DTX-1500

CableAnalyzer™

Users Manual

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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).

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USA

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DTX-1500 CableAnalyzer

Overview of Features

The DTX-1500 CableAnalyzers are rugged, hand-held instruments used to certify, troubleshoot, and document copper cabling installations. The testers feature the following:

- Certifies twisted pair and coaxial cabling to Cat 6A/Class E_A limits (500 MHz) in less than 10 seconds. Meets Level IIIe accuracy requirements.

- Color display clearly indicates PASS/FAIL results.

- Automatic diagnostics report distance to and likely causes of common faults.

- Toner feature helps you locate jacks and automatically starts an Autotest upon tone detection.

- Stores up to 250 Cat 6 Autotest results, including graphical data, in internal memory.

- Runs for at least 12 hours on the rechargeable lithium ion battery pack.

- LinkWare™ software lets you upload test results to a PC to create professional-quality test reports. LinkWare Stats software generates browsable, graphical reports of cable test statistics.

Note

The DTX-1500 tests only copper cabling. It is not compatible with accessories for testing fiber cabling or verifying network service.

Registration

Registering your product with Fluke Networks gives you access to valuable information on product updates, troubleshooting tips, and other support services.

To register, fill out the online registration form on the Fluke Networks website at **www.flukenetworks.com/registration**.

Contacting Fluke Networks

Note

If you contact Fluke Networks about your tester, have the tester's software and hardware version numbers available if possible.

ℹ **www.flukenetworks.com**

✉ **support@flukenetworks.com**

☎ **+1-425-446-5500**

- Australia: 61 (2) 8850-3333 or 61 (3) 9329 0244
- Beijing: 86 (10) 6512-3435
- Brazil: 11 3759 7600
- Canada: 1-800-363-5853
- Europe: +31-(0) 40 2675 600
- Hong Kong: 852 2721-3228
- Japan: 03-6714-3117
- Korea: 82 2 539-6311
- Singapore: 65-6799-5566
- Taiwan: (886) 2-227-83199
- USA: 1-800-283-5853

Visit our website for a complete list of phone numbers.

Accessing the Technical Reference Handbook

The *DTX-1500 CableAnalyzer Technical Reference Handbook* provides additional information on the tester. The handbook is available on the Fluke Networks website. Go to **www.flukenetworks.com**, click **SUPPORT** > **Manuals,** then select **DTX CableAnalyzer Series**.

Additional Resources for Cable Testing Information

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**.

Unpacking

The DTX-1500 CableAnalyzers come with the accessories listed below. If something is damaged or missing, contact the place of purchase immediately.

- DTX-1500 CableAnalyzer with lithium-ion battery pack
- DTX-1500 SmartRemote with lithium-ion battery pack
- Two Cat 6A/Class E_A channel adapters
- One 6-inch (15 cm) RJ45 reference patch cord
- Two headsets
- Carrying case
- Two carrying straps
- USB cable for PC communications
- Two ac adapters
- DTX-1500 Getting Started Guide

Certification and Compliance

CE	Conforms to relevant European Union directives.
®CSA_{US}	Conforms to relevant North American safety standards.
	Conforms to relevant Australian standards.
FC	CFR Title 47, Part 15, Subpart B

⚠ Safety Information

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

Table 1. International Electrical 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.
⊗	Do not connect this equipment to public communications networks, such as telephone systems.
🗑	Do not put products containing circuit boards into the garbage. Dispose of circuit boards in accordance with local regulations.

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⚠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 connect the tester to telephony inputs, systems, or equipment, including ISDN inputs. Doing so is a misapplication of this product, which could result in damage to the tester and create a potential shock hazard to the user.

- 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.

- Use this Product indoors only.

- Always turn on the Product before connecting it to a cable. Turning the Product on activates the tool's input protection circuitry.

- Do not connect the Product to voltages that are higher than the maximum voltage rating for the Product.

- For Products that have multiple connectors for different types of tests on copper cabling, disconnect unused test leads from the connectors before you do a test.

- 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 at temperatures above 50 °C. If the batteries are not removed, battery leakage can damage 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 sunlight.

- 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.

- Have an approved technician repair the Product.

- Do not put metal objects into connectors.

- For Products with rechargeable batteries, use only AC adapters approved by Fluke Networks for use with the Product to supply power to the Product and charge the battery.

⚠Caution

To avoid disrupting network operation, to avoid damaging the tester or cables under test, to avoid data loss, and to ensure maximum accuracy of test results:

- Never connect the tester to an active network. Doing so may disrupt network operation.

- Never attempt to insert any connector other than an 8-pin modular (RJ45) connector into an adapter's jack. Inserting other connectors, such as RJ11 (telephone) connectors, can permanently damage the jack.

- Never operate portable transmitting devices, such as walkie-talkies and cell phones, during a cable test. Doing so might cause erroneous test results.

- To ensure maximum accuracy of copper cable test results, perform the reference procedure every 30 days as described under "Setting the Reference".

- Leave the module bay covers in place. See page 8.

Getting Acquainted

The following sections introduce the tester's basic features.

Physical Features

Figures 1 and 2 describe the tester's features. Figure 3 describes the smart remote's features.
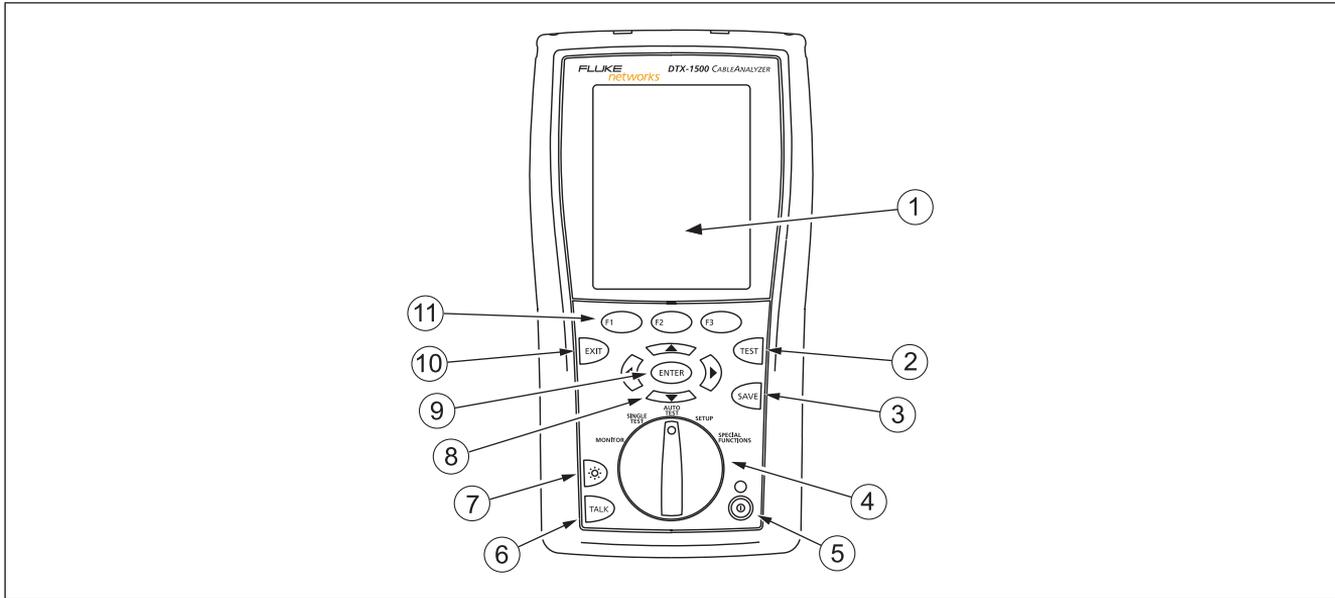

X29.EPS

Figure 1. Tester Front Panel Features

① LCD display with backlight and adjustable brightness.

② ⌜TEST⌟ : Starts the currently selected test. Activates the tone generator for twisted pair cabling if no smart remote is detected. The test starts when both testers are connected.

③ ⌜SAVE⌟ : Saves Autotest results in memory.

④ Rotary switch selects the tester's modes.

⑤ ⓪: On/off key.

⑥ ⌜TALK⌟ : Press to use the headset to talk to the person at the other end of the link.

⑦ ⌜☼⌟: Press to switch the backlight between bright and dim settings. Hold for 1 second to adjust the display contrast.

⑧ ⌜◁ ▷⌟ ⌜▵⌟ ⌜▿⌟: Arrow keys for navigating through screens and incrementing or decrementing alphanumeric values.

⑨ ⌜ENTER⌟: Enter key selects the highlighted item from a menu.

⑩ ⌜EXIT⌟: Exits the current screen without saving changes.

⑪ ⌜F1⌟ ⌜F2⌟ ⌜F3⌟: The softkeys provide functions related to the current screen. The functions are shown on the screen above the keys.

Figure 1. Tester Front Panel Features (cont.)
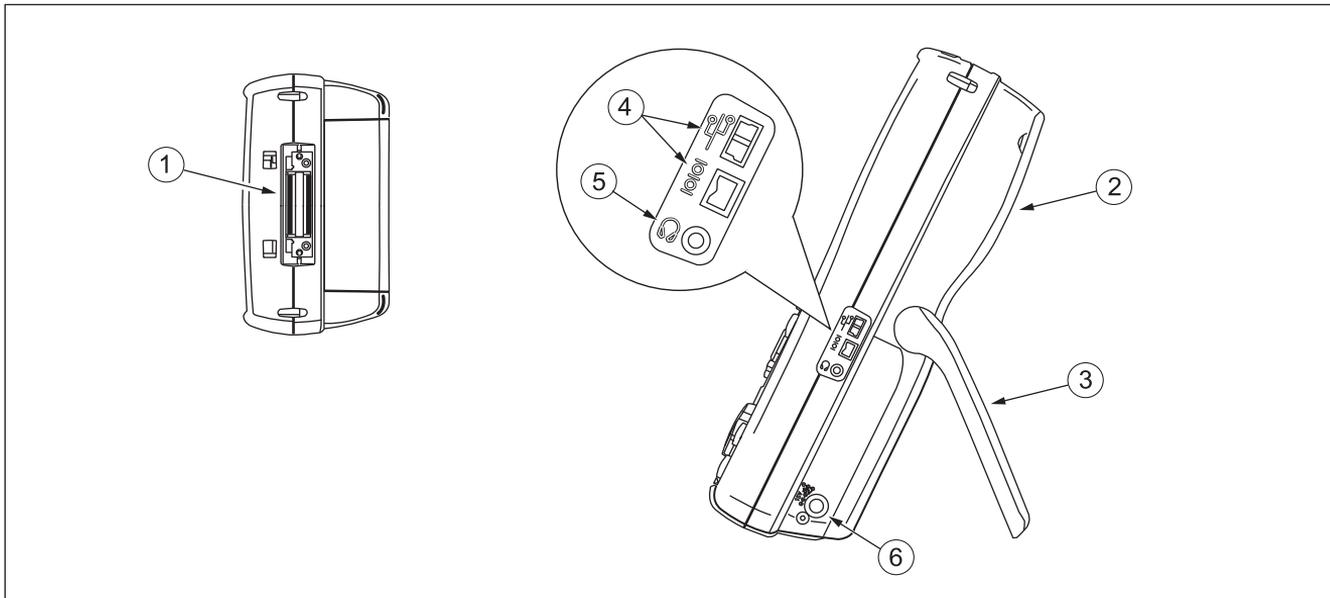
X33.EPS

Figure 2. Tester Side and Top Panel Features

1. Connector for twisted pair interface adapters.

2. Cover for the module bay. Leave the cover in place.

3. Bail.

4.

5. USB (⌨) and RS-232C (‖◎‖◎‖): Ports for uploading test reports to a PC and updating the tester's software. The RS-232C port uses a custom DTX cable available from Fluke Networks.

6. Headset jack for talk mode.

7. Connector for the ac adapter. The LED turns on when the tester is connected to ac power.
   - Red: Battery is charging.
   - Green: Battery is charged.
   - Flashing red: Charge timeout. The battery failed to reach full charge within 6 hours. See "Powering the Tester" on page 12.

Figure 2. Tester Side and Top Panel Features (cont.)

X30.EPS

Figure 3. Smart Remote Features

⚠ Caution

All the LEDs flash if the smart remote detects excessive voltage on the cable. Unplug the cable immediately if this occurs.

Note

The LEDs also act as a battery gauge. See Figure 13 on page 13.
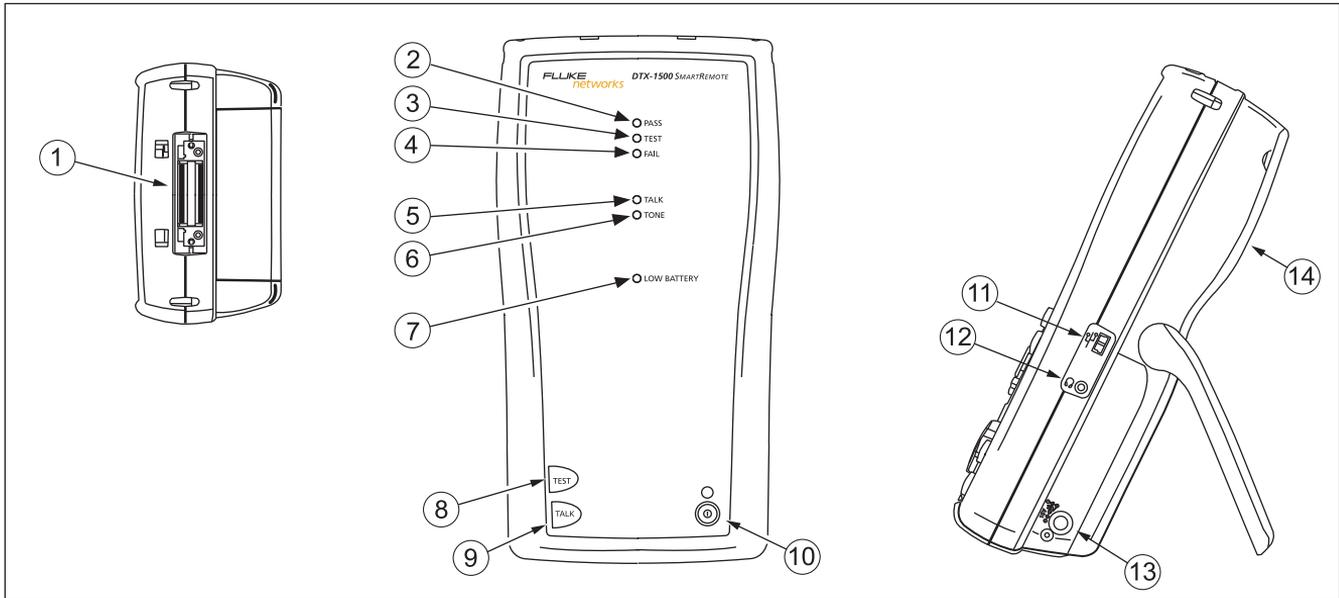
1. Connector for twisted pair interface adapters.

2. Pass LED lights when a test passes.

3. Test LED lights during cable tests.

4. Fail LED lights when a test fails.

5. Talk LED lights when the smart remote is in talk mode. Press TALK to adjust the volume.

6. Tone LED lights and the tone generator turns on when you press TEST, but the main tester is not connected.

7. Low battery LED lights when the battery is low.

8. TEST : Starts the test currently selected on the main unit. Activates the tone generator for twisted pair cabling if no main tester is detected. The test starts when both testers are connected.

9. TALK : Press to use the headset to talk to the person at the other end of the link. Press again to adjust the volume. Press and hold to exit talk mode.

10. ⓪: On/off key.

11. USB port for updating the tester's software with a PC.

12. Headset jack for talk mode.

13. Connector for the ac adapter, as described in Figure 2.

14. Cover for the module bay. Leave the cover in place.

Figure 3. Smart Remote Features (cont.)

Powering the Tester

- You may charge the battery when it is attached or detached from the tester. Figure 4 shows how to remove the battery.

- The battery charges fully in about 4 hours with the tester off. A fully-charged battery lasts for at least 12 hours of typical use.

    Note

    The battery will not charge at temperatures outside of 0 °C to 45 °C (32 °F to 113 °F). The battery charges at a reduced rate between 40 °C and 45 °C (104 °F and 113 °F).

- The battery status icon (▇) near the upper-right corner of main screens shows the battery's charge level. The smart remote's LEDs show the smart remote's battery status at the end of the power-up cycle, as shown in Figure 5.

- For additional battery information, connect the main tester and smart remote through link adapters, turn the rotary switch to **SPECIAL FUNCTIONS**; then select **Battery Status**. See page 45 for information on retraining the battery gauge.

- If the battery does not reach full charge within 6 hours, the battery LED flashes red. Verify that the battery was within the temperature range given above during charging and that the correct ac adapter was used. Disconnect then reconnect ac power and try charging the battery again. If the battery does not charge the second time, retrain the battery gauge. See page 45.

Localizing the Tester

Local settings include **Language**, **Date**, **Time**, **Numeric Format**, **Length Units**, and **Power Line Frequency**.

1   Turn the rotary switch to **SETUP**.

2   Use ⬥ to highlight **Instrument Settings** at the bottom of the list; then press (ENTER).

3   Use 🔘 and ⬥ to find and highlight **Language** on the bottom of tab **2**; then press (ENTER).

4   Use ⬥ to highlight the desired language; then press (ENTER).

5   Use the arrow keys and (ENTER) to find and change other local settings on tabs **2**, **3**, and **4** under **Instrument Settings**.
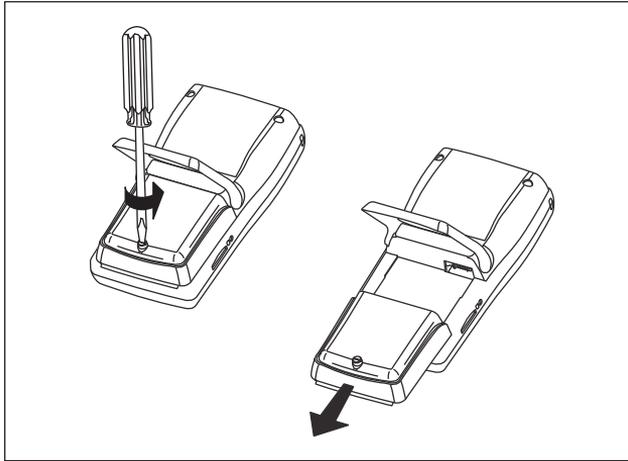
AMD32F.EPS

Figure 4. Removing the Battery Pack

84 % - 100 %	PASS
67 % - 83 %	TEST
51 % - 66 %	FAIL
34 % - 50 %	TALK
18 % - 33 %	TONE
0 % - 17 %	LOW BA
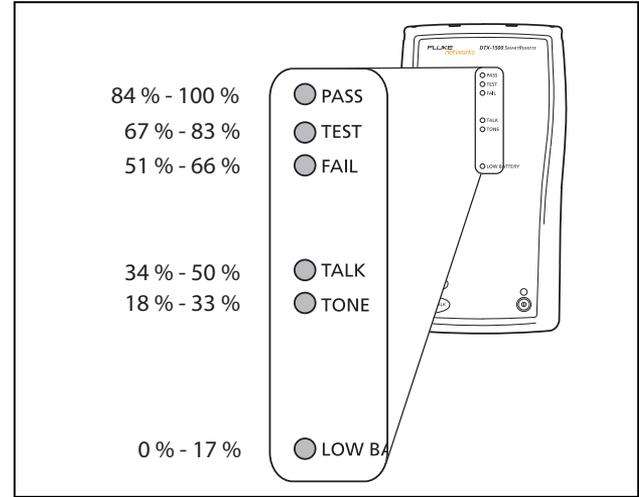
X167.EPS

**Figure 5. Smart Remote Battery Status
Shown After Power-Up**

About Link Interface Adapters

Link interface adapters provide the correct jacks and interface circuitry for testing different types of twisted pair LAN cabling. The channel interface adapters provided are suitable for testing cabling up to Cat 6A/Class E_A. Optional adapters let you test permanent link installations and coaxial cabling.

Figure 6 shows how to attach and remove adapters.

⚠Caution

To avoid damaging the optional permanent link adapter and to ensure maximum accuracy of test results, never pinch, kink, or crush the adapter's cable. Follow the handling guidelines given in Figure 7.
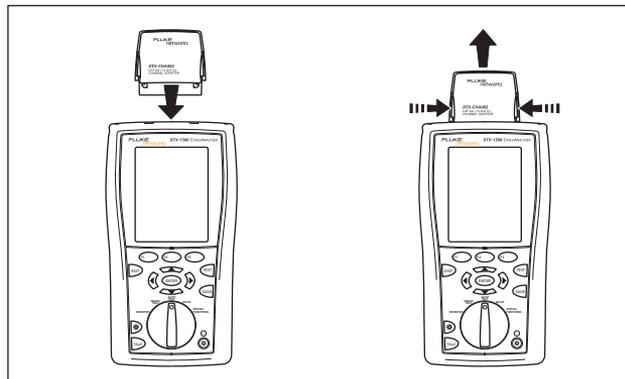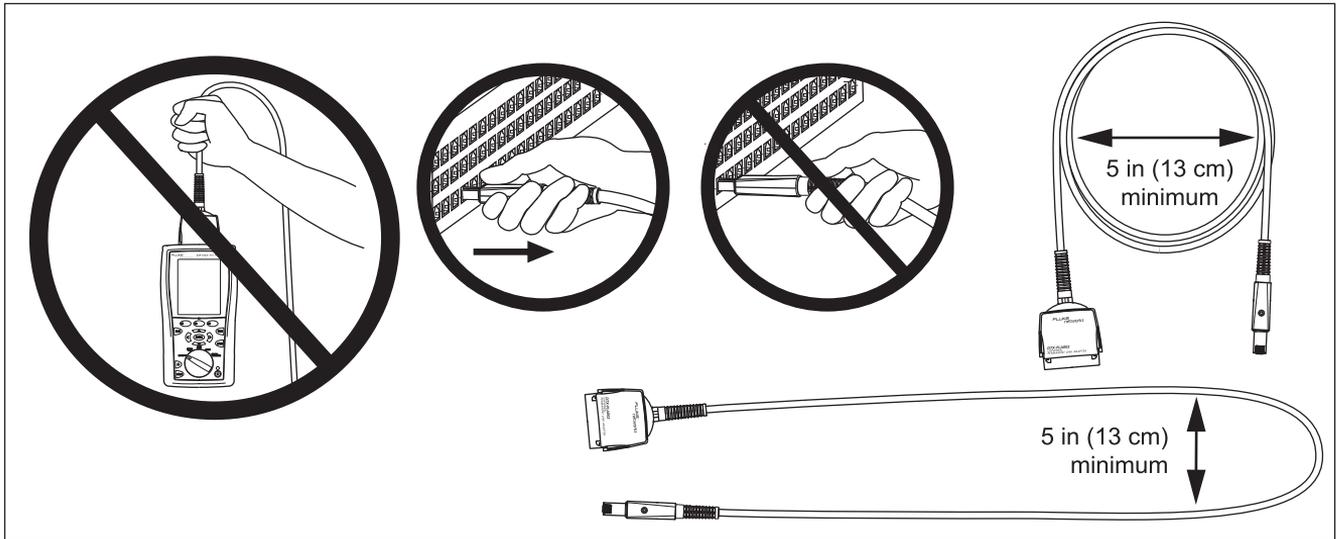

X35.EPS

Figure 6. Attaching and Removing Adapters

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Figure 7. Handling Guidelines for Optional Permanent Link Adapters

The optional DTX-PLA001 universal permanent link adapter has a removable personality module. These may be changed to customize the adapter for different jack configurations.

To change the personality module, do the following (refer to Figure 8):

1   Ground yourself by touching a grounded, conductive surface.

2   Remove the link interface adapter from the tester.

3   Use your fingers to unscrew the screw on the personality module.

4   Store the module in its original, static protection bag.

5   Put the new module in place and tighten the screw with your fingers.

⚠Caution

Tighten the screw snugly with your fingers only. Do not overtighten. Doing so can damage the module or the end of the cable.
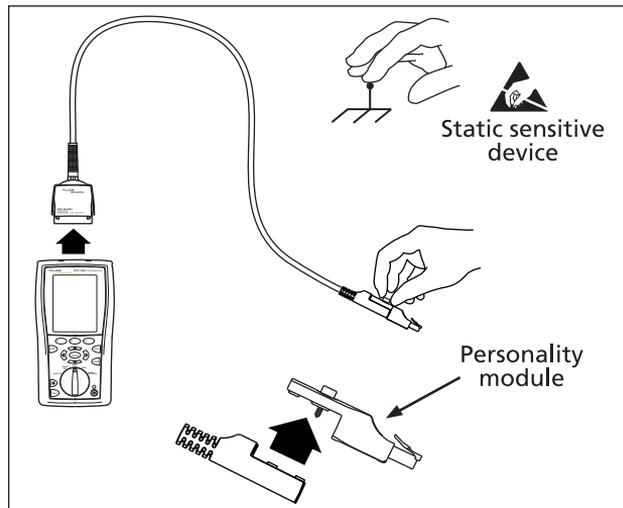
X74F.EPS

Figure 8. Changing the Personality Module on Optional DTX-PLA001 Adapters

The optional DTX-PLCAL automated calibration kit lets you calibrate your permanent link adapters to compensate for physical changes that occur over time to the adapter's cable and other components. Contact Fluke Networks for more information.

Preparing to Save Tests

❑ **Check the memory space available:**

Turn the rotary switch to **SPECIAL FUNCTIONS**; then select **Memory Status**.

❑ **Select a cable ID source:**

You can select IDs from a pre-generated list or create an ID after each test. Turn the rotary switch to **SETUP**, select **Instrument Settings**, select **Cable ID Source**; then select a source. See "Cable ID Options" on page 39 for details.

❑ **Set up a job folder:**

On the **Instrument Settings** menu: **Current Folder**: Select an existing folder or press
F1 **Create Folder** to create a new folder.

❑ **Set the plot data storage option:**

On the **Instrument Settings** menu select **Store Plot Data.** Select **Standard** to save plot data for the frequency range required by the selected test limit. Select **Extended** to save data beyond the range required by the selected test limit. Select **No** to save data in text format only, which lets you save more results.

❑ **Enter job information:**

On the **Instrument Settings** menu press ⏵ to show the tab with the **Operator, Site,** and **Company** names. To enter a new name, select a setting, press F1 **Create** if necessary; then use the softkeys, ⏴⏵ ▱▱ ▱▱, and ⏎ENTER for editing. Press SAVE when you are finished.

❑ **Enable Auto Save, if desired:**

On the **Instrument Settings** menu press ⏵ to show the tab with the **Auto Save Results** setting. Select **Yes** to have the tester automatically save Autotests using the next ID available from the Cable ID Source.

Certifying Twisted Pair Cabling

Setting the Reference for Twisted Pair Cabling

The reference procedure sets a baseline for insertion loss, ACR-F, and DC resistance measurements.

Run the tester's reference procedure at the following times:

- When you want to use the tester with a different smart remote. You can reference the tester to two different smart remotes.

- Every 30 days. Doing so ensures maximum accuracy of test results.

You do not need to set the reference after changing link interface adapters.

Note

Turn on the tester and smart remote and let them sit for 1 minute before setting the reference. Set the reference only after the testers have reached an ambient temperature between 10 °C and 40 °C (50 °F and 104 °F).

To set the reference, do the following:

1 Use one of the methods shown in Figure 9 to connect the main and remote testers together..

⚠ Caution

When you use two channel adapters for the reference procedure, use only the 6 inch (15 cm) patch cord provided with the DTX-1500 to connect the testers together.

2 Turn the rotary switch to **SPECIAL FUNCTIONS**.

3 Highlight **Set Reference**; then press ⒺⓃⓉⒺⓇ .

4 Press ⓉⒺⓈⓉ.
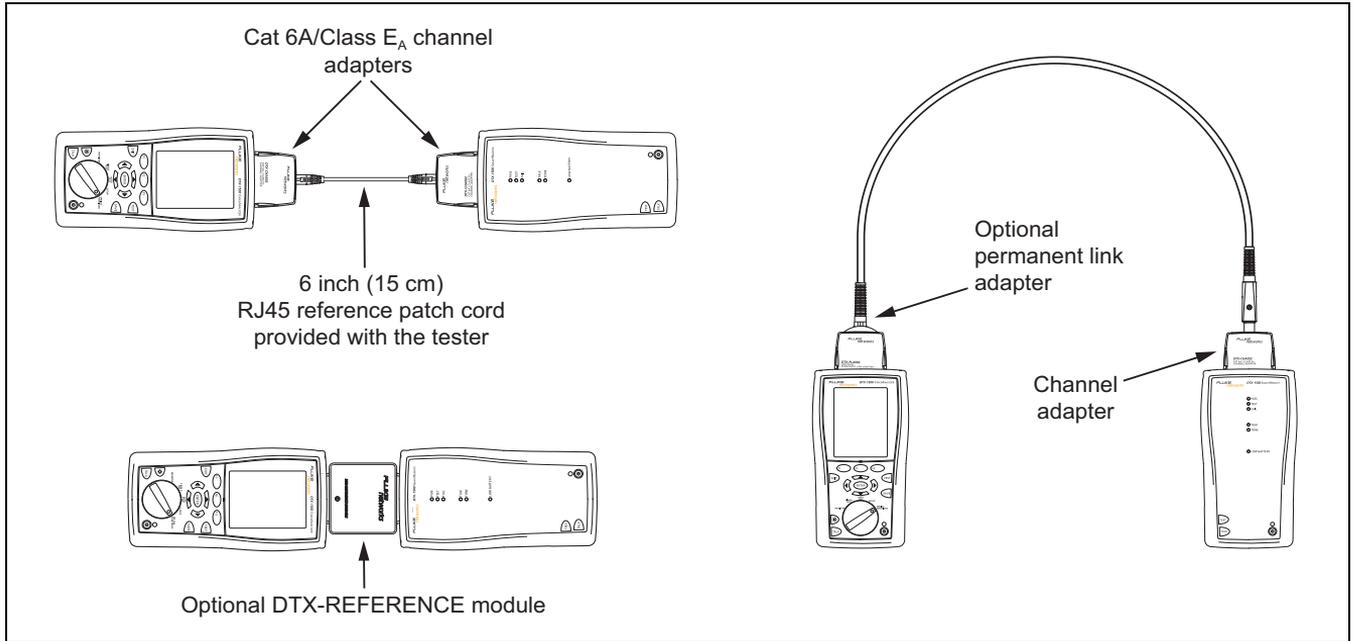
X41.EPS

Figure 9. Twisted Pair Reference Connections

Cat 6A/Class E$_A$ channel
adapters

6 inch (15 cm)
RJ45 reference patch cord
provided with the tester

Optional DTX-REFERENCE module

Optional
permanent link
adapter

Channel
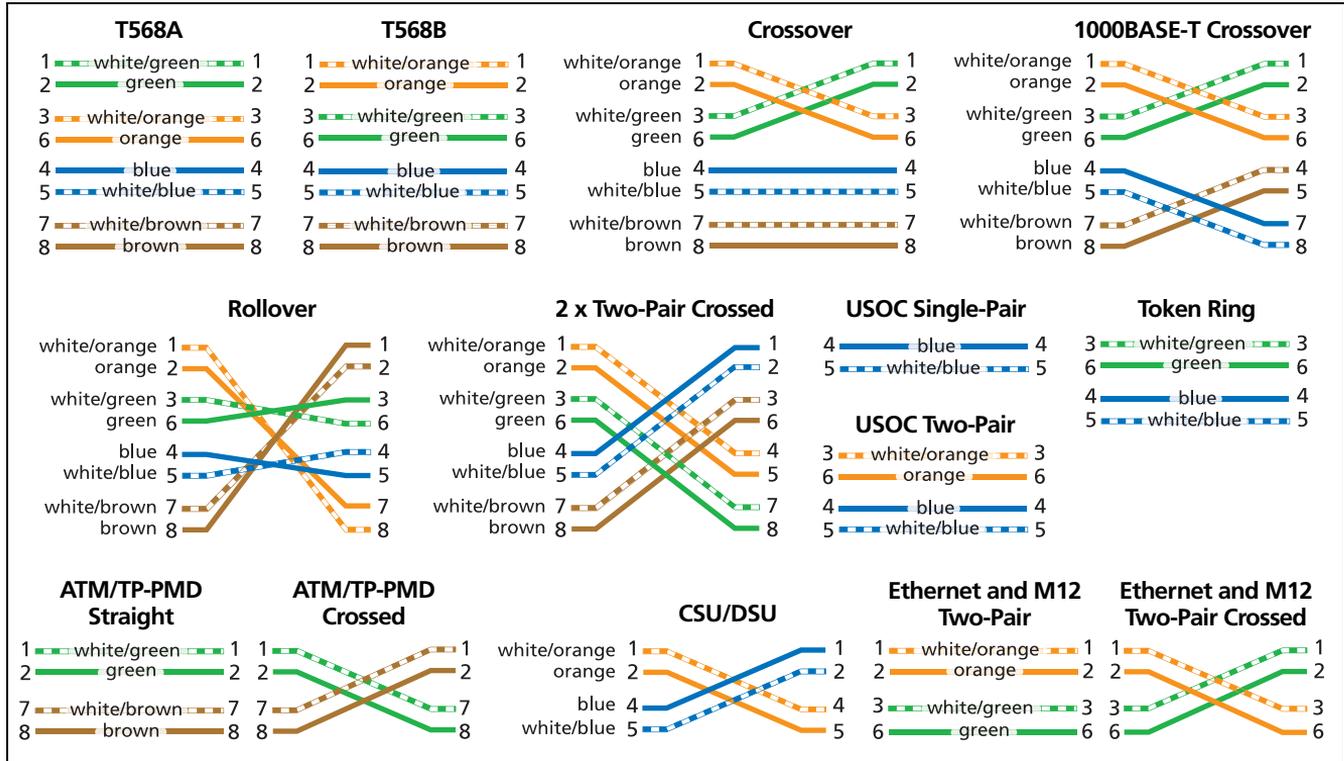adapter

Twisted Pair Test Settings

Table 2 describes the settings that apply to twisted pair cabling tests.

To access the settings, turn the rotary switch to **SETUP**, use ⬯ to highlight **Twisted Pair**; then press (ENTER).

Table 2. Twisted Pair Test Settings

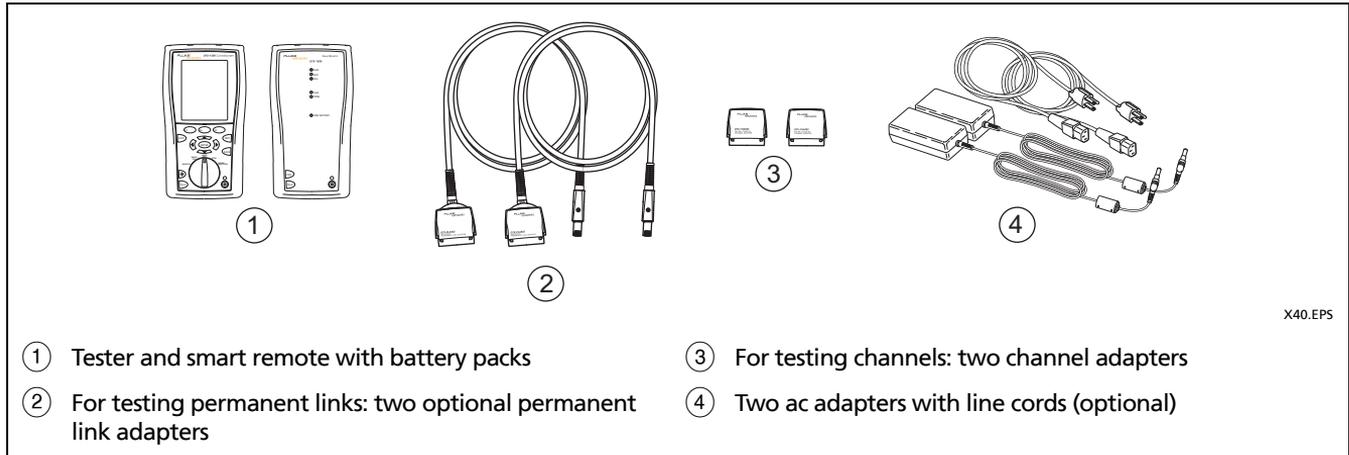| Setting	Description
SETUP > Twisted Pair > Test Limit	Select the appropriate test limit for the job. Selecting **Custom** lets you create a test limit. See the Technical Reference Handbook for details.
SETUP > Twisted Pair > Cable Type	Select a cable type appropriate for the type you will test. The cable types are organized by type and manufacturer. Selecting **Custom** lets you create a cable type. See the Technical Reference Handbook for details.
SETUP > Twisted Pair > NVP	Nominal velocity of propagation, which is used with the measured propagation delay to determine cable length. The default value defined by the selected cable type represents the typical NVP for that cable type. You may enter a different value if necessary. To determine the actual value, change the NVP until the measured length matches the known length of a cable. Use a cable at least 30 m (100 ft) long. Increasing the NVP increases measured length.
SETUP > Twisted Pair > Outlet Configuration	The **Outlet Configuration** setting determines which cable pairs are tested and which pair numbers are assigned to the pairs. See Figure 10. To see the wire map for a configuration, press (F1) **Sample** from the **Outlet Configuration** screen. Selecting "Custom" lets you create a configuration. See the Technical Reference Handbook for details.

-continued-

Figure 10. Outlet Configurations

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Table 2. Twisted Pair Test Settings (cont.)

Setting	Description
SETUP > Twisted Pair > HDTDX/HDTDR	**PASS*/FAIL Only**: The tester shows HDTDX and HDTDR results only for Autotests with **PASS***, **FAIL***, or **FAIL** results. **All AUTOTESTs**: The tester shows HDTDX and HDTDR for all Autotests.
SETUP > Twisted Pair > AC Wire Map	Select **Enable** to test cabling through an unpowered mid-span PoE (Power over Ethernet) device. See the Technical Reference Handbook for details.
SETUP > Instrument Settings > Store Plot Data	**Standard**: The tester displays and saves plot data for frequency-based tests such as NEXT, return loss, and attenuation. The tester saves data for the frequency range required by the selected test limit. **Extended**: The tester saves data beyond the frequency range required by the selected test limit. **No**: Plot data is not saved, which lets you save more results. Saved results show worst margins and worst values for each pair.
SPECIAL FUNCTIONS > Set Reference	The tester must be referenced to the smart remote the first time the two units are used together. You should also set the reference every 30 days. See "Setting the Reference for Twisted Pair Cabling" on page 18.
Settings for saving tests	See "Preparing to Save Tests" on page 17.

Autotest on Twisted Pair Cabling

Figure 11 shows the equipment needed for certifying twisted pair cabling.

X40.EPS

① Tester and smart remote with battery packs

② For testing permanent links: two optional permanent link adapters

③ For testing channels: two channel adapters

④ Two ac adapters with line cords (optional)

Figure 11. Equipment for Certifying Twisted Pair Cabling

Autotest on Twisted Pair Cabling

1 Attach adapters appropriate for the job to the tester and the smart remote.

2 Turn the rotary switch to **SETUP**, then select **Twisted Pair**. Set the following on the **Twisted Pair** tab:

- **Cable Type**: Select a list of cable types; then select the cable type to be tested.

- **Test Limit**: Select the test limit required for the job. The screen shows the last nine limits used. Press (F1) **More** to see other lists of limits.

3 Turn the rotary switch to **AUTOTEST** and turn on the smart remote. Connect to the cabling, as shown in Figure 12 for a permanent link or Figure 13 for a channel.

4 Press (TEST) on the tester or smart remote. To stop the test at any time, press (EXIT).

Tip: Pressing (TEST) on the tester or smart remote starts the tone generator so you can use a tone probe before connecting, if necessary. The tone also activates a sleeping or powered-down tester connected to the other end of the cabling.

5 The tester shows the Autotest **Summary** screen when the test is complete (see Figure 14 on page 27). To view results for a specific parameter, use (▲) (▼) to highlight the parameter; then press (ENTER).

6 If the Autotest failed, press (F1) **Fault Info** for possible causes of the failure.

7 To save the results, press (SAVE). Select or create a cable ID; then press (SAVE) again.
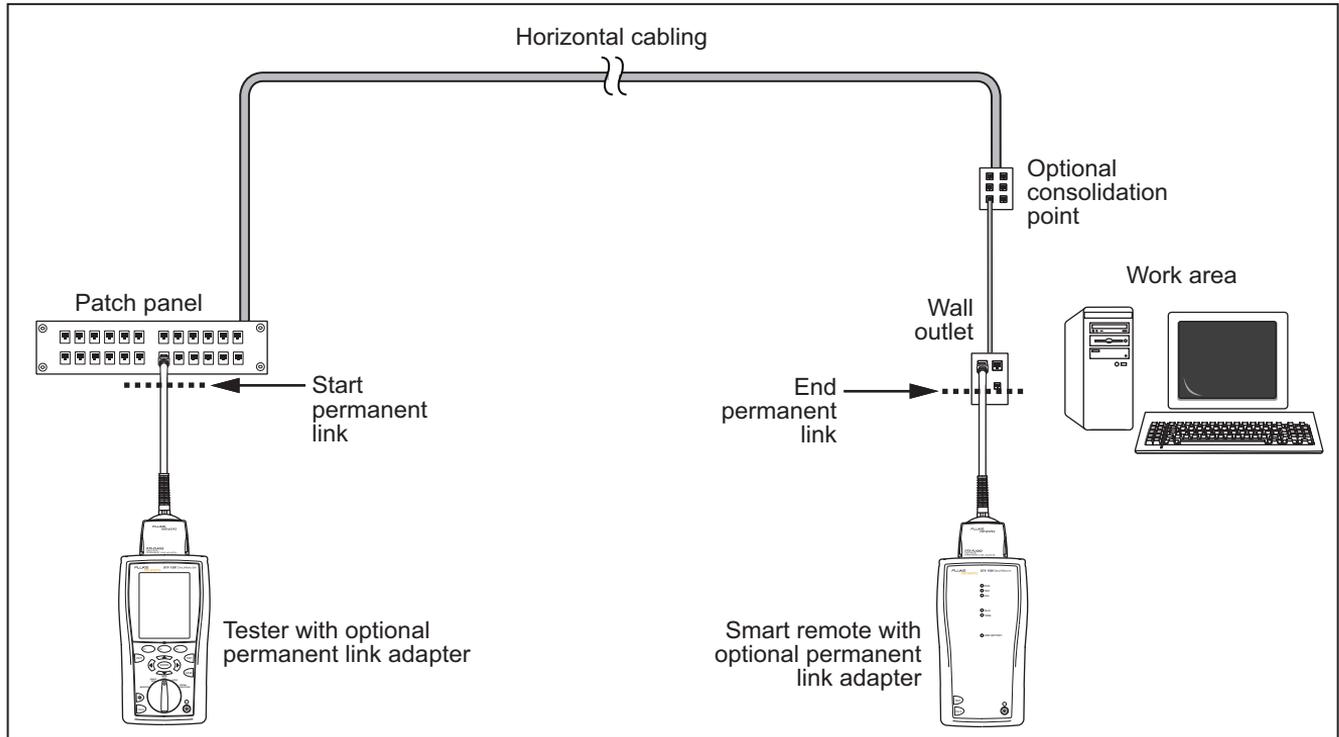
X22.EPS

Figure 12. Permanent Link Test Connections

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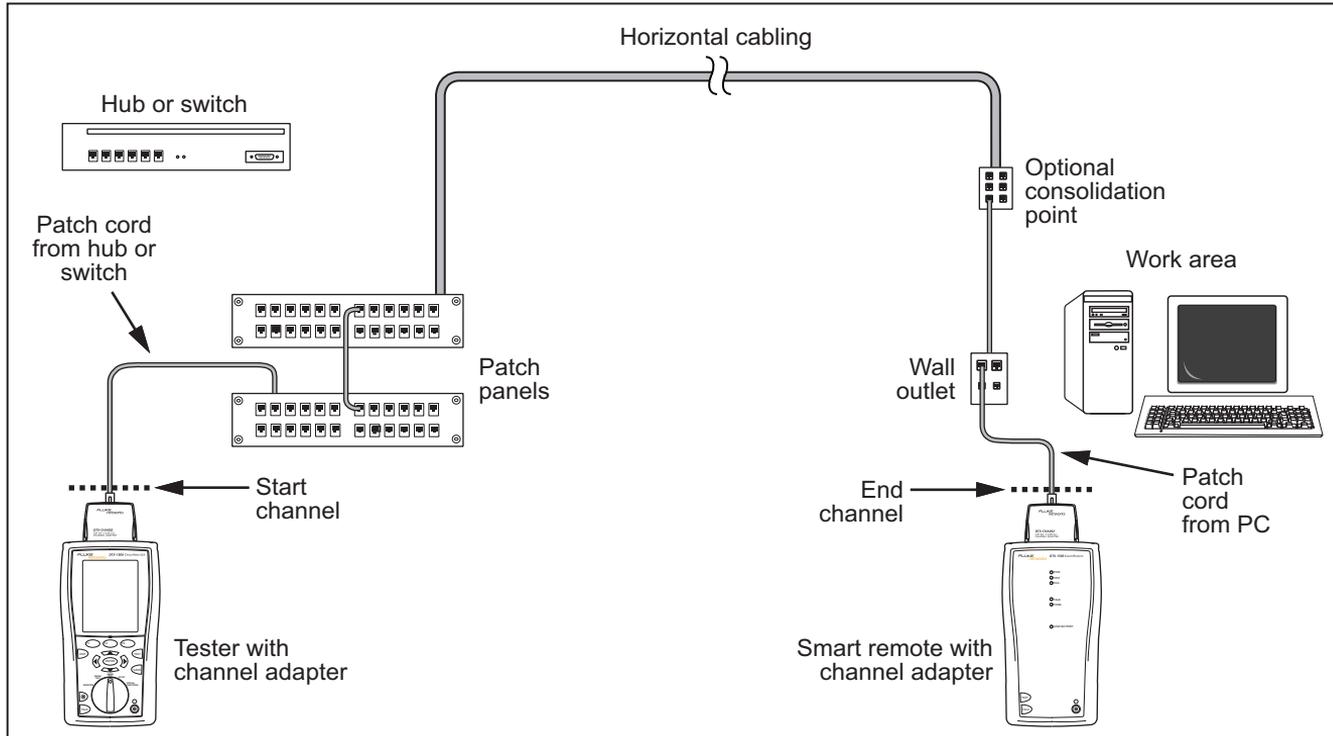
Figure 13. Channel Test Connections

X21.EPS

Autotest Summary Results for Twisted Pair Cabling

Figure 14 describes the Autotest **Summary** screen.

① **PASS:** All parameters are within limits.

FAIL: One or more parameters exceed the limit.

PASS*/FAIL*: One or more parameters are within the tester's accuracy uncertainty range, and the "*" notation is required by the selected test standard. See "PASS*/FAIL* Results" on page 28.

② Press (F2) or (F3) to scroll the screen.

③ If the test failed, press (F1) for diagnostic information.

④ Action prompt for the screen. Use ⌄ ⌃ to highlight a parameter; then press (ENTER).

⑤ ✔: The test passed.

i: The parameter was measured, but has no PASS/FAIL limit in the selected test limit.

X: The test failed.

✱: See "PASS*/FAIL* Results" on page 28.

⑥ The worst margin found for the test.

Figure 14. Autotest Summary for Twisted Pair Cabling

PASS*/FAIL* Results

A result marked with an asterisk means that measurements are in the tester's accuracy uncertainty range (Figure 15) and the "*" notation is required by the selected test standard. These results are considered marginal. Marginal passing and failing results are marked with blue and red asterisks, respectively.

A **PASS*** may be considered a passing result.

A **FAIL*** should be considered a failure.
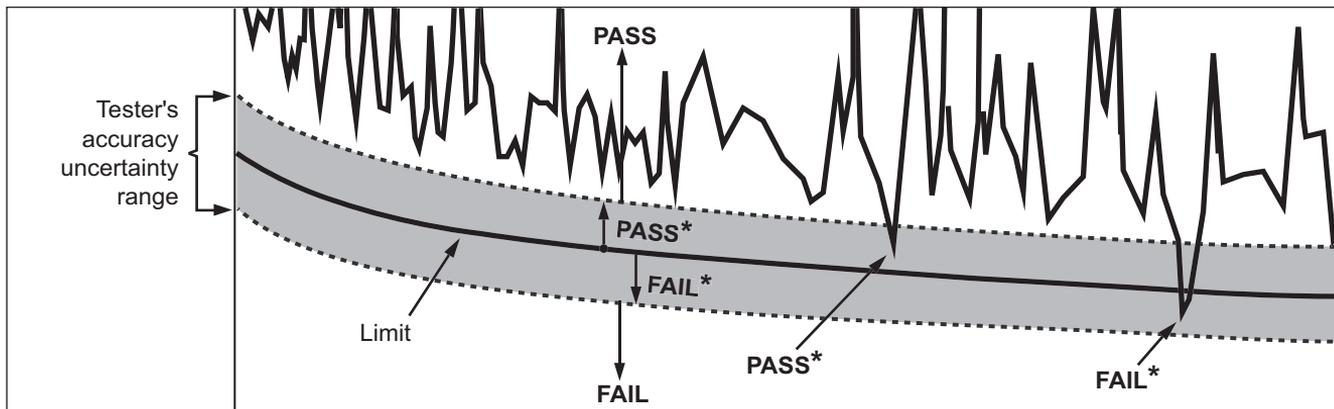
Figure 15. PASS* and FAIL* Results

Automatic Diagnostics

If an Autotest fails, press (F1) **Fault Info** for diagnostic information about the failure. The diagnostic screens show likely causes of the failure and suggest actions you can take to solve the problem. A failed test may produce more than one diagnostic screen. In this case, press ⏶ ⏷ ◀ ▶ to see additional screens.

Figure 16 shows examples of diagnostic screens.
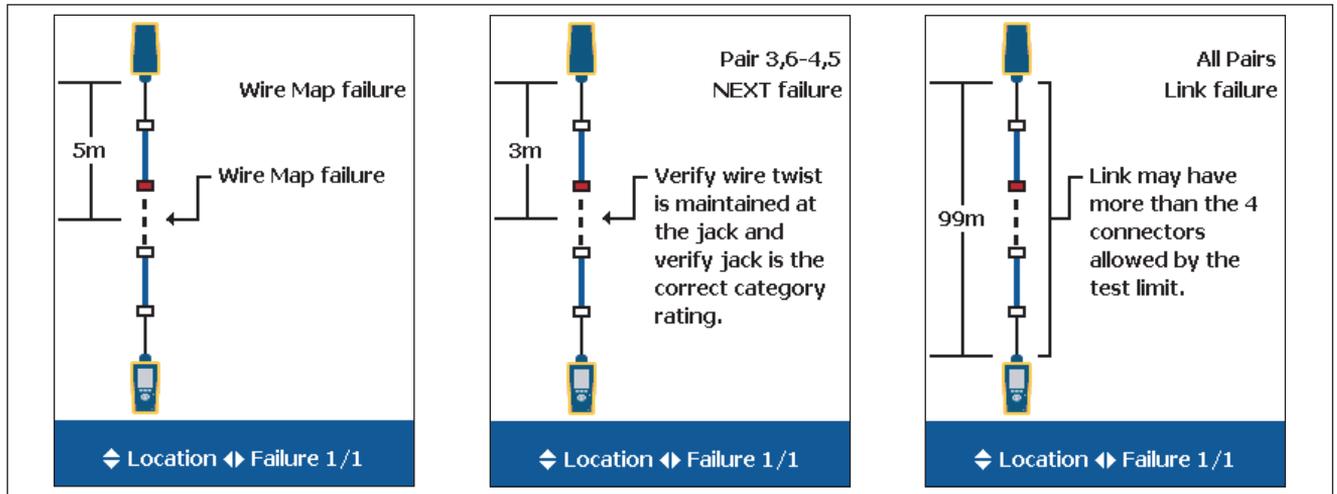
AMD75F.EPS

Figure 16. Examples of Automatic Diagnostic Screens

Certifying Coaxial Cabling

Certifying coaxial cabling requires the optional
DTX-COAX coaxial adapters.

Setting the Reference for Coaxial Cabling

The reference procedure sets a baseline for insertion loss
measurements.

Run the tester's reference procedure at the following
times:

- When you want to use the tester with a different
  smart remote. You can reference the tester to two
  different smart remotes.

- Every 30 days. Doing so ensures maximum accuracy of
  test results.

You do not need to set the reference after changing link
interface adapters.

Note

*Turn on the tester and let it sit for 1 minute before
setting the reference. Set the reference only after
the testers have reached an ambient temperature
between 10 ℃ and 40 ℃ (50 ℉ and 104 ℉).*

To set the reference, do the following:

1   Attach coaxial adapters to the main and remote testers, screw in the F-connector to BNC adapters; then make the connections shown in Figure 17.

2   Turn the rotary switch to **SPECIAL FUNCTIONS**.

3   Highlight **Set Reference**; then press (ENTER).

4   Press (TEST).

12 in (30 cm) 75 Ω coaxial patch cord

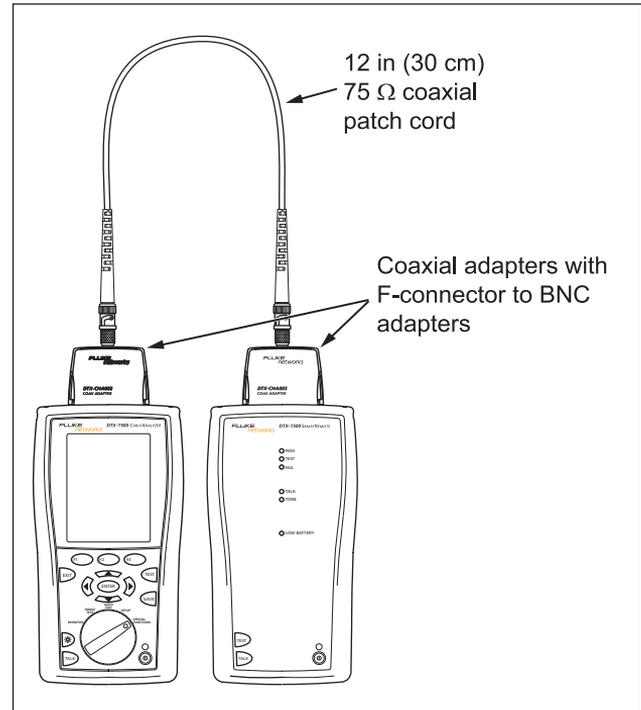Coaxial adapters with F-connector to BNC adapters

X140.EPS

Figure 17. Coaxial Reference Connections

Coaxial Test Settings

Table 3 describes the settings that apply to coaxial cabling tests.

To access the settings, turn the rotary switch to **SETUP**, use ⬡ to highlight **Coaxial**; then press (ENTER).

Table 3. Coaxial Cable Test Settings

Setting	Description
SETUP > Coaxial > Test Limit	Select the appropriate test limit for the job.
SETUP > Coaxial > Cable Type	Select a cable type appropriate for the type you will test.
SETUP > Coaxial > NVP	Nominal velocity of propagation, which is used with the measured propagation delay to determine cable length. The default value defined by the selected cable type represents the typical NVP for that cable type. You may enter a different value if necessary. To determine the actual value, change the NVP until the measured length matches the known length of a cable. Use a cable at least 30 m (100 ft) long. Increasing the NVP increases measured length.

Table 3. Coaxial Cable Test Settings (cont.)

Setting	Description
SETUP > Instrument Settings > Store Plot Data	**Standard**: The tester displays and saves plot data for insertion loss. The tester saves data for the frequency range required by the selected test limit. **Extended**: The tester saves data beyond the frequency range required by the selected test limit. **No**: Plot data is not saved, which lets you save more results. Saved results show only worst margins and worst values for each pair.
SPECIAL FUNCTIONS > Set Reference	The tester must be referenced to the smart remote the first time the two units are used together. You should also set the reference every 30 days. See "Setting the Reference for Coaxial Cabling" on page 30.
Settings for saving tests	See "Preparing to Save Tests" on page 17.

Autotest on Coaxial Cabling

Figure 18 shows the equipment needed for certifying coaxial cabling.

X138.EPS

① Tester and smart remote with battery packs

② DTX coaxial adapters with female-to-female F-connector adapters installed

③ F-connector-to-BNC adapters (for testing network coaxial cabling)
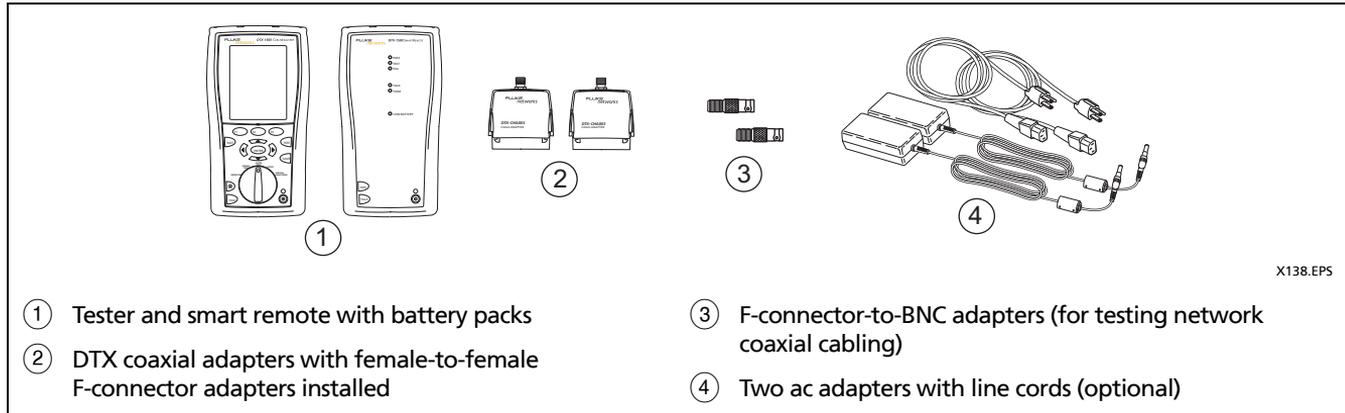
④ Two ac adapters with line cords (optional)

Figure 18. Equipment for Certifying Coaxial Cabling

Autotest on Coaxial Cabling

1 Attach coaxial adapters to the tester and smart remote.

2 Turn the rotary switch to **SETUP**, then select **Coaxial**. Set the following on the **Coaxial** tab:

- **Cable Type**: Select a list of cable types; then select the cable type to be tested.

- **Test Limit**: Select the test limit required for the job. The screen shows the last nine limits used. Press (F1) **More** to see other lists of limits.

3 Turn the rotary switch to **AUTOTEST** and turn on the smart remote. Connect to the cabling, as shown in Figure 19 or 20.

4

5 Press (TEST) on the tester or smart remote. To stop the test at any time, press (EXIT).

6 The tester shows the Autotest **Summary** screen when the test is complete (see Figure 21 on page 38). To view results for a specific parameter, use (▲) (▼) to highlight the parameter; then press (ENTER).

7 To save the results, press (SAVE). Select or create a cable ID; then press (SAVE) again.

Note

If you turn off the main or remote unit while the two units are connected through coaxial adapters, the unit will turn on again.
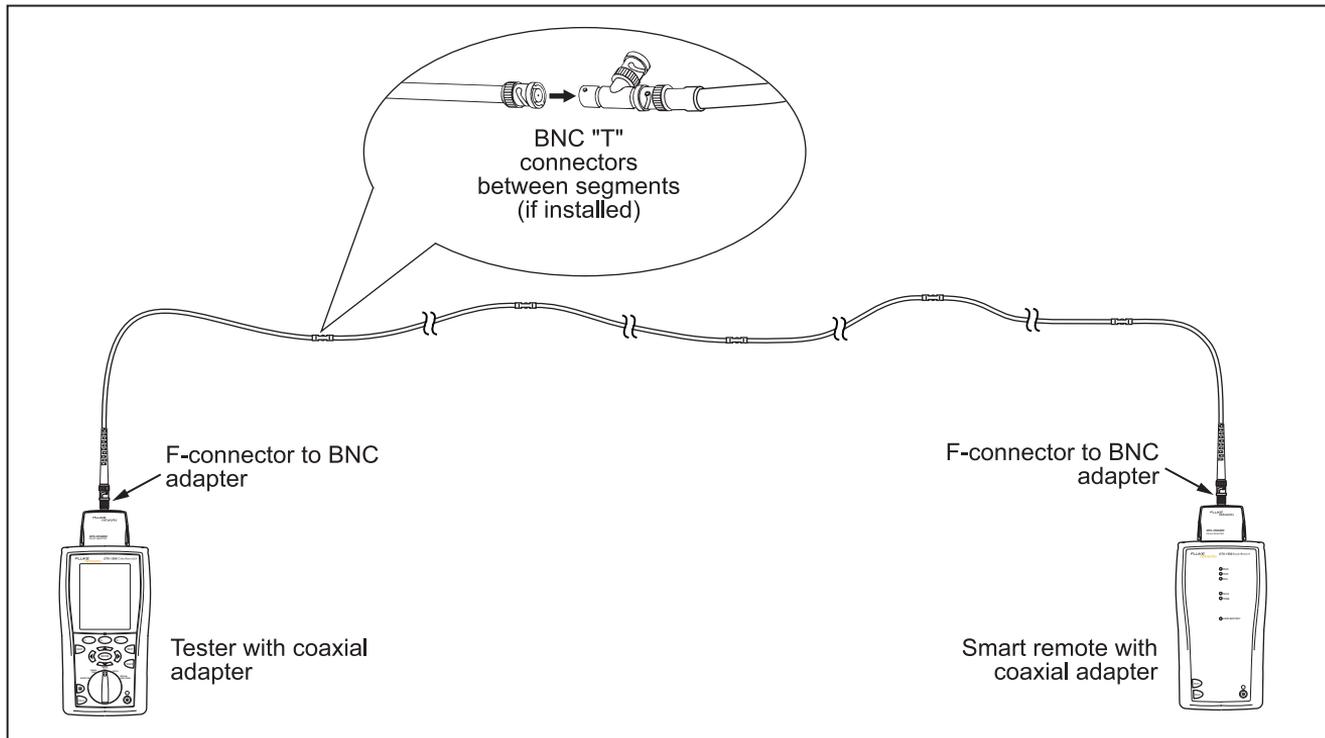
X139.EPS

Figure 19. Coaxial Network Cabling Test Connections
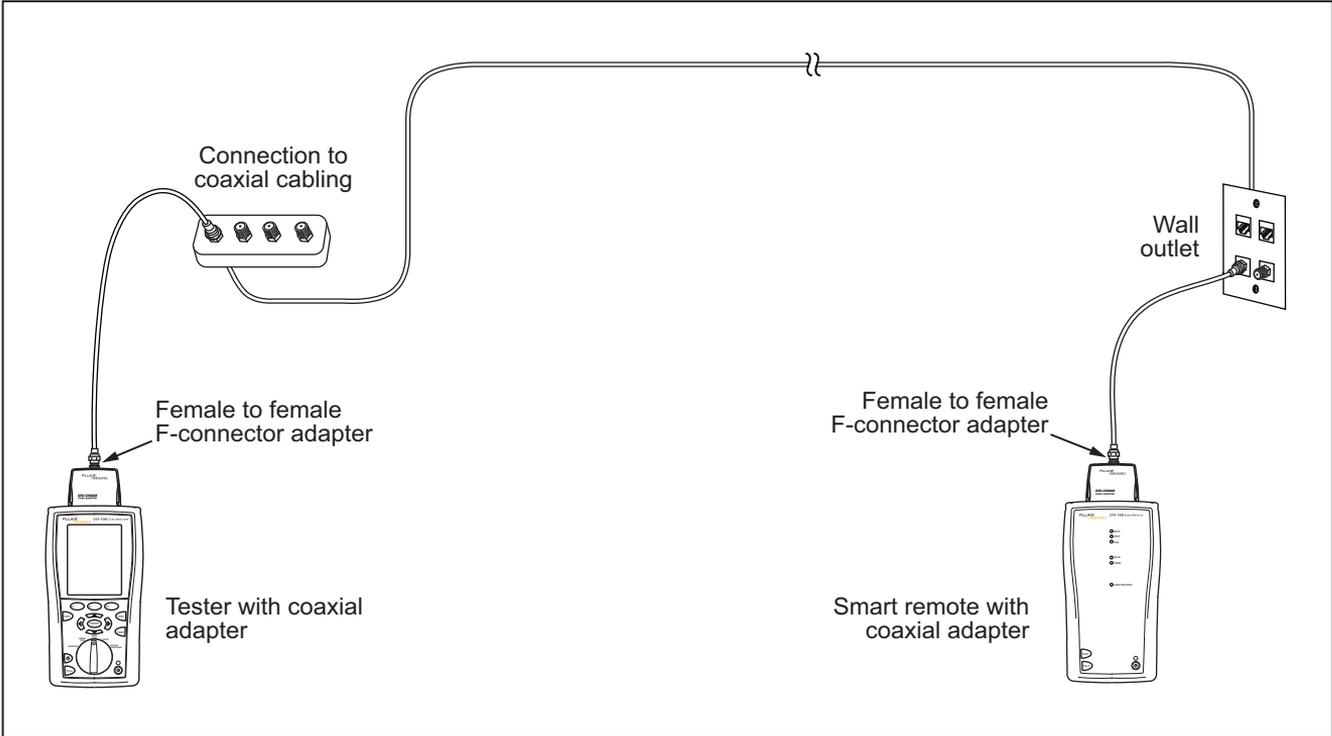
X142.EPS

Figure 20. Coaxial Video Cabling Test Connections

Autotest Results for Coaxial Cabling

Figure 21 describes the Autotest **Summary** screen.

① **PASS:** All parameters are within limits.

    FAIL: One or more parameters exceed the limit.

② ✔: The test passed.

    i: The parameter was measured, but has no PASS/FAIL limit in the selected test limit.

    X: The test failed.

③ The worst margin found for the test.

AMD141F.EPS

Figure 21. Autotest Results for Coaxial Cabling

Cable ID Options

You can select cable IDs from a pre-generated list or you can create an ID after each test.

To select a source for cable IDs, turn the rotary switch to **SETUP**, select **Instrument Settings**, select **Cable ID Source**; then select a source:

- **Auto Increment**: Increments the last character of the ID each time you press ⌷SAVE⌷.
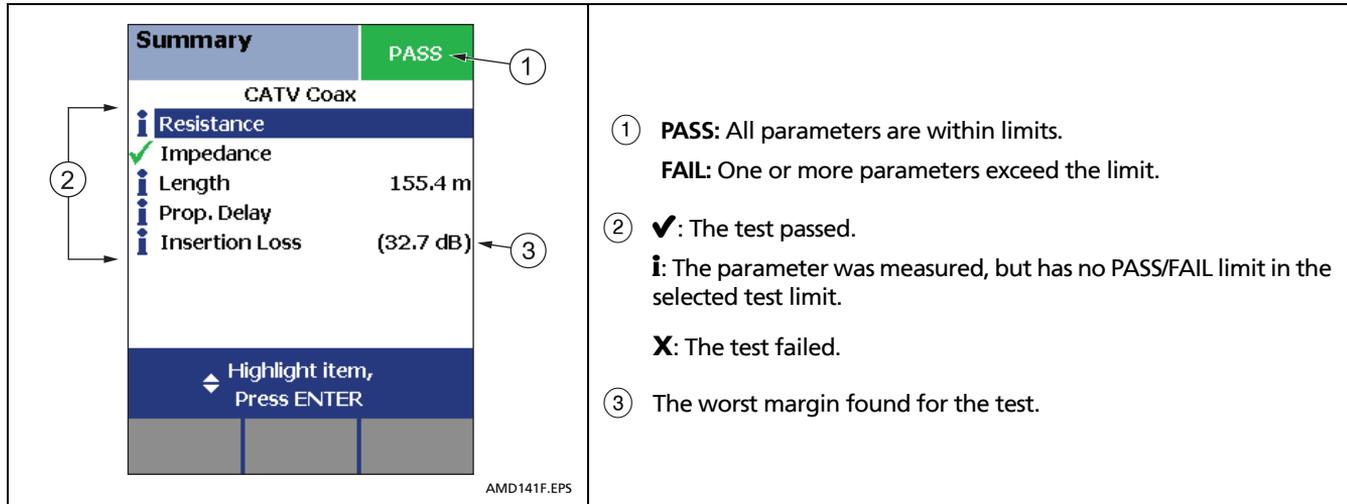
- **List:** Lets you use an ID list created in LinkWare software and downloaded to the tester.

- **Auto Sequence:** Lets you use a list of sequential IDs generated from a template. The horizontal, backbone, and campus templates follow the ID formats specified in the ANSI/TIA/EIA-606-A standard. The **Free Form** template lets you create your own pattern.

- **None:** Lets you create an ID each time you press ⌷SAVE⌷.

After you press ⌷SAVE⌷, you can also edit an existing ID before using it for saving results.

To create a list of sequential IDs, do the following:

1 On the **Auto Sequence** screen, select a template.

2 On the **Auto Sequence** screen, select **Start ID**. Use the softkeys, ◁▷ ◁△▷ ◁▽▷, and ⌷ENTER⌷ to enter the first ID in the sequential list. Press ⌷SAVE⌷ when you are finished.

3 Select **Stop ID**. Use the softkeys, ◁▷ ◁△▷ ◁▽▷, and ⌷ENTER⌷ to enter the last ID in the sequential list. Press ⌷SAVE⌷ when you are finished

4 Press ⌷F3⌷ **Sample List** to see what the list will look like.

Used IDs are marked with a "$" in cable ID lists.

Memory Functions

All DTX testers have internal memory that can store at least 250 Autotest results, including graphical data. The maximum capacity of internal memory depends on the space taken by the tester's software.

Viewing Results

To view saved results, do the following:

1 Turn the rotary switch to **SPECIAL FUNCTIONS**; then select **View/Delete Results**.

2 If necessary, press (F1) **Change Folder** to find the result you want to view.

3 Highlight the result; then press (ENTER).

Deleting Results

To delete results or folders, do the following:

1 Turn the rotary switch to **SPECIAL FUNCTIONS**, then select **View/Delete Results**.

2 If necessary, press (F1) **Change Folder** to find the results you want to delete.

3 Do one of the following:

- To delete one result, highlight it, press (F2) **Delete**, press (F3) **Delete**; then press (F3) **Yes**.

- To delete all results in the current folder, the current folder, or all results in the tester (internal memory), press (F2) **Delete**; then select an option. Press (F3) **Delete**; then press (F3) **Yes**.

Uploading Results to a PC

To upload results to a PC, do the following:

1 Install the latest version of LinkWare software on your PC.

2 Turn on the tester.

3 Connect the tester to the PC with the USB cable included or the DTX serial cable available from Fluke Networks.

4 Start LinkWare software on the PC.

5 Click **Import** on the LinkWare toolbar. Select the tester's model from the list.

6 Select the records you want to import; then click **OK**.

Options and Accessories

For a complete list of options and accessories visit the Fluke Networks website at **www.flukenetworks.com**. To order options or accessories, contact Fluke Networks as described on page 2.

About LinkWare and LinkWare Stats Software

The LinkWare™ Cable Test Management software lets you do the following:

- Upload test records to a PC.

- View test results.

- Add ANSI/TIA/EIA-606-A administration information to records.

- Organize, customize, and print professional-quality test reports.

- Update the tester's software.

- Create and download data to the DTX, such as Setup data and cable ID lists.

- Calibrate the optional permanent link adapters (DTX-PLCAL kit required for DTX-PLA002 adapters.)

- Transfer custom limits between testers.

LinkWare software is available at no charge on the Fluke Networks website.

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

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

Maintenance

⚠Warning⚠

To avoid possible fire, electric shock, personal injury, or damage to the tester:

- **Do not open the case. No user-serviceable parts are inside.**

- **Replacing electrical parts yourself will void the tester's warranty and might compromise its safety features.**

- **Use only specified replacement parts for user-replaceable items.**

- **Use only Fluke Networks authorized service centers.**

⚠️Caution

Replacing electrical parts yourself might void the tester's calibration and compromise its accuracy. If the calibration is void, cable manufacturers might not extend their warranty to the cabling you install.

Cleaning

Clean the display with glass cleaner and a soft, lint-free cloth. Clean the case with a soft cloth dampened with water or water and a mild soap.

⚠️Caution

To avoid damaging the display or the case, do not use solvents or abrasive cleansers.

Factory Calibration

The tester requires calibration at a service center once a year to ensure that it meets or exceeds the published accuracy specifications. Contact an authorized Fluke Networks Service Center for information on getting your tester calibrated.

Updating the Tester's Software

Keeping your tester's software current gives you access to new features and the latest test limits.

To see the software version installed in your tester or smart remote, connect the testers through link adapters, turn the rotary switch to **SPECIAL FUNCTIONS**; then select **Version Information**.

To get a software update, download the update from the Fluke Networks website or contact Fluke Networks to get the update by other means.

⚠️Caution

To avoid unexpected loss of power, connect the ac adapter to the tester when updating the software.

Note

Changes to the update procedure may be posted on the DTX CableAnalyzer software page on the Fluke Networks website.
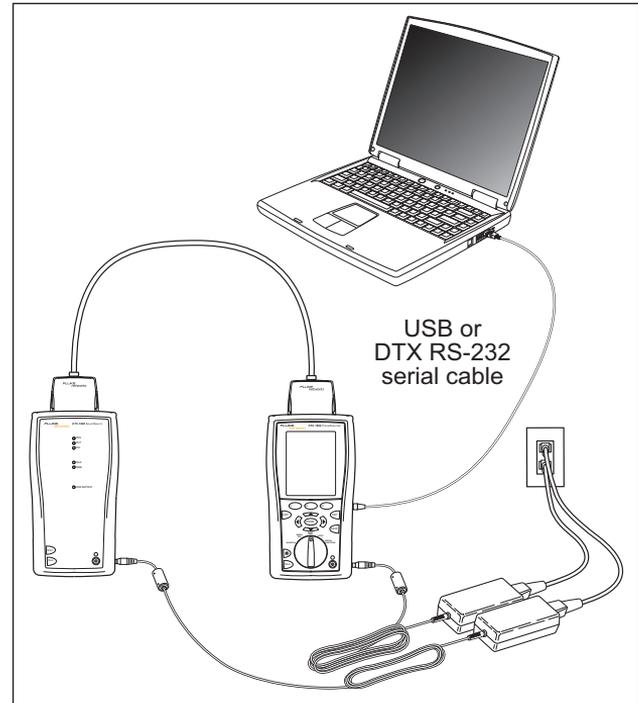
Updating with a PC

1 Install the latest version of LinkWare software on your PC.

2 Download the DTX CableAnalyzer update file from the Fluke Networks website, or contact Fluke Networks to get the update by other means. Save the file to your hard drive.

3 Make the connections shown in Figure 22 using the USB or DTX serial cable. (The USB connection, if available, is faster.) Turn on the tester and the smart remote.

Note

The DTX serial cable connects a PC's DB-9 RS-232 serial port to the miniature RS-232 serial port on the DTX-1500 testers. This cable is available from Fluke Networks.

4 Select **Utilities** > **DTX Utilities** > **Software Update** from the LinkWare menu, locate and select the .dtx (DTX update) file; then click **Open**.

5 When the tester is updated, it reboots, then prompts you about updating the smart remote's software. Press (F2) **OK** to update the smart remote's software.

6 To verify the update, turn the rotary switch to **SPECIAL FUNCTIONS**; then select **Version Information**.

USB or
DTX RS-232
serial cable

X72.EPS

Figure 22. Updating the Software with a PC

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Updating with Another Tester

You can update a tester's software using another tester that is already updated.

1 Use link interface adapters to connect an updated tester or smart remote to a tester or smart remote that needs updating (Figure 23).

Note

One of the testers must be a main tester.

2 Turn on both testers. The testers compare software versions. If one has more recent software, the main tester prompts you about updating the older software.

3 Press ⬭ F2 ⬭ **OK** to start the update process.

4 To verify the update, turn the rotary switch to **SPECIAL FUNCTIONS**; then select **Version Information**.
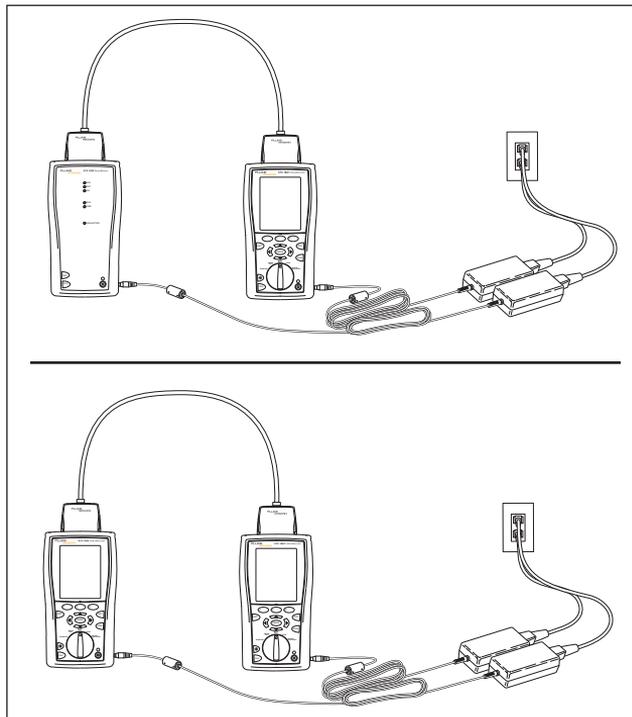
X73.EPS

Figure 23. Updating the Software with an Updated Tester

Updating the Limits or Cable Types Database

Fluke Networks may release a test limits or cable types database that is not part of a software update. To install a new database in your tester, use the **Modify DTX Test Limits** utility in LinkWare software. See the LinkWare online help for details.

Retraining the Battery Gauge

The accuracy of the battery gauge may drift over time if the battery is frequently recharged before being fully discharged. Retraining the battery gauge restores its accuracy.

Retraining can take 17 to 30 hours. The time is shorter if you start with the batteries discharged.

To retrain the battery gauge:

1   Connect the main and remote testers together using a permanent link adapter and a channel adapter, or two channel adapters or two coaxial adapters and a patch cord.

2   Connect the ac adapters to the main and remote testers. Turn on both testers.

3   Turn the rotary switch to **SPECIAL FUNCTIONS**; then select **Battery Status**. Verify that both the main and remote battery gauges are shown. If the remote

gauge is missing, check the connections between the two units.

4   Press (F1) **Train Battery**.

To abort the retraining, hold down the power key (⊚) on the main and remote testers until they turn off.

5   Retraining is complete when the testers have turned off and the LED by the ac adapter connection is green.

Safety and Compliance

IEC 61010-1: Measurement Category None, Pollution Degree 2

Elecromagnetic environment: IEC 61326-1: Portable

FCC: CFR Title 47, Part 15, Subpart B

Regulatory Information

This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15B of the FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of the equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.