NetXpert 1400

Cable Qualifier

USER MANUAL

IT Networks

Net**X**pert 1400

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INTRODUCTION

The NetXpert 1400 Ethernet Speed Certifier offers a complete solution to test copper cables. The NetXpert 1400 performs speed certification to test the data-carrying capabilities of electrical Ethernet network cable up to 1 Gb/s by testing for noise in the network, detecting faults in the cable wiring, and ensuring that cables are able to support the speed capabilities of active equipment.

To certify Ethernet speed performance of copper cable runs, the NetXpert 1400 handheld tester conducts Bit Error Rate (BER) tests by sending data packets down specified cable runs at defined data rates to check for errors at the maximum throughput of the link. The NetXpert 1400 also reports on signal quality that can impact high-speed data transmission by measuring Signal-to-noise ratio (SNR). Skew measurements report on the signal time delay between pairs that can impact Ethernet data transmission. The NetXpert 1400 also provides continuity testing that detects opens, shorts, miswires, split pairs, reversals, and high-resistance faults while accurately measuring distance to faults and total cable length.

The NetXpert 1400 includes a comprehensive set of features for testing active network capabilities: measures Power over Ethernet (PoE) to ensure the correct power is available on the correct pins, uses Port Discovery to ensure the correct speed and duplex capability are available, connects at gigabit Ethernet and runs ping tests to verify connectivity to IP hosts, discovers network devices using Cisco Discovery Protocol (CDP) or Link Layer Discovery Protocol (LLDP), offers VLAN discovery and the Trace Route function displays the path internet packets travel to reach a specified destination. The NetXpert 1400 also saves test reports and exports to PCs.

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SAFETY INFORMATION

To ensure safe operations of the NetXpert 1400, follow instructions carefully and observe warning and caution messages in this manual. Failure to observe warnings can result in severe injury or death and can damage the equipment.

Table 3. Safety Information

Symbol	Definition
	• Warning/caution: potential for personal injury or damage to equipment
Voltage!	• Warning: hazards could cause harm or death
	Conformité Européenne. Conforms to European Economic Area directives.
	Disposal Information

 Warning! To avoid possible fire, electric shock, or personal injury:

- Do not open the case; no user-serviceable parts are inside.
- Do not modify the tester.
- Do not use the tester if it is damaged. Inspect the tester before use.
- The tester is not intended to be connected to active telephone inputs, systems, or equipment, including ISDN devices. Prolonged exposure to the voltages applied by these interfaces may damage the tester.
- Lithium-ion battery pack should be serviced by qualified personnel. Only the original battery pack type should be used with this product.

NetXpert 1400

DESCRIPTION

Modular cable interface

RJ45 Jack and F-connector

LCD Touch screen

Menu buttons

Power button

Battery Door

Kickstand

Micro USB and SD card slot

D/C Charger plug

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ACTIVE REMOTE

Battery charge status LED's

Linked/Pass/Fail LED's

RJ45 Jack

Status button

Hook strap loop

Battery Door

D/C Charger plug

Battery door screws
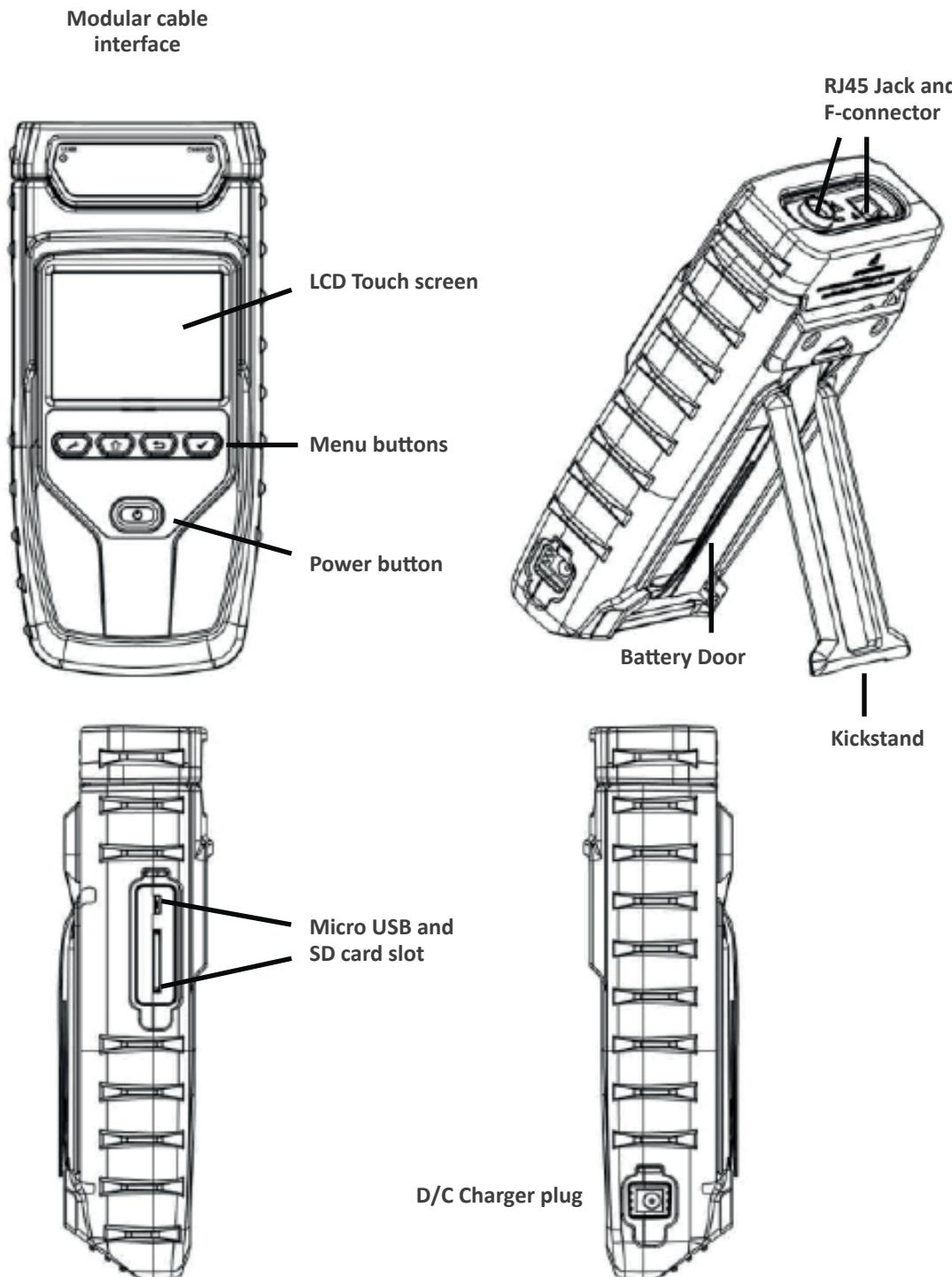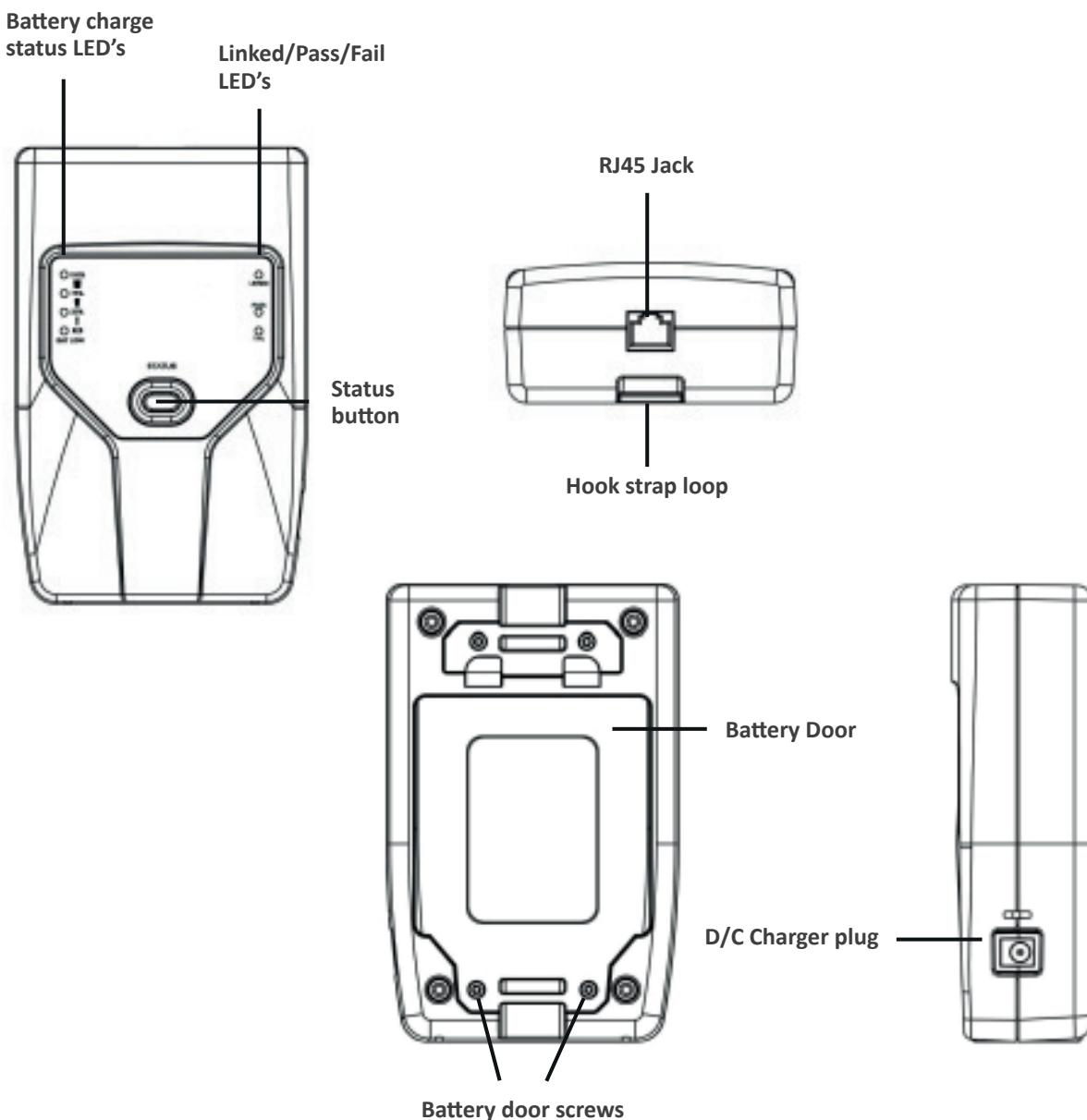
INCLUDED IN THE KIT

- NetXpert 1400 main unit
- Active remote
- Power supply (2)
- Network patch cables (2)
- Sacrificial cables (2)
- 4 GB SD card
- Micro USB cable
- #1 Testing network remote
- Network and coax remote set: #1-5
- F-connector coupler (includes foam holder)
- Hanging strap and clip (2)
- Large carrying bag

NETXPERT 1400 BUTTONS AND TOUCH SCREEN

The NetXpert 1400 features buttons and a full color capacitive touch screen to allow easy navigation.
Touch an icon to select an option.

Touch and drag a list to scroll up or down or touch the Up/Down arrows.

The NetXpert 1400 buttons assist with Navigation, starting and stopping a test.

| Settings | Home | Back | Test |

Settings - The Settings button will display the settings menu. Pressing the settings while in the settings menu will display additional menu screens.

Home - The Home button will display the Home screen from any menu.

Back - The Back button will display the previous screen.

Test - The Test button will start/stop a test.

GENERAL OPERATIONS

On/Off

- Turn NetXpert 1400 on by pressing the Power button [image] .

- Tap the Power button to put the NetXpert 1400 in sleep mode.

- Press and hold the Power button to power the unit off.

Automatic Power Down

The NetXpert 1400 automatically enters sleep mode to conserve battery power if no input or activity is performed on the device. See System Settings on page 11 to adjust the length of time before the automatic power down occurs.

NetXpert 1400 Active Remote

Check the Active Remote battery status and last test result by pressing the Status button.

NetXpert 1400

SYSTEM SETTINGS

The NetXpert 1400 Setup consists of eight screens to configure the unit to the user's preference. Use the Settings button to navigate through the settings screens.

FIRST SYSTEM SETTINGS SCREEN: IPV4 SETUP

In the IPV4 setup screen, the NetXpert 1400 network tests can be configured to use DHCP or a Static IP address. The NetXpert 1400 can also be set to use a DHCP provided DNS or a fixed DNS IP.

- Turn the NetXpert 1400 on by pressing the Power button .
- Touch System Settings on the Home screen.
- "Use DHCP" is set as default. To enter static IPs, touch "Use Static IP" and enter the following:
- Touch "Set IP" and enter the NetXpert 1400 IP address using the numeric keypad, then touch **OK**.
- Touch "Set Subnet Mask" and enter the Subnet Mask IP address using the numeric keypad, then touch **OK**.
- Touch "Set Gateway" and enter the Gateway IP address, then touch **OK**.
- Use "DHCP DNS" is set as default. To manually enter DNS addresses, touch "Choose DNS".
- Touch "Set DNS" and use the numeric keypad to enter a preferred DNS IP address and touch **OK**.

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SECOND SYSTEMS SETTINGS SCREEN: LANGUAGE/DATE FORMAT

Language
• Select the desired language.

Date Format
• Select the desired date format:

• month/day/year or day/month/year
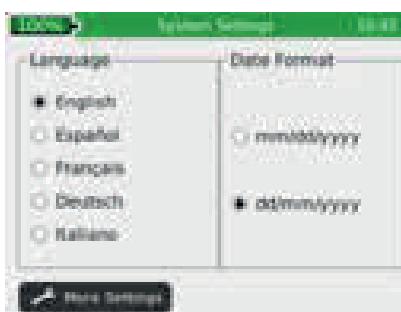
THIRD SYSTEM SETTINGS SCREEN: DISPLAY SETTINGS

Length settings:
• Under Display Units, touch either Feet or Meters.

• Under "Standard", touch either T568A or T568B. The touched wiring standard will be displayed in the cable test wiring diagram.
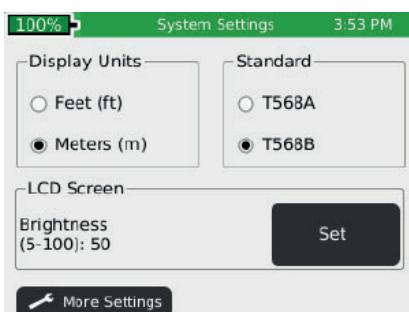
LCD screen brightness:
• To the right of Brightness, touch Set.

• Enter a number between 5 and 100 then touch OK. To cancel, press the Back button ⟲.

• To continue, touch More Settings or press the Settings button 🔧.
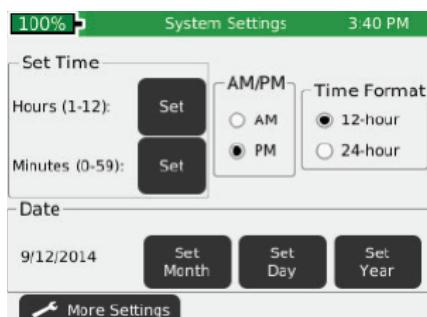
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FOURTH SYSTEM SETTINGS SCREEN: DISPLAY UNITS
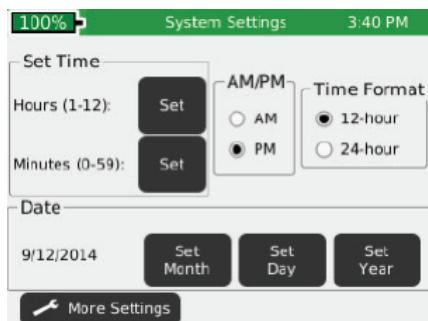
Set time/clock/date:

- Under Time Format, touch either 12-hour or 24-hour format.

- To the right of Hours (1–12), touch Set Hour. Enter the hour you wish to display then touch **OK**.

- To cancel, press the Back button 🔙 .

- To the right of Minutes (0-59), touch Set Minute. Enter the minutes you wish to display then touch **OK**. To cancel, press the Back button 🔙 .

- Under AM/PM, touch AM or PM on the screen.

- Under Date, set the month, day, and year: Touch Set Month. Enter the number of the month, and then touch **OK**. To cancel, press the Back button 🔙 .

- Touch Set Day. Enter the number of the day, and then touch

- OK. To cancel, press the Back button 🔙 .

- Touch Set Year. Enter the year (all four digits), then touch **OK**. To cancel, press the Back button 🔙 .

- To continue, touch More Settings or press the Settings button 🔧 .

FIFTH SYSTEM SETTINGS SCREEN: TIMEOUT SETTINGS

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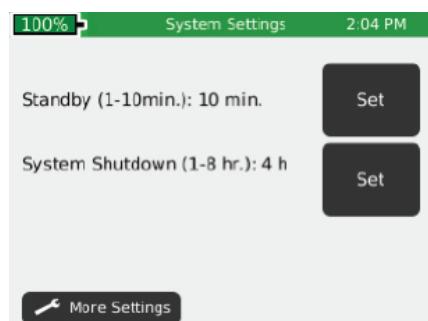
- To set Standby power down:

- Touch Set to the right of Stand-by (default is 10 min).

- Enter a whole number from 1-10 for the number of minutes then touch **OK**. To cancel, press the Back button 🔙 .

- To set System Shutdown Time:

- Touch Set to the right of System Shutdown (4 hour is the default setting).

- Touch the number between 1 and 8 for the hours before system shutdown then touch **OK**. To cancel, press the Back button 🔙 .

- To configure .tst file backup to SD, touch Disable/Enable. This allows the test files to be saved to the SD card in the event of critical memory loss.

- To continue, touch More Settings or press the Settings button 🔧 .

SIXTH SYSTEM SETTINGS SCREEN: USER INFORMATION

The User Information screen allows the user to enter Company name, user name, and e-mail to be included on the NetXpert 1400 test reports.
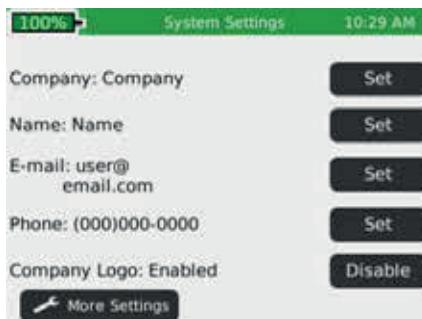
Touch Set Company and use the keypad to enter the
- company name (max 20 characters) then touch **OK**.

- Touch Set Name (max 20 characters) and use the keypad to enter a name then touch **OK**.

- Touch Set e-mail and use the keypad to enter an e-mail address then touch **OK**.

- Touch Set Phone and use the keypad to enter a phone number (20 characters maximum) then touch **OK**.

- To include a company logo, copy the desired image from your computer to the Logo folder on the NetXpert 1400 SD card. The image size cannot exceed 586x163 dpi. Touch the "Enable/Disable" button to include the company logo.

Note: If the SD card does not have a logo folder, right click in the SD Card dialog box and click on a new folder. Name the new folder "logo".

- To continue, touch More Settings or press the Settings button 🔧 .

SEVENTH SYSTEM SETTINGS SCREEN (FIRMWARE)
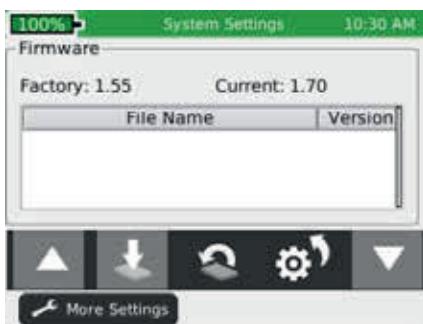
You can have more than one version of firmware on the SD-Card – all firmware files on the SD-Card will be displayed on this screen. Use the Up ▲ and Down ▼ buttons to scroll through multiple firmware files.

- The factory installed firmware revision (default firmware) is displayed above the firmware file table.

- The current firmware revision that is being used is displayed above the firmware file table Current x.xx.

HOW TO UPDATE THE NETXPERT 1400 FIRMWARE:

Warning! Do not update the firmware if the battery charge is less than 50%, unless the NetXpert 1400 is plugged in to A/C power.

- Go to the Download Center at https://itnetworks.softing.com

- Download the firmware file to your computer. Take note of where the firmware file is saved.

UPLOAD FIRMWARE USING THE SD CARD:

- Remove the SD Card (located on the left side of NetXpert 1400) and insert it into your computer using an SD Card reader. Your computer will recognize the SD Card as a removable drive. Open the removable drive folder and copy the firmware file(s) from your computer to the removable drive window. Image files may be included as part of the update, be sure to copy all files from the firmware update folder to the SD card. Re-insert the SD Card into the NetXpert 1400.

- Proceed Installation; "Install NetXpert 1400 Update" below to install complete the update.

Note: When installing SD Card with firmware update refresh the firmware table by exiting and then reentering the firmware screen.

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UPLOAD NETXPERT 1400 FIRMWARE USING THE MICRO USB CABLE:

- Plug the included micro USB cable into the NetXpert 1400 then plug the other end of the cable into your computer.
- Touch File Manager ▣ .
- Touch More Options ▣ .
- Touch USB ▣ . The NetXpert 1400 will reboot into File Transfer Mode as shown in the image below.

File Transfer Mode
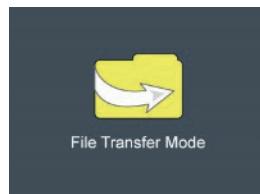
- The NetXpert 1400 will be recognized by your computer as a removable drive. If your computer does not automatically prompt you to view the removable drive, click on the Windows Start Menu, click on "Computer", and then double click on the removable drive.

Note: The removable drive may be listed in "Computer" as an SD Card, as the NetXpert 1400 simulates an SD Card reader.

- Navigate to the firmware file(s) that was saved to the computer from Softing Download Center. Right click on the firmware file(s) then click on "Copy". Image files may be included as part of the update. Be sure to copy all files from the firmware update download.
- Navigate back to the NetXpert 1400 removable drive and right click in the removable drive window and click on "Paste".
- Close the removable drive window then click on "safely remove hardware" on your computers toolbar on the bottom left. Eject "MQX Mass Storage Device".
- Remove the micro USB cable from the NetXpert 1400.
- The NetXpert 1400 will automatically reboot. Follow the instructions below to complete the update.

INSTALL NETXPERT 1400 UPDATE:

- From the Home screen, Touch System Settings ▣ .
- Touch More Settings or press the Settings button ▣ until the firmware screen is displayed (7th settings screen).
- Update by touching the firmware file in the firmware table then touch Update Firmware ▣ on the screen. A new screen will appear, confirming that you are updating firmware. Touch OK to continue or Cancel. Another window will appear: Updating firmware.

Warning: System will reboot after update. Please make sure battery is not low.

- Press OK to continue or Cancel.

- To reset to the factory firmware, touch the Reload Factory Firmware ⟳ . A new screen will appear, confirming that you are deleting the firmware update and restoring to factory default. You will be prompted to touch OK to continue or Cancel to cancel. NetXpert 1400 will then restart.

- To reset to the factory settings, touch Reset Settings ⚙ . A new screen will appear, confirming that you are restoring factory Cable Type list. You will be prompted to touch OK to continue or Cancel to cancel.

TO UPDATE THE BOOTLOADER:

Warning! *If your NetXpert 1400 currently has factory Boot version 3.03 or lower, you must use a Windows 7, Vista, or XP computer to install the bootloader. Bootloader 4.00 or greater is compatible with Windows 8, 7, Vista, and XP.*

- To download the NetXpert 1400 bootloader, visit the Download Center at https://itnetworks.softing.com.

- Download the Bootloader file to your computer.

- Connect the NetXpert 1400 to your computer using the included USB cable.

- Press and hold the wrench key 🔧 , then press and release the power button ⏻ . The NetXpert 1400 will display a solid color on the touch screen and the Link LED will flash. You can release the wrench key at this point.

- Open the removable drive named "Bootloader".

- Copy and paste the bootloader file to the removable drive.

- Power off the NetXpert 1400, unplug it from your computer, and then power it back on.

TO UPDATE THE PIC:

Warning! *The PIC update requires a factory version of at least 00.23 to be updated through the GUI. Please contact Softing IT Networks technical support for more information. Please see Firmware Hardware versions on page 19.*

- To update the NetXpert 1400 Pic, visit the Download Cemter at https://itnetworks.softing.com

- Download the Pic update file to your computer.

- Follow "Upload firmware using the SD Card" or Upload NetXpert 1400 firmware using the Micro USB cable" instructions on page 16 to upload the Pic update file to your NetXpert 1400.

- Go to the NetXpert 1400 Firmware Update screen (7th Settings Screen) and touch the Pic update file in the Firmware table.

- Touch the install firmware icon ⟳ . A new screen will appear, confirming that you are deleting the firmware update and restoring to factory default. You will be prompted to touch OK to continue or Cancel to cancel. NetXpert 1400 will then

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restart.

EIGHTH SYSTEM SETTINGS SCREEN: FIRMWARE/HARDWARE VERSIONS

This screen will display which versions of firmware and hardware are in your NetXpert 1400.
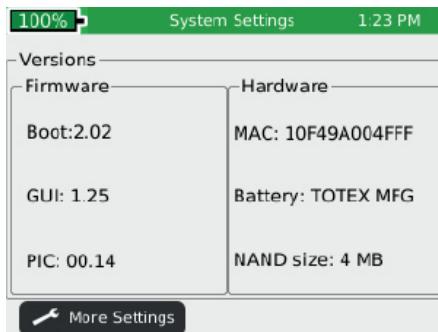
Firmware

• Boot (initializes hardware, loads, and executes operating system)

• GUI (Graphical User Interface)

• PIC (NetXpert 1400 Processor)

Hardware

• Serial Number (NetXpert 1400 MAC Address)

• Module revision (number of your updated module)

• Battery (type of battery)

• NAND size (flash memory in megabytes)

Press the More Settings soft key to return to the first System Settings screen or press the Home button to return to the Home Screen.

ACTIVE REMOTE

The Active Remote is used with the NetXpert 1400 to perform a speed certification test. The Active Remote can be configured to display 1-4 remote IDs:

• Press the Status button to display the battery percentage and the Pass/Fail result of the previous cable test.

• To set the remote ID, remove the battery door screws (see Active Remote on p. 8) and remove the battery door.

• Gently pull out the battery (it is not necessary to unplug the battery to access the ID indicator switch).

WARNING! Do not pull on the battery wires as this may damage the battery. If the battery is removed, use caution as it plugs in one way. Do not force the plug in to the remote as this will damage the plug and/or the remote.

• Push the desired ID switch up and push the other keys down (see image below).

Remote set to ID 1

CALBLE TEST

The NetXpert 1400 performs a wire map test, measures cable length using capacitance and TDR, and speed certifies cables up to 1 Gigabit.

TEST OPTIONS

There are four test options depending on the type of remote being used or if no remote being used. Below are descriptions of the test results given for each test option. To see a full screen view of the results, touch Full Screen ▦ . Press the Back button to exit the full screen view.

Active Remote:

When an Active Remote is being used to perform a cable test, the NetXpert 1400 will display the cable wire map, Active Remote ID, SNR, SKEW, and BER test results. The NetXpert 1400 will display a green check mark ✅ to indicate that the cable has passed the network speed certification test. A VoIP check mark ✅ will also be displayed on the test report. The NetXpert 1400 qualifies cables for use with VoIP if they have successfully transmitted at least 100Mbps.

Network Testing Remote:

When a network remote is being used, the NetXpert 1400 will display the wire map, cable length, ID, and an orange check mark ✅ when passing the wire map test.

Coax Remote:

When using coax remotes, the NetXpert 1400 will display the remote ID. If a short or open is detected, the NetXpert 1400 will measure the distance to the fault.

Open Ended Test

When no remote it being used, the NetXpert 1400 will display the cable length and "Status" for each pair.

ID Only Remote RJ45/Coax

When an ID only remote is being used, the NetXpert 1400 will only show the remote ID on the Detailed Test Results screen. The ID remotes are used to assist with mapping and labeling network cable runs.

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CABLE TEST OVERVIEW

Detailed Test Results
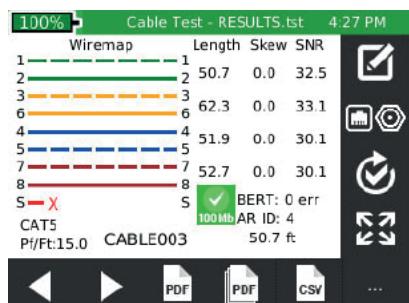
Cable Test List

The Cable Test ![icon] menu saves all tests to internal memory and to the SD card, except when using ID only remotes, to a file with the extension ".tst". If the SD Card is not inserted into the unit, a warning will appear upon entering the Cable Test Screen; "AutoSave cable test to SD enabled but SD card not found". See 5th Systems Settings screen to Enable/Disable autosave to SD. The Cable Test has two screens; a Detailed Results screen and a spreadsheet-like Test List screen. Testing can be either screen by pressing the Test button ![icon] . When initiating a test from the Test List Screen, only a summary of the results is shown. If no test file is defined by the user, "UNTITLED1.TST" will be used to save test results to. The test file name that is being used appears in the title bar along with the current function, Cable Test.

To navigate from the Detailed Results screen to the Test List, touch List ![icon] at the bottom of screen. If the List icon is not displayed at the bottom of the screen, touch More Options on the bottom right of the screen ![icon] . The Test List will be displayed with a highlighted cable test in the list which the Detailed Results screen was displaying results for. To navigate from the Test List to the Detailed Results screen, highlight a cable test in the list that you would like to display the test details for and touch Select ![icon] at the bottom of the screen. To exit the Test List without making a selection, press the Back button ![icon] .

Before testing a cable, the list file should be selected or created to save results to. The cable type should be selected or created from the cable type list and the cable name prefix and beginning index number can be defined or kept as default. Each test performed will use the currently selected test definition.

Note: All these test setup functions are on the Detailed Results screen.

CABLE TEST SETUP

From the Home screen, touch Cable Test ![icon]. If the list screen is displayed, touch Select ![icon] at the bottom of the screen or the Back button ![icon] to go to the Detailed Results screen:

Creating a New Test List:

Touch New File ![icon] at the bottom of the Detailed Results screen, enter a file name (20 characters max.), and touch OK. Return to Detailed Results screen. Test List name will appear in the title bar. See File Manager section on page 34 for additional File manager instructions.

Opening a Test List:

If a Test List (.tst) file already exists, it can be selected from a directory list, by touching File Manager ![icon]. The file manager screen will open showing the internal memory directory of TST files. Touch to highlight the desired file in the list and select File Open ![icon] to open the test list and return to the Detailed Results screen.

Selecting a Cable Type:

Touch Cable Type ![icon] on the right-hand side of the Detailed Results screen. A list of defined cable types will be displayed with a scroll bar on the right-hand side. If the cable type to be used is in the list, highlight it by touching the line and touch select ![icon] to make it the current cable type and return to the Detailed Results screen. See Cable Type section on page 23 for instructions to edit, add or delete cable types.

Setting Cable ID Names:

The cable ID naming convention is a prefix plus an incrementing three digit index number. The prefix should be limited to 9 characters. With the three digit index there will be a total of 12 characters in the name. From the Detailed Result screen, touch Edit ![icon] on the right-hand side of the Detailed Result screen. The Cable Test Setup screen will appear with the current values for prefix and index displayed. Touch Edit to the right of the value to be changed, type in new name or index and touch OK. To add up to 200 cables to the test list at once, touch add ![icon], and enter the number of cables to add and then touch OK. Touch Save ![icon] to keep the edited values or touch Cancel ![icon] to exit without saving. Cable IDs can also be edited from the Test List to be any 12 character name, with or without numbers. See the Test List section on page 26 for instructions on editing, adding and deleting cables.

Warning! All cable test files refer to the cable type list to extract information about the cable definition used in the testing. If a cable type is deleted or the name changed, any Test List that uses that cable type will be corrupted. It is suggested that any PDF or CSV files created from a Test List affected by a cable list change should be generated before making a change to a cable type that is used by the test list.

CABLE TYPE

The cable type list contains a list of all the defined cable types to be tested. Cable type list is used to select the test criteria for cables to be tested and manage the list by editing, adding or deleting entries.

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New Cable Type
- From the Cable Test Screen, touch Cable Type ⬚ .
- To add a new cable type, touch New ⬚ .
- Enter cable name on next screen and press **OK**.
- Touch test connector "RJ45" or "Coax" and press **OK**.
- Touch a data rate (100 Mbps, 1 Gbps, 2-pair 100Mbps, or 0 Mbps) for a Bit Error Rate test and touch **OK** (coax skips this step).
- Enter length constant in pF/foot or pF/meter and press **OK**.

    Typical cable length constant (pF/ft, pF/m):

    - CAT5/5E: 15 pF/ft
    - CAT6: 15 pF/ft
    - CAT7: 15 pF/ft
    - RG6: 16.5 pF/ft
    - RG58: 27 pF/ft
    - RG59: 16.5 pF/ft

- Touch Shielded cable, Non-shielded Cable, or Ignore Shield then touch **OK**.

Edit Existing Cable Types
- Touch a cable type from the Cable Type list. With a line highlighted, the buttons functions are:
- Touch Edit ⬚ to edit the highlighted entry. The name may be changed or kept default. All other settings are entered as in New Cable Type.
- To delete highlighted entry, touch Delete ⬚ .
- Touch OK to confirm action or cancel.

Select a Cable Type to Test
- Touch a cable type from the Cable Type list. Add the highlighted cable type to the test list by touching Select ⬚ .The Cable Test screen will appear with the added cable type displayed in the lower left of the screen.

Cable Name
- From the Detailed Results screen, touch edit ⬚ .
- To enter a cable name prefix touch Edit ⬚ . The prefix is the first part of the cable name that does not increment when a cable is added to the test list. Enter the desired prefix using the touchscreen keypad and touch **OK**.
- Touch Cable index ⬚ to edit the incrementing numerical portion of the Cable ID. When the desired index is entered, touch **OK**.
- To accept the changes, touch Save ⬚ . To exit without saving, touch Cancel ⬚ .

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Ethernet Cable Test

- From the Home screen, touch Cable Test ▣ .

- Connect an Ethernet cable to the NetXpert 1400 then connect the Active Remote to the opposite end of the cable. If an Active Remote is not being used, connect a Network testing ID remote to the opposite end of the cable.

Note: If testing an Ethernet cable that is terminated to a wall plate, use the included RJ45 patch cables to connect to the wall plate or modular RJ45 jack.

- Touch Cable Type ▣ .

- Touch the desired cable type from the cable type list and then touch Select Type ▣ .

- Press the Test button ▣ to perform a test. The NetXpert 1400 will add an incremented cable name to the Test List and perform a test.

- To perform another test, press Test button ▣ . The NetXpert 1400 will add another cable to the test list and perform a test.

- To re-test another cable test, touch the left or right arrows to navigate to the desired cable test then touch Retest ▣ .

Calibration

- To calibrate the length measurement to 0ft, touch Edit from the Cable Test screen ▣ to enter the Cable Test Setup. Be sure to remove connected cables unless a patch cable is being used. Touch Coax Connector or RJ45 Connector.

- To calibrate a patch cable to 0 ft, connect a patch cable to the NetXpert 1400 then select Coax Connector or RJ45 Connector.

Note: The maximum 0 length calibration is 10 ft or 150 picofarads. Coax Cable Test:

- Connect the included F81 barrel adaptor to the NetXpert 1400 module and then connect a Coax ID Remote to the opposite end of the cable

- From the Home Screen, touch Cable Test ▣ .

- Touch Cable Type ▣ .

- Touch the desired coax cable type from the cable type list then Select ▣ .

- Press the Test button ▣ to perform a test.

CABLE FAULTS

Below are the types of cable faults that the NetXpert 1400 will detect and display if the cable under test is damaged or faulty.

Open:

The wire(s) is not continuous throughout the cable. This may be caused by improper termination or a break in the cable.

Short:

Two or more wires in the cable are connected. This may be caused by an improperly terminated cable, damaged RJ45 plug/jack, or a damaged cable.

Miswire:

Cable's wire connection does not follow TIA568A/B Ethernet cabling standards. This occurs when there is an error made when terminating the cable.

Split:

The cable has been wired with correct continuity but not with correct circuitry pairing. This most often happens when the cable is terminated consistently at both ends but in the wrong order.

Skew:

The delay skew is higher than 35 nanoseconds. This may be caused by velocity of propagation or length difference between the cable pairs.

SNR:

The Signal-to-noise ratio is lower than 22db. This may be caused by attenuation, excessive crosstalk, or noise that is imposed on the cable from an external source such as electrical cabling, fluorescent lighting, or electrical equipment.

Length:

The NetXpert 1400 will fail an Ethernet cable when performing a speed certification test if the cable length exceeds 328 feet or 100 meters.

SAVING CABLE TESTS AS A PDF

In the Detailed Results screen there are two options; the NetXpert 1400 can save the last cable test results as PDF, or the entire test list can be saved as a report.

• From the Detailed Result screen, touch More Options .

• Touch PDF .

• Enter the desired file name for your test and touch **OK**.

• NetXpert 1400 will save the PDF under your new file name to external memory (SD Card).

SAVING A PDF REPORT

• From the Detailed Results screen, touch More Options .

• Touch the PDF Report on the Cable Test screen.

• Enter the desired file name for your test report and touch **OK**.

• NetXpert 1400 will save the PDF under the new file name to external memory (SD Card).

DO NOT REMOVE THE SD CARD UNTIL DIALOG BOX DISAPPEARS

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SAVING THE TEST LIST AS A CSV FILE

The test list can be saved as a CSV file to be opened with excel or CSV compatible software.

- From the Cable Test screen, touch More Options ▦ .
- Touch CSV ▣ .
- Use the keypad to enter a file name then touch **OK**.
- The CSV file will be saved to external memory (SD Card).

TEST LIST

The Test List screen contains a list of cables that have been tested. The Test List allows the user to view, save, retest, add, or edit cable tests.

- From the Cable Test screen, touch Test List ▤ .
- Touch the Up and Down arrows ▲ ▼ to scroll through the cable test list.
- To edit the cable name of an existing cable test, touch edit ▣ .
- Use the keypad to enter a new cable name then touch **OK**.
- To add a cable from the test list screen touch Add ▣ .
- Touch OK to accept the automatically incremented cable name or use the keypad to enter a new cable name then touch **OK**.
- To delete a cable from the test list touch Delete ▣ .
- To retest a cable from the test list, touch a cable from the list, touch select ▣ then touch retest ▣ . Pressing the test button again will add a new cable to the test list and a test will be performed. The test list can have up to 256 cable tests. If you will be testing more than 256 cables, create a new Test List to continue testing (see "Cable Name" on page 24 for instructions on how to increment the cable name).

CREATE A NEW TEST LIST

When a Test list is created, the NetXpert 1400 automatically saves your test list as a .tst file to internal memory. The .tst file can be transferred to an SD card or computer. TST files can be reopened by a NetXpert 1400 for editing, retesting, or adding new tests.

- To create a new .tst file, touch Cable Test ▣ from the Home screen.
- Touch New File ▣ and enter a file name then touch **OK**. The .tst file will be saved to internal memory.

FILE MANAGER

- From the Cable Test screen touch File Manager ▣ .
- File manager contains tst, pdf, and csv files that have been saved to internal or external memory. See "File Manager" on page 36 for File manager instructions.

LINK TEST

The Link Test menu displays port services provided by an active switch, router, *or* NIC.

- From the Home screen, touch Link Test ⬚ .
- Touch the desired Link Test option.

PORT DISCOVERY

The Port Discovery test will display port services and capabilities such as link speed, MDI/MDI-X, auto negotiation, and SNR of each pair within the cable.

- Port Discovery is the default Link Test option.
- Press the Test button ⬚ to perform a Port Discovery test.
- Touch PDF ⬚ to save the Port Discovery test results.
- Use the keypad to enter a file name then touch OK.

POE TEST

The detailed PoE test displays PoE mode, type, and min/max load.

- From the Link Test screen, touch PoE ⬚ .
- Press the Test button ⬚ to perform a PoE test.
- Touch PDF ⬚ to save the PoE test.
- Use the keypad to enter a file name, then touch OK.

TONE

The tone generator will transmit a frequency onto a cable to be made audible using a tone probe. The tone generator will assist in locating an inactive cable in a bundle, patch panel, or wall plate.

- From the Link Test screen ⬚ , touch Tone ⬚ .
- Press the test button ⬚ to transmit the tone.
- Touch Previous ⬚ or Next ⬚ to alternate which pin or pair to transmit the tone.
- Touch Low/High to change the tone output level and cadence (default is set to low).
- Use a tone probe to trace the tone alongside or at the end of the cable.

LINK LIGHT

The Link Light blinks the port LED on a switch or router to identify which port the NetXpert 1400 is connected to.

- Connect the NetXpert 1400 to a cable that is plugged into an active hub, switch or router.

- From the Link Test screen ![icon], touch Link Light ![icon] .

- Press the Test button ![icon] .The Link Light graphic will begin to blink indicating that the test is running.

- The LED of the port you are connected to on a switch or router will blink at a slow and consistent cadence for easy identification.

- To select the Link speed, touch the Left ![icon] or Right arrows ![icon] . The Link Light can be connected at 10Mbps half or full duplex, 100 Mbps half or full duplex, 1Gbps half or full duplex or auto.

BERT TEST

The BER Test will allow you to manually perform a Bit Error Rate Test without regard to TIA wiring specifications such as length maximum and pinout. This will allow you to identify if a cable can support 100Mbps or 1Gbps using up to 250 Gigabytes of data.

- From the Link Test screen ![icon], touch More Options ![icon] .

- Touch BERT 100Mb to perform a 100MB test or touch 1Gb to perform a 1Gb test.

- Touch the left ![icon] or right ![icon] arrows to select the amount of data to transmit. The amount of time it takes to test is displayed in seconds under the data amount to transmit.

- To save the BER Test, touch the PDF icon ![icon] , enter a file name, and then touch **OK**.

CUSTOMER SERVICE

The Network Test menu provides advanced network tests to discover, verify and troubleshoot the network.

- From the Home screen, touch Network Test [icon].

- The NetXpert 1400 will automatically establish a link upon entering the Network Test screen.

LINK TEST

Upon entering the Link Test screen, the NetXpert 1400 will automatically perform a port test by acquiring an IP address and DHCP information.

DHCP

- Touch DHCP [icon] from the Network Test screen.

- Press the Test button [icon] .

- To save the DHCP test results, touch PDF [icon] on the lower right of the LCD screen. Enter a file name, then touch **OK**.
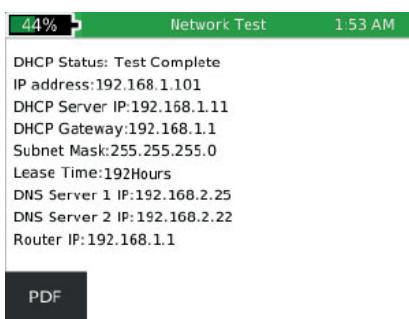
PING TEST

- Connect the NetXpert 1400 to an active Ethernet port or cable.

- Touch Ping [icon] from the Network Test screen.

- Touch Add [icon] . The saved target list will be displayed.

- Touch Add [icon] or Edit [icon] to enter a new IP address or URL.

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- Use the keypad to enter an IP or URL

- To edit or remove an address, touch an address under "IP/URL" then touch Edit ✎
  or Delete ✖ .

- To add an IP address or URL to the target list, touch an address under IP/URL then
  touch Add ✚ .

- To ping the Targets, press the Test button ✅ .

- To stop the ping test, press the Test button ✅ .

TRACE ROUTE

Trace Route is an ICMP ping test that shows much more details than a regular Ping Test. Choose a target and each device along the route to the target will be displayed with a corresponding hop number. The largest hop number will be the destination. If a device does not respond to ICMP dashes will be shown next to the hop number. Three pings will be sent to each hop and the response times will be shown.

- From the Network Test screen, touch Trace Route ⊕ .

- To Add/Edit trace route IP addresses, touch List 📋 .

- To delete an address, touch Delete ✖ .

- To add an IP address or URL, touch Add ✚ .

- To edit an IP address or URL, touch Edit ✎ .

- Use the keypad to add or edit the IP address or URL, then touch **OK**.

- To add an IP address or URL to the trace route test, touch the desired address from the list and touch Select 📋 .

- Press the Test button to begin the Trace Route test.

- The NetXpert 1400 will display the hop number, IP address, and response time. If a device does not respond with an IP, the NetXpert 1400 will display dashes "- - - -" for that device.

- To save the Trace Route test list, touch CSV 🗎 .

- Use the keypad to name the CSV file, then touch **OK**.
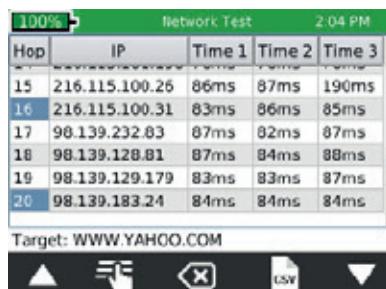
VLAN

The NetXpert 1400 identifies Virtual Local Area Networks and displays them in a list for easy identification. The list will include the VLAN ID and Priority.

- From the Network Test screen, touch VLAN ▨ . The NetXpert 1400 will automatically list the available VLANs.

- Use the Up ▲ and Down ▼ arrows to scroll through the VLAN list.

- To save the VLAN results, touch CSV ▣ .

- Use the Keypad to name the CSV file, then touch **OK**.

DISCOVERY PROTOCOLS

The Discovery Protocol menu provides Cisco switch Protocol and Link Layer Protocol information.
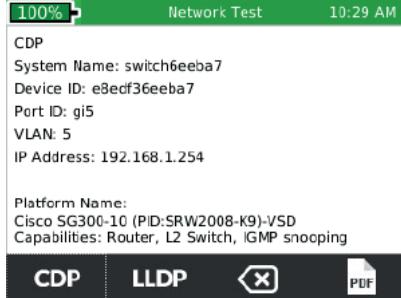
- Connect the NetXpert 1400 to an active Ethernet port or cable.

- Touch CDP/LLDP ▣ .

- Touch CDP ▨ to display Cisco switch information.

- Touch LLDP ▨ to display Link Layer switch information.

Note: The information displayed may vary depending on the information provided by the switch.

- Touch the left ◀ or right ▶ arrows to view additional CDP or LLDP devices that may be present on the network.

- Touch Clear ▨ to clear the CDP or LLDP screen.

- To save the results, touch PDF ▣ .

- Use the keypad to enter a file name, then touch **OK**.

Note: CDP/LLDP information is obtained from a broadcast packet from a switch or switches on the network. The time between packets is a switch setting and can be in excess of 30 seconds or tuned off. Usually, only managed switches support CDP and or LLDP.

IP SETTINGS

- Touch IP ▨ to configure the NetXpert 1400 IP setup (see "First System Settings" on page 10 for additional instructions).

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FILE MANAGER

The File manager contains saved PDF, CSV, and TST test files. In this menu, they can be renamed, deleted, or transferred between internal and external memory.

MANAGING FILES

- From the Home screen, touch the File Manager [image] .

- The File Manager displays files from internal memory and external memory (SD Card). Touch Show Internal [image] or Show SD [image] to view the desired memory location.

- To display PDF files only, touch PDF [image] .

- To display CSV files only, touch CSV [image]

- Touch the Up [image] and Down [image] arrows to scroll through the file list.

- To copy files, touch one or more files from the list, then touch Copy to SD [image] or Copy to Internal [image] .

- Touch [image] for more options.

- To open a .tst file, touch a .tst file then touch Open [image] .

- To delete a file, touch a file from the list and touch delete [image] .

USB MODE

Files can be uploaded to a computer by removing the SD card and inserting it into an SD Card reader, or by plugging the NetXpert 1400 into a computer via USB.

- To upload files from the NetXpert 1400 to a computer via USB, plug a micro USB cable into a computer then into the NetXpert 1400.

- From the File Manager screen, touch More options [image] .

- Touch USB. A dialog box will appear to confirm the selection. Touch **OK** to proceed or Cancel to return to the File Manager screen.

- Open the removable storage device drive on your computer.

- Double click on the PDF or CSV folders to view the test files.

- Copy the desired files to your computer.

SD CARD

- Remove the SD Card from the NetXpert 1400. Push the SD Card inward then release to unlock the SD Card.

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ICON GLOSSARY

Cable Test Menu		Retest	
Link Test Menu		Reload Factory Software	
Network Test Menu		Restore Defaults	
File Manager Menu		Save one Test to a PDF	
System Settings		Save *.tst file to a PDF	
Menu		Save *.tst file as CSV	
Add		Ping Test	
Edit		DHCP Request	
Edit Index		Trace Route	
Delete		Tone Test	
Select		Blink Link Light	
Page Up		PoE Test	
Page Down		Setup IP Addresses	
Previous		LLDP/CDP Screen	
Next		VLAN	
List		Clear Screen	
File Manager		↔ SD Card Internal Memory View Toggle	
New File		Copy to SD Card	
Save		File Open	
Cancel		Delete File	
More Options		Copy to Internal Memory	
Full Screen			

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FREQUENTLY ASKED QUESTIONS

Q. What are the 1 inch RJ45 dongles in the NetXpert 1400 kit?

A. They are RJ45 sacrificial cables. They are to be plugged into the NetXpert 1400 and the Active Remote during testing to prolong the life of the NetXpert 1400 and Active Remote RJ45 jacks.

Q. Why does the NetXpert 1400 display the cable length in red and fail the cable test?

A. The NetXpert 1400 tests to TIA568 A and B interconnect specifications. If your cable exceeds 328 ft/100 m, the NetXpert 1400 will not perform the speed certification test and fail the cable length.

Q. Whats is a .tst file?

A. The .tst files consist of cable tests that have been performed in each file.

Q. Whats is pF/ft?

A. pF/ft stands for "Picofarad per foot". It is the capacitance length measurement value used by the NetXpert 1400 to measure a cable. The NetXpert 1400 also uses TDR when a short is detected to measure the distance to the short.

Q. What's the difference between the Link Test and Network Test menu?

A. The Link Test menu identifies port services such as link speed (Port Discovery), PoE, and port location options such as tone generation and link light flashing. The Network Test menu network features include ping, VLAN detectionn, Trace Route, LLDP/CDP, and DHCP.

Q. How do I get a firmware update for the NetXpert 1400?

A. Go to the Download Center on https://itnetworks.softing.com to access NetXpert 1400 updates.

Q. Why don't I get DHCP results in the Link Test or Network Test menus?

A. There may be a few of reasons why the NetXpert 1400 cannot obtain DHCP. Make sure that Use DHCP and Use DHCP DNS are selected in the settings menu, perform a VLAN test and make sure you are not connected to a tagged VLAN port. If you still cannot get a DHCP, check to make sure the cable is connected to an active port.

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Q. Why does the test report display Pass VoIP?

A. The NetXpert 1400 qualifies a speed certified cable as VoIP capable as it has successfully transmitted at least 100mbps. VoIP requires at least 100mbps capability to function correctly.

Q. Why won't the NetXpert 1400 display VLAN results?

A. VLAN detection relies on VLAN tagged LLDP or CDP packets. Perform an LLDP or CDP test and if no results are displayed, enable LLDP or CDP on the switch you are testing.

Q. How many cable tests can the NetXpert 1400 save?

A. The NetXpert 1400 can save tens of thousands of cable tests to internal and external memory combined. Each TST file is limited to 250 cable tests to keep the file size small and to keep the test list from becoming cumbersome to navigate.

Q. Does the NetXpert 1400 detect PoE?

A. Yes, the NetXpert 1400 detects PoE and PoE plus, PoE mode, and min/max voltages while loading.

Q. How do I test unterminated Ethernet cables?

A. An optional 8-way Alligator Clip Cord Set allows you to test unterminated Ethernet cable. This unique cord set has an RJ45 plug on one end and an alligator clip connected to each wire on the other end. This accessory allows you to make sure cables have not been damaged before you spend the time and money to terminate them.

Q. How do I extend the life of my RJ45 Jack?

A. The sacrificial RJ45 Cable extends the life of the RJ45 jacks on your tester and remote(s). Plug the sacrificial cable into the tester or remote and then plug the cables to be tested into the sacrificial cables. Continue testing cables with the sacrificial cables plugged into the tester or remote(s). If the sacrificial cables become worn or damaged, simply replace them. This prevents downtime and saves money by not having to send your tester in for an RJ45 jack replacement.

Q. Can I purchase additional active remotes?

A. Yes, the NetXpert 1400 Active Remote has selectable IDs (1-4) so users can have up to 4 remotes with different IDs.

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Q. Why are the length wrong and split errors on all my cable drops?

A. This issue is most common when punching down cables to a patch panel. Some patch panels reroute continuity through PCB boards, have LEDs connected to a pair to identify the presence of traffic, or noise isolators. These features will change the cable characteristics and affect the test results.

Q. What is SNR, and how is it measured?

A. The Signal-to-noise ratio is performed by measuring the signal generated by the far end (active remote/switch). The far end device transmits Ethernet signals by which the NetXpert 1400 measures the quality of the Ethernet signals. If the signal jitter is outside the Ethernet spectrum, it affects the quality of the signal, which is identified as an SNR dB measurement

Q. What is SKEW?

A. SKEW is the signal delay between pairs. Excessive delay can cause data to be received in the incorrect order, negatively impacting network performance.

Q. What is BERT, and how is does it work?

A. BERT stands for Bit Error Rate Test. The NetXpert 1400 generates data packets equaling up to 10 Gigabytes, then sends the data packets to the Active Remote at 1Gbps. The Active Remote receives and returns the same data to the NetXpert 1400. This test ensures successful data transmission at maximum data rate for 1 Gig.

NetXpert 1400

MAINTENANCE

BATTERIES

- The NetXpert 1400 is powered by a rechargeable Lithium-ion battery.

- To charge the battery, plug the charger into the side port and then plug the charger into the power source.

- Be sure to charge the batteries overnight or a minimum of 5 hours for the Lithium Ion battery pack to establish voltage memory. This increases the accuracy of the battery charge percentage.

- NetXpert 1400 battery is not user serviceable. In the event you need to remove the battery, unscrew the back panel of the NetXpert 1400 and unplug the battery from the NetXpert 1400. Be sure to remove all the leads connecting the battery to the device.

NOTE: The advanced Lithium-ion battery is designed to last the life of the unit and should not have to be replaced. Lithium-ion batteries are hazardous waste and should be disposed of in compliance with local, state, and federal hazardous waste regulations.

CLEANING

- Use a clean, damp cloth to clean the NetXpert 1400.

- Before cleaning, disconnect all cables from the NetXpert 1400. Failing to disconnect cables can damage the device and cause personal injury.

- Do not use harsh cleaners, abrasives, or solvents.

STORAGE

- When not in use, store the NetXpert 1400 in the included protective case.

- Do not expose the NetXpert 1400 to high temperatures (above 80 °C) or humidity. See the specifications section for temperature limits.

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SPECIFICATIONS

SPECIFICATIONS	Description
Length Measurement	Time Domain Reflectometry & Capacitance
Power	Wall Power Adapter: Input 100-240VAC 50/60Hz, Output 12VDC 2.5A DC Input Jack: 10-28VDC, 20 watts max Battery pack - Rechargeable Li-ion rated 7.8V, 5500mAh, initial capacity Battery life - Linked @ 1Gb - 8 hours minimum
Output Connectors	8-Position shielded modular jack (Data) F-coax (video)
Interfaces	Micro USB, SD flash card
Battery Life	Battery pack - Rechargeable Li-ion rated 7.8V, 5500mAh, initial capacity Battery life - Linked @ 1Gb - 8 hours minimum Active, not linked - 20 hours
Altitude	10,000 ft. (3,048 m) operating
Temperature:	Operating: -10 to 60 °C Storage: -30 to 70°C Charging temperature range: 10°C to 45°C
Humidity	10 to 90% non-condensing
Enclosure	High-strength PC/ABS plastic with V0 rating with boot
Size	2.41"H x 4.18"W x 9.03"L (6.12 x 10.61 x 22.94 cm)
Weight	With batteries: 1 lb 12 oz
Safety Compliances	CE
Warranty	1 Year

NetXpert 1400

CUSTOMER SERVICE

CONTACTING SOFTING IT NETWORKS

For technical information and support please contact the Softing office in your country.
Please see the last page of this manual or go to https://itnetworks.softing.com.

IT Networks

WARRANTY

Softing IT Networks GmbH warrants that the product shall be free from defects in parts or workmanship for a period of 12 months from the date of purchase if used in accordance with Softing IT Networks GmbH operating specifications.

THIS IS THE ONLY WARRANTY MADE BY Softing IT Networks GmbH AND IS EXPRESSLY MADE IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

Should any parts or workmanship prove defective, Softing IT Networks GmbH will repair or replace at Softing IT Networks' option, at no cost to the Buyer except for shipping costs from the Buyer's location to Softing IT Networks. This is Buyer's SOLE AND EXCLUSIVE REMEDY under this Agreement. This warranty does not apply to products which have been subject to neglect, accident or improper use, or to units which have been altered or repaired by other than an authorized repair facility.

Return of Equipment – To return a product to Softing IT Networks first obtain a Return Authorization Number from our local Customer Service. The RMA# must be clearly marked on
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