



Automatic Single Fiber Optic Interferometer
Mars-ML-AT

User Manual

Version 1.0

Introduction

Thank you for purchasing one of Mars Single Fiber Connector Optical Interferometers.

Mars Single Fiber Connector Optical Interferometer is a high precision instrument developed and manufactured by Sunma Technology Co., Ltd. to measure the end face geometry of optical fiber connectors. It is used to measure standard fiber optic connectors such as SC/PC, SC/APC, FC/PC, FC/APC, ST, LC/PC, LC/APC, MU/PC connectors with diameter of 1.25mm or 2.5mm. Output parameters include Radius of Curvature (ROC), Fiber Height, Apex Offset, APC Angle and Key Angle, etc., which help to improve the end face polishing of fiber optic connectors, and lead to perfect transmission.

To ensure consistent repeatable results and high reliability, great efforts have been made in the design and manufacture of the Mars. To achieve the best possible results, please take the time to read this user manual carefully and thoroughly before using your machine.

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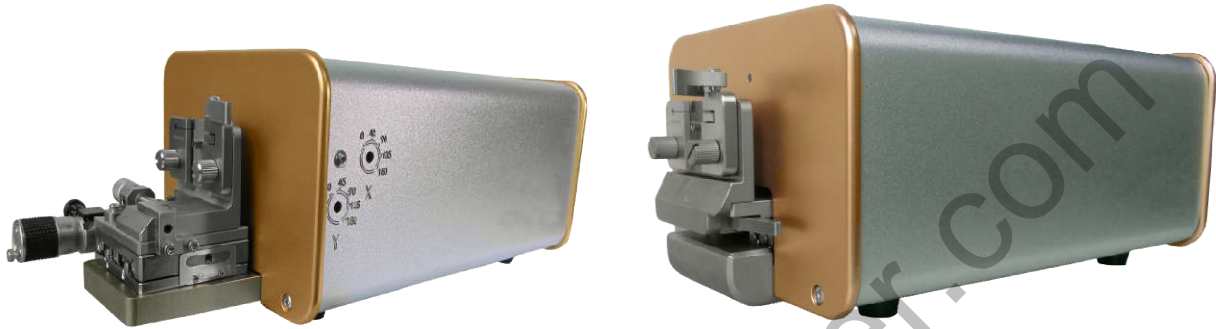
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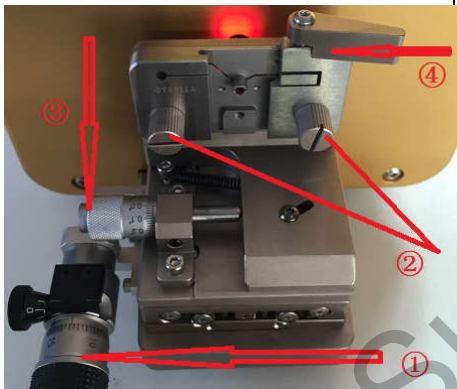
1. Instrument Setup

1.1 Instrument Introduction

Mars-ML and Mars-AT interferometer is comprised of three main assembly components. #1) chuck assembly stage, #2) reference mirror adjustments, #3) connection interface, and other accessories.



1.1.1 Chuck Assembly Stage



① Focus Micrometer Knob

The clearest fringes of connector end face under test are obtained by rotating the.

② Chuck Holder

It holds the chuck of 1.25mm or 2.5mm, which is tighten by two screws.

③ Angular/Tilt Adjustment Screw


Turn it to 0 degree when testing PC connector, and turn to the degree marked on the product label which is on the connection interface when testing APC connector.

④ Fiber Clamping Switch


Turn the switch in the clockwise direction to clamp the connector, and turn in the counter-clockwise direction to loosen it.

The Mars-AT Interferometer is auto focused so there is no focus knob.

1.1.2 Reference Mirror Adjustments

	<ul style="list-style-type: none"> ① Reference Mirror X Axis ② Reference Mirror Y Axis <p>The calibration procedure may lead to a request for mirror orientation adjustment. The rotation values of X Axis and Y Axis are given by the software. Use the Allen Key to adjust the angles manually with reference to the degrees around the X and Y holes.</p> <p>The Mars-AT Interferometer is totally automatic so the angle adjustment of the reference mirror will be finished by itself.</p>
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1.1.3 Connection Interface

	<ul style="list-style-type: none"> ① Product Label The label shows product name, product serial no., ID code, and input voltage. ② ON/OFF Power Switch It is used to control the power supply of the interferometer. ③ Power Interface Port The interferometer is powered by 24V Direct Current. ④ Video Out Port It is connected to the computer by a USB cable and is used to view the image in real time and control the interferometer.
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1.1.4 Chucks and Keying Adapter Plates

The universal V-groove chuck is extremely versatile and clamps virtually any 1.25mm or 2.5mm diameter connectors. It is tightened by two screws. Release them before changing another one and then tighten them again.

Note: 1. Do not forget to calibrate the apex offset after changing the chuck.

2. The Keying Adapter Plates which is used to make sure the connector in the right and same position every time been inserted should be placed when APC is testing.

Keying adapter plates

Keying adapter plates are mandatory for APC connector measurements; however they are not required for PC measurements. Different adapter plates are available for each style of connector



that comes in an APC format, including but not limited to FC, SC, ST, E20000 and LC. Sunma Mars Interferometer provides four types of keying adapter plates to use. For some connectors such as the FC/APC several key widths have evolved from different manufacturers and for different applications. If you are using FC/APC connector housings from multiple vendors, Sunma has developed an adapter palate that will key most designs and key widths using a single adapter plates. Alternatively, if you are only using one specific key width, FC/APC adapter plates are available with fixed width slots. Although these adapter plates will ONLY correctly accommodate one specific key width, they are less sensitive to variations in ferrule length and/or connector insertion depth.

When installing an adapter plate, DO NOT tighten the adapter plate thumbscrews fully. The idea is to allow the adapter plate to move laterally to accommodate any slight flotation in the ferrule, which still preventing rotation of the connector key. With the connector inserted fully, there should be no perceivable rotation of the ferrule possible. Always follow the recommended procedure described in this manual to fit the plate correctly.

1.2 Connect the Instrument to the Computer

The following diagrams show the cable connections necessary to setup your Mars Interferometer correctly. ***Note: Incorrect connections may damage the computer and the instrument.*** Double check that all connections have been made correctly and are secure.

1.2.1 Set up the Computer

1. Check to ensure that the computer voltage switch is set to the correct DC supply voltage.
2. Connect the plug on the mouse to the socket on the rear of the computer.
3. Connect the plug on the computer keyboard to the socket on the rear of the computer.
4. Plug the USB into the USB port on the computer.

1.2.2 Connect the Instrument to the Computer

5. Check to ensure that the interferometer voltage switch is set to the correct DC supply voltage. Connect the power cable to the interferometer.
6. Connect one end of the USB cable to the video port on the instrument and the other end into the USB port on the computer.
7. Press the power button and the red light in the front of the instrument will be turned on.

2. Software Installation

Mars Single Fiber Connector Optical Interferometer software package includes the test application, camera drive and USB drive.

The software required has already been installed in the computer before shipment. In the event of

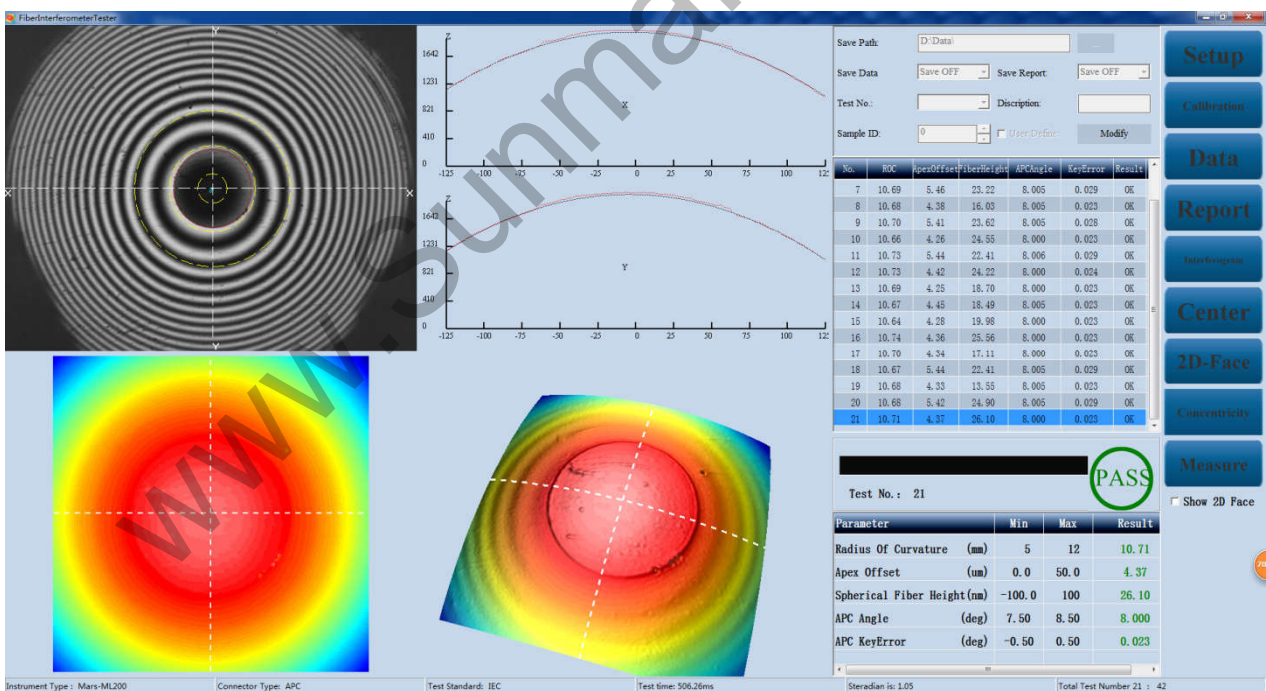
false uninstallation or software updating, please go to the file “SoftWare” in the D disk where all the software is stored to re-install them.

To install the software correctly, please read below instruction:

- Open the file where the software package is saved (Default installation root is “c:\Program Files\.....”), unzip the package and run the software.
- You may see the interface shown as below, which means the previous software which have already installed in the computer should be uninstalled. Follow the instruction to uninstall the previous software.
- Once the previous software is uninstalled, run the “Mars_SinglefiberSetup.exe” again, and you will see the regular installation interface as below.
- Click “Next” to move on to the second installation step. The test application and camera drive will be installed simultaneously.
- Click “Finish” when all are installed, and you will see the software icon on the desktop.

3. Software Operation

Open the software and the software interface will pop up. The toolbar icons along the right side of the interface perform most functions of the software.



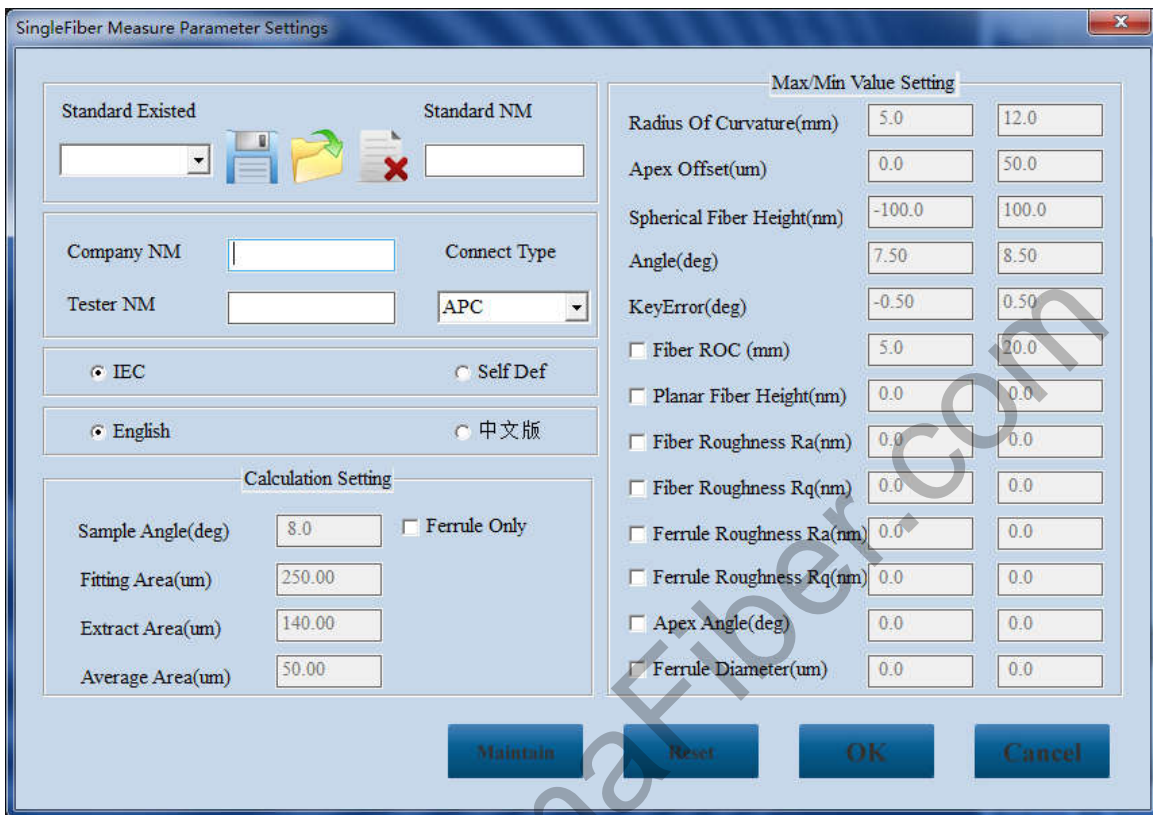
3.1 Toolbar Icons

Setup Icon

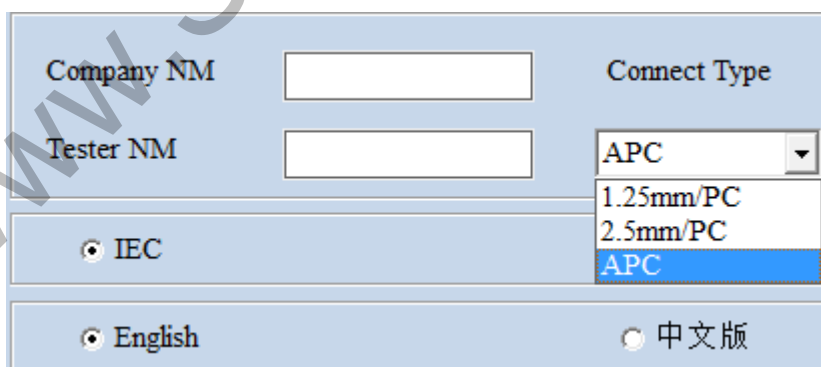
The Setup menu allows the user to make measurement settings, which includes the type of

connector to be measured, measurement standard, language versions (English or Chinese), etc. When clicking the icon, the “Measure Parameter Settings” window will pop up as below.

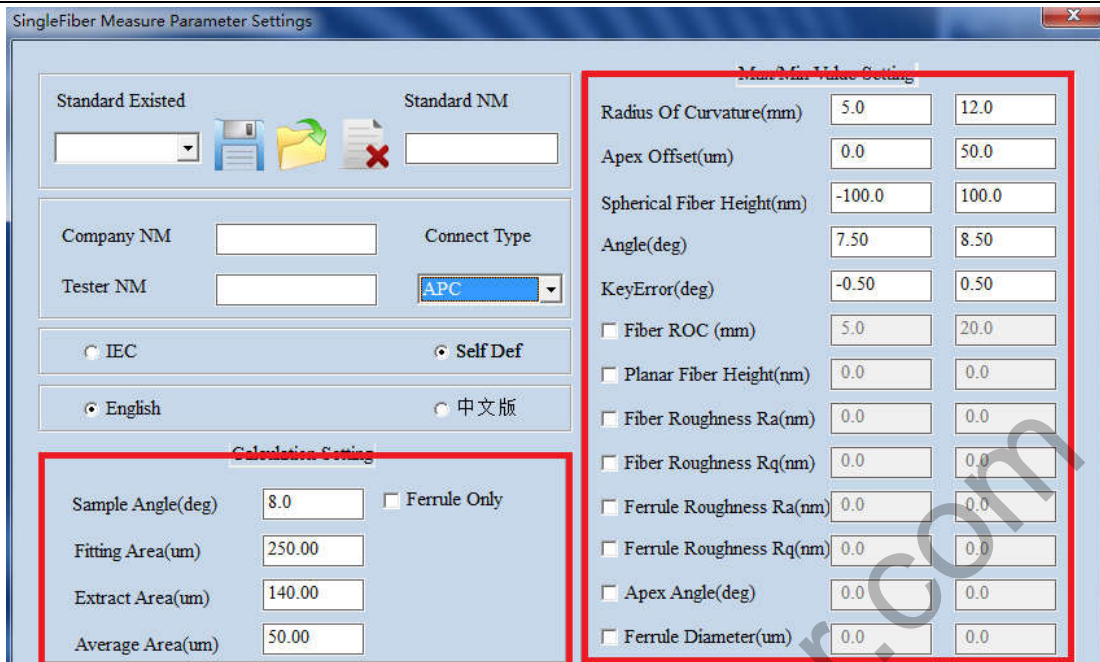
Note: The settings should be made again if a different type of connector will be tested.



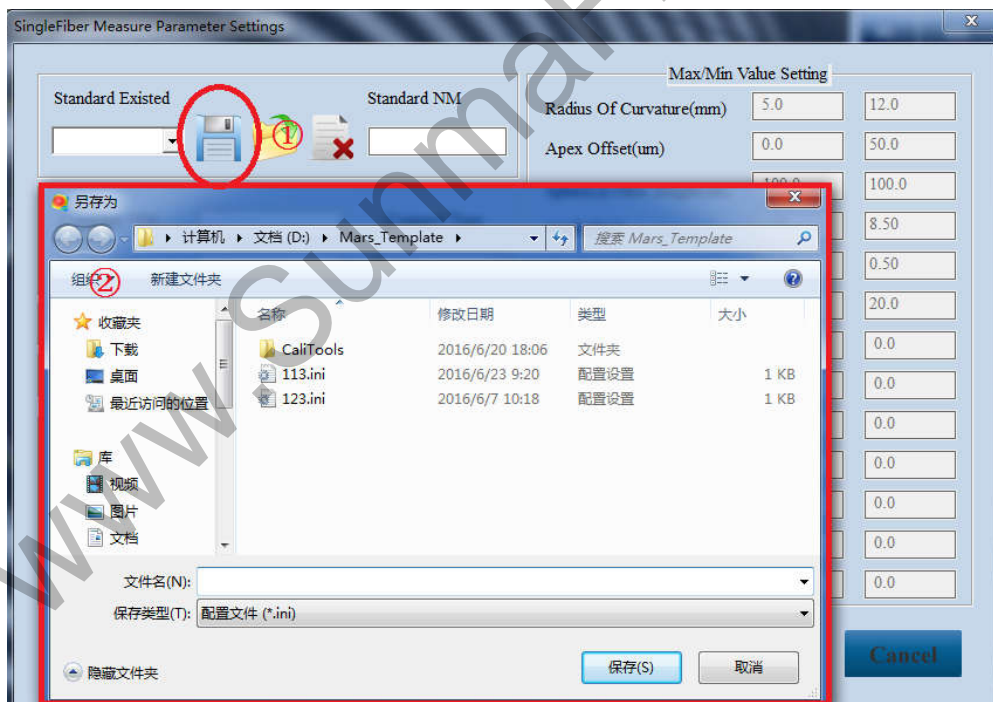
- In the “Company NM” option, you can enter your company name, and it will display in the test report and data documents. In the “Tester NM” text box, enter the name of the person who takes the measurement.
- In the “Connector Type” option, select the type of connector to be tested in the drop-down list.



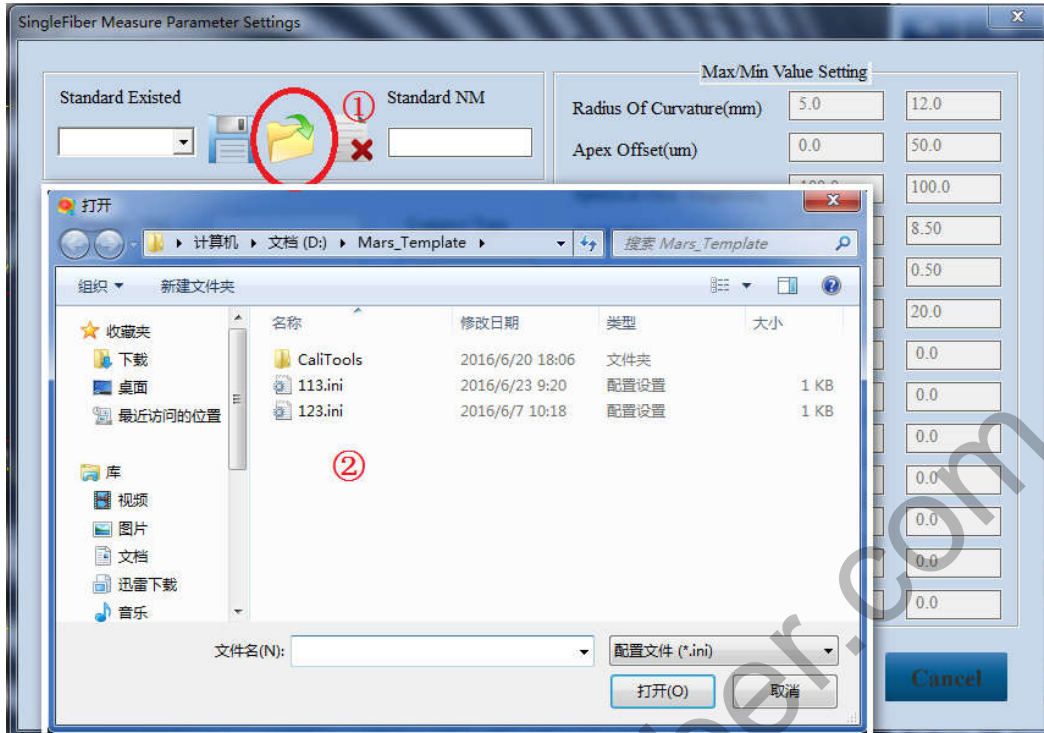
- In the “Standard” option, there are one type of international standard listed, i.e. IEC. You can also define your own criteria by selecting “Self Def” and entering the figures into the text boxes on the right and bottom.



- To save your own measurement standard, you can click the “Save” button①, and in its dialog② enter the file name and define a location to store it, then a file with “. ini” format will be created.



- To import the measurement standard that you have set before, click the “Import” button①, and in its dialog② open the file you need, then all the criteria will be imported into the measurement text boxes.



- The software has two language versions – Chinese and English. Choose the language that you want by simply clicking the option at the bottom left.
- Select the “Ceramic Ferrule” if you measure a ferrule blank (i.e. a ferrule with no internal hole) to save the measurement time. There will be no parameter of fiber height in testing result.
- Click the “Reset” button, and the “Connector Type” will be set as the original “2.5mm/PC” and the “Standard” as “IEC”.
- Click “OK” when all the settings are made.
- The “Maintain” is for the support from Sunma only. Operators are not allowed to use it.

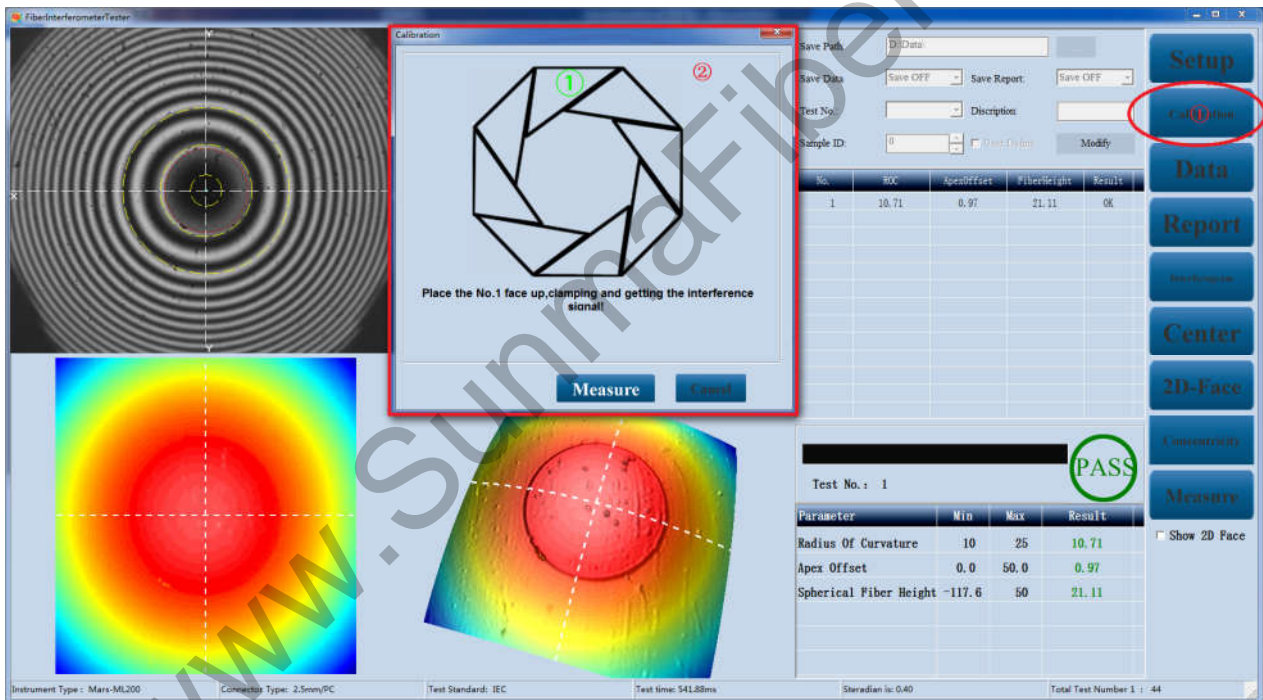
Calibration Icon

Calibration should be performed on a routine basis to ensure that the system is performing within specifications. In the event that chuck assemblies are changed or the instrument is moved, calibration should be performed again. It is suggested that calibration should be performed at least once per day.

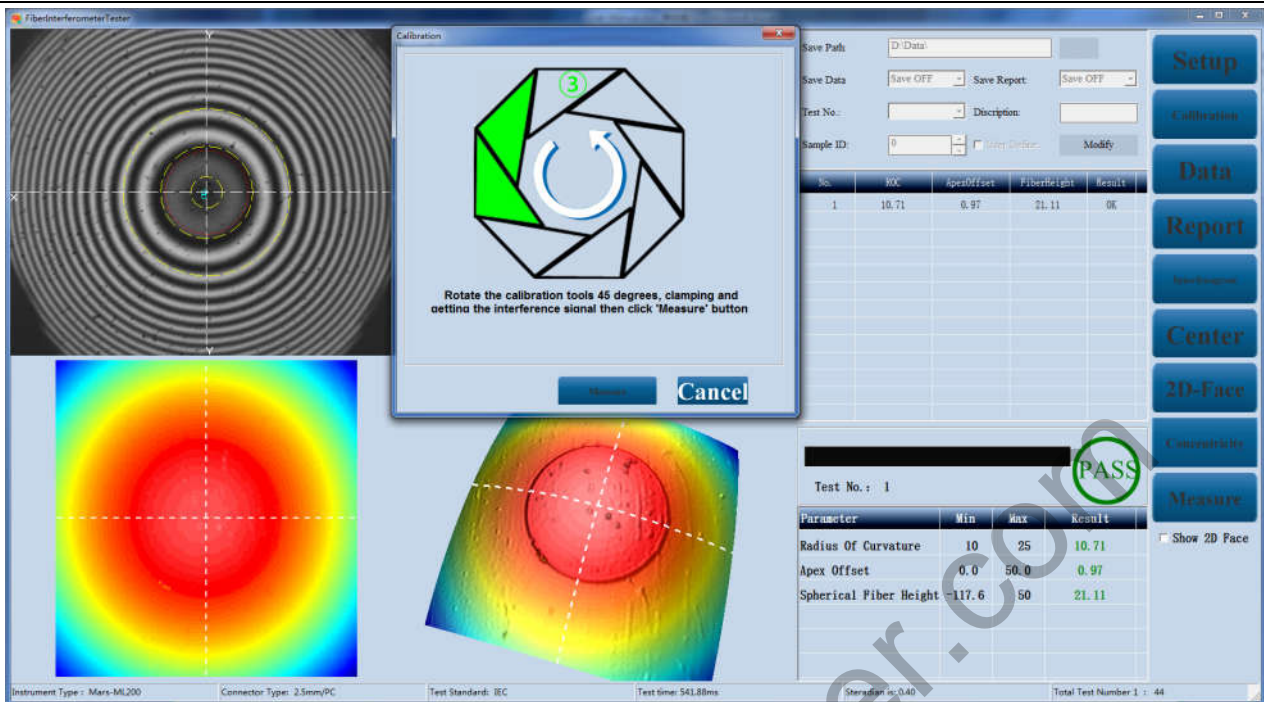
For optimum results, adjustments should be performed with the reference connector when you first use the instrument and compare the result with the report. Calibration should be carried out if the data is not between maximum and minimum as shown in report.

Below are steps to make calibration:

- a) Insert the reference connector (the correct type under test) into the V-groove chuck.
- b) Click the “Calibrate” icon ① and in the “Calibration” window ② follow the instructions presented on the right. **Note: Before pressing the “Measure” button on the bottom of the Calibration panel, make sure that the fringes are the sharpest and clearest.**

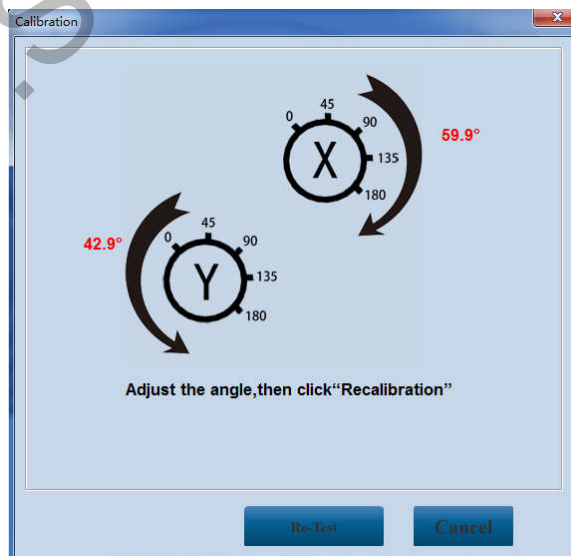


- c) Press the “Measure” button, and there will be a small green circle on the interferogram which shows the position of the apex. Meanwhile the segment of the polygon corresponding to this position will turn green on the “Calibration” window.



- d) Rotate the connector by about 45 degrees so that the apex lies in the next section and re-focus for fringes if necessary. **Note: The fiber clamping switch should be un-locked and locked at this point to ensure that there is no bias in the ferrule position.**
- e) Continue to rotate the connector until all of the segments have changed to green. The software apex offset will be displayed along with the asymmetry of the X to Y radius. Note: The asymmetry of the X to Y radius should be within ± 15 degree (0 degree is the perfect condition), otherwise you need to adjust the reference mirror.
- f) The calibration result dialog will show up after all the eight segments are calibrated.

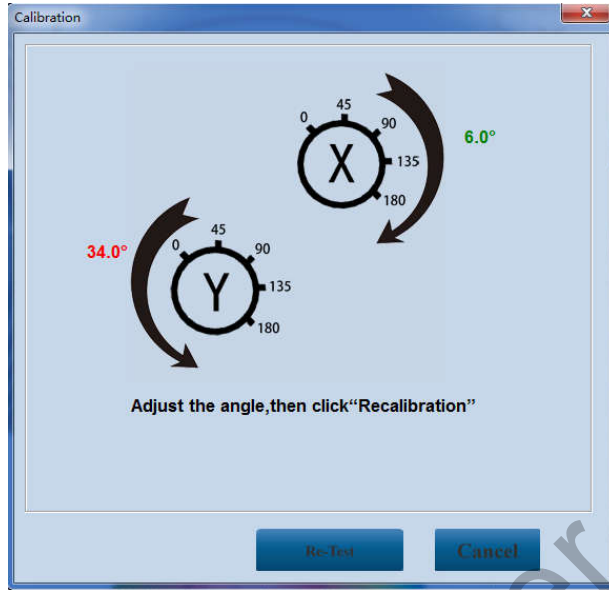
You may see a dialog box as below:



Both deviation degrees of X and Y radius are red with rotation directions marked, which means you need to manually adjust the three-dimensional adjusting frame with reference to the rotation directions and degrees. After adjustment is done, click the “Re-Test” button on the dialog and

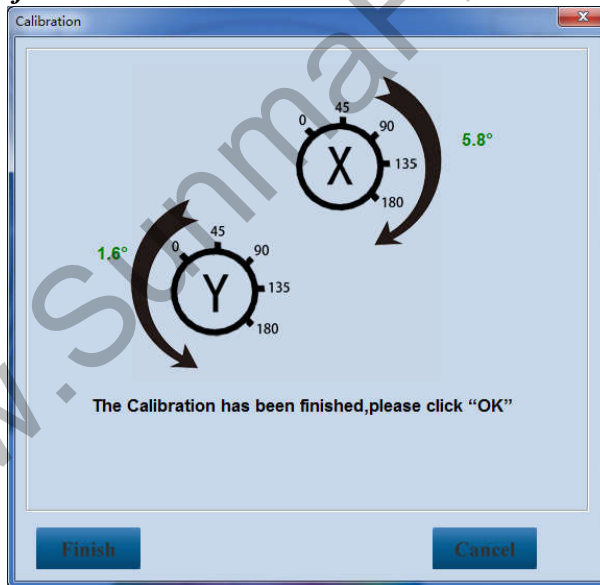
calibrate again until both deviation degrees are green.

Or you may see a dialog box as below:



The deviation degree of one radius is red whilst the other is green. In this case, you need to adjust the radius with its degree in red, and calibrate again.

The dialog box with qualified calibration should be like below:




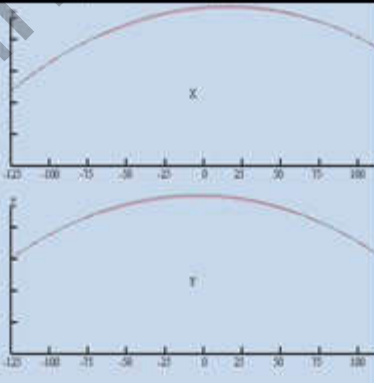
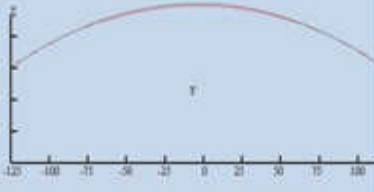
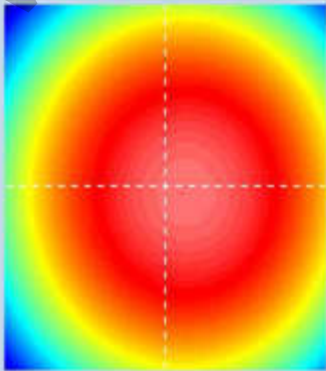
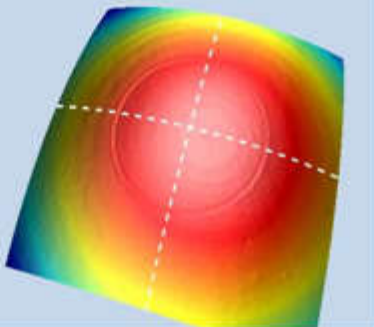
Both deviation degrees of X and Y radius are green, which means the calibration is ok. Click the "Finish" button then.

Report Icon

The icon allows you to read the report of the current sample under testing. The report includes connector type, ID, test number, test standard, measurement parameter, 3D diagram, test result, company name, signer, etc. Below is an example.

Note: 1. The menu works only when the “Report Save” function is activated (i.e. The “ReportSave” option is selected on the “Connector ID Setup” panel).

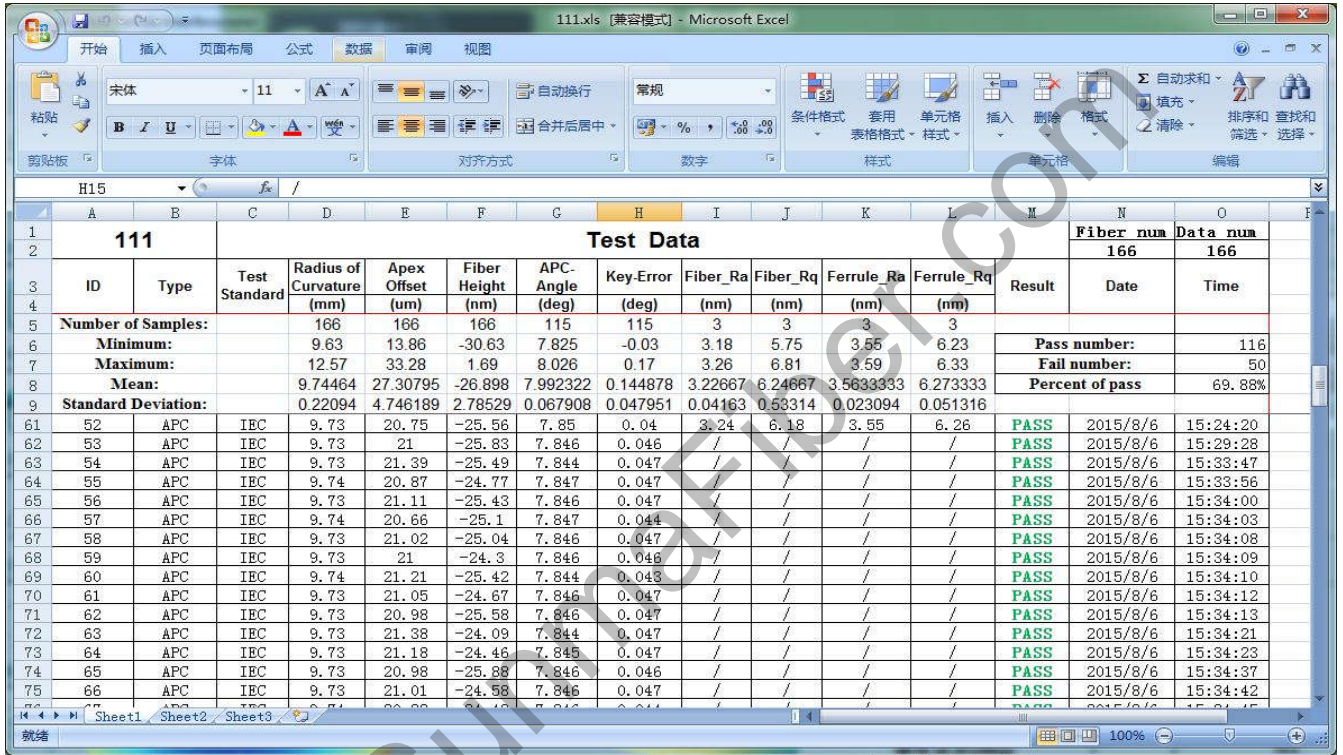
2. The icon is to show the report of the sample which is currently under testing. If you want to read reports of the other connectors, find them in the file where they are saved.

					20160511
Sample ID: 1					PASS
Type & Standard:		1.25mm/PC	IEC		
Sample Description: SC					
Measurement Parameter	Pass/Fail Limits		Measured Value		Passed or Failed
	Minimum	Maximum			
Radius of Curvature	7.00	25.00	8.92	mm	PASS
Apex Offset	0.00	50.00	15.30	µm	PASS
Fiber Height	-125.00	50.00	-21.95	nm	PASS
Angle	/	/	/	/	/
Key Error	/	/		deg	/
Fiber Roughness (Rq)			0.00	nm	
Fiber Roughness (Ra)			0.00	nm	
Ferrule Roughness (Rq)			0.00	nm	
Ferrule Roughness (Ra)			0.00	nm	
Radius			0.00	µm	
Comments					
  					Insertion Loss
					1310 nm
 					1550 nm
					Backreflection
					1310 nm
					1550 nm
					Time: 16:47:45
					Date: 2016-05-11
					Signer:

Data Icon

The icon allows you to read the test data of the samples with the same test number. The test data includes connector type, ID, test number, test standard, measurement parameter, test result, etc. Below is an example.

Note: The menu works only when the “Data Save” function is activated (i.e. The “DataSave” option is selected on the “Connector ID Setup” panel).

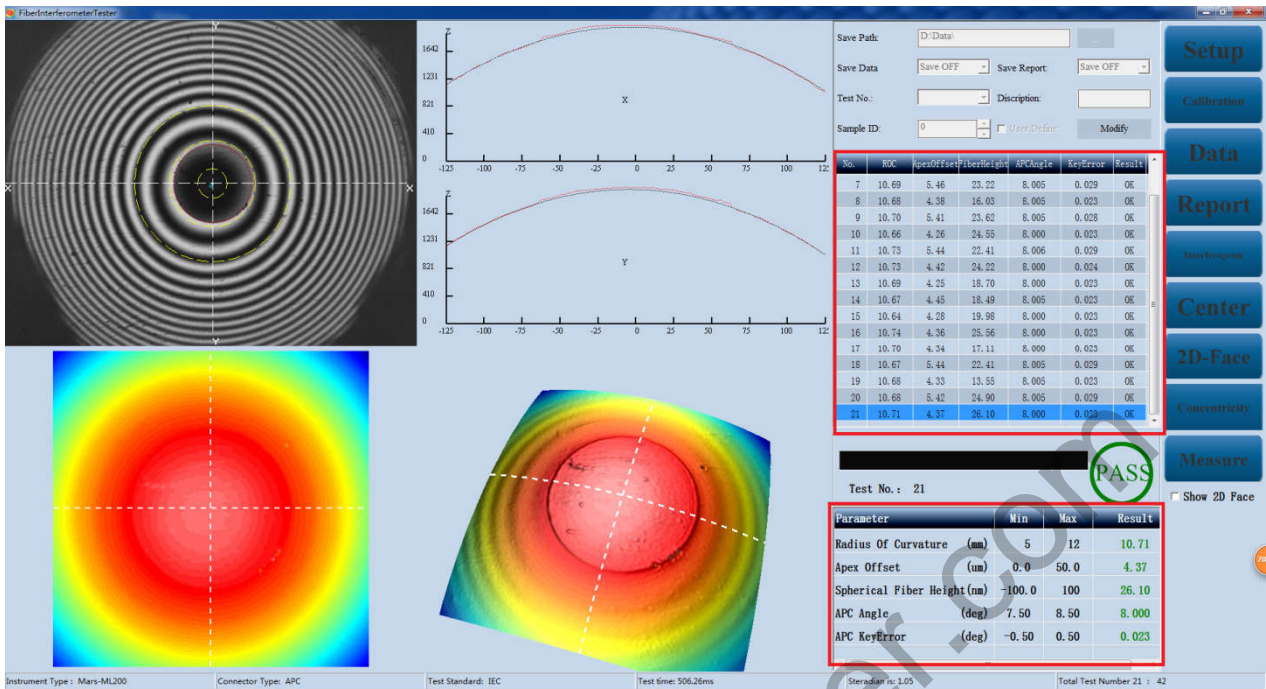


111 Test Data													Fiber num	Data num
ID	Type	Test Standard	Radius of Curvature (mm)	Apex Offset (um)	Fiber Height (nm)	APC-Angle (deg)	Key-Error (deg)	Fiber_Ra (nm)	Fiber_Rq (nm)	Ferrule_Ra (nm)	Ferrule_Rq (nm)	Result	Date	Time
Number of Samples:			166	166	166	115	115	3	3	3	3			
Minimum:			9.63	13.86	-30.63	7.825	-0.03	3.18	5.75	3.55	6.23			
Maximum:			12.57	33.28	1.69	8.026	0.17	3.26	6.81	3.59	6.33			
Mean:			9.74464	27.30795	-26.898	7.992322	0.144878	3.22667	6.24667	3.563333	6.273333			
Standard Deviation:			0.22094	4.746189	2.78529	0.067908	0.047951	0.04163	0.53314	0.023094	0.051316			
52	APC	IEC	9.73	20.75	-25.56	7.85	0.04	3.24	6.18	3.55	6.26	PASS	2015/8/6	15:24:20
53	APC	IEC	9.73	21	-25.83	7.846	0.046	/	/	/	/	PASS	2015/8/6	15:29:28
54	APC	IEC	9.73	21.39	-25.49	7.844	0.047	/	/	/	/	PASS	2015/8/6	15:33:47
55	APC	IEC	9.74	20.87	-24.77	7.847	0.047	/	/	/	/	PASS	2015/8/6	15:33:56
56	APC	IEC	9.73	21.11	-25.43	7.846	0.047	/	/	/	/	PASS	2015/8/6	15:34:00
57	APC	IEC	9.74	20.66	-25.1	7.847	0.044	/	/	/	/	PASS	2015/8/6	15:34:03
58	APC	IEC	9.73	21.02	-25.04	7.846	0.047	/	/	/	/	PASS	2015/8/6	15:34:08
59	APC	IEC	9.73	21	-24.3	7.846	0.046	/	/	/	/	PASS	2015/8/6	15:34:09
60	APC	IEC	9.74	21.21	-25.42	7.844	0.043	/	/	/	/	PASS	2015/8/6	15:34:10
61	APC	IEC	9.73	21.05	-24.67	7.846	0.047	/	/	/	/	PASS	2015/8/6	15:34:12
62	APC	IEC	9.73	20.98	-25.58	7.846	0.047	/	/	/	/	PASS	2015/8/6	15:34:13
63	APC	IEC	9.73	21.38	-24.09	7.844	0.047	/	/	/	/	PASS	2015/8/6	15:34:21
64	APC	IEC	9.73	21.18	-24.46	7.845	0.047	/	/	/	/	PASS	2015/8/6	15:34:23
65	APC	IEC	9.73	20.98	-25.88	7.846	0.046	/	/	/	/	PASS	2015/8/6	15:34:37
66	APC	IEC	9.73	21.01	-24.58	7.846	0.047	/	/	/	/	PASS	2015/8/6	15:34:42

Measure Icon

The test result can be acquired by clicking the “Measure” icon if the connector has a clear interferogram. Or you can use the hotkey “Enter” or “Space” to make measurements.

Note: When measuring the connector, make sure that the fringes are not wobbling and the align has been done.

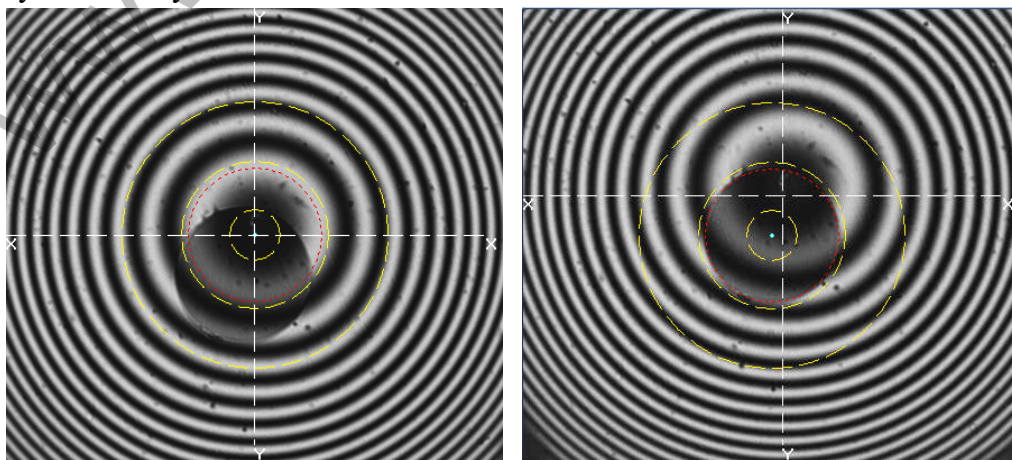


The output parameter includes ROC, apex offset, fiber height, polishing angle and key error. All the results will display in the list box beside the interferogram. You can pull-down to see the historical data. If the connector is unqualified, the test result will be in red rather than green. The surface graphic of the fiber connector end face will show up if you choose the “3D Image” rather than “Interferogram” in the right button.

The software plays a hint to help the user to judge whether the measurement has been done. The hint sound will be different if the connector passes the criteria.

Align Icon

The icon is used to choose the right area for calculation. Click it to move the green circle on the fiber. If the green circle does not perfectly move on the fiber, move it manually by using the direction keys on the keyboard.



(a) Before Align

(b) After Align

The software can measure the fiber with slight contamination although it affects the test result.

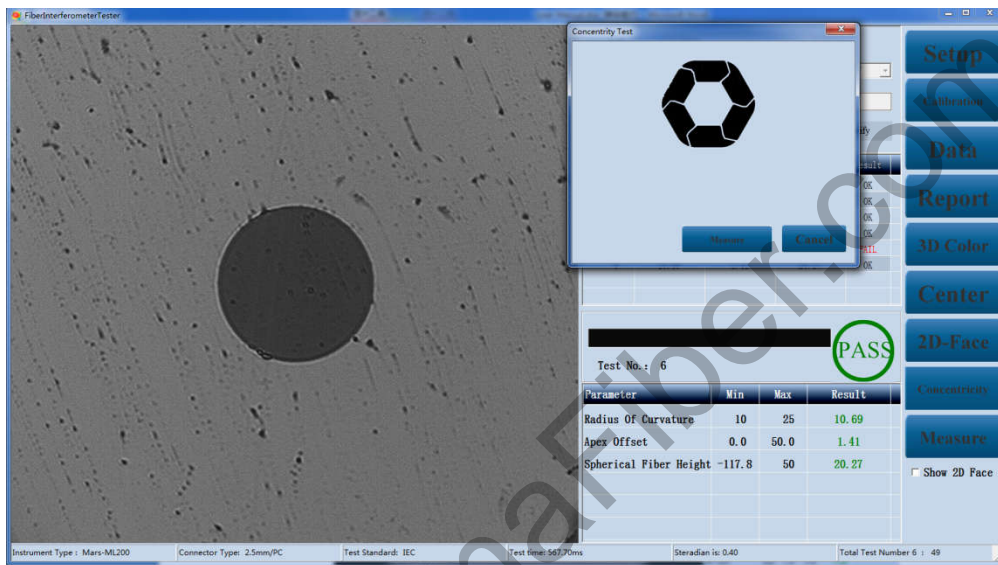
Eccentric Icon

The icon is to measure the fiber eccentricity which is an important criterion for fiber assembly. The operation to get eccentricity is similar to making calibration.

Note: Make sure that there are clear fringes before pressing the “Eccentric” button.

Take steps as followings to measure the eccentricity:

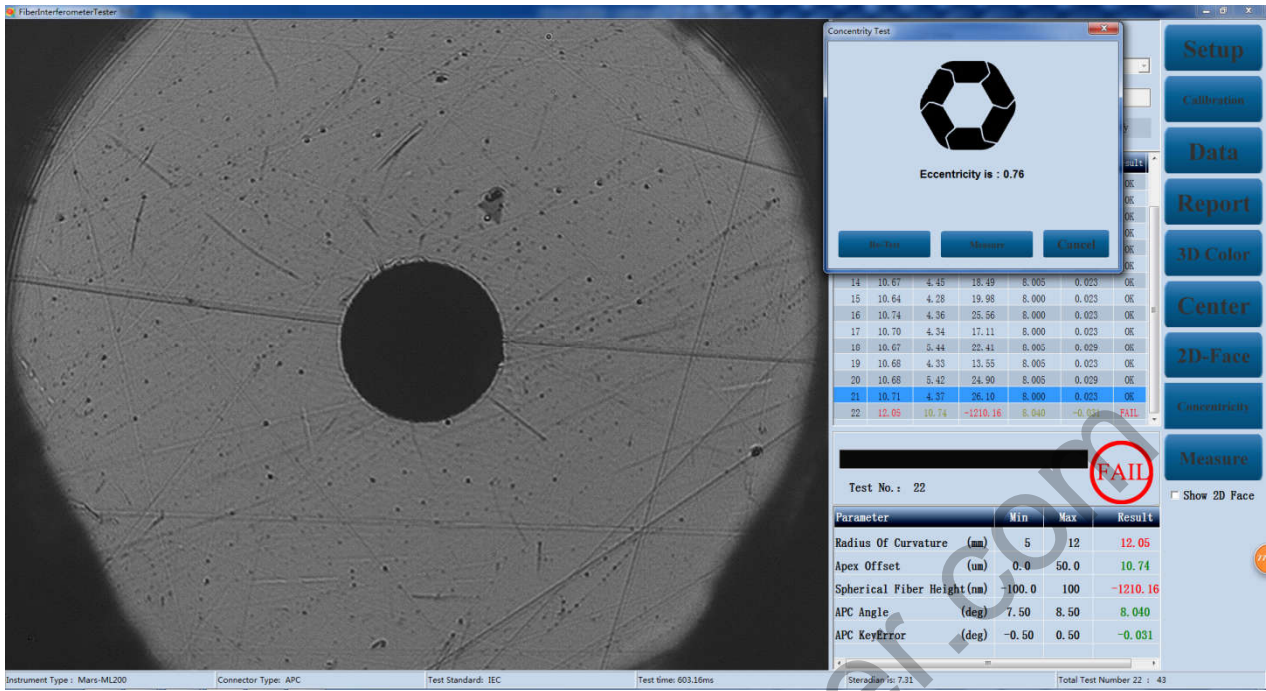
a) Click the “Eccentric” icon, and there will be a dialog box pops up as below. Follow its instruction directly.



b) Rotate the connector by about 60 degrees (re-focus for fringes if necessary before clicking “Measure”.



c) Then a dialog box with the same instruction will pop up. Continue to rotate the connector until all of the segments have tested, and the window with the eccentricity of the sample under test will show up as below.



Concentricity Test

Eccentricity is : 0.76

14	10.67	4.95	18.49	8.005	0.023	OK
15	10.64	4.28	19.98	8.000	0.023	OK
16	10.74	4.36	25.56	8.000	0.023	OK
17	10.70	4.34	17.11	8.000	0.023	OK
18	10.67	5.44	22.41	8.005	0.029	OK
19	10.68	4.33	13.55	8.005	0.023	OK
20	10.68	5.42	24.90	8.005	0.029	OK
21	10.71	4.37	26.10	8.000	0.023	OK
22	12.65	10.74	-1210.16	8.040	-0.031	FAIL

Test No. : 22

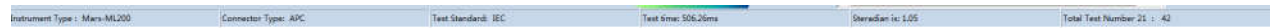
Parameter	Min	Max	Result
Radius Of Curvature (mm)	5	12	12.05
Apex Offset (um)	0.0	50.0	10.74
Spherical Fiber Height (nm)	-100.0	100	-1210.16
APC Angle (deg)	7.50	8.50	8.040
APC KeyError (deg)	-0.50	0.50	-0.031

Instrument Type : Mars-ML200 Connector Type: APC Test Standard: IEC Test time: 603.16ms Steradian: 7.31 Total Test Number 22 : 43

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3.2 Status Bar

The status bar is at the bottom of the software interface.

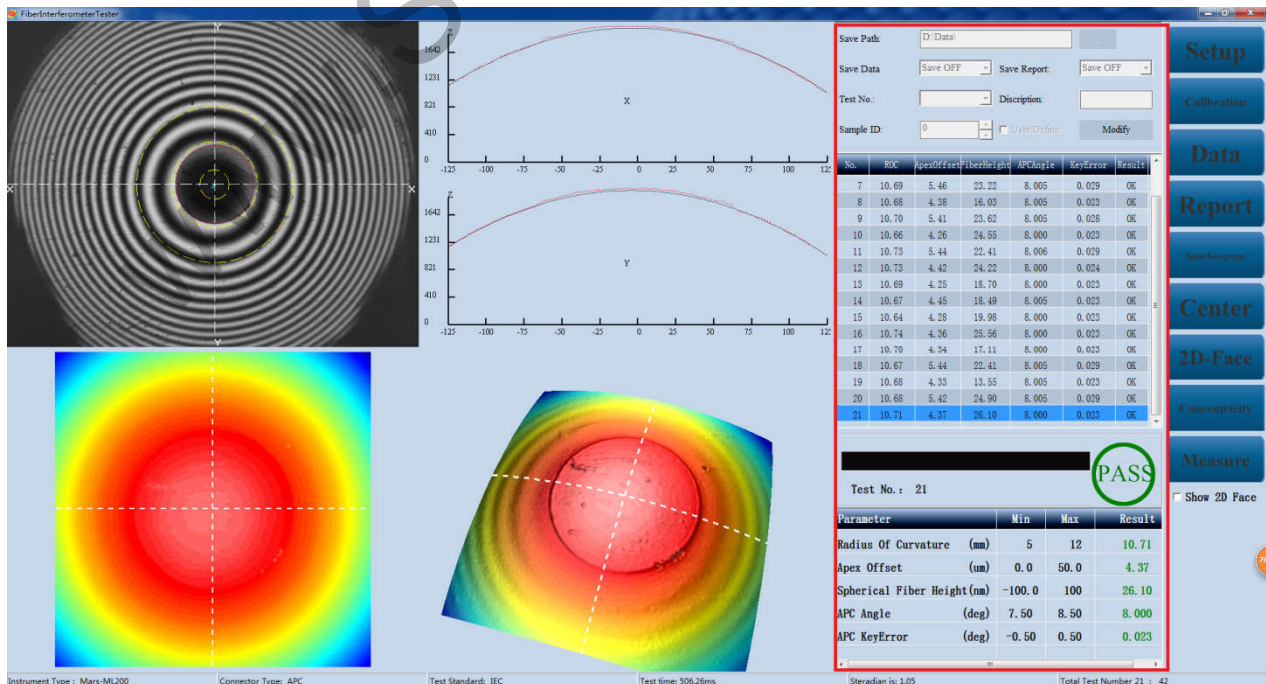


- ① **Instrument Type:**
It shows the instrument type that the software has detected, which might be Mars-ML or Mars-AT.
- ② **Connector Type:**
It shows the type of connector you choose, which has been done in the measurement setup.
- ③ **Test Standard:**
It shows the test standard, i.e. IEC, Telcordia or Self – defined, that you choose in the measurement setup.
- ④ **Test Time:**
It shows the time (in millisecond) taken in measuring the connector under testing.
- ⑤ **Steradian:**
The closer to figure 0, the better the steradian of the connector end-face is.
- ⑥ **Measurement Frequency:**
The figure on the left shows how many measurements the software has taken since its startup whilst that on the right shows the total amount of measurements that the interferometer has taken.

3.3 Test Result Panel

The Test Result Panel is on the right side of the software interface.

On the top of it, you can choose whether to store the data or report and define a path to store it. If you choose to save both data and report, a file named by the test number (e.g. ABC) will be created as below. The excel “ABC” is the test data, and the others are reports respectively.



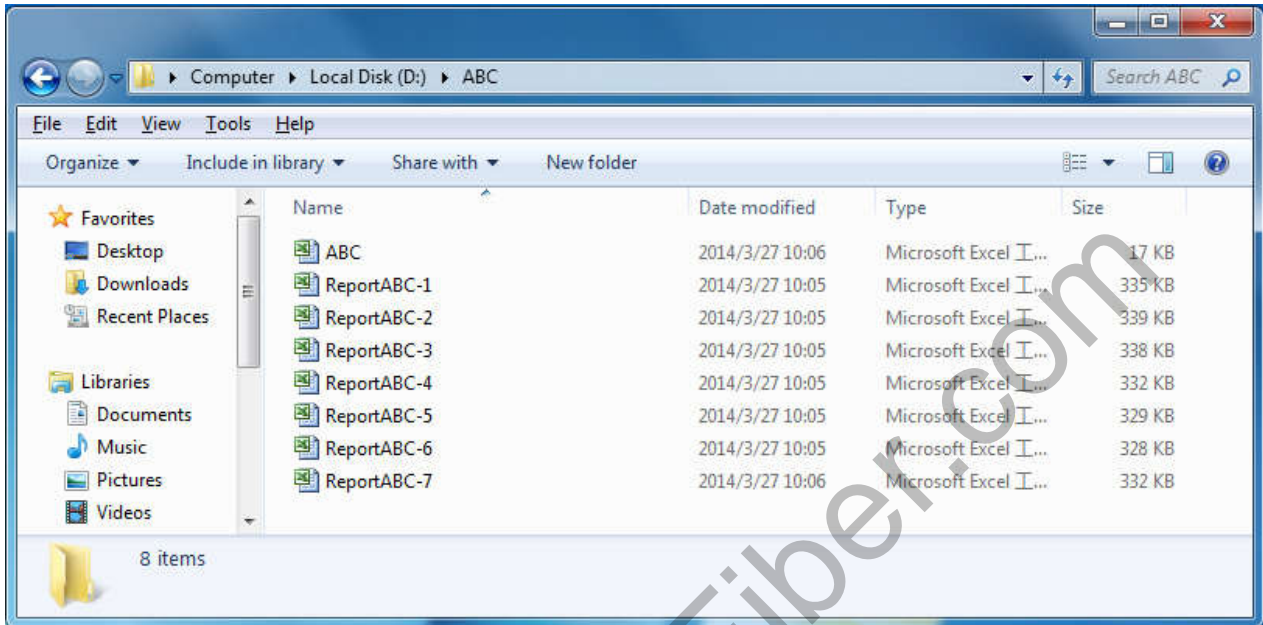
The Test Result Panel displays the following data table:

No.	ROC	ApexOffset	FiberHeight	APCAngle	KeyError	Result
7	10.69	5.46	23.22	8.005	0.029	OK
8	10.68	4.38	16.03	8.005	0.023	OK
9	10.70	5.41	23.62	8.005	0.028	OK
10	10.66	4.26	24.55	8.000	0.023	OK
11	10.73	5.44	22.41	8.006	0.029	OK
12	10.73	4.42	24.22	8.000	0.024	OK
13	10.69	4.25	18.70	8.000	0.023	OK
14	10.67	4.45	18.49	8.005	0.023	OK
15	10.64	4.28	19.98	8.000	0.023	OK
16	10.74	4.36	25.56	8.000	0.023	OK
17	10.70	4.34	17.11	8.000	0.023	OK
18	10.67	5.44	22.41	8.005	0.029	OK
19	10.68	4.33	13.55	8.005	0.023	OK
20	10.68	5.42	24.90	8.005	0.029	OK
21	10.71	4.37	26.10	8.000	0.023	OK

Summary for Test No. 21:

Parameter	Min	Max	Result
Radius of Curvature (mm)	5	12	10.71
Apex Offset (um)	0.0	50.0	4.37
Spherical Fiber Height (nm)	-100.0	100	26.10
APC Angle (deg)	7.50	8.50	8.000
APC KeyError (deg)	-0.50	0.50	0.023

On the middle section, there is a list box of output parameters which include ROC, apex offset, fiber height, polishing angle and key error (if APC are measured). It shows the historical test data of the connectors you have tested since the software startup, and you can pull-down or pull-up to read them.



At the bottom, it shows the test result. If the connector is unqualified, the test result will be in red rather than green.

Test No.: 1				Test No.: 5			
Parameter	Min	Max	Result	Parameter	Min	Max	Result
Radius Of Curvature	10	25	10.71	Radius Of Curvature	10	25	10.65
Apex Offset	0.0	50.0	0.97	Apex Offset	0.0	50.0	64.78
Spherical Fiber Height	-117.6	50	21.11	Spherical Fiber Height	-118.2	50	20.14

4. How to Make Measurements

Performing measurements on Mars Interferometer is very simple. By following below procedure, a measurement can be performed very quickly and easily. Generally, the measurement of the fiber optic connectors includes below basic steps:

1. Check the chuck and make sure that it is the correct type to measure the connector.
2. Press the “Setup” button to make measurement settings accordingly.
3. Insert the connector into the chuck and turn the handle in the clockwise direction to clamp the connector. *Note: The ferrule should slide in easily. Never force a ferrule into this holder as it will damage the holder and may render the instrument unusable.*

4. Interference fringes have to be observed before measurement. If there are no fringes, slightly rotate the focus micrometer knob to obtain fringes and maximize the fringe contrast.
5. If you have change the chuck you must calibrate apex offset by pressing the “Calibration” button and follow the procedures instructed.
6. Press the “Measure” button to acquire the test result. The 3D image of the connector end face can be obtained.

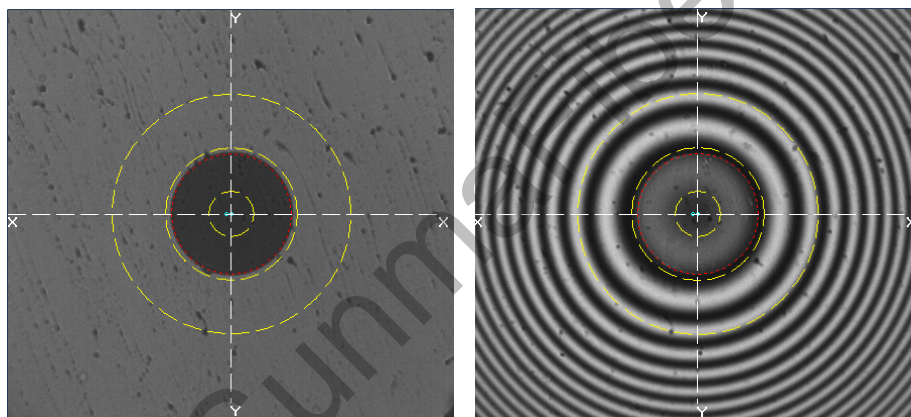
4.1 Measuring PC Connector

Step 1: Setup

Before making measurement, you should click the “Setup” button to make parameter settings such as the type of connector to be measured (2.5mm PC or 1.25mm PC), the test standard, company name, signature, etc. Click “OK” when done.

Step 2: Interference fringe

Interference fringes have to be observed before pressing the measure button. If there are no fringes, slightly rotate the focus micrometer knob to obtain fringes and maximize the fringe contrast shown below.



(a) No fringes

(b) Clear fringes

Step 3: Centering and calibration

Press the “Align” button if the fiber is not in the green circle. The software will detect the fiber center and automatically reset the green circle to coincide with the fiber. If you have change the chuck you must calibrate apex offset by pressing the Calibration button and follow the procedure as provided.

Step 4: Measurement

Click the “Measure” button to acquire the result which includes ROC, apex offset, fiber height, polishing angle and key error. The 3D image of the connector end face can be obtained.

4.2 Measuring APC Connector

The most popular angled polished connectors are the 8 degree FC/APC, LC/APC and SC/APC. The Option /01-m FC connector adapter provides a key-way for the Angled FC/PC. The options /02-m and /03-m provide keying plates for ST and SC respectively. When measuring angled connectors they must be measured with reference to their keys. This is achieved by fitting the appropriate adapter plate over the universal chuck.

Step 1: Insert keying adapter plate

Before measuring the APC connector you need to insert the corresponding keying adapter plate and make sure that connector is in the right position. Fit the adapter plate over universal holder using the tow M3 screws. **Do not over tighten.**

Step 2: Adjust Angular Micrometer

Loosen the M3 screw, and rotate the angular micrometer to the correct value. And then tighten the M3 screw.

Note: 1. LOOSEN the M3 screw BEFORE rotating the angular micrometer.
2. FASTEN the M3 screw AFTER rotating the angular micrometer.



Step 3: Setup

When making measurement settings, **ensure that APC has been selected in the “Type” option.**

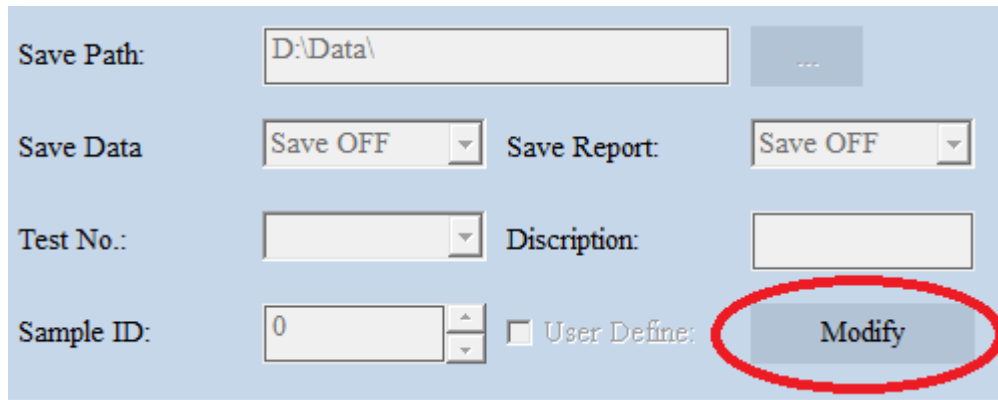
Step 4: Interference fringes

Adjust the focus micrometer until the image is in focus. On a perfectly angled and polished connector, the circular fringe will be centered around the fiber resembling a standard PC connector.

4.3 Save Data and Report

Settings can be made on the “Connector ID Setup” panel on the right side of the software interface.

Note: 1. If you want to save data or report, it should be done before measuring the connectors.
2. Press “Modify” button on the panel before making settings.
3. Press “Confirm” button on the panel after settings are made.
4. By default, the “DataSave” and “ReportSave” function is off.



The screenshot shows a software window with the following fields and controls:

- Save Path:** A text box containing "D:\Data\" and a browse button "...".
- Save Data:** A dropdown menu currently set to "Save OFF".
- Save Report:** A dropdown menu currently set to "Save OFF".
- Test No.:** A text box with a dropdown arrow.
- Discription:** A text box.
- Sample ID:** A text box containing "0" with up and down arrow buttons.
- User Define:** An unchecked checkbox.
- Modify:** A button circled in red.

1) To save data, below are steps to follow:

- Uncheck the “Modify” option on the “Connector ID Setup” panel.
- Select “Save ON” from the “Save Data” dropdown list, and input the number in the “Test No.” text box. You can also add remarks in the “Description” text box.
- In the “Save Path” option, define a location to store the data.
- When done, check the “Confirm” option.

2) To save report, below are steps to follow:

- Uncheck the “Modify” option on the “Connector ID Setup” panel.
- Select “Save ON” from the “Save Report” dropdown list, and input the number in the “Test No.” text box. You can also add remarks in the “Description” text box.

Note: The “Auto” option is selected by default, and the “Connector ID” will start from number 0. If you want to define a specific connector ID, select the “User Define” option and enter the number in the “Connector ID” text box.

- In the “Save Path” option, define a location to store the report.
- When done, check the “Confirm” option.

5. Service and Maintenance

The Mars interferometer was designed to be virtually maintenance free. No internal maintenance should be required. To keep the instrument working normally and ensure the best use of it, please follow these instructions:

- Keep the temperature of the workshop where the instrument is working between 0 and 35 degree Celsius (°C), i.e. 32-95 degree Fahrenheit (°F).
- Keep the humidity under 30%.
- Keep the vibration rate of the working environment between 0 and 200Hz.
- Clean the chuck with clean cloth regularly (on a weekly basis) and avoid collision and bending.
- Keep the chuck clamping switch loosened if the instrument is not working.
- Do not open the software more than once at one time.
- In some instances that the lens of the camera may become contaminated with dust, DO NOT

clean it by yourself, but contact our support for help.

6. Troubleshooting Guide

The following troubleshooting guide should help solve most problems that you might encounter while using the Mars Single Fiber Interferometer. In the event that this guide cannot locate or solve your problem, please refer to page **XXXX – Technical Support**.

6.1 Error Messages and Dialog Boxes

The software displays several error messages if the instrument is not connected correctly or the system is unable to complete a measurement. These messages are shown as below:

Adjust the focus micrometer to get the clearest interference fringes.

Solution: Rotate the focus micrometer knob to obtain fringes and maximize the fringe contrast. The system needs clear fringe in order to yield correct results.

Please check if the connector endface is clean.

Solution: Clean the connector endface with clean cloth if its contamination is serious. The software can measure the fiber when it has contaminated slightly although it will affect the test result.

Please check if the USB cable is connected, or if the interferometer is turned on.

Cause 1: The instrument is not turned on or the USB cable is not connected.

Solution: Connect the USB cable and turn on the instrument.

Cause 2: The software freezes.

Solution: Restart the instrument and then restart the software.

Please check if the camera cable is connected.

Cause 1: The camera cable is loosened or not connected.

Solution: Connect the camera cable tightly.

Cause 2: The camera driver is not installed correctly.

Solution: Update the camera drive (storage path: **C:\Program Files\Mars Singlefiber 检测软件\Mars Singlefiber\Support\Camera Drive**).

6.2 Other problems

The instrument is totally inoperable.

Check if the power button on the connection interface is turned on or the unit is plugged into an active power outlet. To check if the instrument is powered on, simply press the power button and check if there is red light showing in the front of the instrument.

No interference fringes are seen on the monitor.

Cause 1: The connector to be test is not in focus.

Solution: Rotate the focus micrometer knob to the focus.

Cause 2: The angular micrometer is not adjusted according to the type of connector to be tested.

Solution: Adjust the angular micrometer to the correct value of the connector. If a PC connector is under test, adjust the angular micrometer to 0 degree. If an APC connector is under test, adjust the angular micrometer to the right degree value to match the connector angle.

Cause 3: The USB cable is loosened or not connected.

Solution: Check the USB cable and make sure that it is connected.

Cause 4: The instrument is not powered on.

Solution: Connect the power cable to the interferometer.

The outputs of Apex Offset are obviously different from one another when measuring the same connector.

Cause 1: The chuck fastening screws are loosened.

Solution: Use slotted screwdriver to fasten the screws.

Cause 2: Align is not taken.

Solution: Click the “Align” button or manually align the fiber.

Cause 3: Calibration is not taken.

Solution: Use the reference connector to calibrate.

Cause 4: The connector clamping switch is loosened or not clamped.

Solution: rotate the switch in the clockwise direction tightly; and if the fiber is still not in the green circle, take out the switch and retreat one gear in the counter clockwise direction, and then mount it again.

Cause 5: The fringes are wobbling.

Solution: Make sure that the desk where the instrument is placed is still and the connector under testing is stable too.

Cause 6: The steradian of the connector endface is too large.

Solution: Grind the connector endface again.

The interferogram freezes.

Cause 1: The camera cable is connected to USB 3.0 Serial port.

Solution: Connect the camera cable to USB 2.0 Serial sport.

Cause 2: The camera cable is loosened.

Solution: Make sure that the camera cable is connected tightly.

Cause 3: The software crashes.

Solution: Restart the instrument and then restart the software.

7. Technical Support

Where can I get an extra copy of the User Manual?

Simply send an e-mail requesting a copy of the manual and we will send you a password to extract the file by return.

Where can I get the latest version of the Mars-Single-Fiber software?

Simply send an e-mail requesting the password to upgrade our software along the current version running and the serial number of the instrument. We will verify that your system is capable of running the new software and e-mail you the necessary password.

If you have any questions regarding the software or any aspects of the Mars interferometer, or in the unlikely event that your machine develops a fault, please do one of the following:

Outside P. R. China

Contact the representative through whom the unit was initially purchased and explain in detail the problem you are experiencing. They will either be able to solve the problem over the telephone, or arrange for the repair of your machine or additional technical support from Sunma.

Within P. R. China

Contact one of our service representatives at the following address:

We understand how frustrating it could be to have a fault piece of test equipment. We will do our best to resolve any questions, problems or failures you might have, both quickly and efficiently. Please be prepared to provide us with any additional information, or test results we may require. This will help us to make a better evaluation of your problem, greatly increasing the accuracy of



our diagnosis, and the speed of its resolution. We are also very happy to hear any suggestion on our product improvement.

www.SunmaFiber.com