Power button. The LED in the power button shows the status of the battery charging process. See Table 2 on page 15.

⑦ TALK: Press TALK to use the headset to speak to the person at the other end of the link. Press again to adjust the volume. To turn off the talk function, hold down TALK.

⑧ Connector for the AC adapter. Versiv: The LED is red when the battery charges, and green when the battery is fully charged. The LED is yellow if the battery will not charge. See “Charge the Battery” on page 14.

⑨ Micro USB port: This USB port lets you connect the tester to a PC so you can install software updates in the tester.

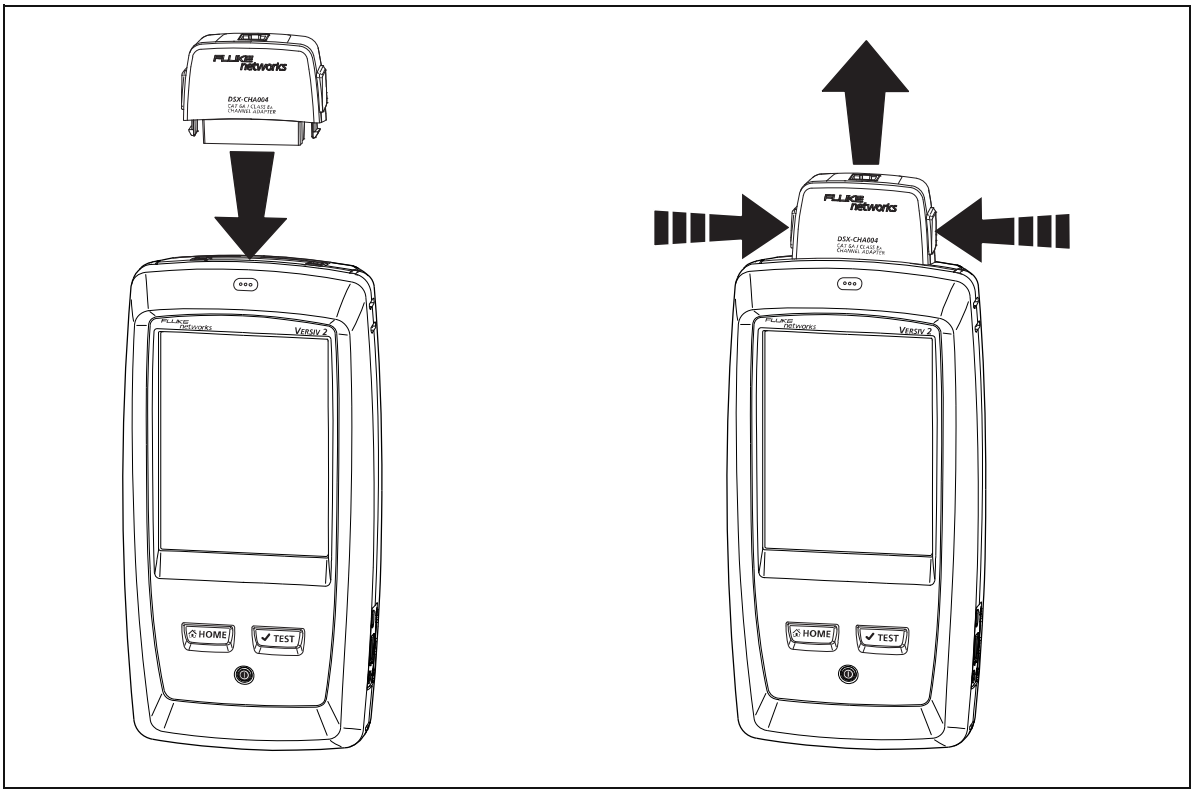
⑩ Headset jack

About Link Interface Adapters

Link interface adapters let you connect the DSX CableAnalyzer to different types of twisted pair links. Figure 9 shows how to attach and remove adapters.

⚠ Caution

To prevent damage to the cables on the permanent link adapters and to make sure your test results are as accurate as possible, do not twist, pull on, pinch, crush, or make kinks in the cables. See Figure 10 on page 36.



GPU109.EPS

Figure 9. How to Attach and Remove Link Interface Adapters

GPU108.EPS

Figure 10. How to Prevent Damage to the Permanent Link Adapter Cables

Adapters for DSX-8000 and DSX-5000 Modules

You can use adapters for test limits up to Cat 7_A/Class F_A and coaxial adapters with DSX-8000 and DSX-5000 modules. Be sure to select a test limit that is appropriate for the adapter.

Cat 8/Class I and Class II adapters, such as the DSX-PLA804 and DSX-CHA-8-GG45, have tabs that lets you attach them only to DSX-8000 modules (see 11).

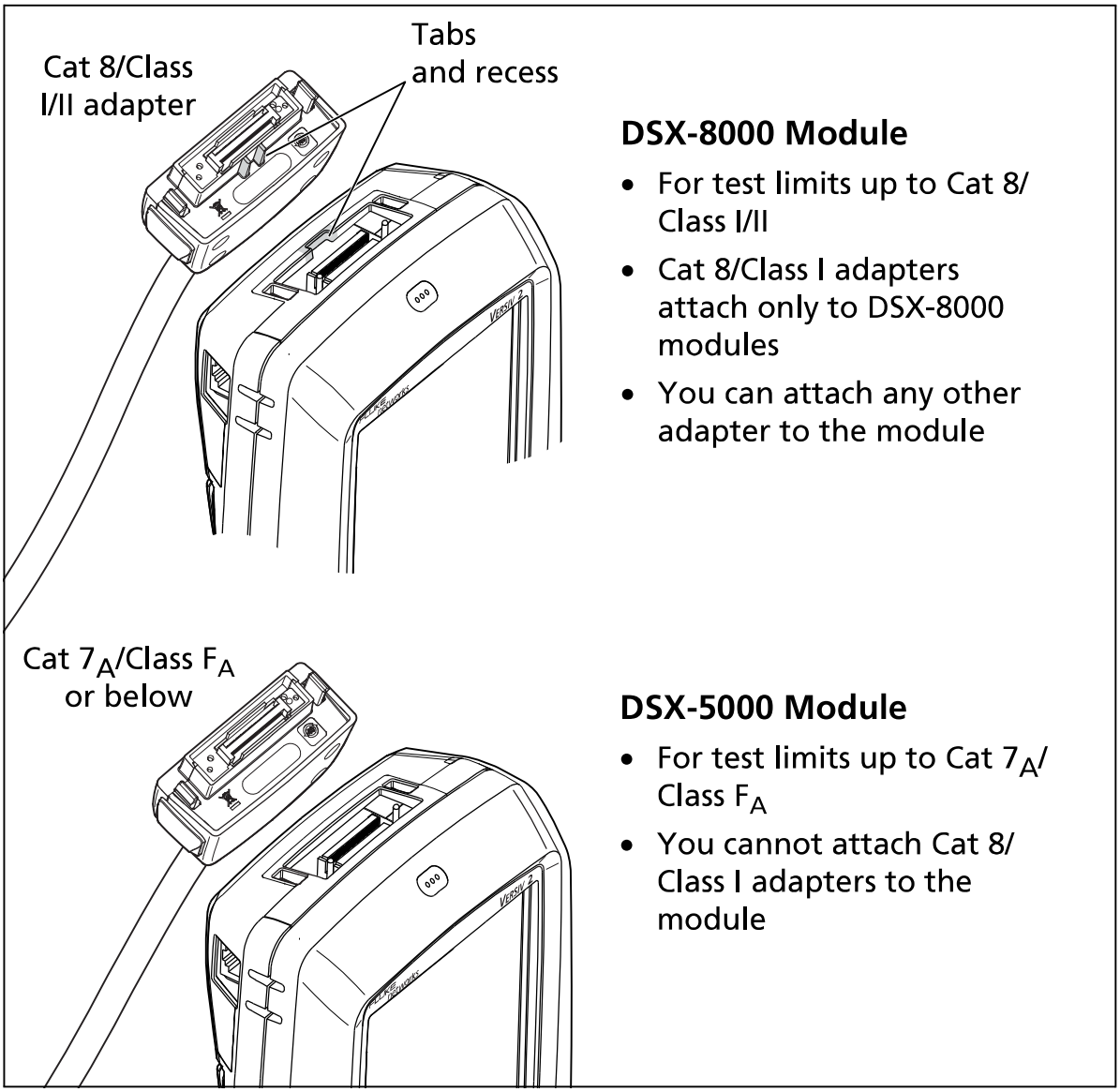


Figure 11. DSX-8000 and DSX-5000 Module and Adapter Differences

The DSX CableAnalyzer Home Screen

The home screen (Figure 12) shows important test settings. Before you do a test, make sure these settings are correct.

GPU110.EPS

Figure 12. The Home Screen for the DSX CableAnalyzer

① **PROJECT**: The project contains the settings for a job and helps you monitor the status of a job. When you save test results, the tester puts them in the project. Tap the **PROJECT** panel to edit the project settings, select a different project, or make a new project.

② Shows a summary of the test results in the project:

 : The number of tests that passed.

 : The number of tests that failed.

 : The number of tests with an overall marginal result.

③ The test setup panel shows the settings the tester will use when you tap **TEST** or press TEST. To change these settings, tap the panel.

Note

You can set up tests for any module that the tester can use, even when no module is attached.

④ Icons show the status of the **Store Plot Data** and **AC Wire Map** settings. See Table 3 on page 47.

⑤ **Next ID**: The **Next ID** panel shows the ID that the tester gives to the next test results you save.

Tap **Next ID** to do these tasks:

- Enter an ID, select a different ID in the ID set, select a different set of IDs, or make a new set. The tester adds the IDs and ID sets you make to the project that shows on the home screen.
- Turn **Auto Save** on or off.

⑥ **Operator**: The name of the person who does the job. You can enter a maximum of 20 operator names. For each operator you can also enter the email address that the operator will use as an ID to sign in to LinkWare Live.

⑦ **TOOLS**: The **TOOLS** menu lets you set the reference, see the status of the tester, and set user preferences such as the language and the display brightness.

⑧ **RESULTS**: Tap **RESULTS** to see and manage the results that are saved in the tester.

⑨ **SYNC**: Tap **SYNC** to sync projects with LinkWare Live.

⑩ **TEST**: Tap **TEST** to do the test shown in the test setup panel.

⑪ % Tested: The percentage of the project that is completed. The percentage is the number of IDs used for saved results divided by the total number of used and available IDs in the project. The number of IDs includes IDs for copper and fiber cable. Figure 128 on page 341.

% Tested does not show if your project contains only a **Next ID** list. See "About Next ID Sets" on page 340 for more information about the **Next ID** list.

⑫ The type of module attached to the main tester.

⑬  This icon shows when the tester's link interface adapter is connected to the adapter on a remote tester and the remote is turned on.

 DSX-5000 only: The arrows on the remote connection icon are orange when the main and remote use long-range communication mode. See "Long-Range Communication Mode (DSX-5000)" on page 72.

⑭  The asset management icon shows when the owner of a LinkWare Live account has enabled the asset management service on the tester. "About the Asset Management Service" on page 352.

⑮  This icon shows when the talk function is on. To use the talk function:

1. Connect the main and remote testers together through a link that has one or more good wire pairs.
2. Connect headsets to the headset jacks on the testers.
3. Press the button on one of the headset microphones or press TALK on the remote, then speak into the microphone.

Make Sure Your Tester is Ready to Certify Cabling

To make sure your tester meets its accuracy specifications, follow these guidelines:

- Keep the tester's software current. The latest software is available on the Fluke Networks website. See "Update the Software" on page 359.
- Set the reference for the twisted pair adapters every 30 days. See *Set the Reference* below.
- Make sure that you select the correct cable type for the job, and that the NVP for the cable is correct. See Table 3 on page 46.
- Make sure you select the correct test limit for the job. See Table 3 on page 46.
- Make sure the cords and connectors for all test equipment and patch cords are in good condition.
- Make sure the battery is fully charged.
- Send the modules to a Fluke Networks service center every 12 months for factory calibration.

Set the Reference

The reference procedure for twisted pair cable sets the baseline for insertion loss, ACR-F, and DC resistance measurements.

Set the reference at these times:

- When you want to use the tester with a different module. The tester can save reference values for eight different pairs of modules.
- When you attach Class F/F_A or Class I/II link interface adapters, such as the optional TERA or GG45 adapters.
- Every 30 days, at minimum. To ensure maximum accuracy of test results, set the reference daily.

To set the reference

1 Install DSX modules in the tester and the remote.

2 Turn on the tester and the remote a minimum of 5 minutes before you set the reference.

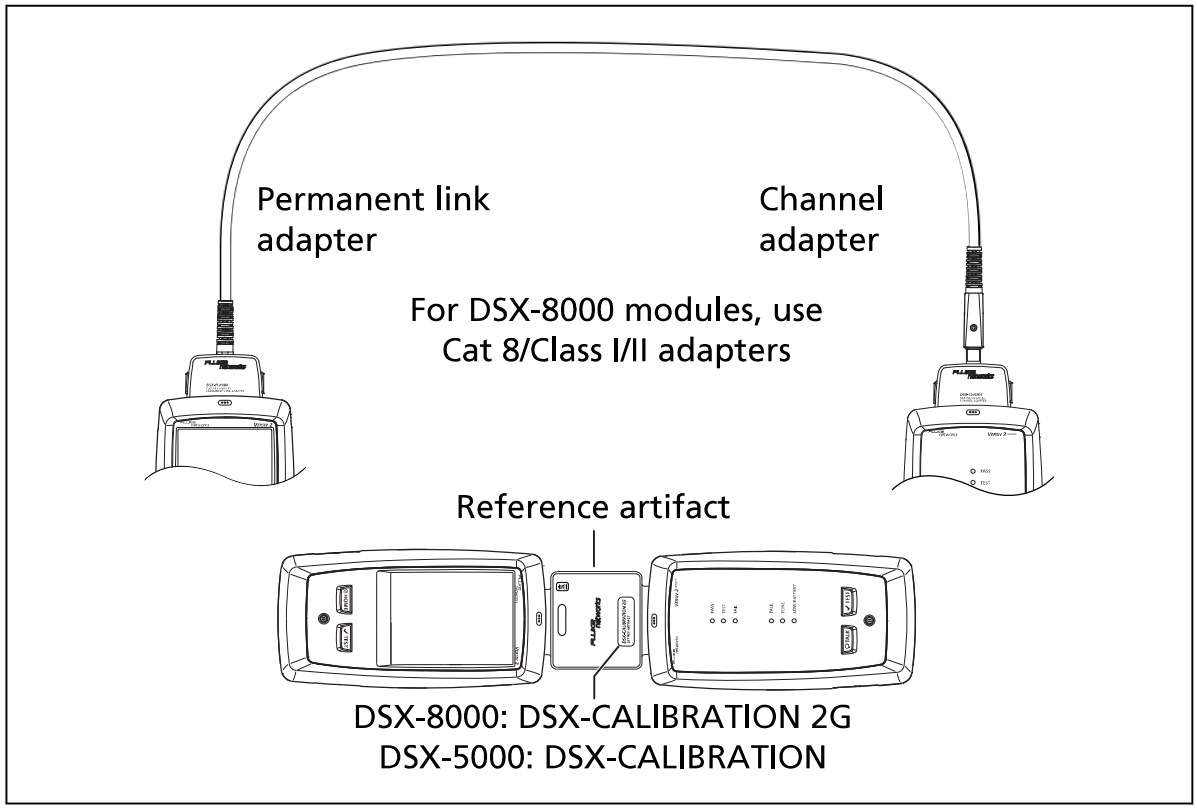
Note

Set the reference only after the testers are at an ambient temperature between 50 °F and 104 °F (10 °C and 40 °C).

3 Use the appropriate adapters or a reference artifact to connect the main and remote testers together as shown in Figure 13.

4 On the home screen, tap **TOOLS**, then tap **Set Reference**.

5 On the **SET REFERENCE** screen tap **TEST**.



GPU89.EPS

Figure 13. Reference Connections for Twisted Pair Cable

Settings for Twisted Pair Tests

Table 3 gives descriptions of the settings for twisted pair tests. To set up a project, which includes the settings in Table 3, cable IDs, and operator names, see Chapter 13.

To set up a twisted pair test

1 On the home screen, tap the test setup panel.

2 On the **CHANGE TEST** screen, select a twisted pair test to change, then tap **EDIT**.

Or to set up a new twisted pair test, tap **NEW TEST**. If no module is installed, the **MODULE** screen shows. Tap the correct copper module.

3 On the **TEST SETUP** screen, tap the panels to change settings for the test. See Table 3.

4 On the **TEST SETUP** screen, tap **SAVE** when your test setup is completed.

5 On the **CHANGE TEST** screen, make sure the button next to the test is selected, then tap **USE SELECTED**.

Table 3. Settings for Twisted Pair Tests

Setting	Description
Module	Select **DSX-8000 CableAnalyzer** or **DSX-5000 CableAnalyzer**. See Figure 11 on page 38.
Cable Type	Select a cable type that is correct for the type you will test. To see a different group of cable types, tap **MORE**, then tap a group. To make a custom cable type, tap **Custom** in the **Cable Groups** list.
NVP	Nominal velocity of propagation. The tester uses the NVP and the propagation delay to calculate the length of the cable. The default value is defined by the selected cable type and is the typical NVP for that cable type. To enter a different value, tap the **NVP** panel, then tap  or  on the **NVP** screen to increase or decrease the value. To find the actual value for a cable, connect a known length of the cable to the tester, tap **MEASURE** on the **NVP** screen, then change the NVP until the measured length matches the known length. Use a cable at least 30 m (100 ft) long. When you increase the NVP value, the calculated length increases.
Shield Test	This setting shows only when you select a shielded cable type. **On**: The wire map test includes a DC test for shield continuity and AC tests for shield quality. The wire map test fails if the shield is open or the AC test results are unsatisfactory. **Off**: The wire map shows the shield if the shield has continuity. The tester does not do AC tests for shield quality. The wire map test does not fail or show the shield if the shield is open.

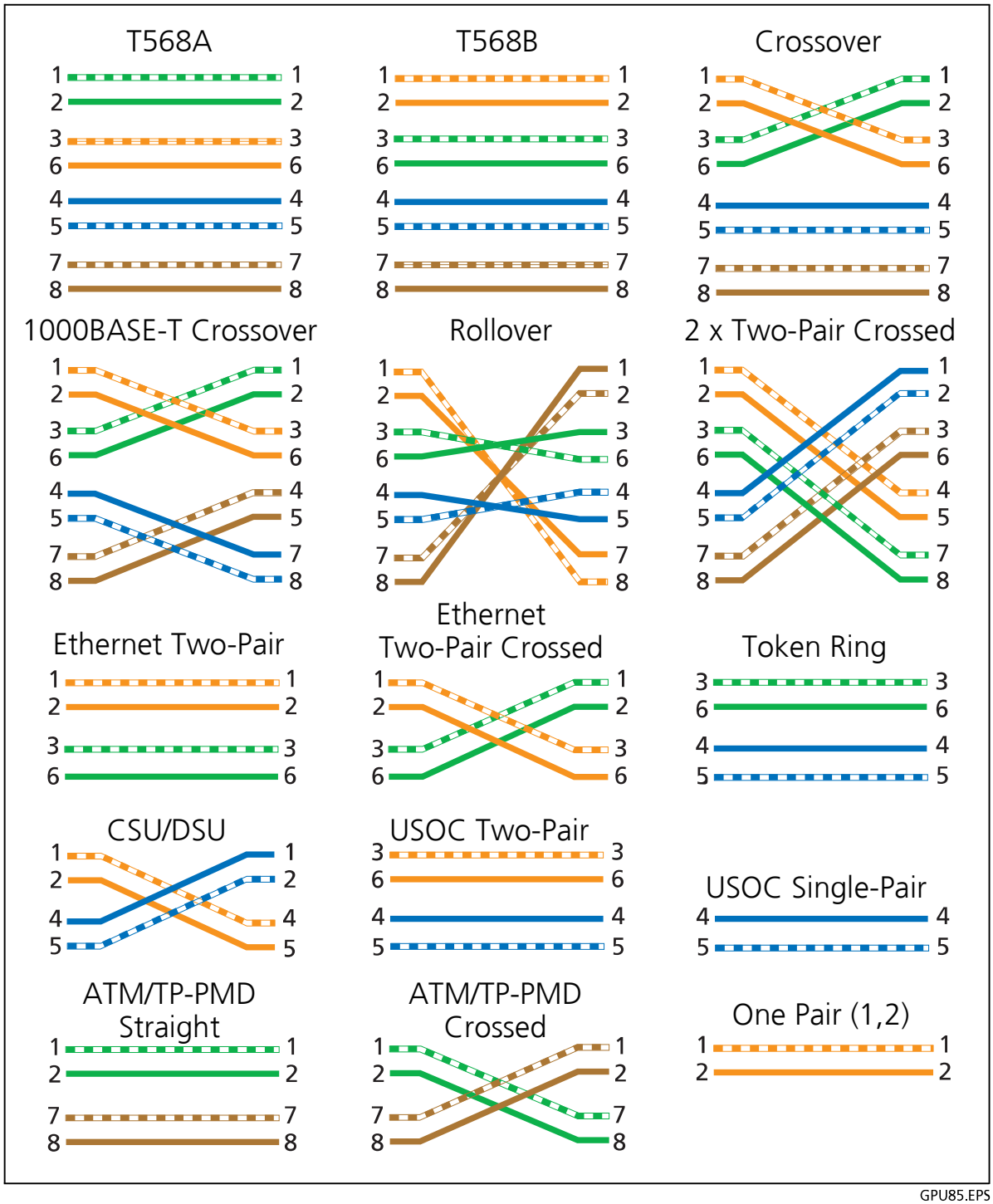
(continued)

Table 3. Settings for Twisted Pair Tests(cont.)

Test Limit	Select the correct test limit for the job. To see a different group of limits, tap **MORE**, then tap the name of a group.
Store Plot Data	**Off** : The tester does not save plot data for frequency-domain tests or for the HDTDR/HDTDX analyzers. You can see the plots before you save the test and exit the results screen. The saved results show frequency-domain measurements in a table and do not include the HDTDR/HDTDX plots. **On** : The tester saves plot data for all frequency-domain tests required by the selected test limit and for the HDTDR/HDTDX analyzers.
HDTDR/HDTDX	Fail/Pass* only: The tester shows HDTDR and HDTDX analyzer results only for Autotests with PASS*, FAIL*, or FAIL results. All Autotests: The tester shows HDTDR and HDTDX analyzer results for all Autotests. Never: The tester never shows HDTDR or HDTDX analyzer results. This setting also disables the automatic diagnostics, so the **FAULT INFO** screens never show. To get HDTDR/HDTDX analyzer results you can also tap **TOOLS** > **Diagnostics**. For more information about the HDTDR and HDTDX analyzers, see the Technical Reference Handbook.
Bi-directional	This setting shows only when you select a patch cord test limit. It is used mainly by patch cord manufacturers to make the Autotest time shorter. **On:** The tester does tests in both directions. **Off:** The tester does tests in only one direction, which decreases the Autotest time.

Table 3. Settings for Twisted Pair Tests(cont.)

Outlet Configuration	The **Outlet Configuration** specifies which wire pairs are tested and which wire numbers the wire map shows for the pairs. See Figures 14 and 15. To see the wire map for a configuration, tap **Outlet Configuration**, tap the configuration name on the **OUTLET CONFIG** screen, then tap **SAMPLE**. To select a configuration, tap a name on the **OUTLET CONFIG** screen, then tap **USE SELECTED**. *Note* *The **OUTLET CONFIG** screen shows only the configurations that are applicable to the selected **Test Limit**.* To make a custom outlet configuration, tap **CUSTOM** on the **OUTLET CONFIG** screen, then tap **MANAGE**, then tap **Create**.
AC Wire Map	The **AC Wire Map** test lets you do tests on links connected through midspan PoE (Power over Ethernet) devices. See the Technical Reference Handbook. When the **AC Wire Map** test is on, this icon shows on the home screen: ~ *Notes* *Always turn off the AC wire map test when you will not do tests through a PoE device. The AC wire map test increases the time for an Autotest. It also disables the resistance and shield continuity tests.* *The DSX-8000 modules do not support the AC wire map test.*



GPU85.EPS

Figure 14. Outlet Configurations - RJ45

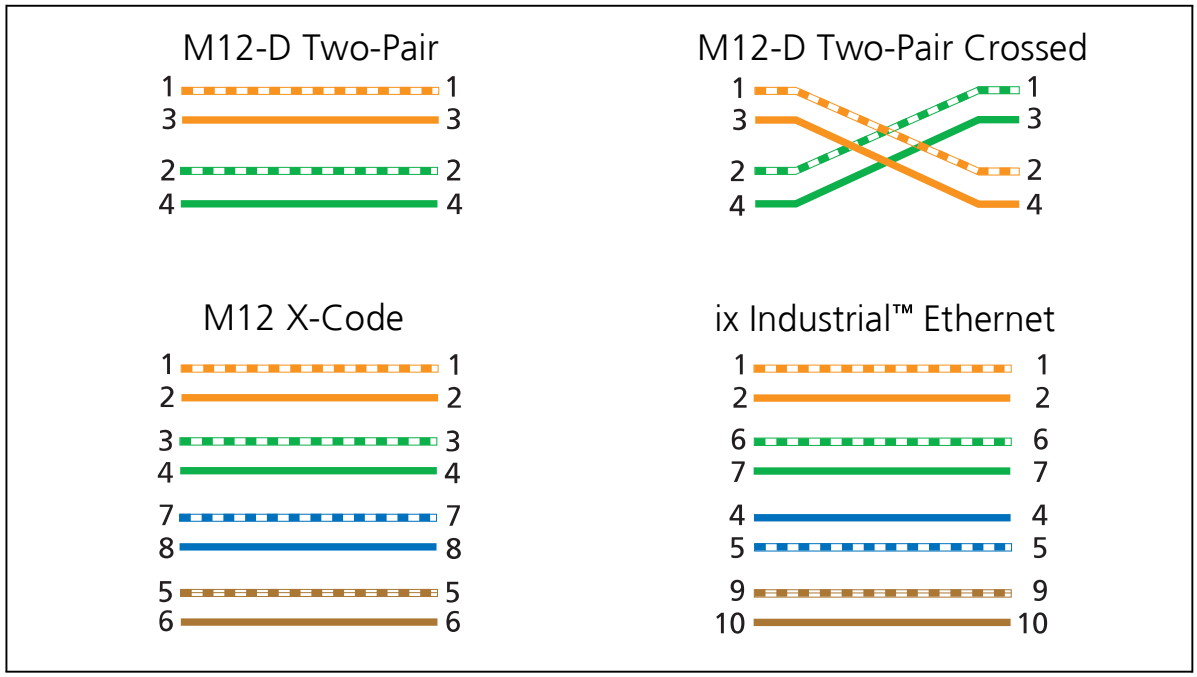
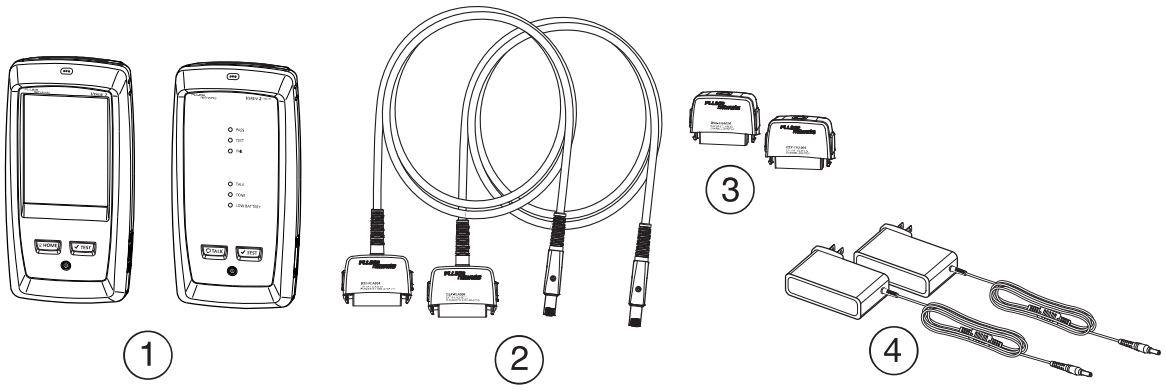


Figure 15. Outlet Configurations - Industrial Ethernet

How to Do an Autotest

When you tap **TEST** on the main tester or press TEST on the main or remote tester, the testers do an Autotest. The Autotest includes all the tests necessary to certify that the cabling meets or exceeds the performance requirements specified in the selected test limit.

Figure 16 shows the equipment for Autotests on twisted pair cable.



1. Main and remote testers with modules installed
2. For tests on permanent links: two permanent link adapters
3. For tests on channels: two channel adapters
4. AC adapters (optional)

Figure 16. Equipment for Autotests on Twisted Pair Cable

To do an Autotest on twisted pair cable

1 Attach permanent link or channel adapters to the main and remote testers.

2 Make sure that the home screen shows the correct settings for the job.

To make sure that other settings are correct, tap the test setup panel, make sure the correct test is selected on the **CHANGE TEST SCREEN**, then tap **EDIT** to see more settings. Table 3 on page 46 describes the settings.

3 Connect the testers to the link as shown in Figure 17, 18, 19, 20, or 21.

4 Tap **TEST** on the main tester or press TEST on the main or remote tester.

If the tester at the other end of the cable is in sleep mode or is off, your tester's tone generator turns on the other tester.

If the two testers are not connected:

- Your tester's tone generator stays on. Then, you can use a tone probe if necessary to find the cable to connect to the other tester.
- Or, tap **MEASURE** to do the tests that do not require a remote tester. Because the tester cannot complete all tests and some tests always fail with no remote connected, the result for an Autotest without a remote is always **FAIL**.

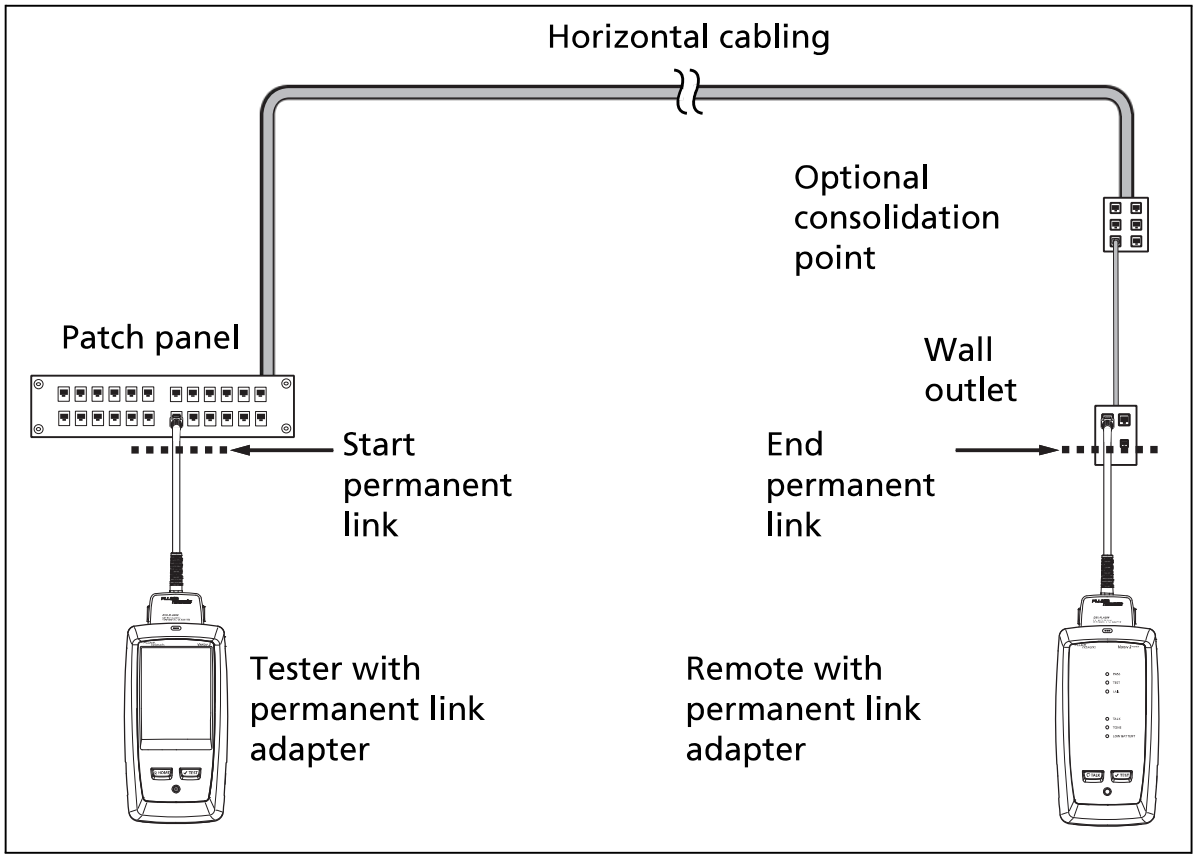


Figure 17. Permanent Link Connections for Links Up to Class F_A

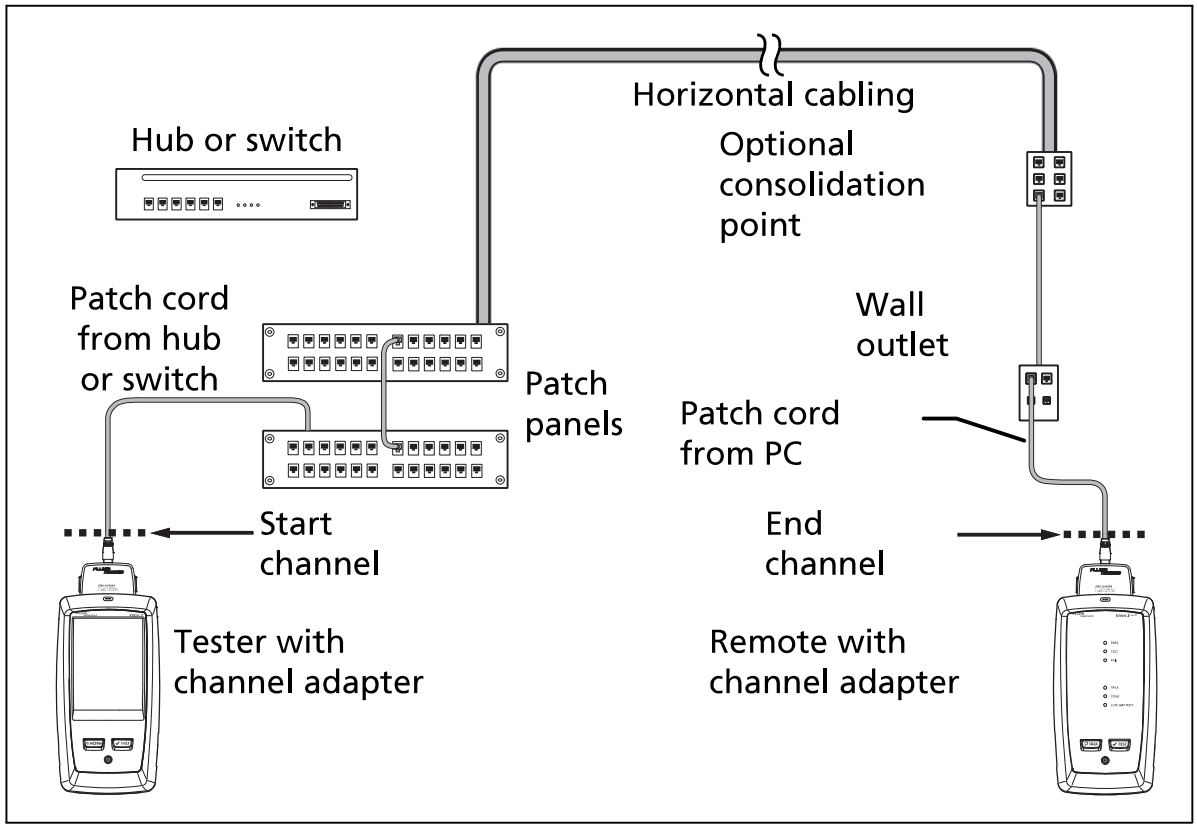


Figure 18. Channel Connections for Links Up to Class F_A

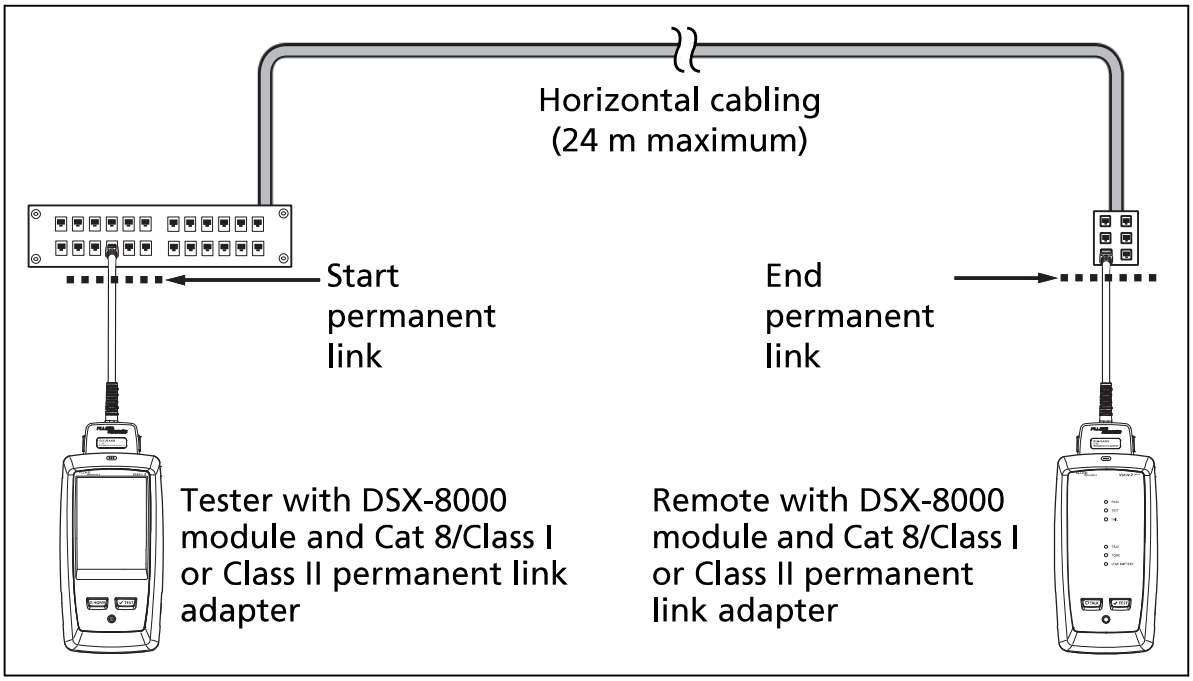


Figure 19. Permanent Link Connections for Cat 8/Class I/II Links

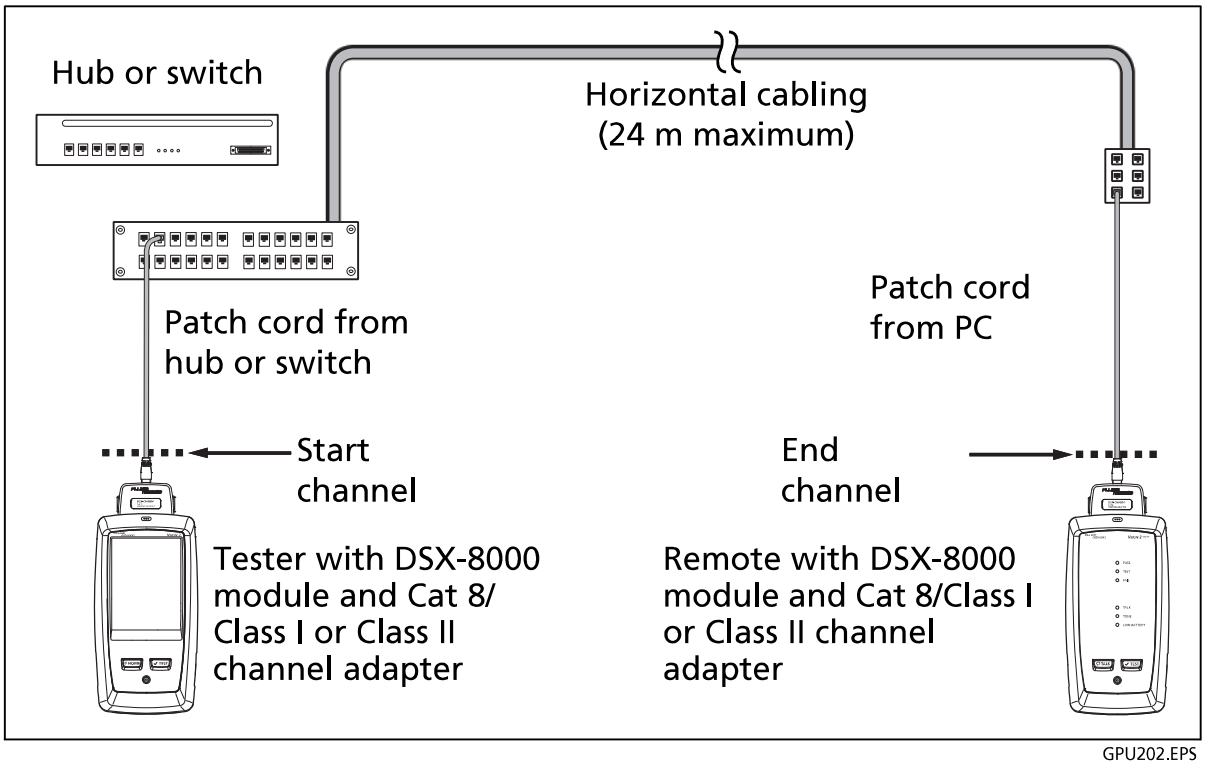


Figure 20. Channel Connections for Cat 8/Class I/II Links

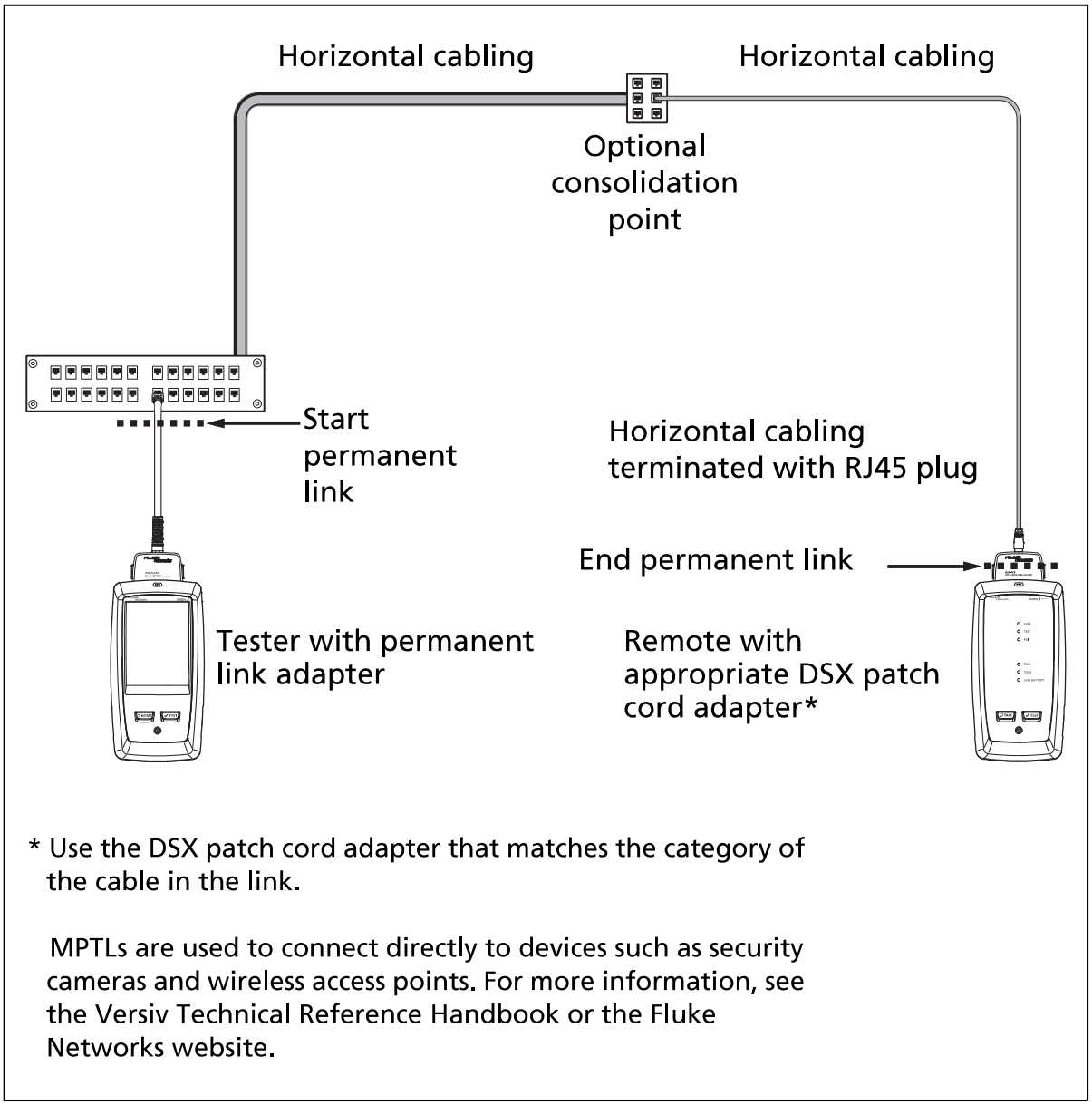


Figure 21. Connections for Modular Plug Terminated Links (MPTL)