optimize!
softing

WireXpert

Cat 6A+ Adapters

Version: WireXpert4500_Copper_CAT6APLUS_IT_EN_201908

Disclaimer of liability

Softing Singapore Pte Ltd

73 Science Park Drive
#02-12/13 Cintech I
Singapore Science Park 1
Singapore 118254
http://itnetworks.softing.com

     + 65 6569 6019
     + 65 6899 1016
     asia-support.itnetworks@softing.com

The latest version of this manual is available in the Softing download area at: http://itnetworks.softing.com.

Table of Contents

This page is left intentionally blank

1 Introduction

1.1 About product

Please ensure v8.1 and above firmware has been installed into WireXpert and workstation before proceeding further. Please refer to Installation Guide for detailed instructions on how to obtain and install eXport.

With the *CAT 6A+ Channel* adapters, besides testing all of the AUTOTEST parameters required for a channel link test, WireXpert will be able to measure direct current resistance unbalance or DCRU between and in pairs of twisted pair LAN cabling in accordance with TIA and IEC specifications. The enhanced shield integrity test help to determine if shielded cables are connected on the correct socket. The enhanced wire map test enables pre-defined crossovers cables to be tested.

This user guide will only contain information and instructions on how to use the Cat6A+ Channel Adapters with WireXpert. Please refer to User Manual and Guides for WireXpert for device and PC software help respectively.

The Cat6A+ Channel adapters are compatible with WireXpert 4500, WireXpert 500+ and WireXpert 500-CU.

1.2 Safety precautions

Read this manual before starting

For damages due to improper connection, implementation or operation Softing refuses any liability according to our existing warranty obligations.

Note

This symbol is used to call attention to notable information that should be followed during installation, use, or servicing of this device.

Hint

This symbol is used when providing you with helpful user hints.

CAUTION

Selection of option may cause all or partial of saved data and/or settings in the device to be erased or restored to non-reversible original factory state. Backing up of saved result(s) is recommended before executing option.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

1.3 Intended use

WireXpert series has been designed for use in factory, process and building control. The unit must not be used in explosion hazard areas. The permissible ambient conditions given in the Technical Data must be complied with.

The faultless and safe operation of the product requires proper transport, proper storage and installation, and expert operation and maintenance in accordance with the manual.

1.4 About this document

Read this manual before starting

For damages due to improper connection, implementation or operation Softing refuses any liability according to our existing warranty obligations.

1.4.1 Document history

Document version	Modifications compared to previous version
201907	Firmware update to v8.1

1.4.2 Conventions used

The following conventions are used throughout Softing customer documentation:

Keys, buttons, menu items, commands and other elements involving user interaction are set in bold font and menu sequences are separated by an arrow	Open **Start ➔ Control Panel ➔ Programs**
Buttons from the user interface are enclosed in brackets and set to bold typeface	Press **[Start]** to start the application
Coding samples, file extracts and screen output are set in Courier font type	`MaxDlsapAddressSupported=23`
Filenames and directories are written in italic	Device description files are located in *C:\<product name>\delivery\software\Device Description files*

1.5 Before you start

Check that the latest eXport PC software and firmware is installed in the workstation and WireXpert respectively to ensure the latest features are available.

Key differences between WX4500 and WX500 series

Features	WX4500-FA	WX500-PLUS	WX500-CU	WX500-FIBER
Frequency of measurement	2500 MHz	500 MHz	500 MHz	N/A
Accuracy Specification	TIA Level 2G ISO/IEC Level VI	TIA Level IIIe ISO/IEV Level IIIe	TIA Level IIIe ISO/IEC Level IIIe	N/A
Fiber Testing option	Yes	Yes	No	Yes
Class FA/CAT 8 options	Yes	No	No	No
Patch Cord Test adapters	Yes	Yes	Yes	No

Softing recommends WireXpert to be calibrated annually. Starting from v7.4, WireXpert will remind the user to calibrate the units if the last calibration was more than one year ago. This notification can be closed by clicking the **[OK]** button, but will be displayed on every boot up until the units are calibrated.

Calibration can only be done by the service center. Please contact your local vendor for more information.

1.6 Scope of delivery

WireXpert Cat6A+ Channel test kit comprises the following parts:

CAT 6A+ Channel adapters (WX_AD_6ACH_PLUS2)	CAT 6A Reference Cord (WX_AC_6A_REF_PCORD1)

1.7   System requirements

Hardware

❑   PC

Operating system

❑   Windows 7, 8.x or 10 (32 bit or 64 bit)

❑   Intel Core 2 Duo, 2GHz

❑   1 GB of RAM

❑   200 MB of free space of installation

❑   Microsoft .NET framework

2   Application description

The Direct Current (DC) resistance of twisted pair cabling has become an important parameter with the roll-out of high-power Power-over-Ethernet (PoE) applications up to 60 or 100W.

If the DC resistance of a cable is too high and/or the DC resistance between pairs or even within wires or a pair differs too much, the temperature of that pair or wire can increase above the allowed cable or connector specification. This DC resistance unbalance (DCRU) will cause the cabling to suffer from accelerated aging or damaging, as well as significant risk to lose data due to signal distortion.

ISO/IEC, TIA and Cenelec have defined testing of DCRU as an optional parameter that can be added to regular cable certification, in case the use of high power PoE is planned for a specific cabling installation.

When using the *CAT6A+* adapters, the general requirements such as maximum distance between links remains unchanged as per documented by the Standards.

3   Setting Reference

The **CAT 6A+ Channel** adapters behaves differently from the regular CAT 6A Channel adapters. The pair of CAT6A+ adapters can be paired together to perform a set reference if the WireXpert units are paired for the first time.

To set reference,

1.   Connect the CAT 6A+ Channel adapters to both LOCAL and REMOTE units.

2.   Connect the 2 units together using the reference cord provided in the kit.
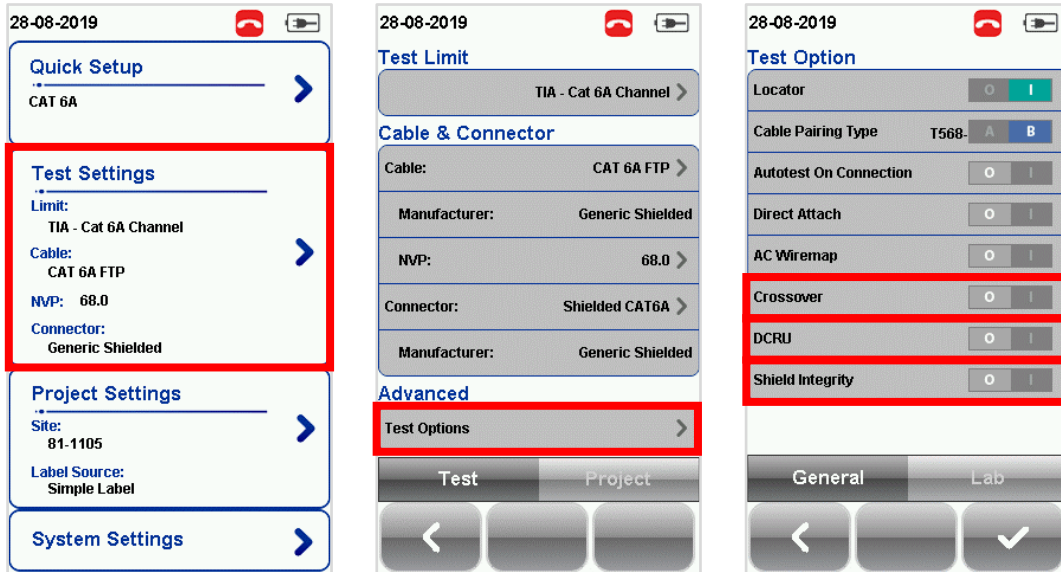
3.   Press the **[TOOLS]** button ➔ **Set Reference**

4.   Set Reference will fail in the event of-

- Adapter probe mismatch, i.e., two channel or permanent link adapters

- Firmware version mismatch between LOCAL and REMOTE units

- No connection between LOCAL and REMOTE units

4 Configuring an AUTOTEST

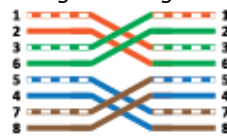## 4.1 Setting up WireXpert

4.1.1 Crossover

1. Press the **[SETUP]** button ➔ **Test Settings** ➔ **Test Options** ➔ **General**

2. Enable **Crossover** option to perform testing of a crossover cable.

3. Depending on the limit selected, select the crossover wiremap(s) that will be allowed during an AUTOTEST. At least one wiremap must be selected to proceed.
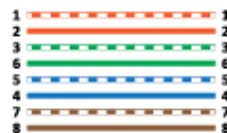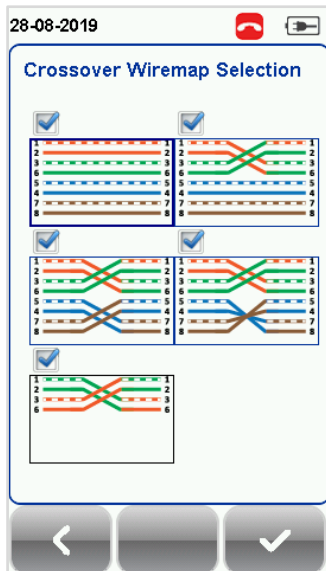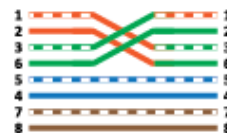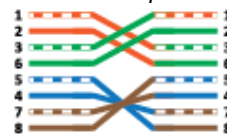

Straight-through cable

Crossover at pairs 12, 36

Crossover at pairs 12, 36, 54,78

Crossover at pairs 12, 36 and reversed at pairs 54, 78

Crossover at pairs 12, 36 for 2-pair cable

4. Click **[OK]** on Crossover Wiremap Selection screen to save selection.

5. Click **[OK]** on Test Option screen to save option.

Note

Crossover can only be selected by selecting a test limit from **Test Settings** ➔ **Test Limit** ➔ **Application Standards**. Disabled by default.

Crossover wiremap selections will only be available for the applicable limits as follows:

	Straight-through cable	Crossover at pairs 12, 36	Crossover at pairs 12, 36, 54,78	Crossover at pairs 12, 36 and reversed at pairs 54, 78	Crossover at pairs 12, 36 for 2-pair cable
1000BASE-T	Yes	No	No	Yes	No
1000BASE-TX	Yes	No	Yes	No	No
100BASE-TX	Yes	Yes	Yes	Yes	Yes
10BASE-T	Yes	Yes	Yes	Yes	Yes

4.1.2   DCRU (Direct Current Resistance Unbalance)

The DCRU test allows to perform additional DC resistance unbalance measurements between and within each pair in accordance with TIA and IEC specifications, on top of the AUTOTEST parameters required in a Channel or Permanent Link.

1. Press the **[SETUP]** button ➔ **Test Settings** ➔ **Test Options** ➔ **General**

2. Enable **DCRU** option to perform additional testing of DCRU Pair-to-Pair (P2P) and In-Pair.

3. Click **[OK]** on Test Option screen to save option

Note

DCRU option can only be selected when a *CAT6A+* adapter is used on WireXpert. Disabled by default.

4.1.3   Shield Test

The improved shield integrity test allows the instrument to differentiate between a shield being present and connected at both ends on the actual cable under test, as opposed to alternative electrical path between the shield pins of the WireXpert units.

1. Press the **[SETUP]** button ➔ **Test Settings** ➔ **Test Options** ➔ **General**

2. Enable **Shield Test** option to perform shield integrity test during an AUTOTEST.

3. Click **[OK]** on Test Option screen to save option

Note

Shield Test option can only be selected when a *CAT6A+* adapter is used on WireXpert. Disabled by default.

Option will be disabled when the AC Wiremap option is enabled.

4.2   Testing Guide for Channel Testing

Channel (Ch) test is comprised of the connection from an active device (eg. Router) in a data rack, a telecommunication outlet (horizontal cabling) and the connecting patch cords at both ends using

Channel test adapters at each end of the link under test. The recommended length for the patch cord from the patch panel and the outlet is 5m.

1. Insert the *CAT6 A+ Channel* adapters onto the LOCAL and REMOTE units of the WireXpert.

2. Power ON WireXpert. Check that WireXpert is in Copper testing mode.

3. Set reference is required if the units are being paired for the first time. Refer to Chapter 2 on how to set reference.

4. Choose the Channel limits and configure other settings if necessary.

5. Connect the LOCAL unit to the patch panel and REMOTE unit to the outlet using the patch cord connected to be used.

6. Press the **[AUTOTEST]** button to begin AUTOTEST.
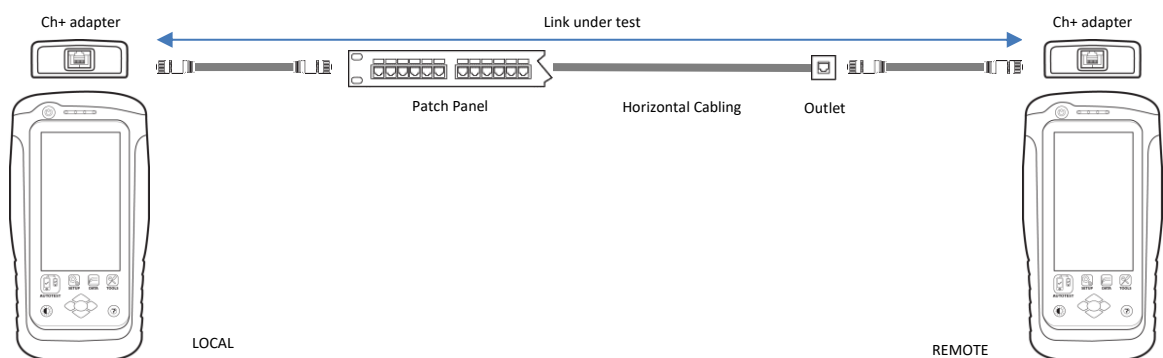
User Manuals

For more information on installation and using eXport PC software, please refer to "Installation Guide for eXport PC software" and "User Manual for eXport PC software".

Note

Depending on the number additional options that are enabled, WireXpert may take a slightly longer time to perform accurate measurements of the parameters.
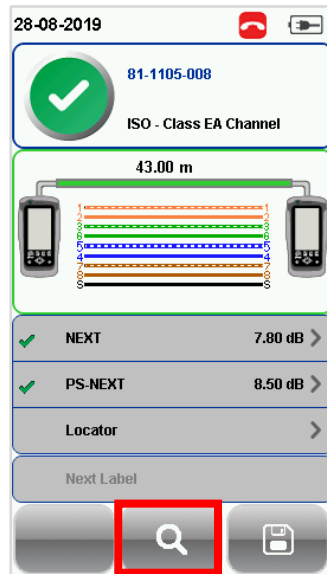
5 Performing an AUTOTEST

5.1 Understanding AUTOTEST

Press the **[AUTOTEST]** button once settings and limits have been selected. WireXpert will use the last configuration or factory settings to perform the AUTOTEST if new settings are not configured.
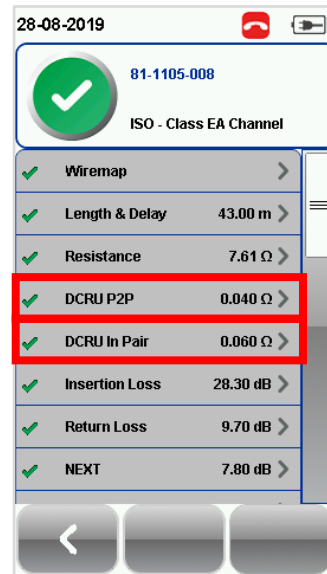
WireXpert will display summarized result with PASS or FAIL once AUTOTEST is completed. Press the **[View]** details button to view the comprehensive result or the **[Save]** button to save the results.
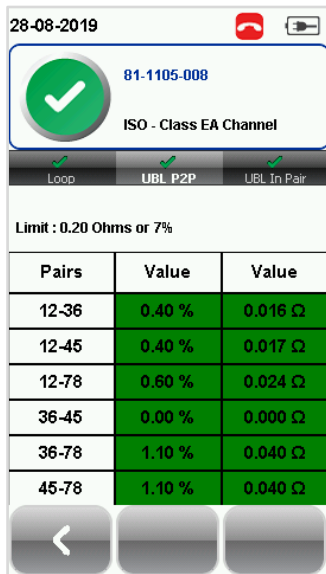

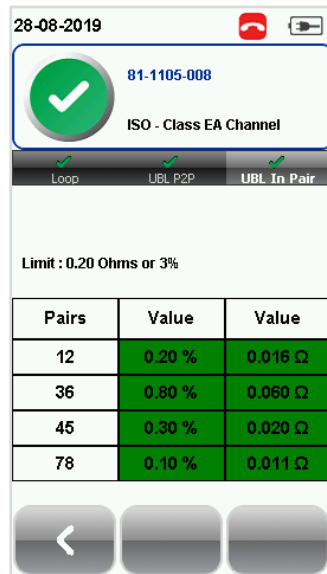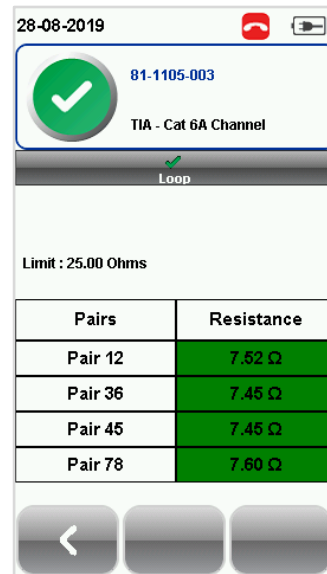*AUTOTEST in progress* *AUTOTEST complete* *[View] results with DCRU parameters.*

If the DCRU option is enabled, two additional parameters – **DCRU P2P** and **DCRU in Pair** – will be listed in the summary results list. Select the additional options to view the detailed result of the parameter.

DCRU Pair-to-Pair *DCRU In-Pair* *If DCRU option is disabled, the Unbalance (UBL) P2P and In-Pair tabs will not be available.*

Note

DCRU test parameters are only applicable to certain Test Limits as per standards. When DCRU is selected but not applicable to the selected test limits, WireXpert will mark the result with an "i" instead of a "PASS" or "FAIL" to symbolize "For Information Only". Any values marked with "i" will not influence the test results.

DCRU parameters are applicable to the following Test Limits in WireXpert:

| Standard	Test Limit	In-Pair	Pair-to-Pair
AS-NZ 3080	All Classes Channel	Yes	
	All Classes Permanent Link	Yes	
Cenelec EN	All Classes Channel	Yes	Yes
	All Classes Permanent Link	Yes	Yes
End-to-End	All Classes	Yes	
ISO	All Classes Channel, except DTR11801, TR11801-9901, TR24750	Yes	Yes
	All Classes Permanent Link except TR24750	Yes	Yes
Japan / JIS	All Classes Channel	Yes	Yes
	All Classes Permanent Link	Yes	Yes
TIA	All Categories Channel, including TIA-1005 except TSB-155	Yes	
	All Category 8 Channel and Permanent Link	Yes	Yes

If the Crossover option is enabled, depending on the template(s) selected, the following wiremap(s) will pass an AUTOTEST when the selected crossover cable is used.
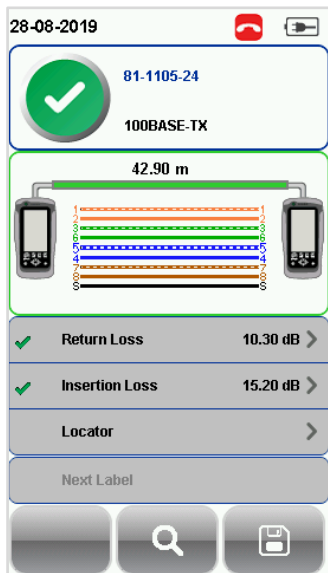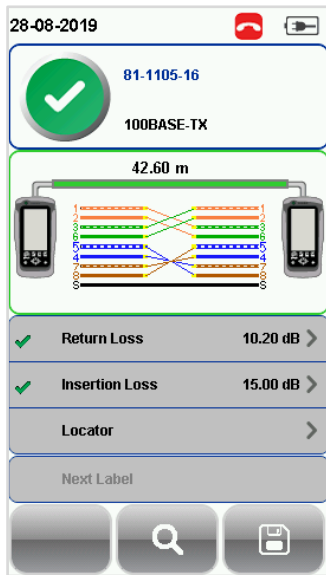

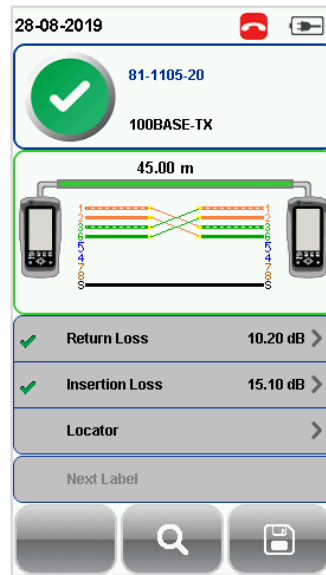*AUTOTEST Passed with "Straight-through cable" selected.*
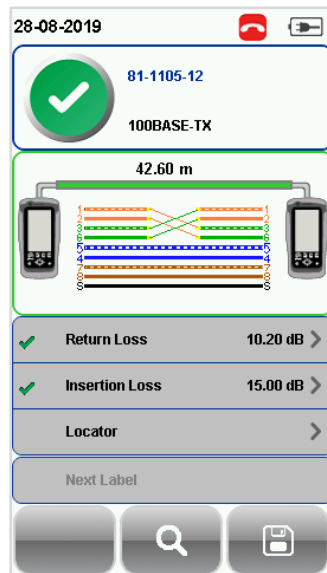
AUTOTEST Passed with "Crossover at pairs 12, 36" selected.
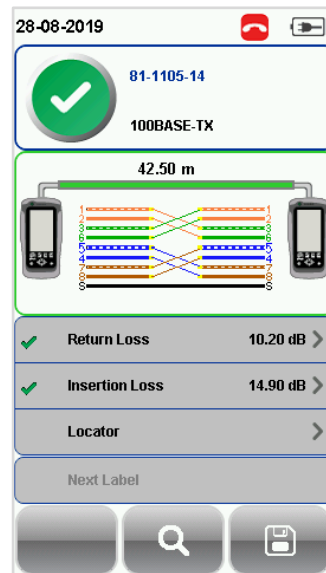
AUTOTEST Passed with "Crossover at pairs 12, 36, 54,78" selected.

AUTOTEST Passed with "Crossover at pairs 12, 36 and reversed at pairs 54, 78" selected.

*AUTOTEST Passed with "Crossover at pairs 12, 36 for 2-pair cable" selected.*



Note

Select **Two-pair shielded** from **Test Settings ➔ Cable ➔ Generic Shielded** when performing test with a two-pair shielded cable.

If the Shield Test option is enabled, WireXpert will "PASS" if shield is present, and "FAIL" an AUTOTEST if;Shield is open at either or both ends of the Channel.

1. Unshielded cables are used in the Link and/or patch cords under test.

2. Unshielded connectors are used.
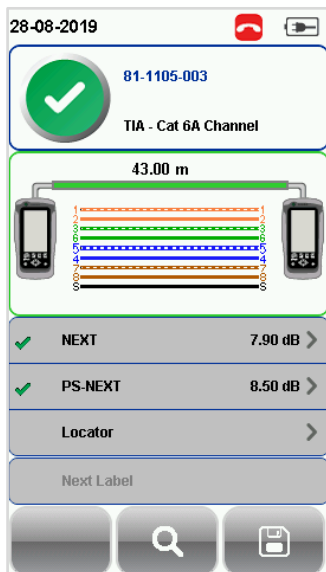
AUTOTEST Passed with "Shield Test" enabled
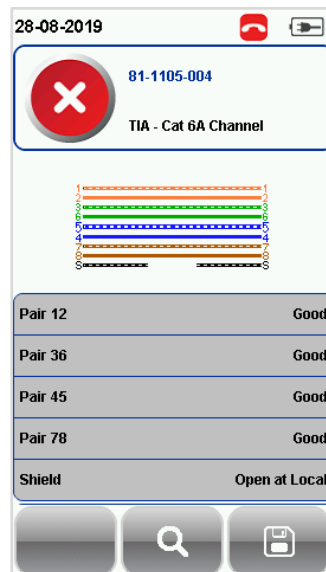
AUTOTEST Failed with "Shield Test" enabled

WireXpert will not continue with the AUTOTEST process if a shield integrity test FAIL is detected.

6 Managing test result(s)

eXport is a data management software designed to work seamlessly with WireXpert. Saved results can be imported to eXport PC software using USB flash drive, USB cable or eXport Cloud.

User Manuals

For more information on installation and using eXport PC software, please refer to "Installation Guide for eXport PC software" and "User Manual for eXport PC software".

User Manuals

For more information on how to save and export saved test results, please refer to "User Manual – Copper Certification Testing"

6.1 Viewing results on eXport PC software

1. Launch eXport PC software and create a new project.

2. Import saved results by selecting **Import ➔ Device/USB Flash Drive/PC**

3. Select a result on the results panel.

4. If DCRU option is enabled for an AUTOTEST, the "DCRU in Pair" and "DCRU P2P" parameters will be listed in the overall result in the summary panel.

DCRU option is enabled for an AUTOTEST.
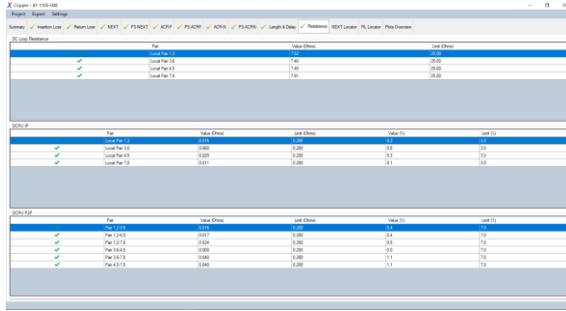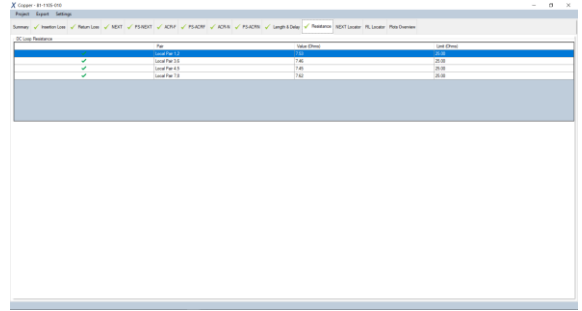
If DCRU option is disabled, the Unbalance P2P and In-Pair parameters will not be available.

5. Double click on the result.

6. If DCRU option is enabled for an AUTOTEST, the parameters will be listed in the "Resistance" tab.
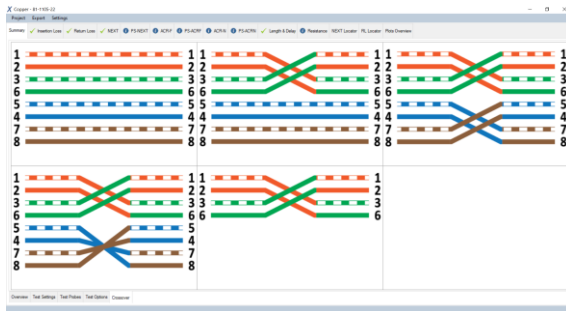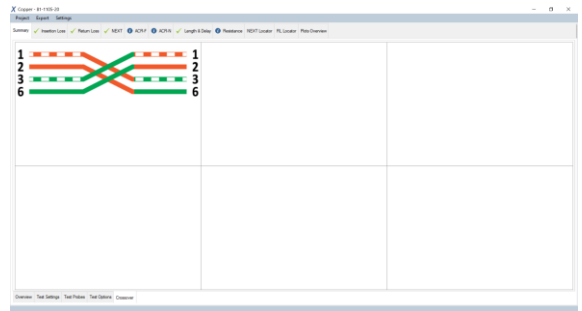
| *DCRU option is enabled for an AUTOTEST.* | *If DCRU option is disabled, the Unbalance P2P and In-Pair parameters will not be available.* |

7. If Crossover option(s) is enabled for an AUTOTEST, the selected crossover wiremap(s) will be displayed on the "Crossover" tab. The "Crossover" tab will not be available if option is disabled.

| *"Crossover" tab with all Crossover wiremap options selected for an AUTOTEST.* | *"Crossover" tab with only 1 option selected for an AUTOTEST.* |

6.2 Viewing results on PDF report

1. Select and export result(s) by select **Export ➔ PDF ➔ Detail**

2. If DCRU option is enabled during an AUTOTEST, the parameters will be listed in the Wiremap test block in the report.

	Value	Limit	Margin
Length (m):	43.0	-	-
Cable NVP:	68.0	-	-
Propagation Delay (ns):	214.0	555.0	341.0
Delay Skew (ns):	3.0	50.0	47.0
DC Loop Resistance (Ohms):	7.61	25.00	17.39
➡ Resistance Unbalance In Pair (Ohms):	0.060	0.200	0.140
➡ Resistance Unbalance In Pair (%):	0.8	3.0	2.2
➡ Resistance Unbalance Pair To Pair (Ohms):	0.040	0.200	0.160
➡ Resistance Unbalance Pair To Pair (%):	1.1	7.0	5.9

PDF Test report indicating DCRU parameters.

	Value	Limit	Margin
Length (m):	43.0	-	-
Cable NVP:	68.0	-	-
Propagation Delay (ns):	214.0	555.0	341.0
Delay Skew (ns):	3.0	50.0	47.0
DC Loop Resistance (Ohms):	7.62	25.00	17.38

PDF Test report without DCRU parameters.

7 Declarations

EU Declaration of Conformity

softing

We

Softing Singapore Pte. Ltd.
3 Science Park Drive
#03-09, The Franklin
Singapore Science Park 1
Singapore 118223

declare under our sole responsibility that the products

Model / Description

WX4500-FA	/	WireXpert cable certifier 2500 MHz
WX500-CU	/	WireXpert cable certifier 500 MHz
WX_AD_VCL_MM1/MM2	/	Multi mode fibre adapter
WX_AD_EF_MM1/MM2	/	Multi mode fibre adapter (encircled flux compliant)
WX_AD_SM1/SM2	/	Single mode fibre adapter
WX_AD_MM_MPO_KIT/		
SOURCE/PWRMETER	/	Multi mode MPO adapters

including associated accessories and cables supplied by Softing Singapore, comply with the
requirements of the following directives:

EMC directive 2014/30/EU

Low Voltage Directive 2014/35/EU

RoHS directive 2011/65/EU

REACH Regulation (EC) 1907/2006 including tracking changes to the SVHC list published by
ECHA on an ongoing basis. As of 21st February 2017, 173 SVHCs are listed.

Applied harmonised standards:

EN 55024 (2003-10) : Information technology equipment – Immunity characteristics –
Limits and methods of measurement

EN 55022 (2008-05) : Information technology equipment – Radio disturbance
characteristics – Limits and methods of measurement

IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 : Information technology
equipment – Safety – Part 1 : General requirements

21st February 2017

Simon Harrison
General Manager

Date

Template version 2.1		Document No: 3000-0007

This device complies with the requirements of the EC directive 2004/108/EG "Electromagnetic Compatibility" (EMC directive). It meets the following requirements:

Note

A Declaration of Conformity in compliance with the above standards has been made and can be requested from Softing Singapore Pte Ltd.

China ROHS

The WireXpert device and its test components are China ROHS compliant.

WEEE

Electrical and electronic equipment must be disposed of separately from normal waste at the end of its operational lifetime.

Please dispose of this product according to the respective national regulations or contractual agreements. If there are any further questions concerning the disposal of this product, contact Softing IT Networks.

CAUTION

This is a Class A product. In a domestic environment this product may cause radio interference. In that case the user may be required to take adequate measures!

ROHS

The WireXpert device and its test components are ROHS compliant.

ETL Intertek Verified

WireXpert device is ETL verified to ANSI/TIA IIIe, IEC 61935-1 levels IIIe & IV and currently proposed Level V draft, with the applicable measurement accuracy.

Class 1 Laser Product

The light source transmitted from the following fiber test modules – Single Mode (SM), Multi-Mode (MM) and Encircled Flux compliant Multi-Mode (MMEF) are classified as Class 1 lasers and are very low risk and "safe under reasonably foreseeable use", including the use of optical instruments for intrabeam viewing.

Class 1m Laser Product

The light source transmitted from the following fiber test modules – MPO REMOTE are classified as Class 1m lasers and have wavelengths between 302.5 nm and 4000 nm and are safe except when used with optical aids.

1 **8 Appendix**

[Add]– Adds a site, operator or customised cable, connector to the database.	**[Retest]** – Performs an AUTOTEST on selected result on List-Based Testing.	**[Back]** – Returns to previous screen. Unsaved options will be discarded.
[Cancel] – Discards option.	**[Delete]** – Deletes a site, operator or customised cable, connector from the database.	**[View]**– View selected result.
[Manage] – Enables **[Rename]** and **[Select all]** options.	Format, Reset – Performs non-reversible setting/data restoration to factory defaults.	Forward – Proceed to the next screen.
[Device info] – Displays device firmware build information.	**[OK]** – Confirms and saves current option.	**[Rename]** – Renames saved test result in the DATA menu.
[Restart] – Restarts current procedure.	**[Save]** – Saves current test result. Icon will disappear after a successful save.	**[USB]** – Reads USB flash drive to perform upgrade firmware, test result export or custom limit and label list import

[Select all] – Selects all data on screen.	**[Next pair]** – View next pair of plots of the current result.	**Fibermap** – Displays mapping of fiber being tested.
[MPO chart/grid] – Toggles between displaying of power loss in bar chart or grid format for fiber testing.	**[Scope live/test]** – Toggles between 'Live' and 'Test' mode when inspecting a SM/MM fiber with the inspection scope.	**[Set Reference]** – Performs result referencing between the LOCAL and REMOTE units.
[Transmit ON/OFF] – Toggles between enabling and disabling of light source on the REMOTE unit.		

2

9 Glossary

AC Wire Map: Feature in WireXpert that enables test runs measurements with Power over Ethernet (PoE) midspan devices in between. WireXpert supports cable runs with IEEE 802.3 af and 802.3 at injectors. Recommended to disable when not performing a test through a PoE device.

ACRF: Acronym for Attenuation to Crosstalk Ratio Far-end, formally known as Equal Level Far End Crosstalk (ELFEXT), is a calculated parameter, derived from subtracting the attenuation of the disturber at the far end pair from the FEXT on the disturbed pair. This is expressed in dB.

ACRN: Acronym for Attenuation to Crosstalk Ratio Near-end, formally known as ACR, is a calculated parameter, derived from subtracting the attenuation of the disturber pair from the NEXT on the disturbed pair. This is expressed in dB. Test parameter is not required for TIA cabling standards.

Adapter: The modular test probe used with WireXpert when used in this Manual's context, unless otherwise stated.

CAT: Abbreviation for "Category", describes the transmission performance and construction of copper cabling links associated with ANSI/TIA-568 Standards.

Channel: Definition of cabling elements in horizontal cabling, permanently installed data cable including patch cords/jumpers at each end.

Class: Describes the transmission performance and construction of copper cabling links associated with ISO/IEC 11801 Standards.

Crosstalk: Disturbance caused by the electric or magnetic fields along a cable pair. It can occur when removing too much of the pair shield or untwisting pairs too much during termination, using the wrong components, selecting wrong settings or using inferior quality test setups.

Crossover Cable: Cable used to connect two devices of the same type, e.g., two computers or two switches. A crossover cable has the following A-to-B ends pin-outs: 1-3, 2-6, 3-1, 4-7, 5-8, 6-2, 7-4, 8-5.

dB: Acronym for decibel, is the ratio unit used to measure the power level of an electrical signal by comparing it with a given level on a logarithmic scale.

DCRU: Acronym for Direct Current Resistance Unbalance, is the measurement of DCRU between and in pairs of twisted pair LAN cabling.

DCS: Acronym for Dual Control System, is a unique feature of WireXpert that provides real-time graphical test data on both the LOCAL and REMOTE units.

Delay Skew: Refers to test used to determine the difference in propagation delay between the fastest and slowest set of wire pairs. In general, the lower the skew value, the better.

Device: Refers to WireXpert unit in this Manual's context, unless otherwise stated.

E2E: Acronym for End-to-End. Generally referring to End-to-End links. Application that requires direct connection to machines or machines to network devices in the industrial environment, potentially containing 1 or multiple segments with 2 or multiple connections in the link.

EULA: Acronym for End User License Agreement. Starting from v7.3, user will require to read and agree to the terms and conditions stipulated by Softing before proceeding to use WireXpert and eXport PC firmware.

eXport: Project management PC software to seamlessly work with WireXpert. Required to upgrade device firmware. Not to be confused with actions "file export".

FTP: Acronym for Foil-screened Twisted Pairs. See F/UTP. Not to be confused with "File Transfer Protocol".

F/FTP: Cable with overall foil shield with FTP. Commonly used in 10GBaseT applications.

F/UTP: Cable with an overall foil shield (F) with UTP. Commonly used in 10GBaseT applications. Also known as FTP.

GUI: Acronym for Graphical User Interface, generally referring to the touchscreen interface on WireXpert in this Manual's context, unless otherwise stated.

IL: Acronym for Insertion Loss, is the loss of signal power resulting from the insertion of jack to a plug. This is expressed in dB.

In-Pair: Generally referring to reactions between a pair of wires (eg., 1,2) in twisted pairs cable in this Manual's context.

ISO: Acronym for International Organization of Standardization. Generally referring to ISO/IEC 11801 Standards for generic cabling for general purpose telecommunication cabling systems or structured cabling.

Jack: Generally referring to a connector with female electrical contact or socket.

LBT: Acronym for List-Based Testing, is a unique feature of WireXpert that allows creation of label list and perform AUTOTEST in a hierarchical format.

Limit: Or test limit, refers to the performance threshold that a cable installation is obliged to meet.

Link: See Permanent Link.

LOCAL: Refers to the WireXpert unit labelled "LOCAL".

Margin: Refers to the difference between the selected test limit value and the measured value. This is expressed in dB. In general, a higher positive margin value represents a good test result, a negative value represents a FAIL test, and zero when the measured value is the same as the test limit.

Marginal: Generally referring to marginal PASS/FAIL, refers to the tested value's margin is smaller than the accuracy for the test parameter.

NEXT: Acronym for Near-End Crosstalk, is the measurement of the ability of a cable to reject crosstalk. In general, the higher the NEXT value, the greater the rejection of crosstalk at the local connection.

NVP: Acronym for Nominal Velocity of Propagation, is the speed at which the data signals travel down the cable expressed as a percentage of the speed of light in a vacuum. NVP is required to determine the length of a cable during a test.

P2P: Acronym for Pair-to-Pair, generally referring to reactions between two pairs of wires (eg., 1,2 & 3,6) in twisted pairs cable in this Manual's context.

Patch Cord: Also known Patch Cable, is an electrical cable used to connect one electronic to another for signal routing. Commonly produced in different colors, and are usually not longer than 2 metres.

Patch Panel: Also known as Patch Bay, is a device or unit featuring a number of jacks, for connecting and managing incoming and outgoing LAN cables.

Plug: Generally referring to a connector with male electrical contact or pin.

Permanent Link: Definition of cabling elements in horizontal cabling, permanently installed data cable.

PoE: Acronym for Power over Ethernet, is the technology for wired Ethernet LANs that allows electrical current required for operation of devices to be carried by data cables.

Probe: Generally referring to a device used to connect a test equipment to a device under test, e.g., the Channel adapter and Video Inspection Scope are probes to the WireXpert.

Propagation Delay: The measurement of how long it takes for the signal to travel down the cable being tested.

PSACRF: Acronym for Power Sum ACRF, formally known as Power Sum Equal Level Far-End Crosstalk (PSELFEXT), is the difference between the test signal and the crosstalk from the other pairs received at the far end of the link. This is expressed in dB.

PSACRN: Acronym for Power Sum ACRN, formally known as Power Sum Attenuation to Crosstalk Ratio (PSACR), is the difference between each wire pair's attenuation (IL) and the combined crosstalk received from the other pairs. In general, higher PSACRN values corresponds to better cabling performance. This is expressed in dB. Test parameter is not required for TIA cabling standards.

PSNEXT: Acronym for Power Sum NEXT, is the sum of NEXT values from three wire pairs as the affect the other wire pair. There will be four PSNEXT results at each end of the link tested. In general, the higher the PSNEXT value, the lower the crosstalk.

REMOTE: Refers to the WireXpert unit labelled "REMOTE".

Reference Cord: Generally referring to the patch cord used for setting reference prior to performing an AUTOTEST.

RL: Acronym for Return Loss, is a measurement of reflections caused by the impedance changes at all locations along the link. This is expressed in dB.

Set Reference: The compensation for the effects of ambient conditions, e.g., ambient temperature, in the LOCAL and REMOTE units, to ensure maximum measurement accuracy of WireXpert.

Shielded: Generally referring to an electrical cable or connector being enclosed in or by conductive layers to provide noise screening.

Shield Test: Also known as Shield Integrity Test, refers to the identification of a shield being present and connected at both ends on the actual cable under test.

Single Ended Test: Feature in WireXpert, referring to the ability to determine the loss of copper cable at one end without the use of the REMOTE unit.

S/UTP: Cable with an overall braid screen (S) with unscreened UTP. Also known as STP.

STP: See S/UTP.

S/FTP: Cable with an overall braid screen (S) with FTP. The "shield" underneath the jacket is a braid, and each individual pair is surrounded by its own foil barrier. The additional foil on the individual pairs limit the amount of crosstalk between them. Also known as S-STP.

SF/UTP: Cable with both an overall braid screen (S) and foil shield (S) with UTP. The overall braided screen is very effective at protecting EMI from entering or exiting the cable. Also known as S-FTP.
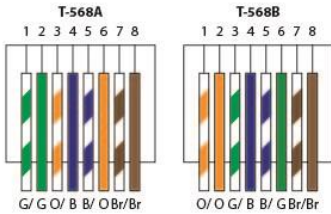

Straight Through Cable: Cable used to connect computers to hubs or switches. A straight through cable has the

following A-to-B ends pin-outs: 1-1, 2-2, 3-3, 4-4, 5-5, 6-6, 7-7, 8-8.

T568A/B: T568A and T568B are two color codes approved by ANSI/TIA/EIA that are used for wiring eight-position RJ45 plugs.

TIA: Acronym for Telecommunications Industry Association. Generally referring to TIA-568 Standards for telecommunication products and services.

TIA-606-A: The guidelines and choices of classes of administration for maintaining telecommunications infrastructure as defined by the TIA Standards.

Unshielded: Generally referring to an electrical cable or connector that are not enclosed in or by conductive layers.

U/FTP: Cable without overall shielding or braid (U) with FTP. Commonly used in 10GBaseT applications.

UTP: Acronym for Unscreened Twisted Pairs. See U/UTP.

U/UTP: Cable without shielded with UTP. Also known as UTP.

Wiremap: The parameter that checks the correct termination of cable wires in telecommunication outlets and patch panels.

10 Related documents

Application Note – E2E Link Test

Application Note – MPTL

Quick Start Guide – Copper Certification Testing

Quick Start Guide – Fiber Certification Testing

Quick Start Guide – Encircled Flux Compliant Multimode Fiber Certification Testing

Quick Start Guide – MPO Certification Testing

Quick Start Guide – Digital Fiber Inspection Kit

User Manual – Copper Certification Testing

User Manual – Fiber Certification Testing

User Manual – MPO Certification

User Manual – eXport

User Guide – List Based Testing

User Guide – Installing eXport PC Software

User Guide – License Upgrade

User Guide – eXport Cloud

User Guide – Custom Limits

User Guide – Tone Generator

11 Technical Support

Softing's global presence ensures our customers receives sales and technical support anywhere around the world. For more information: ***https://itnetworks.softing.com***

The Americas
Softing Inc.
7209 Chapman Highway
Knoxville, TN 37920
Phone: +1 865 251 5252
E-mail: sales@softing.us

Asia / Pacific
Softing Singapore Pte. Ltd.
73 Science Park Drive
#02-12/13, Cintech I
Singapore Science Park 1
Singapore 118254
Phone: +65-6569-6019
E-mail: asia-sales.itnetwork@softing.com

Softing Shanghai
Room 416, 4/F, Mytech Intelligence Park,
No.1999 East Jinxiu Road, Pudong District,
201206, Shanghai, China

Phone: +86 (21) 61063031
E-mail: china-sales.itnetwork@softing.com

Europe/Middle East/Africa
Softing IT Networks GmbH
Richard-Reitzner-Alle 6
D-85540 Haar, Munich
Phone: +49 89 45 656 660
E-mail:info.itnetworks@softing.com

Softing SRL
87 Rue du Général Leclerc
Creteil, Île-de-France
94000 (Paris)
Phone: +33 1451 72805
E-mail: info.france@softing.com

Softing Italia Srl.
Via M. Kolbe, 6
20090 Cesano Boscone (MI)
Phone: +39 02 4505171
E-mail: info@softingitalia.it

Austria
Buxbaum Automation GmbH
Eisenstadt
Phone: +43 2682 7045 60
E-Mail: office@myautomation.at