MX900030A
Connector Master
Operation Manual

Sixth Edition

ANRITSU CORPORATION

Safety Symbols

To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Corporation uses the following safety symbols to indicate safety-related information. Ensure that you clearly understand the meanings of the symbols BEFORE using the equipment. Some or all of the following symbols may be used on all Anritsu equipment. In addition, there may be other labels attached to products that are not shown in the diagrams in this manual.

Symbols used in manual

⚠ **DANGER**   This indicates a very dangerous procedure that could result in serious injury or death if not performed properly.

⚠ **WARNING**   This indicates a hazardous procedure that could result in serious injury or death if not performed properly.

⚠ **CAUTION**   This indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

Safety Symbols Used on Equipment and in Manual

The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Ensure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

⊘   This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.

◯   This indicates an obligatory safety precaution. The obligatory operation is indicated symbolically in or near the circle.

△   This indicates a warning or caution. The contents are indicated symbolically in or near the triangle.

☐   This indicates a note. The contents are described in the box.

♻ 🗑   These indicate that the marked part should be recycled.

MX900030A
Connector Master
Operation Manual

11   March   2014 (First Edition)
14   February   2022 (Sixth Edition)

Equipment Certificate

Anritsu Corporation guarantees that this equipment was inspected at shipment and meets the published specifications.

Anritsu Warranty

- During the warranty period, Anritsu Corporation will repair or exchange this software free-of-charge if it proves defective when used as described in the operation manual.
- The warranty period is 6 months from the purchase date.
- The warranty period after repair or exchange will remain 6 months from the original purchase date, or 30 days from the date of repair or exchange, depending on whichever is longer.
- This warranty does not cover damage to this software caused by Acts of God, natural disasters, and misuse or mishandling by the customer.

In addition, this warranty is valid only for the original equipment purchaser. It is not transferable if the equipment is resold.

Anritsu Corporation shall assume no liability for damage or financial loss of the customer due to the use of or a failure to use this equipment, unless the damage or loss is caused due to Anritsu Corporation's intentional or gross negligence.

Anritsu Corporation Contact

In the event of this equipment malfunctions, please contact an Anritsu Service and Sales office. Contact information can be found on the last page of the printed version of this manual, and is available in a separate file on the PDF version.

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1. If a fault (bug) is discovered in this Software, making this Software unable to operate as described in the operation manual or specifications even though you have used this Software as described in the manual, Anritsu shall at its own discretion, fix the bug, or replace the software, or suggest a workaround, free-of-charge, provided, however, that the faults caused by the following items and any of your lost or damaged data whatsoever shall be excluded from repair and the warranty.

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    ii) If this Software has been used in conjunction with other non-Anritsu-approved software.
    iii) If this Software or the Equipment has been modified, repaired, or otherwise altered without Anritsu's prior approval.
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3. The warranty period for faults listed in Section 1 of this Article shall be either 6 months from the date of purchase of this Software or 30 days after the date of repair or replacement, whichever is longer.

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You shall not use or otherwise export or re-export directly or indirectly this Software except as authorized by the laws and regulations of Japan and the United States, etc. In particular, this Software shall not be exported or re-exported (a) into any Japan or US embargoed countries or (b) to anyone restricted by the Japanese export control regulations, or the US Treasury Department's list of Specially Designated Nationals or the US Department of Commerce Denied Persons List or Entity List. In using this Software, you warrant that you are not located in any such embargoed countries or on any such lists. You also agree that you will not use or otherwise export or re-export this Software for any purposes prohibited by the Japanese and US laws and regulations, including, without limitation, the development, design and manufacture or production of missiles or nuclear, chemical or biological weapons of mass destruction, and conventional weapons.

Article 5.   Change of Terms

Anritsu may change without your approval the terms of this EULA if the changes are for the benefit of general customers, or are reasonable in light of the purpose of this EULA and circumstances of the changes. At the time of change, Anritsu will inform you of those changes and its effective date, as a general rule 45 days, in advance on its website, or in writing or by e-mail.

Article 6.   Termination

1. Anritsu may terminate this EULA immediately if you violate any conditions described herein. This EULA shall also be terminated immediately by Anritsu if there is any good reason that it is deemed difficult to continue this EULA, such as your violation of Anritsu copyrights, patents, etc. or any laws and ordinances, or if it turns out that you belong to an antisocial organization or has a socially inappropriate relationship with members of such organization.

2. You and Anritsu may terminate this EULA by a written notice to the other party 30 days in advance.

Article 7.   Damages

If Anritsu suffers any damages or loss, financial or otherwise, due to your violation of the terms of this EULA, Anritsu shall have the right to seek proportional damages from you.

Article 8.   Responsibility after Termination

Upon termination of this EULA in accordance with Article 6, you shall cease all uses of this Software immediately and shall as directed by Anritsu either destroy or return this Software and any backup copies, full or partial, to Anritsu.

Article 9.   Negotiation for Dispute Resolution

If matters of interpretational dispute or items not covered under this EULA arise, they shall be resolved by negotiations in good faith between you and Anritsu.

Article 10. Governing Law and Court of Jurisdiction

This EULA shall be governed by and interpreted in accordance with the laws of Japan without regard to the principles of the conflict of laws thereof, and any disputes arising from or in relation to this EULA that cannot be resolved by negotiation described in Article 9 shall be subject to and be settled by the exclusive agreed jurisdiction of the Tokyo District Court of Japan.

Revision History:

February 29th, 2020
December 17th, 2021

Protection Against Computer Virus Infections

Prior to the software installation

Before installing this software or any other software recommended or approved by Anritsu, run a virus scan on your computer, including removable media (e.g. USB flash drive and CF memory card) you want to connect to your computer.

When using this software and connecting with the measuring instrument

- Copying files and data
  On your computer, do not save any copies other than the following:
  - Files and data provided by Anritsu
  - Files created by this software
  - Files specified in this document
  Before copying these files and/or data, run a virus scan, including removable media (e.g. USB flash drive and CF memory card).
- Connecting to network
  Connect your computer to the network that provides adequate protection against computer viruses.
- Protection against malware (malicious software such as viruses).
  To connect your computer to network, the following is advised.
  - Activate Firewall.
  - Install important updates of Windows.
  - Use antivirus software.

Cautions on Proper Operation of Software

This software may not operate normally if any of the following operations are performed on your computer:

- Simultaneously running any software other than that recommended or approved by Anritsu
- Closing the lid (Laptop computer)
- Turning on the screen saver function
- Turning on the battery-power saving function (Laptop computer)

For how to turn off the functions, refer to the operation manual that came with your computer.

About This Manual

This manual explains how to use the MX900030A Connector Master.

For safety precautions and operation of the fiber scope, refer to one of the following operation manuals:
G0306A Visual Inspection Probe Operation Manual
G0306B Visual Inspection Probe Operation Manual
G0306C Visual Inspection Probe Operation Manual.

Table of Contents

This chapter explains the outline and configuration of the MX900030A Connector Master.

1

Outline

1.1 Outline

The MX900030A Connector Master (hereafter this software) is the software to observe, analyze, and make a pass-fail judgment of the fibre optic connector endface by personal computer (hereafter PC) using the G0306A, G0306B, or G0306C (hereafter G0306A/B/C) Video Inspection Probe (hereafter VIP).

Figure 1.1-1   Example Use of This Software

This software has the following functions.
- Real time display of fibre optic connector endfaces.
- Save images of fibre optic connector endfaces in png, jpeg, or bmp formats.
- Automatic analysis of fibre optic connector endfaces.
- Making test report in pdf format.

This software analyzes fibre optic connector endfaces according to the standards below.
IEC 61300-3-35 *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures –*
Part 3-35: Examinations and measurements – Fibre optic connector endface visual and automated inspection

This software can read the VIPI files that were made by the products below.
- MU909014x/MU909015x µOTDR
- MT1000A Network Master Pro
- MT1040A Network Master Pro

- MT1100A Network Master Flex
- MT9085 Series ACCESS Master

Note:

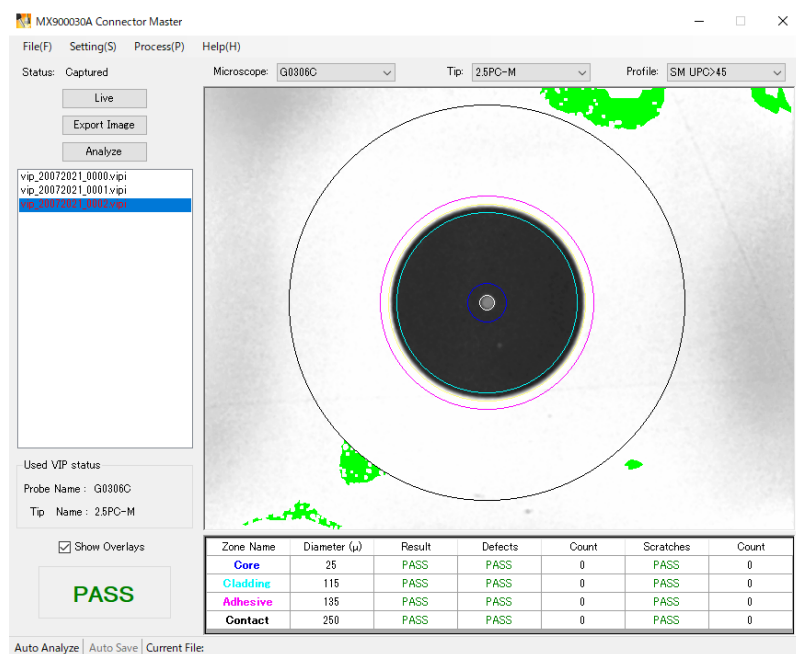This software only supports the G0306A/B/C VIP. It cannot analyze the VIPI files saved by other microscopes.

Figure 1.1-2　Example of Analysis Result

1.2 Recommendable Operating Environment

The Recommendable Operating Environment of the MX900030A is shown below.

Table 1.2-1   Recommendable Operating Environment

Item	Specifications
OS	Windows 8 (32/64 bit) Windows 10 (32/64 bit)
CPU	Processor of 1 GHz or more
Memory	2 GB or more
Free hard disk space	100 MB or more
Interface	USB 2.0
Display	1024 × 768 or more
Others	.NET Framework 4.8 Adobe Reader 9.0 or later

1.3 Configuration

The product configuration of the MX900030A is shown below.

Table 1.3-1   Configuration

Model/Ordering Number	Name
MX900030A	Connector Master*
W3690AE	Operation Manual*

*:   Download from Anritsu web site.

This chapter describes the process of installing and uninstalling the MX900030A by taking Windows 10 as an example.

2

Installation

# 2.1 Installation

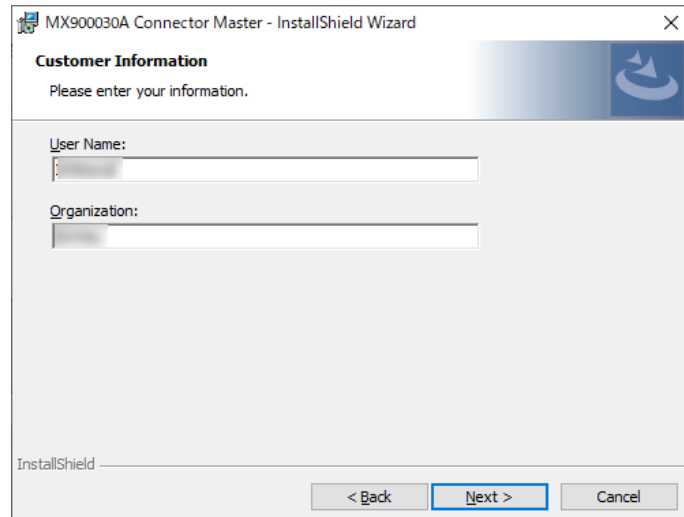Perform the following steps to install this software on the PC.

1. Extract the downloaded file.

2. Move the MX900030A folder from the decompressed MX900030A_vxxx_E folder to an arbitrary folder.
   xxx is replaced by the version number.

3. In the MX900030A folder, double-click the setup.exe file.

4. In the **User Account Control** dialog box, click **Yes**.

5. Click **Next**.
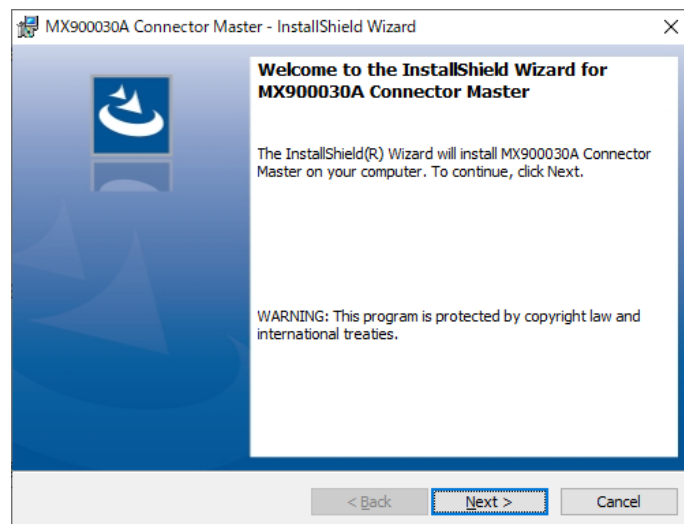
6. Select **I accept the terms in the license agreement**, and then click **Next**.
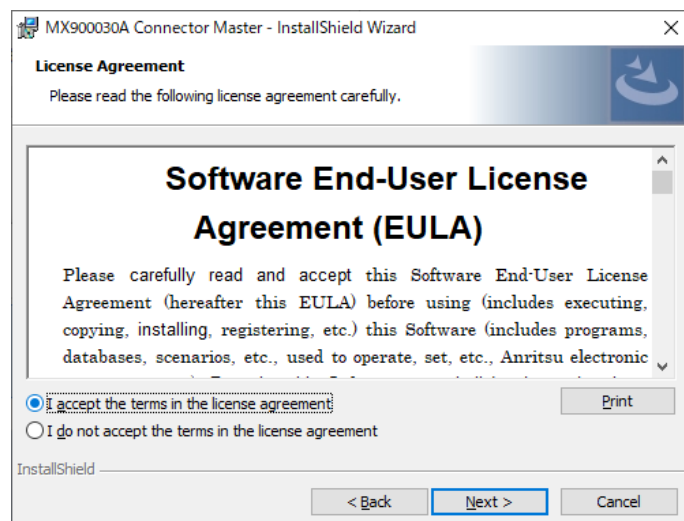
7. Enter User Name and Organization and then click **Next**.
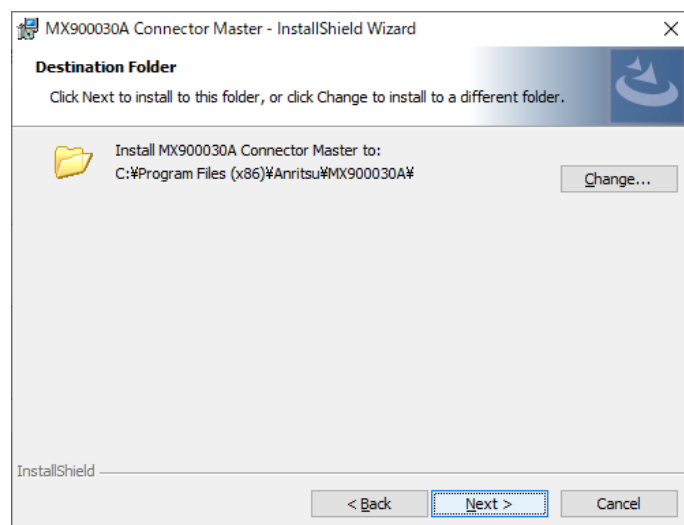
8. Click **Change** to select the installation location. Then click **Next**.
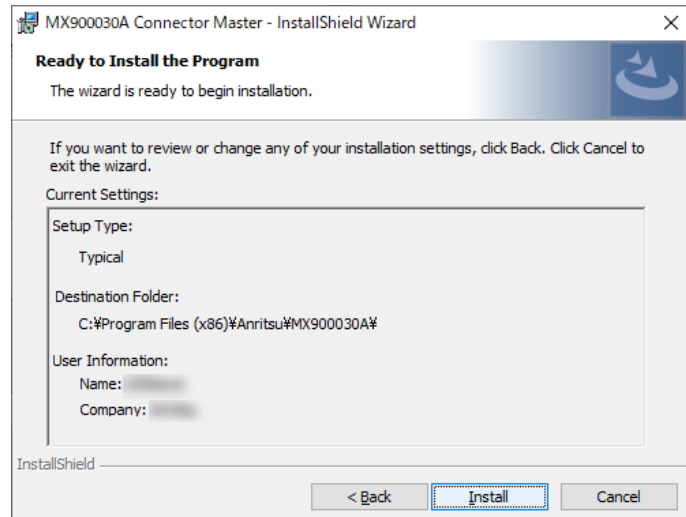
9.   Click **Install**.

10.   Click **Finish**.
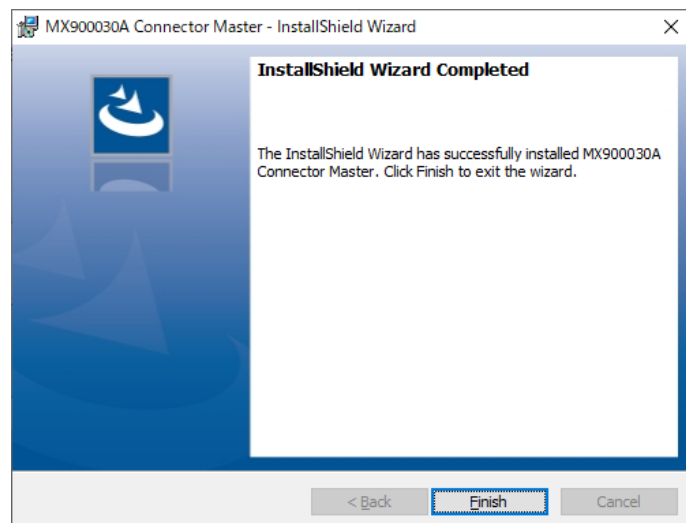
11.   Double-click the Connector Master shortcut created on the desktop, and then make sure that the application starts successfully.

2.2 Uninstallation

Perform the following steps to uninstall this software from the PC.

1.   Click **Start** (⊞) > **Settings** (⚙) > **Apps**.

Apps
Uninstall, defaults, optional
features
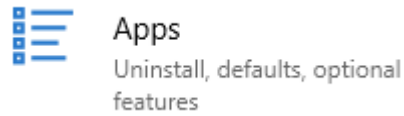
2.   On the Apps & features page, select **MX900030A Connector Master**, and then click **Uninstall**.

2

Installation

This chapter explains how to operate this software.

3

Operation

3.1   Starting and Quitting Software

Before starting the software, connect the G0306A/B/C VIP to the USB port on the PC.

Starting the software

1.   Click the Connector Master shortcut.

2.   The following message is displayed if the G0306A/B/C VIP is not connected to the PC. Click **OK**.
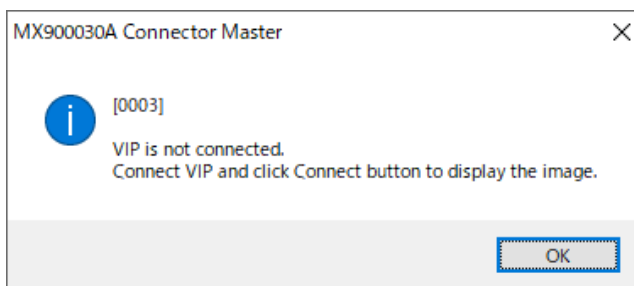
3.   The main window of this software is displayed.

Quitting the software

Click on **File** > **Exit**.

3.2 Main Window

The components of the Main window are as below.
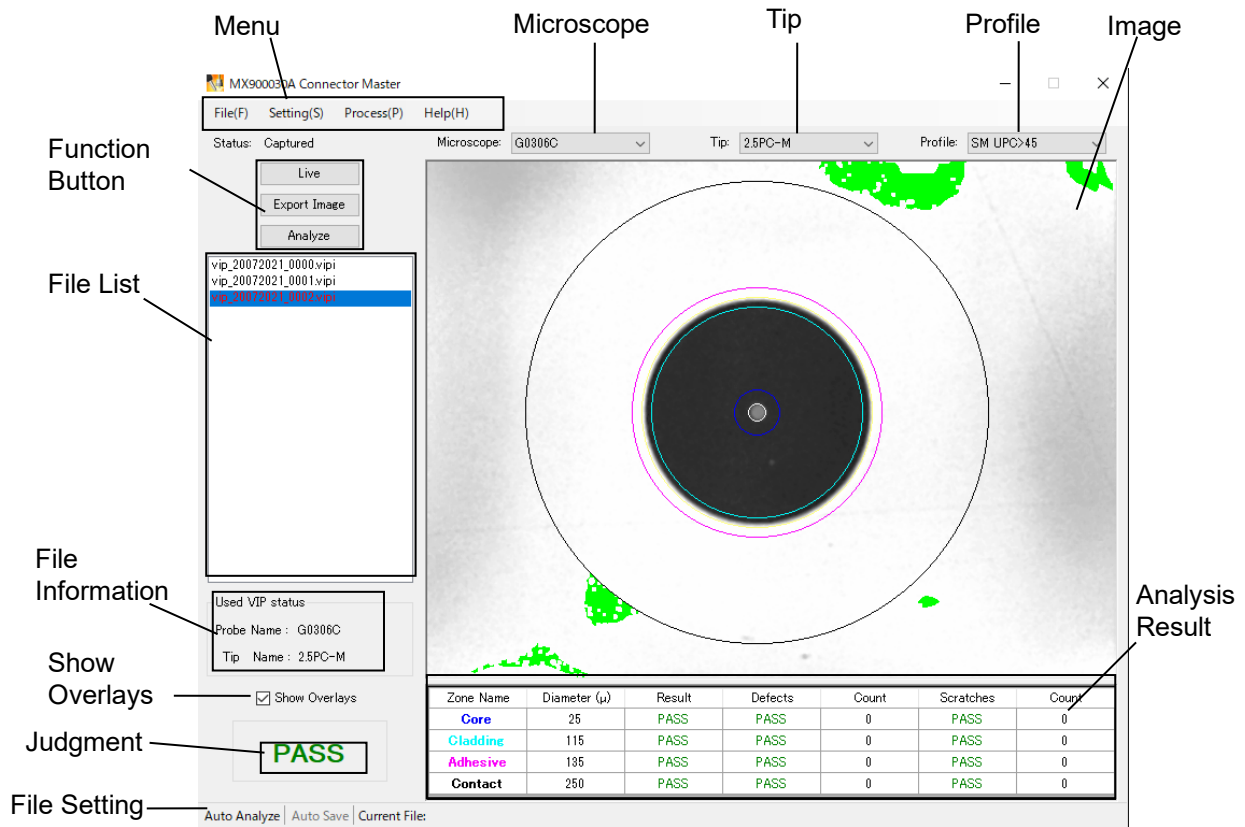
Figure 3.2-1　Components of the Main Window

The table below shows the menu list.

Table 3.2-1   Menu

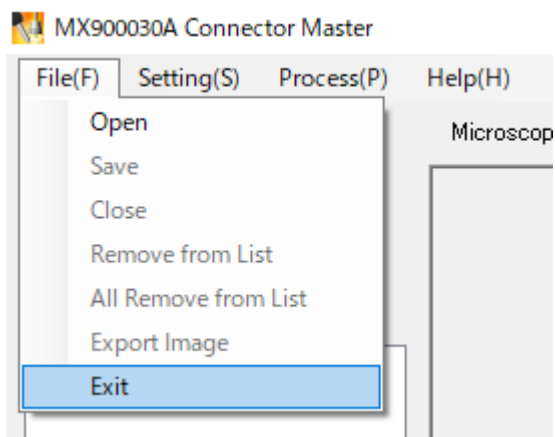| Display		Explanation
File		
	Open	Loads the VIP image files to display in the file list.
	Save	Saves the images of the fiber optic connector endface and the analysis results in the selected file.
	Close	Hides the image displayed on the monitor.
	Remove from List	Removes the selected file from the file list.
	All Remove from List	Remove all files from the file list.
	Export Image	Saves the image of the fiber optic connector endface in the image file.
	Exit	Exits from this software.
Setting		
	Auto File Setting	Sets the file automatic saving.
	PDF Report Setting	Sets the contents to output on the report.
Process		
	Generate Report	Makes a report of the selected file.
	Generate Report(Folder)	Generates reports from all the files in the selected folder.
	Analyze	Analyzes the selected image of the fiber optic connector endface.
Help		
	Manual	Displays the English operation manual. *
	About	Displays the version of this software.

*:   Adobe Reader needs to be installed.

Table 3.2-2   Explanation of the Main Window

Display	Explanation	
Menu		
Microscope	Select a microscope to use.	
Tip	Selects a tip for the VIP to use.	
Profile	Selects a fiber optic connector type.	
Function Button	Connect:	Connect the PC to the VIP.[1]
	Live:	Displays the image of the fiber optic connector endface in real time.[2]
	Capture:	Acquire and save the live image in the file.[2]
	Export Image:	Save the image of the optic fiber connector endface currently displayed on the monitor in the image file.[3]
	Analyze:	Executes analysis.
File List	Displays the captured or loaded VIP image files.[4]	
File Information	Displays the information of the selected file.	
Show Overlays	The overlays to show the fiber evaluation are placed on the image, if checked.	
Image	The image captured by the VIP is displayed.	
Analysis Result	Displays the analysis results per zone.[5]	
Judgment	Displays the judgment of the image analysis.[5]	
File Setting	The current auto file setting is displayed. (Displayed in black when it is checked, and in grey when unchecked.)	

[1]: Appears when the VIP is not connected.

[2]: Appears when the VIP is connecting.

[3]: The function is unavailable during the live.

[4]: Displays up to 100 files.

[5]: Displays the analysis and evaluation results when the analysis is performed.

The table below shows how to operate the main window by using a mouse.

Table 3.2-3   Mouse Operation

Mouse Operation	Main Window Operation	
Left Click	Left-click to select items and operate buttons as below. Menu items, Microscope, Tip, Profile, Connect, Export File, Analyze, files in the file list, Show Overrays	
Right Click	Right-click on the image to restore its default position and size.	
Scroll	Up	To enlarge the image.
	Down	To downsize the image.
Drag	To move the image to a desired direction.	
Double Click	Double-click a file in the file list to display its images and analysis results.	

3.3 Fiber Endface Display

3.3.1 Image display of VIP

1. When this software starts, the image being taken by the VIP is displayed. The status of the window shows "Live" at that time.

    Click **Connect** if **Connect** is displayed on the function button.

2. Adjust the focus by turning the adjustment knob of the VIP.

3. Click **Capture** to capture the image. The status of the window shows "Captured". The file is added automatically to the file list in the following name. When File Save of Auto Function is selected in Auto File Setting dialog box, the captured image is saved automatically. (Default: C:\Users\USER\Documents\Anritsu\MX900030A) The current user name will be displayed in the "USER".

    vip_DDMMYYYY_####.vipi Example: vip_13092013_0000.vipi

DD:	day
MM:	month
YYYY:	year
####:	number (4 digits)

    Note:

    > If the setting is changed in the Auto File Setting dialog box, the file is saved with a name according to the setting.

    When **Auto Function Analyze** is selected in the Auto File Setting dialog box, the fiber endface image is automatically analyzed. Then the zoned image of the fiber endface is displayed with the detected contaminations or scratches marked in colors as below.

    Green: Unimportant scratches and contaminations.

    Red: Important scratches and contaminations that may cause a problem.

4. If clicked, the image of the fiber optic connector endface can be enlarged or downsized by moving the mouse wheel. If right-clicked, the image is displayed in the original size. Also, the image can be moved by dragging.

5. If click **Live**, the image is displayed in real time.

3.3.2 File operation

<Saving Files>

Perform the following steps to save the image of the fiber optic connector endface and the analysis result in the VIP image file.
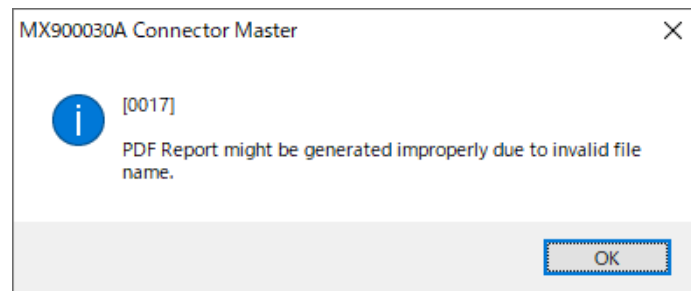
1. Double-click on the file you want to save in the file list to display.
2. Click on **File** > **Save**.
3. Input the destination folder and file name.

Note:

>   Double-byte characters are not allowed in the save folder path and save file name.
>
>   If double-byte characters are used in the save folder path, the VIP image file may not be saved.
>
>   If double-byte characters are used in the file name, the following error message is displayed.

MX900030A Connector Master   ✕

ℹ   [0017]

   PDF Report might be generated improperly due to invalid file name.

OK

4. Click **Save**.

Perform the following steps to save the image of the fiber optic connector endface in the image file.

1. Double-click on the file you want to save in the file list to display.
2. Click **Export Image**.

   Or click on **File** > **Export Image.**
3. Input the destination folder and file name.
4. Select the file type and click **Save**.

Note:

>   When the image is enlarged, it is saved as it is. The parts of the image outside the main window are not output.

Operation

3

<Loading Files>

1.   Click on **File** > **Open**.

Or drag and drop a desired file onto the file list.

2.   Input the reference folder and file name.

Note:

Double-byte characters are not allowed in the reference folder path and file name.

If double-byte characters are used in the referenced folder path or file name, the VIP image file may not be read.

3.   Click **Open**. The loaded file is added to the file list.

4.   If double-click the file in the file list, the image and file information are displayed. Additionally, the status of the window shows "Loaded".

3.4 Analyzing Image of Fiber Endface

3.4.1 Executing analysis

Perform the following steps to set the analysis conditions.

1. Double-click the desired file in the file list and display the image.

2. Select the ferrule adapter installed to the VIP from the Tip pull-down menu.

   1.25PC-M: φ1.25 mm PC Universal
   2.5APC-M: φ2.5 mm APC Universal
   2.5PC-M: φ2.5 mm PC Universal
   FC-PC-F: For FC connector
   LC-PC-F: For LC connector
   SC-PC-F: For SC connector
   SC-APC-F: For SC connector (APC)

   60-LC-PC-F: For 60 degree LC connector
   (Selectable when Microscope is set to G0306B or G0306C)

   The following can be selected only when your VIP is G0306C.

   1.25APC-M: φ1.25 mm APC Universal
   FC-APC-F: For FC connector (APC)
   LC-APC-F: For LC connector (APC)
   E2000-PC-M: For E2000 connector
   E2000-APC-M: For E2000 connector (APC)
   E2000-PC-F: For E2000 connector
   ST-PC-F: For ST connector
   MU-PC-F: For MU connector

3. Select the fiber type from the Profile pull-down menu.

   SM UPC>45: Single-mode fiber, PC connector with return loss >45 dB
   SM APC: Single-mode fiber, Angled PC connector
   SM PC>26: Single-mode fiber, PC connector with return loss >26 dB
   MM PC 62.5: Multi-mode fiber, Core diameter 62.5 μm
   MM PC 50.0: Multi-mode fiber, Core diameter 50 μm

4. Click **Analyze** to display the analysis results and evaluation results.

3

Operation

5.   If check **Show Overlays**, the evaluation diagram (circle) for analysis is displayed on the monitor.

Table 3.4.1-1   Analysis Results

Name	Description
Zone Name	Name of the analyzed zone
Diameter (μ)	Measurement result of the diameter The unit is micrometer (μm).
Result	Evaluation result of the diameter
Defects	Evaluation result of contaminations or defects of the fiber connector endface
Count	Count of the detected contaminations or defects
Scratches	Evaluation result of scratches
Count	Count of the detected scratches on the fiber connector endface

If the analysis results of Result, Defects, and Scratches are all PASS, the total judgment is PASS. If the judgment is FAIL, the parts in trouble are shown in red in the analysis result.

When the fiber endface is too contaminated or the image is out of focus, the image cannot be analyzed properly. When the below message is displayed, clean the connector or adjust the focus of the VIP.
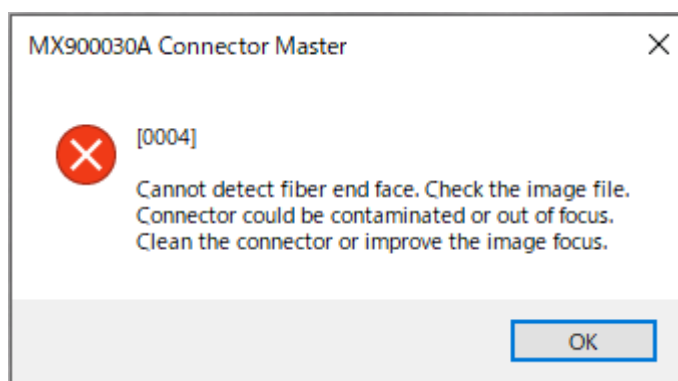
Figure 3.4.1-1 Error Message

Note:

The MX900030A cannot analyze VIP image files acquired by a microscope other than the G0306A/B/C.

3.4.2 Setting automatic file saving

This software can save analysis results in a file automatically.
Perform the following steps for the setting.

1.   Click on **Setting** > **Auto File Setting** to display the Auto File Setting dialog box.

2.   To analyze the fiber optic connector endfaces automatically by clicking **Capture** button, check **Analyze** of Auto Function.

3.   To save files automatically by clicking **Capture** button, check **File Save** of Auto Function.

4.   To change the destination folder, click **Browse…**   Select a new folder and click **OK**. The default destination folder is the document folder.

5.   Set a file name as below.

Input the file name in **File Name Prefix** textbox.

Up to 15 characters can be entered when **Include Date** is selected, and up to 24 characters if it is not.

Input the start number in **Sequence Number** textbox.

To add the date to a file name, check **Include Date**.

For example, if the date is August 12th, 2013, the word string "_12082013" is added to the file name.

The destination folder and the first file to save are displayed.

6.   Click **OK**.

3

Operation

The settings in the Auto File Setting dialog box are not reset by reinstalling this software. The defaults of the setting items are as below.
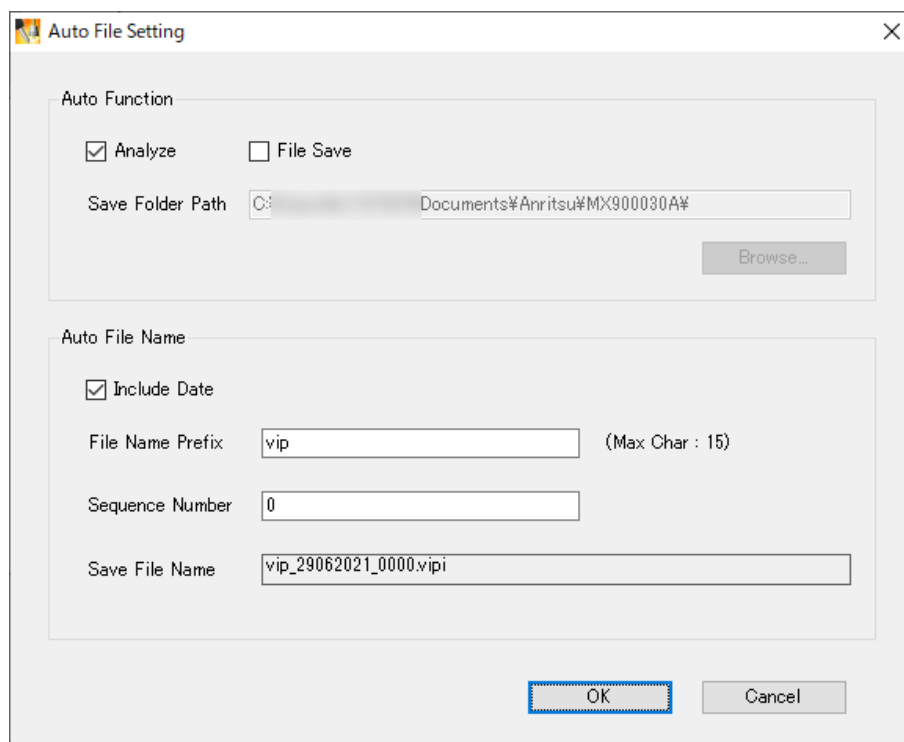

Figure 3.4.2-1　Auto File Setting Dialog Box

Note:

0 to 9999 can be input to the Sequence Number field. If the file with the same name already exists in the destination folder, the file is saved with the Sequence Number automatically incremented.

When the text input in the File Name Prefix textbox exceed the maximum characters, the **OK** button is greyed out and disabled. Edit the text so that it will be within the maximum characters.

3.5 Creating a Report

This software allows the user to create a report in PDF format in the following steps. Adobe Reader needs to be installed to read PDF reports.

To change the report contents to output, perform the following steps.

1. Click on **Setting > PDF Report Settings.** The PDF Report Setting dialog box is displayed.

2. Check **Include Analysis Results** to show the analysis results in the report.
    Check **Include Analysis Details** to show the details of the analysis results in the report.

3. Input the information in **Customer**, **Location**, **Operator**, and **Notes** textboxes to print on the report. Up to 30 characters can be entered.

4. Check **Include Logo** to include a logo in the report.

5. To change the logo, click **Browse**. Select a folder, input a file name, and click **Open.**

6. Click **OK**.

To make a report from the selected file, perform the following steps.

1. Click on **Process > Generate Report**.

2. Select a destination folder and input a file name.

Note:

> Double-byte characters are not allowed in the save folder path and save file name. If double-byte characters are used in the save folder path or file name, analysis results are not output to the generated report file.
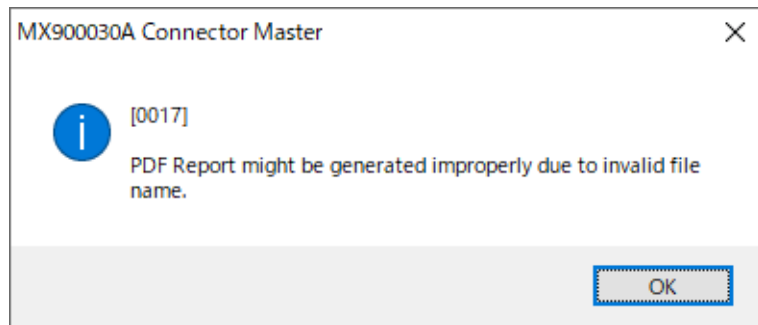
3. Click **Save**.

To make reports from all the files in the selected folder, perform the following steps.

1. Click **Process -> Generate Report (Folder)** on the menu.

2. Select the folder where the desired file is saved, and click **OK**.

Note:

> Double-byte characters are not allowed in the save folder path and save file name. If double-byte characters are used in the save folder path or file name, analysis results are not output to the generated report file.

> When selecting a folder that contains no vipi files, the error message below appears.

3. Select a destination folder to save the report and input a file name.
4. Click **Save**.

The settings in the Auto File Setting dialog box are not reset by reinstalling this software. Click **Restore Defaults** to set the items to defaults in the PDF Report Setting dialog box as below.
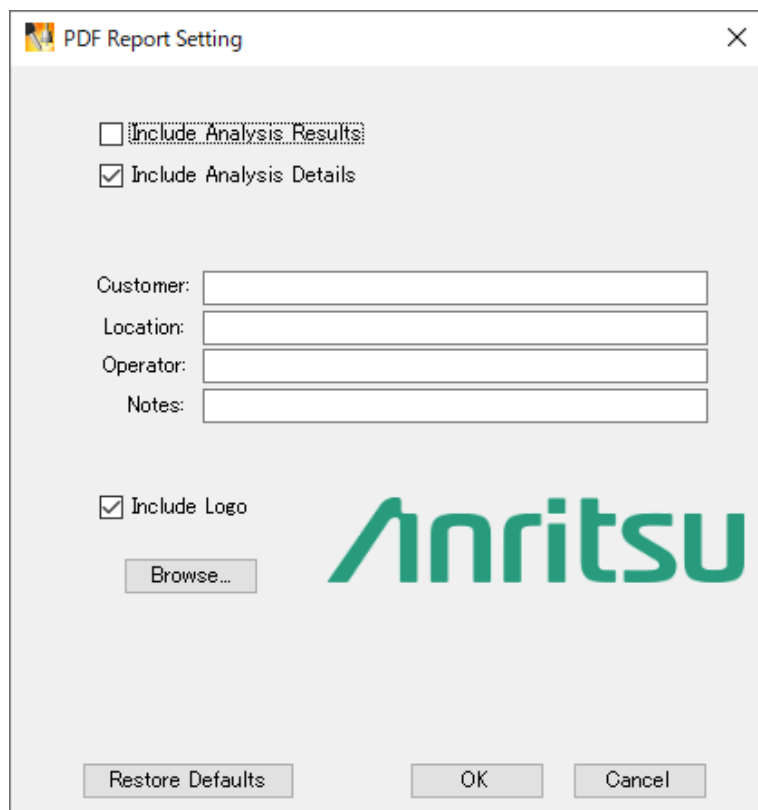

Figure 3.5-1   PDF Report Setting Dialog Box

Figure 3.5-2   Example of Report with Detailed Analysis Results

Note:

> The image on the report and the same image displayed on the screen may look a little different. However, the analysis results are exactly the same in the report and on the screen.

Appendix A   Test Profile Definitions

Appendix A explains the pass-fail definition of test profiles according to IEC 61300-3-35:2015.

In the following table, "None" means that scratches or defects should be none. "No limit" means that there is no limit to the number of scratches or defects.

For example, "None > 3 μm" means that scratches or defects larger than 3 μm should be none.

Table A-1   SM UPC>45

Zone Name	Defects		Scratches	
Core	None		None	
Cladding	No limit	< 2 μm	No limit	≤ 3 μm
	5	from 2 μm to 5 μm	None	> 3 μm
	None	> 5 μm		
Adhesive	No limit		No limit	
Contact	None	> 10 μm	No limit	

Table A-2   SM APC

Zone Name	Defects		Scratches	
Core	None		4	≤ 3 μm
Cladding	No limit	< 2 μm	No limit	
	5	from 2 μm to 5 μm		
	None	> 5 μm		
Adhesive	No limit		No limit	
Contact	None	> 10 μm	No limit	

Table A-3   SM PC>26

Zone Name	Defects		Scratches	
Core	None		2	≤ 3 μm
			None	> 3 μm
Cladding	No limit	< 5 μm	No limit	≤ 3 μm
	5	from 5 μm to 10 μm	3	> 3 μm
	None	> 10 μm		
Adhesive	No limit		No limit	
Contact	None	> 10 μm	No limit	

Table A-4   MM PC62.5, MM PC50.0

Zone Name	Defects		Scratches	
Core	4	≤ 5 µm	No limit	≤ 3 µm
	None	> 5 µm	None	> 3 µm
Cladding	No limit	< 5 µm	No limit	≤ 5 µm
	5	from 5 µm to 10 µm	None	> 5 µm
	None	> 10 µm		
Adhesive	No limit		No limit	
Contact	None	> 10 µm	No limit	