

User Manual

WireXpert

Version: WireXpert4500_MPO_IT_EN_U_201811

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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>.

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1 Introduction

1.1 About product

Softing's WireXpert, with its unparalleled 2,500 MHz measurement range, is the first cable certifier with capability to certify the highest performance cabling systems in enterprise networks and data centers. Cable installers make significant gain in productivity with WireXpert's industry leading test speed and ease of use. With certification testing up to Class FA and CAT8 copper cabling, as well as MPO, SM, MM and MMEF fiber optic cabling, WireXpert is ready for 40G and beyond.

Starting from v7.4, WireXpert is available in four variants- WireXpert 500 copper (up to 500MHz) only, WireXpert 500 fiber only, WireXpert 500-plus; copper + fiber and WireXpert 4500- to provide more flexibility to suit your certification requirements. The WireXpert 500 series provides an affordable solution that can grow with your cable certification needs. Upgrade the copper only or fiber only variants to the combined WireXpert 500-plus or WireXpert 4500 for the full 2,500MHz capability.

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
201702	Firmware update to v7.3
201811	Firmware update to v8.0

Table 1: Document history

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 is set in Courier font type	MaxDlsapAddressSupported=23
Filenames and directories are written in italic	Device description files are located in <i>C:\<product name>\delivery\software\Device Description files</i>

1.5 Before you start

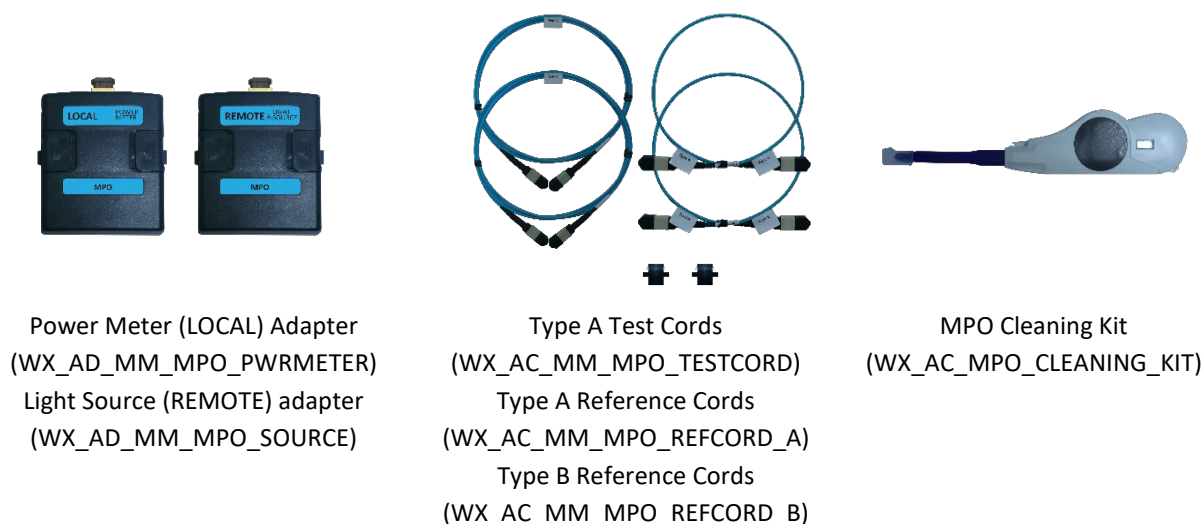
Check that the latest eXport PC software and firmware is installed in the workstation and WireXpert respectively to ensure the latest features are available. Ensure WireXpert is calibrated annually for optimum accuracy.

Key differences between WX4500 and WX500


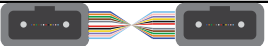

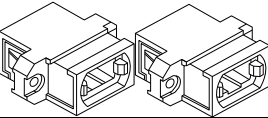
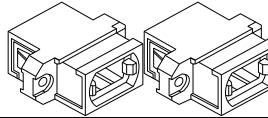
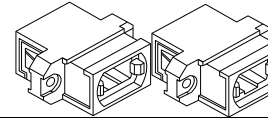
Features	WX4500-FA	WX500-PLUS	WX500-CU	WX500-FIBER
Frequency of measurement	2500 MHz	500 MHz	500 MHz	N/A
Accuracy Specification	TIA Level 2G ISO/IEC Level VI	TIA Level IIIe ISO/IEC Level IIIe	TIA Level IIIe ISO/IEC Level IIIe	N/A
Fiber Testing option	Yes	Yes	No	Yes
Class FA/CAT 8 options	Yes	No	No	No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

1.6 Scope of delivery

Single Mode Fiber (WX_AD_MM_MPO_KIT)



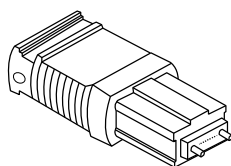
Mating Couplers (WX_AC_MPO_ADAPTER_A)

Description/ Type	A	B	C
Fiber Map			
Module Type	Single module type wire in a "straight through configuration"	Single module type on both ends, wired in a "straight through configuration"	
MPO Methods			
Polarity	Polarity is addressed in the patch cords.	Polarity is managed in the trunk.	Polarity is managed in the cable.

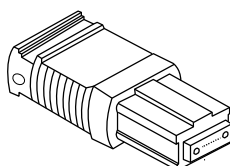


CAUTION

Always use a coupler when mating a pinned and unpinned connector. Mating two pinned connectors with a coupler will damage the pins.



Male / Pinned Connector



Female / Unpinned Connector

1.7 System requirements

Hardware

- ☐ PC

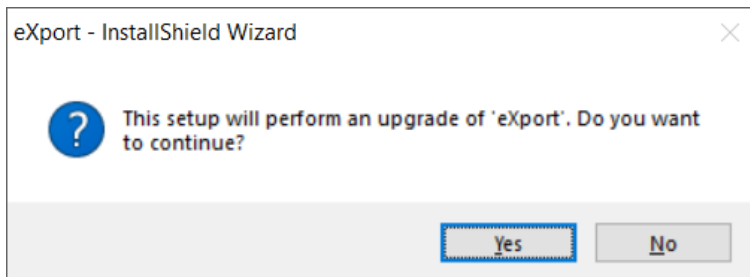
Operating system

- ☐ 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 WireXpert PC Software and Firmware

2.1 Install software

- 1 Download the latest eXport PC software from <https://itnetworks.softing.com/>
- 2 Run eXport setup v8.0.x64.exe
- 3 Follow through the instructions on the screen and click [Next] to proceed.
- 4 Click **[Install]** to begin installation.
- 5 Click **[Finish]** to complete installation.
- 6 If this is an upgrade from an earlier version from 6.x and above, click **[Yes]** to proceed.



- 7 Follow the instructions to complete installation.



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

Softing IT Networks has ceased support for ReportXpert v5.x and earlier. Please contact asia-support.itnetworks@softing.com for more information.

2.2 Upgrade firmware

- 1 Download and install the latest eXport PC software.
- 2 Connect an USB flash drive to the workstation.
- 3 Run eXport PC software.
- 4 Go to **Tools → Update Device Firmware**
- 5 Click **[OK]** and select USB drive from “Export to USB” window.
- 6 Click **[Export]** and **[OK]** to proceed.
- 7 Please wait while exporting takes place. This process may take a while.
- 8 Remove USB flash drive from workstation and connect to WireXpert.
- 9 Select **[Upgrade Firmware]** from prompt and click **[OK]** button to continue.
Note: Both LOCAL and REMOTE units must be upgraded.

- 10 If prompt did not appear, check that USB icon is present on the status bar, and press the **[SETUP]** button → **Settings 2** → **Storage** → **USB**.
- 11 Please wait while upgrading takes place. This process may take a while.
- 12 Upgrade process is complete.



CAUTION

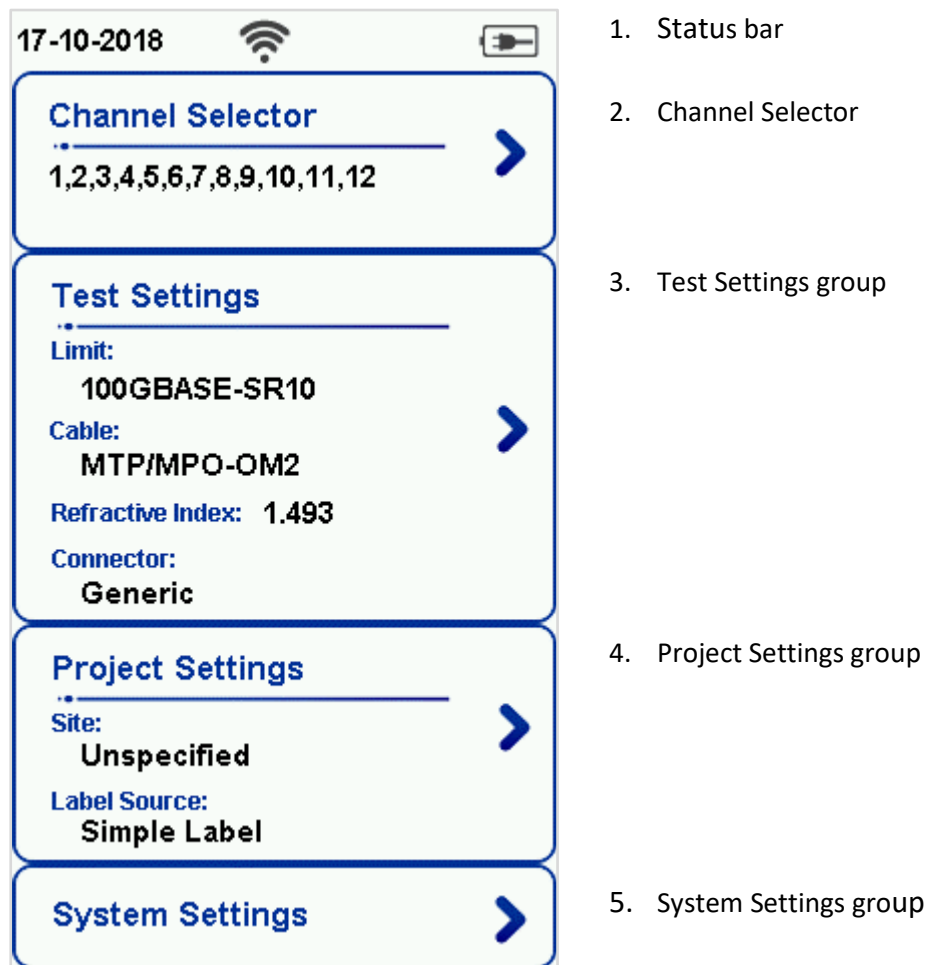
Saved test results and settings may be erased during upgrading. You are recommended to save all test results before upgrading the firmware.

3 WireXpert User Interface

3.1 Touch Screen Layout

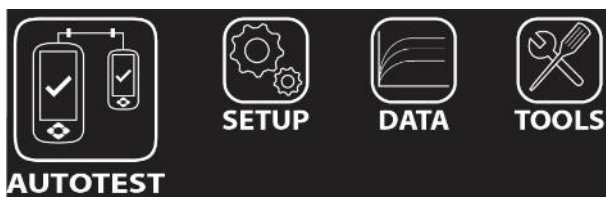
The Graphical User Interface (GUI) in version 7.0's firmware has been updated with a more responsive system and quick-access menus.

WireXpert boots up to the SETUP screen. It is categorized into 5 groups:



1. The **Status bar** displays the current date, Wi-Fi connectivity status, USB connectivity status, talk set connectivity status and battery level. Tap icons to change or view setting.
2. The **Channel Selector** provides selection on which channel loss limit will be applied on a 12 core MPO cable during an AUTOTEST.
3. The **Test Settings** group provides results-oriented configurations necessary to perform an AUTOTEST.
4. The **Project Settings** group provides non-results-oriented configurations before performing an AUTOTEST.
5. The **System Settings** group settings provides device, time, localization and device related configurations.

3.2 The One Touch Access Button



The fundamental philosophy behind the WireXpert User Interface is simplicity in its ease of use. The main functions of the One-Touch access buttons as follows:

3.2.1 The [AUTOTEST] button



The **[AUTOTEST]** button will perform an immediate certification test on the last configured settings. If no settings were configured, default settings will be used.

Test results will be generated automatically after the test is completed.

You will receive any of the following 4 results after performing AUTOTEST:



Green “PASS” – Good test result in accordance to pre-defined settings.

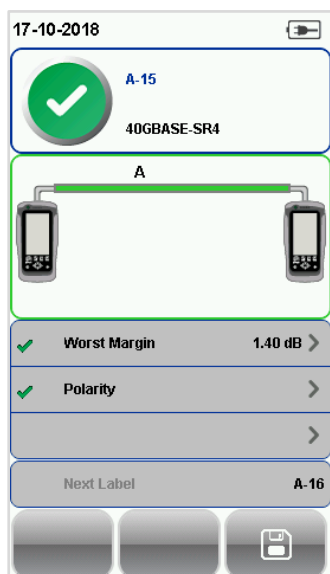


Red “FAIL” – Unacceptable results with severe disturbance on one or more test parameters.

You will be given the following option after performing an AUTOTEST:

- **[Save]** test results to device

An “AUTOTEST” will fail in the event of missing connection between the Local and Remote units, wrong settings configured, “dirty” end connectors or broken cables.



MPO AUTOTEST results

 A screenshot of the 'Detailed loss results' screen. It shows a green checkmark icon, 'A-15', and '40GBASE-SR4'. Below is a table with three columns: 'Channels', 'Absolute Power', and 'Loss'. The table lists 12 channels with their respective power and loss values. At the bottom, there are navigation icons: back, save, and list.

Channels	Absolute Power	Loss
1	-3.95	0.40
2	-5.75	0.45
3	-3.90	0.40
4	-4.40	0.45
5	-6.35	0.50
6	-4.25	0.40
7	-4.55	0.45
8	-4.10	0.35
9	-4.95	0.40
10	-5.65	0.45
11	-4.90	0.30
12	-4.85	0.30

Detailed loss results

 A screenshot of the 'Detailed polarity results' screen. It shows a green checkmark icon, 'A-15', and '40GBASE-SR4'. Below is a 'Connection Map' table with two columns: 'Remote (Tx) Channel' and 'Local (Rx) Channel'. The table lists 12 channels, each with a green checkmark. At the bottom, there are navigation icons: back, save, and a double arrow icon.

Remote (Tx) Channel	Local (Rx) Channel
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12

Detailed polarity results

**Note**

Diagrams and images used are for illustration purposes only and do not represent suggested test values. Reference and test values vary to usage and condition.

3.2.2 The [SETUP] button

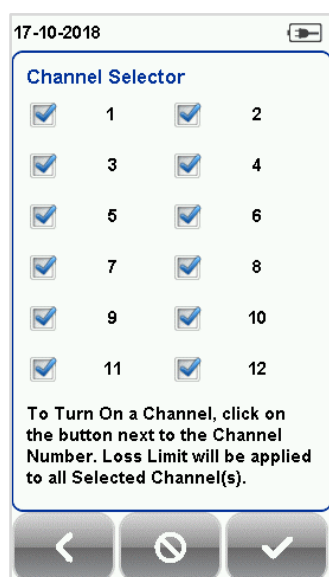


The **[SETUP]** button provides setting options necessary to conduct an AUTOTEST and configure the device.

These options include –

3.2.2.1 Channel Selector

Channel Selector provides selection on which channel(s) loss limit will be applied on during an AUTOTEST. Passed and failed result(s) will be indicated in green and red respectively. Deselected channels will be indicated in yellow.



Channel Selector



Channels	Absolute Power	Loss
1	-3.95	0.40
2	-5.75	0.45
3	-3.90	0.40
4	-4.40	0.45
5	-6.35	0.50
6	-4.25	0.40
7	-4.55	0.45
8	-4.10	0.35
9	-4.95	0.40
10	-5.65	0.45
11	-4.90	0.30
12	-4.85	0.30

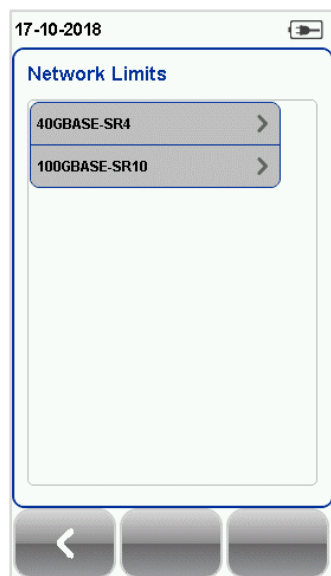
Passed AUTOTEST result with all channels selected

3.2.2.2 Test Settings

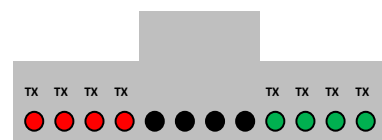
Test Settings provides results-oriented configurations necessary to perform an AUTOTEST including; -

3.2.2.2.1 Network Limits

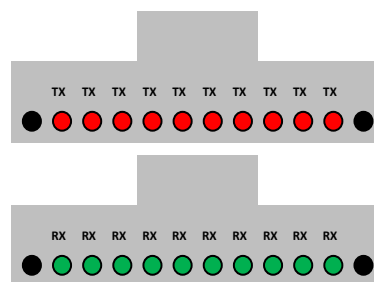
Choose from 40GBASE-SR4 and 100GBASE-SR10 limit to perform MPO test. SR4 uses a single MPO ribbon with four strands to transmit and four strands to receive. SR10 uses a 24 strand MPO cable with ten strands to transmit and 10 strands to receive.



Select Network Limits

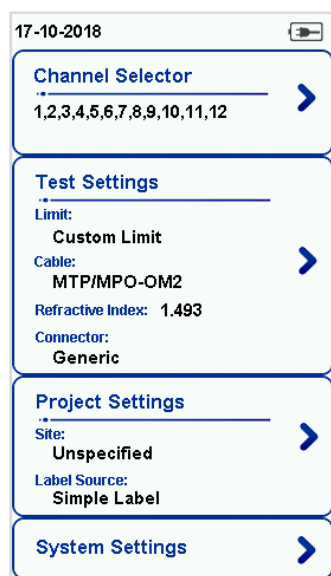


40Gbbase-SR4

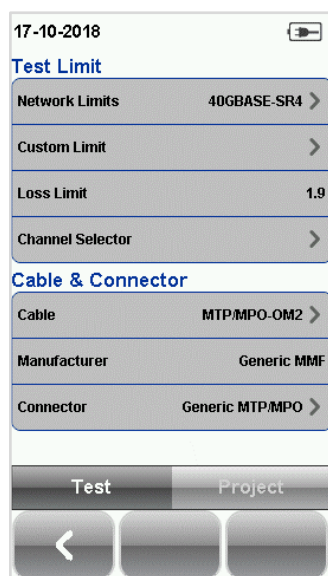


100Gbbase-SR10

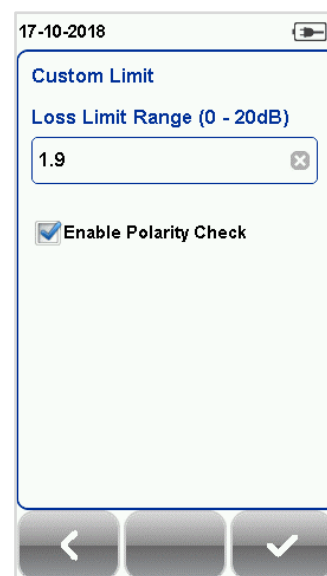
Custom Limit: Enter Loss Limit to perform custom limit test. Uncheck “Enable Polarity Check” to bypass polarity check for customized cable.



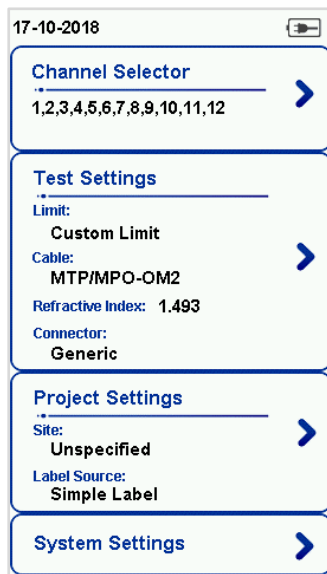
Test Settings



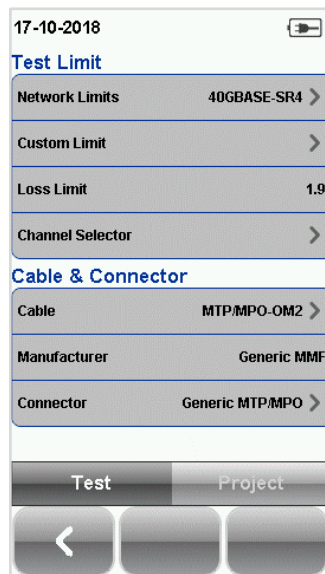
Custom Limit

Change Custom Limit
with/without Polarity Check

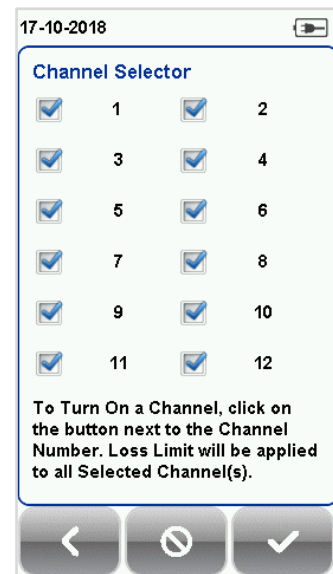
Channel Selector: Loss limit will be applied to selected channels during an AUTOTEST.



Test Settings



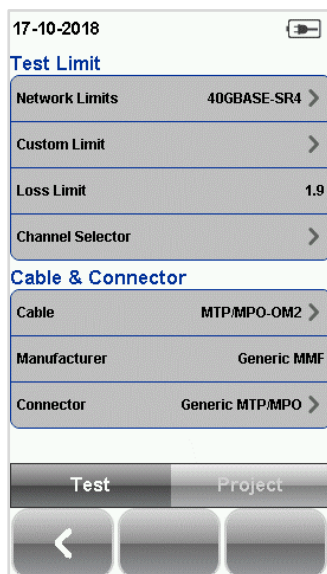
Channel Selector



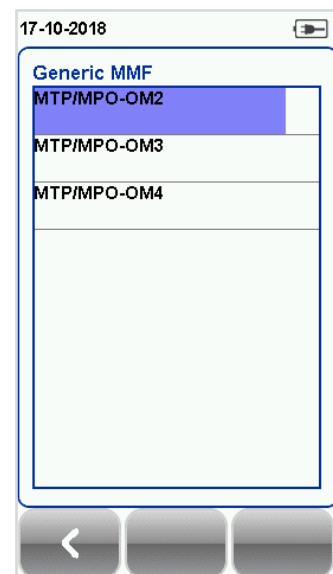
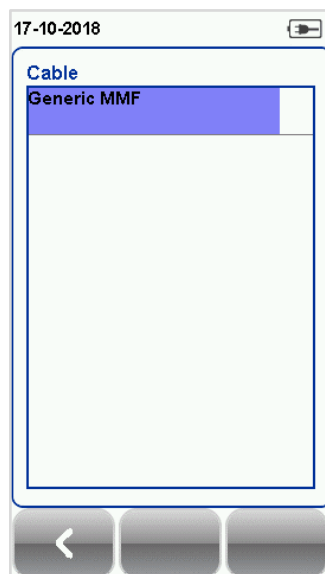
Select choice of channel Selector

3.2.2.2.2 Cable

Select **[Generic MMF]** cable.



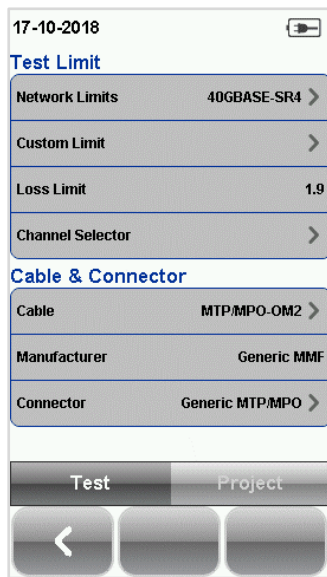
Cable



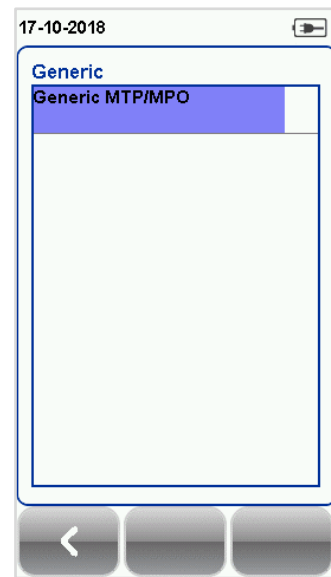
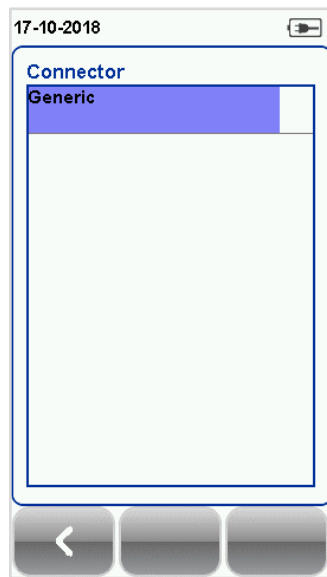
Select choice of generic MMF

3.2.2.2.3 Connector

Select **[Generic]** connector.



Cable



Select choice of generic

3.2.2.3 Project Settings

Project Settings provides non-results-oriented configurations before performing an AUTOTEST.



User Manuals

Refer “User Manual – Copper Certification Testing” for more information on Project Settings.

3.2.2.3.1 Label Source



User Manuals

Refer “User Manual – Copper Certification Testing” or “User Guide – List Based Testing” for more information.

List Based Testing

List based testing allows creation of label list in the eXport software on PC and then bring the list to WireXpert. It further allows easy selection of labels from the list to help technician select the cables to be tested quickly. This testing method is carefully optimized for typical test work-flow, and it significantly improves productivity.



User Manuals

Refer “User Guide – List Based Testing” for more information on List Based Testing.

3.2.2.4 System Settings

3.2.2.4.1 Device Settings



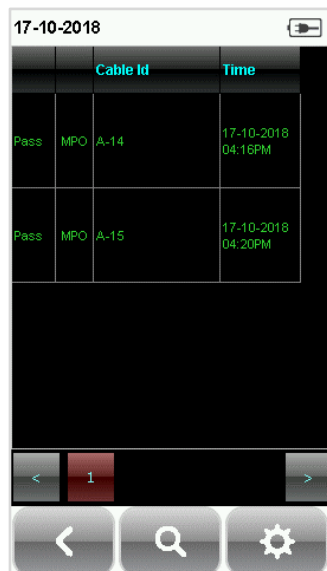
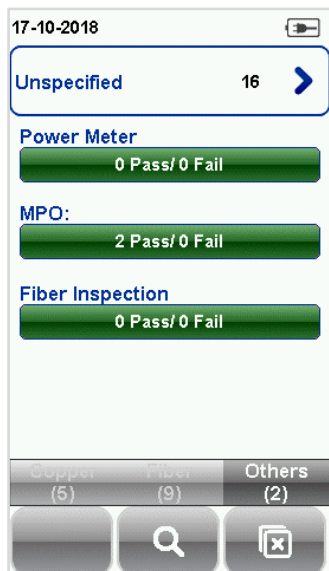
User Manuals

Refer “User Manual – Copper Certification Testing” for more information on System Settings.

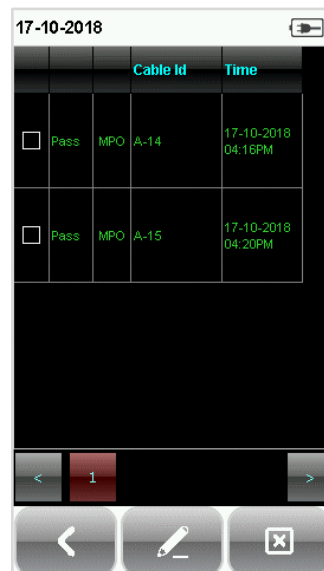
3.2.3 The [DATA] button



The **[DATA]** button provides archive and data management ability to saved sites and test results. Saved test results can be renamed or deleted in this option.



View Results



Manage Results



CAUTION

Deleting a site will also delete its containing test results.

3.2.4 The [TOOLS] button



The **[TOOLS]** button provides advanced options for in-depth troubleshooting and expert WireXpert users. These options include; -



Requires:
LOCAL and REMOTE

Set Reference – Establish test conditions and exclude the reference cords from the measurement.



Requires:
LOCAL and REMOTE

Power Meter – Measures the power loss from a 850/1300nm or 1310/1550nm wavelength light source.



Requires:
1. LOCAL MM/MMEF
2. REMOTE MPO

MPO/MTP – Switches device to MPO mode to perform single fiber Power Meter test.



Requires:
1. LOCAL or REMOTE
2. Inspection Probe[#]

Inspect Fiber – Performs visual verification of fiber's quality using an external scope probe.



Requires:
LOCAL or REMOTE

About – Displays worldwide contact and End User License Agreement (EULA) information.



Requires:
1. LOCAL & REMOTE
2. License key(s)[#]

Licensing – Performs device upgrade from WireXpert 500 to WireXpert 500+ or/to WireXpert 4500.



Requires:
1. LOCAL only
2. Wi-Fi dongle[#]



Requires:
1. LOCAL only
2. eXport Cloud[#]

Wifi – Enables WireXpert to connect to the Wi-Fi to perform eXport Cloud features.

eXport Cloud – Enables WireXpert to download List Based Testing (*.LBT) and upload project site (*.WSD) files to the eXport Cloud platform. Active network connection is required.



Note

Optional purchase required for feature. Contact Softing IT Networks for more information.



User Manuals

Refer “User Guide – eXport Cloud” for more information on installing and using eXport Cloud.



User Manuals

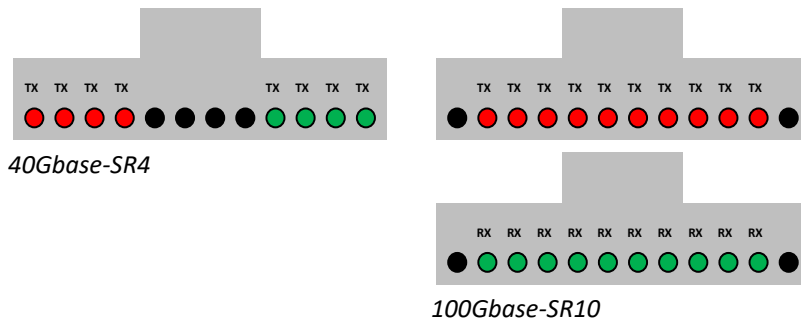
Refer “User Guide – License Upgrade” for more information on upgrading WireXpert 500 to WireXpert 500+ or/to WireXpert 4500.

4 Configuring an AUTOTEST

4.1 Setting up WireXpert

After configuring the system settings, follow these steps to set up an AUTOTEST.

1. Press the **[SETUP]** button → **Project Settings**
 - a. **Site** – Select existing or create a new Site
 - b. **Operator** – Select existing or create a new Operator
 - c. **Label Source** – Select cable labeling scheme. Load labels from USB flash drive if using List Based Testing (LBT).
 - d. **AutoSave** – Enable option for WireXpert to auto save every PASS result.
2. Press the **[SETUP]** button → **Test Settings**
 - a. **Test Limit** – Select a test limit



- b. **Channel Selector** – Select Channel(s) of cable where loss limit will be applied
- c. **Cable** – Select “Generic”
- d. **Connector** – Select “Generic”

Please ensure you have the following components before conducting the test;

- WireXpert, Local & Remote units (WX4500 or WX500-FIBER)
- MPO Testing Kit (WX_AD_MM_MPO_KIT)



WX_AD_MM_MPO_KIT

5 Test Procedure

Testing procedure differs based on the configuration of cable under test. This section describes procedures for different configurations of 12 channels MPO cabling.

The following procedures are based on IEC 61280-4-1.



Note

Diagrams and images used are for illustration purposes only and do not represent suggested test values. Reference and test values vary to usage and condition.



Acronyms

LC – Launch Cord

AC – Adaptor Cord

RC – Receive Cord

NEC – Near-end

Equipment Cord

TC – Test Cord

FEC – Far-end Equipment

Cord



CAUTION

Do not confuse acronyms used in this document with similar acronyms used in other manuals or products.



CAUTION



Mating two pinned connectors with a coupler will damage the pins.

Always use a coupler when mating a pinned and unpinned connector.

Before proceeding to set reference or performing an AUTOTEST with WireXpert, check that the light source on the REMOTE unit is enabled. Toggle button to enable or disable light source.



Light source is enabled.

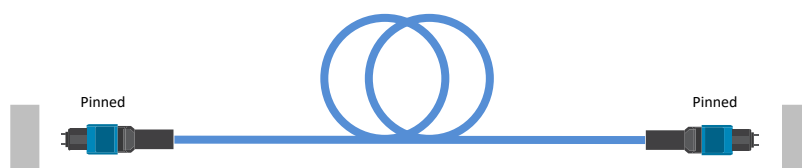


Light source is disabled.

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.

5.1 Pinned to Pinned Link

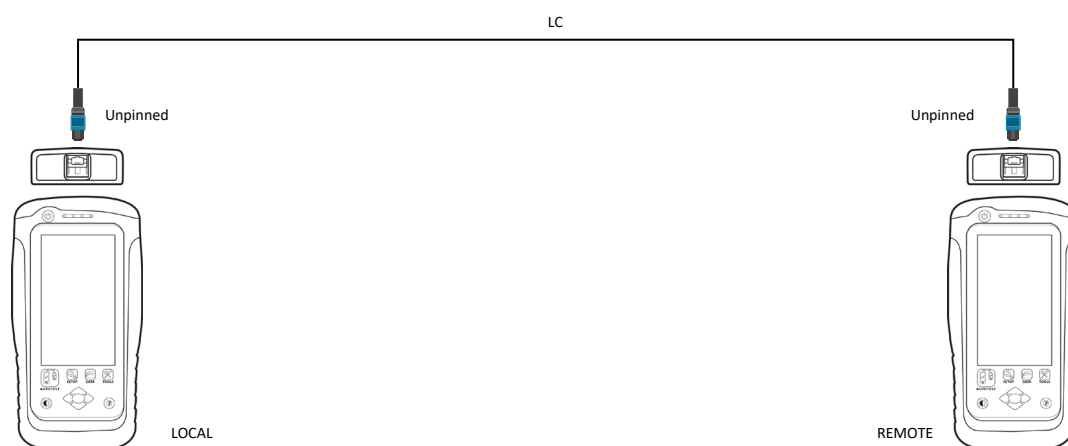
The following procedure describes steps to test Pinned to Pinned Trunk cable with adaptors on both ends as shown.



5.1.1 Test cord insertion loss verification

TC, LC and RC are recommended to be of reference grade.

1. Connect LC to the LOCAL and REMOTE units.



2. Press the **[TOOLS]** button → **Set Reference** and press the **[OK]** button to set reference.
Please ensure the fiber cords are cleaned using the cleaning kit provided in the kit.
3. Disconnect LC from the LOCAL unit.
4. **Do not disconnect LC from the REMOTE unit.**
5. Connect one unpinned end of RC to the LOCAL unit and the other end to the pinned end of TC.
6. **Connect the disconnected unpinned end of LC to the other end of TC using a coupler.**
7. Press the **[AUTOTEST]** button to perform an AUTOTEST.
8. Check that the result is less than the acceptable loss limits.

Termination 1	Termination 2	Attenuation Requirement
Reference Grade	Reference Grade	$\leq 0.1\text{dB}$
Reference Grade	Standard Grade	$\leq 0.3\text{dB}$
Standard Grade	Standard Grade	$\leq 0.5\text{dB}$

9. Clean the adaptors and connectors or replace the cords if necessary and repeat the test again.

The following steps are optional but recommended. If the following steps are not performed, RC and LC must be used in the tested orientation. Performing steps 10 to 15 will allow both LC and RC to be used in either orientation.

10. Interchange the ends of RC.
11. Press the **[AUTOTEST]** button to perform an AUTOTEST.
12. Check that the result is less than the acceptable loss limits.
13. Clean the adaptors and connectors or replace the cords if necessary and repeat the test again.
14. Interchange the ends of LC.
15. Repeat steps 1 to 9.

5.1.2 One-cord reference test method

1. Connect the LC to the LOCAL and REMOTE units.
2. Press the **[TOOLS]** button → **Set Reference** and press the **[OK]** button to set reference.
3. Disconnect LC from the LOCAL unit.
4. **Do not disconnect LC from the REMOTE unit.**
5. Connect one unpinned end of RC to the LOCAL unit and the other end to the pinned end of the cabling under test.
6. Connect the disconnected unpinned end of LC to the other pinned end of the cabling under test.
7. Press the **[AUTOTEST]** button to begin AUTOTEST.

5.2 Pinned to Pinned Channel

The following procedure describes steps to test Pinned to Pinned Trunk cable with connectors on both ends as shown.

5.2.1 Test cord insertion loss verification

TC, LC and RC are recommended to be of reference grade.

1. Connect the LC to the LOCAL and REMOTE units.
2. Press the **[TOOLS]** button → **Set Reference** and press the **[Ok]** button to set reference.
Please ensure the fiber cords are cleaned using the cleaning kit provided in the kit.
3. Disconnect LC from the LOCAL unit.
4. **Do not disconnect LC from the REMOTE unit.**
5. Connect one unpinned end of RC to the LOCAL unit and the other end to the pinned end of TC using a coupler.
6. Connect the disconnected unpinned end of LC to the other end of TC using a coupler.
7. Press the **[AUTOTEST]** button to perform an AUTOTEST.
8. Check that the result is less than the acceptable loss limits.

Termination 1	Termination 2	Attenuation Requirement
Reference Grade	Reference Grade	$\leq 0.1\text{dB}$
Reference Grade	Standard Grade	$\leq 0.3\text{dB}$
Standard Grade	Standard Grade	$\leq 0.5\text{dB}$

9. Clean the adaptors and connectors or replace the cords if necessary and repeat the test again.
10. Interchange the ends of TC.
11. Press the **[AUTOTEST]** button to perform an AUTOTEST.
12. Check that the result is less than the acceptable loss limits.
13. Clean the adaptors and connectors or replace the cords if necessary and repeat the test again.

The following steps are optional but recommended. If the following steps are not performed, RC and LC must be used in the tested orientation. Performing steps 14 to 17 will allow RC to be used in either orientation and steps 18 to 21 will allow LC to be used in either orientation.

14. Interchange the ends of RC.
15. Press the **[AUTOTEST]** button to perform an AUTOTEST.
16. Check that the result is less than the acceptable loss limits.

17. Clean the adaptors and connectors or replace the cords if necessary and repeat the test again from step 1.
18. Interchange the ends of LC.
19. Press the **[AUTOTEST]** button to perform an AUTOTEST.
20. Check that the result is less than the acceptable loss limits.
21. Clean the adaptors and connectors or replace the cords if necessary and repeat the test again from steps 1 to 14.

5.2.2 Three-cords reference method

Three-cords reference method is advised as per Standards for this configuration.

1. Retaining the same set up, perform set reference.
2. Replace TC with cabling under test.
3. **Do not disconnect LC from the REMOTE unit.**
4. Press the **[AUTOTEST]** button to begin AUTOTEST.

5.3 Unpinned to Unpinned Link

The following procedure describes steps to test Unpinned to Unpinned Trunk cable terminated at patch panels.



Note

Due to the limitations of the connecting hardware for this configuration in the IEC 61280-4 -1's test procedure, the following procedure is a recommendation by Softing, following the closest practical approach to the original intention of yielding satisfactory results in practical situations.

5.3.1 Test cord insertion loss verification

TC, LC and RC are recommended to be of reference grade.

1. Connect the LC to the LOCAL and REMOTE units.
2. Press the **[TOOLS]** button → **Set Reference** and press the **[Ok]** button to set reference.
Please ensure the fiber cords are cleaned using the cleaning kit provided in the kit.
3. Disconnect LC from the LOCAL unit.
4. **Do not disconnect LC from the REMOTE unit.**
5. Connect the unpinned end of RC to the LOCAL unit and the pinned end to the unpinned end of LC using a coupler.
6. Press the **[AUTOTEST]** button to perform an AUTOTEST.
7. Check that the result is less than the acceptable loss limits.


Termination 1	Termination 2	Attenuation Requirement
Reference Grade	Reference Grade	$\leq 0.1\text{dB}$
Reference Grade	Standard Grade	$\leq 0.3\text{dB}$
Standard Grade	Standard Grade	$\leq 0.5\text{dB}$

8. Clean the adaptors and connectors or replace the cords if necessary and repeat the test again.
The following step is optional but recommended. Performing the following step will allow LC to be used in either orientation.
9. Interchange the ends of LC and repeat steps 1 to 8.

5.3.2 Two-cords set reference method

1. Retaining the same setup, disconnect the pinned end of RC from the coupler.
2. **Do not disconnect LC from the REMOTE unit.**

Test Procedure

3. Connect a pinned-to-pinned AC to the coupler to the unpinned end of LC.
4.  Connect the cabling under test to RC and AC using couplers
5. Press the **[AUTOTEST]** button to begin AUTOTEST.

5.4 Unpinned to Unpinned Channel

The following procedure describes steps to test Unpinned to Unpinned channel configuration. There could be two possible configurations; -

Configuration A

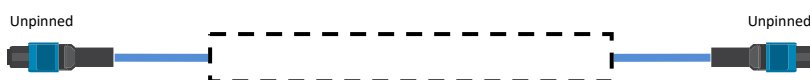
Configuration B



Note

Due to the limitations of the connecting hardware for this configuration in the IEC 61280-4 -1's test procedure, the following procedure is a recommendation by Softing, following the closest practical approach to the original intention of yielding satisfactory results in practical situations.

For simplified understanding, the two configurations will be represented using the following diagram;-



5.4.1 Test cord insertion loss verification

LC and RC are recommended to be of reference grade.

1. Connect the LC to the LOCAL and REMOTE units.
2. Press the **[TOOLS]** button → **Set Reference** and press the **[Ok]** button to set reference.
Please ensure the fiber cords are cleaned using the cleaning kit provided in the kit.
3. Disconnect LC from the LOCAL unit.
4. **Do not disconnect LC from the REMOTE unit.**
5. Connect the unpinned end of RC to the LOCAL unit and the pinned end to the unpinned end of LC using a coupler.
6. Press the **[AUTOTEST]** button to perform an AUTOTEST.
7. Check that the result is less than the acceptable loss limits.


Termination 1	Termination 2	Attenuation Requirement
Reference Grade	Reference Grade	$\leq 0.1\text{dB}$
Reference Grade	Standard Grade	$\leq 0.3\text{dB}$
Standard Grade	Standard Grade	$\leq 0.5\text{dB}$

8. Clean the adaptors and connectors or replace the cords if necessary and repeat the test again.

The following step is optional but recommended. Performing the following step will allow LC to be used in either orientation.

9. Interchange the ends of LC and repeat steps 1 to 8.

5.4.2 Two-cords set reference method

1. Retaining the same setup, disconnect the pinned end of RC from the coupler.
2. **Do not disconnect LC from the REMOTE unit.**
3. Connect a pinned-to-pinned AC to the coupler to the unpinned end of LC.
4.  Connect the cabling under test to RC and AC using couplers.
5. Press the **[AUTOTEST]** button to begin AUTOTEST.



Acceptable loss limit

As per standards acceptable loss may be established in a number of ways, for example, based on customer's testing requirements, specifications claimed by manufacturers etc. It is to the user to select a valid acceptable loss limit.

It is not recommended to set the acceptance loss as high as the minimum performance level, i.e., maximum allowable connection loss (0.75dB).

It is recommended to determine the value based on the following table:

Termination 1	Termination 2	Attenuation Requirement
Reference Grade	Reference Grade	$\leq 0.1\text{dB}$
Reference Grade	Standard Grade	$\leq 0.3\text{dB}$
Standard Grade	Standard Grade	$\leq 0.5\text{dB}$

For example, in the diagram below, all the components used are of reference grade. The user can have acceptable loss limit is 0.35dB (2 x 0.1dB per connector + 0.15dB for other loss contributors).

It is recommended that all the cords used should be of reference grade to reduce the measurement uncertainty.

6 Performing an AUTOTEST

6.1 Understanding AUTOTEST

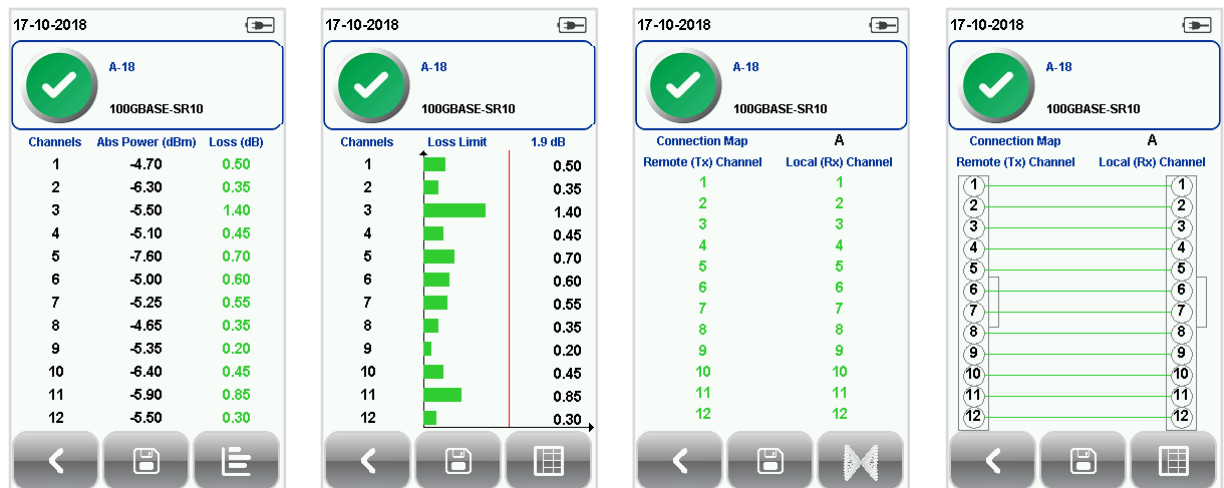
WireXpert will display summarized result with PASS or FAIL once AUTOTEST is completed. Press the **[Loss]** or **[Polarity]** button to view the detailed result or the **[Save]** button to save the results.

Depending on the type of MPO cable is under test, Type A, B and C will return different results. By pressing the buttons in the lower right corner, test results displayed will toggle between absolute power, loss, polarity and fiber map of the MPO cable.

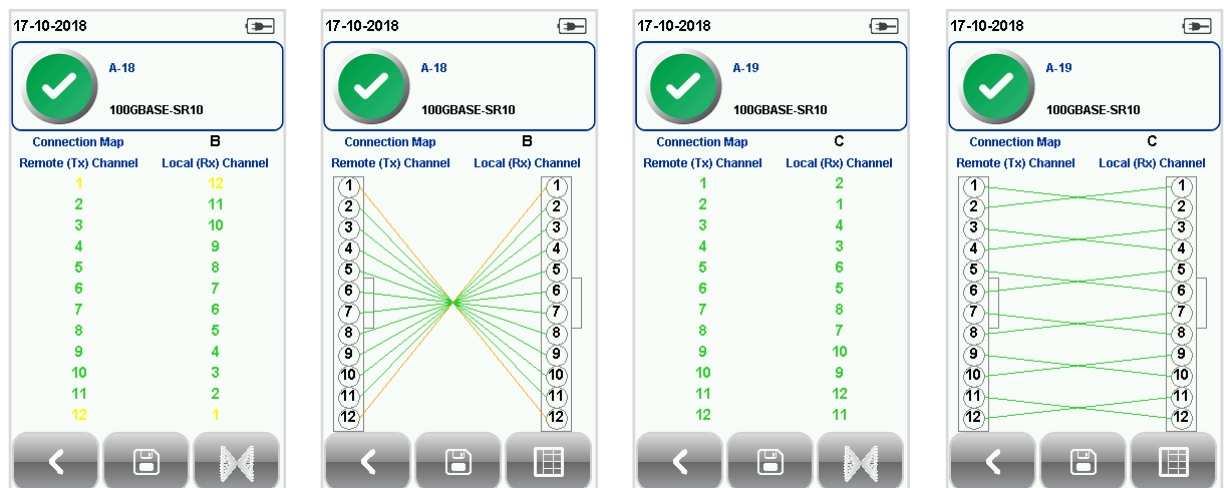


Note

Diagrams and images used are for illustration purposes only and do not represent suggested test values. Reference and test values vary to usage and condition.



Type A MPO cable



Type B MPO cable

Type C MPO cable



Note

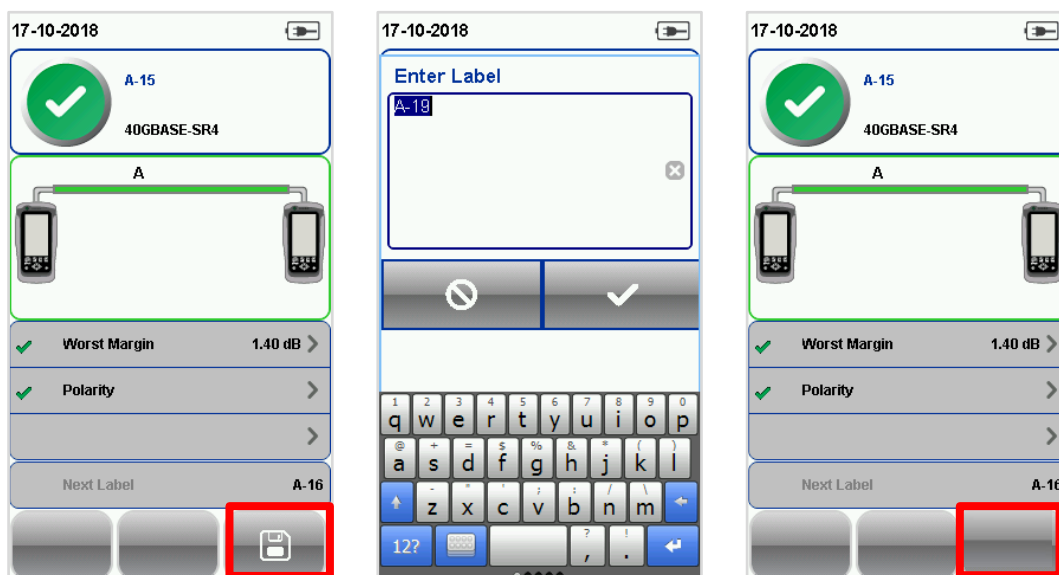
If 40GBase-SR4 or 100GBase-SR10 limits are selected, channels 1, 5, 6, 7, 8 or 1, 12 will be de-selected respectively.

Click on the parameter to display a more comprehensive individual result.

In detailed view, the absolute power and loss values can be displayed in grid or chart format and polarity can be displayed in simplified text or map format.

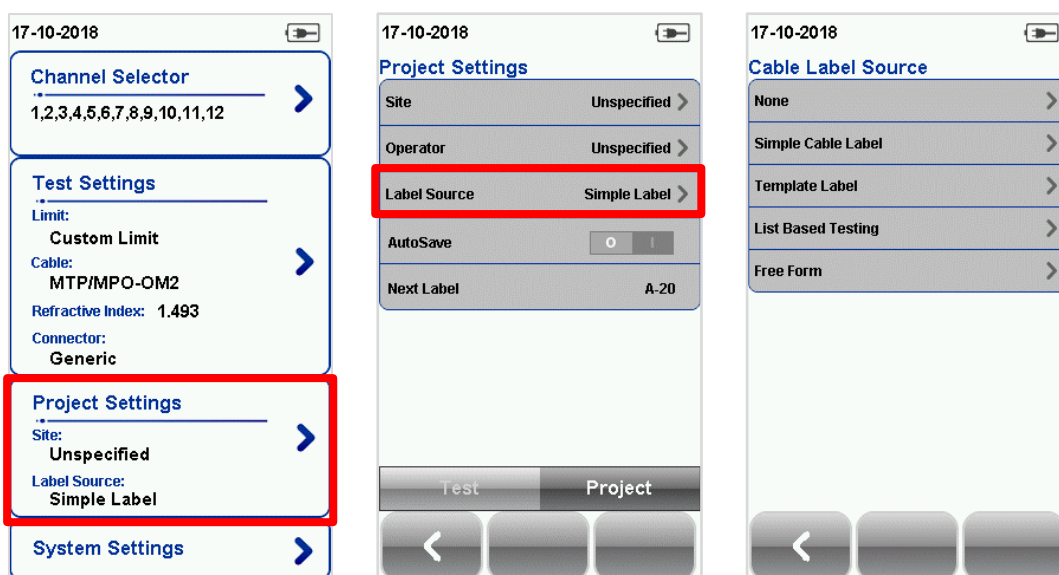
6.2 Managing test result(s)

Test results can be manually saved by pressing the **[Save]** button after an AUTOTEST is completed. When prompted, enter label name and click **[OK]** to save.



The **[Save]** icon will disappear once saving is completed.

Pass test results will be automatically saved with reference to the selected Label Source (**[SETUP]** button → **Project Settings** → **Label Source**) when AUTOTEST is completed.

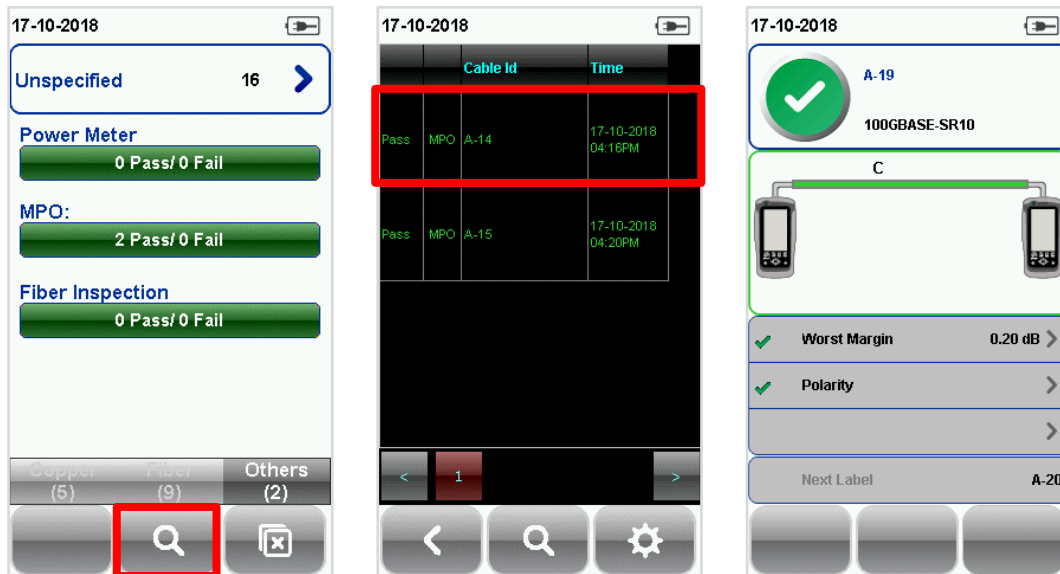


To view saved results,

1. Press the **[DATA]** button.

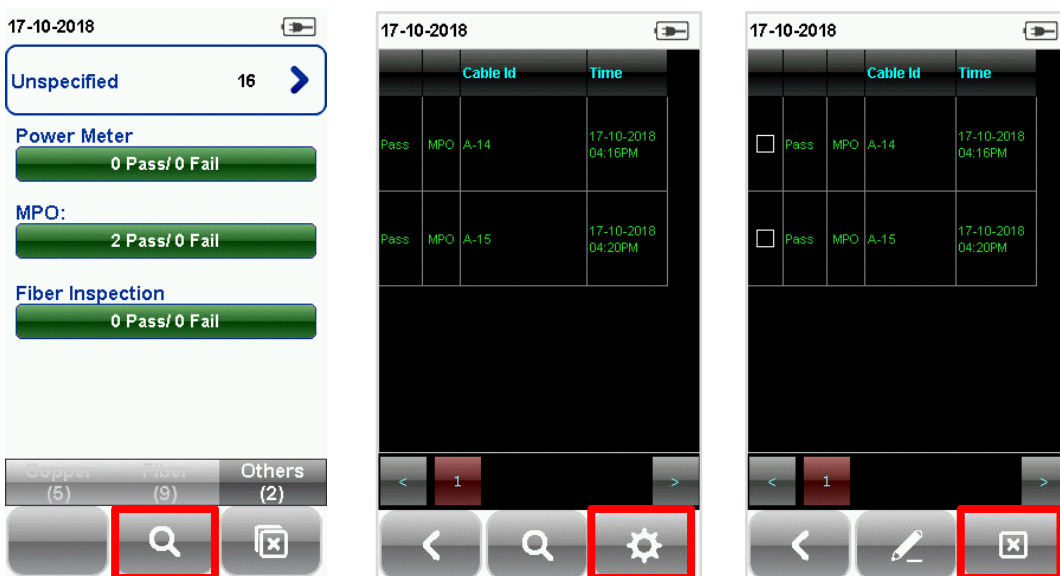
Performing an AUTOTEST

2. Select **[Others]** and press the **[View]** button.
3. Select the test results click **[View]** to view results.
4. Select the next page for more results.



To delete a saved result,

1. Press the **[DATA]** button.
2. Select **[Others]** and press the **[View]** button.
3. Press the **[Manage]** button.
4. Select result(s) and press the **[Delete]** to delete result(s).

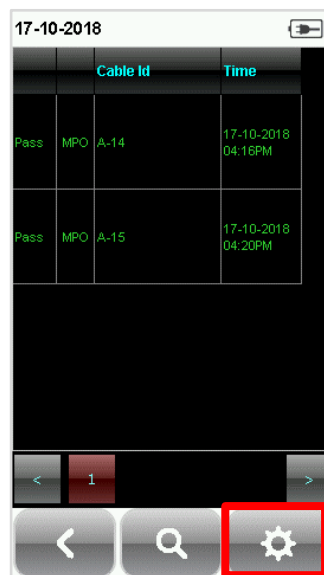
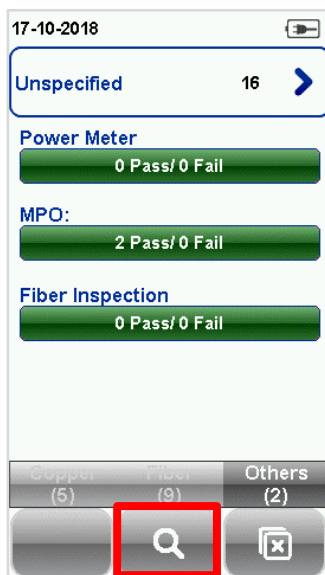


Manage results

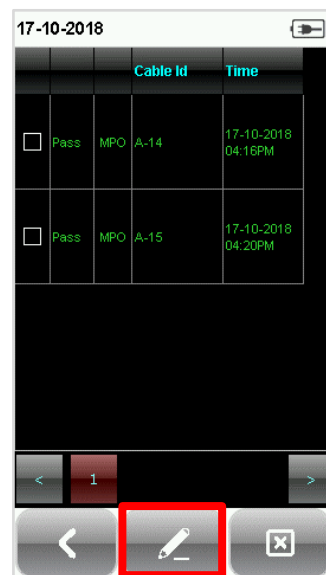
To rename a saved result,

1. Press the **[DATA]** button.

2. Select **[Others]** and press the **[View]** button.
3. Press the **[Manage]** button.
4. Select result and press the **[Rename]** to rename result.



View results



Amend names

6.3 Exporting test results into eXport PC Software

eXport is a data management software designed to work seamlessly with WireXpert.



User Manuals

Refer “User Manual – Copper Certification Testing” for more information on exporting test results into eXport PC Software.



User Manuals

Refer “User Manual – eXport” for more information on how to use the software.

7 Declarations

EU Declaration of Conformity



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

comply with the requirements of the following directives:

EMC directive 2004/108/EC (valid until April 19, 2016)
EMC directive 2014/30/EU (valid from April 20, 2016)

RoHS directive 2011/65/EU

Low Voltage Directive 2006/95/EC (valid until April 19, 2016)
Low Voltage Directive 2014/35/EU (valid from April 20, 2016)

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

Simon Harrison
General Manager

6/7/16
Date

Template version 2.1

Document No: 3000-0006

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.



Intertek

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.

8 Appendix

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

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

9 Glossary

AC: Acronym for Adaptor Cord, is a patch cord that is used to facilitate fiber optic connections that uses non-compatible connectors.

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

Boot: Part of the MPO connector, is the rubber strain relief piece used for reducing the strain and tension at curve transition location of a fiber optic.

Cassette: A module that switches the connection between an MPO connector to single fiber connectors.

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

Connector: Generally referring to plugs with a protruding ferrule that holds and aligns the fibers for connecting to a device or another fiber optic.

Cord Kit: Optional fiber test kits with connector of another type for supplementary use with WireXpert adapter. Comes with test cords and accessories only. Does not include test adapters in this kit.

Coupler: Also known as mating adapters, is an optical device to connect one or more fiber ends in order to allow the transmission of light waves.

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

dBm: Acronym for decibel-milliwatts, refers to the power ratio expressed in dB with reference to one milliwatt (mW), is used to measure the absolute power of fiber optical networks.

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

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

Fan-out: A multi-fiber optical cable with one end terminated with a male or female MPO connector, and the other end attached with several single connectors

FEC: Acronym for Far-end equipment Cord, is the fiber optic describing the connection at the receiving end of the link under test.

Fiber Map: The Abbreviation for Transmit.

IEEE: Acronym for Institute of Electrical and Electronics Engineers standards. Generally referring to IEEE 802.3 Standards for the 40GbaseSR-4 and 100Gbase-SR10 test limits.

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.

Jumper: Also known as Patch Cord, is a fiber optic patch cord that is used to connect one or more devices or equipment in a fiber optic network.

Key-up/Key-down: The position of the key on the MPO connector at either end of an MPO cable. There are only two types of MPO cables; key-up to key-down (TypeA) and key-up to key-up (Type B).

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.

LC: Acronym for Launch Cord, is the fiber optic connected to the light source. Not to be confused with LC connector.

Light Source: Generally referring to fiber optic light source, is used for measuring fiber optic loss for both single and multi-mode fiber cables during optical network installation, test and maintenance. Usually used with fiber optic power meters.

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

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

Loss: Generally referring to optical loss, is the amount of light lost between the input and output of a fiber optic link. This is usually expressed in dB/km.

Loss Budget: The amount of loss a cabling plant should have by adding the estimated losses of all the components used in the plant to obtain the estimated total end to end loss

MM: Acronym for Multi-Mode.

MMF: Acronym for Multi-Mode Fiber.

MPO: Acronym for Multi-fiber Push-On, refers to a type of connector, for ribbon cables with four to twenty-four fibers.

NEC: Near-end equipment Cord, is the fiber optic describing the connection at the transmitting end of the link under test.

OM: Acronym for Optical Multi-mode, refers to a type of fiber optic.

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.

Patch Cord: Also known as Patch Cable. See Jumper.

Pinned: Also known as male, generally referring to an MPO connector with protruding contact or pins. Can only be connected to an unpinned end using a coupler.

Polarity: The matching of the transmit signal, or TX, to the receive equipment, or RX, at both ends of a fiber optic link.

Power Meter: Generally referring to fiber optic power meter, is a device used to measure and testing the average power in an optical system. Usually used with fiber optic light source. The measured value is expressed in dBm.

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.

RC: Acronym for Receive Cord, is the fiber optic at the receiving end of the link under test.

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

Refractive Index: Refers to the measurement of a ray of light is bent when passing from one medium into another.

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

RX: Abbreviation for Receive,

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.

TC: Acronym for Transmit Cord, is the fiber optic at the transmitting end of the link under test.

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

Trunk: Generally refers to the permanent link connecting the MPO modules to each other.

TX: Abbreviation for Transmit.

Type-A/B/C: Referring to either;

1. Connector Type – See Key-up/Key-down.
2. Cable Type -
Type A – Also known as the Straight Through cable, signal from the transmitting end will arrive at the receiving end in a straight numeric order, i.e., 1-1, 2-2, etc.
Type B - Also known as the Reversed or Cross-over cable, signal from transmitting end will arrive at the receiving end in a reversed order, i.e., 1-12, 2-11, 3-10, etc.
Type C – Also known as the Pairs Flipped or Cross-pair cable, signals from the transmitting end will arrive at the adjacent fiber of the receiving end, i.e., 1-2, 2-1, 3-4, 4-3, etc.

Unpinned: Also known as female, generally referring to an MPO connector with female contact or socket. Can only be connected to a pinned end using a coupler.

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 – 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

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 America

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 CesanoBoscone (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