User's Manual

SUN-OPM200 Series

Fiber Optic Power Meter

English

Table: SUN-UM-TE-OPM004

Version: A/0

Safety Sign:

When using the optical power meter, always take bask safety precautions to reduce the harm for the testers, and injury to persons. All the safety sign may not mark in this manual.

Warning: Prohibited misconduct and operation, to prevent any improper conduct and operation of the damage.

Notice: notice the important information, notification, and references, these notice information should be understood.

Safety sign on the instrument:

WEEE Sign: Users of electrical and electronic equipment from private households should have the possibility of returning

WEEE at least free of charge.

Safety Advice

1. When the tester use Disposable alkaline batteries, do not charge it. Ensure the correct polarity installation, when replace the battery.

2. When the products are not in use, please remove the batteries and kept separate to avoid instrument damage caused by

battery leakage. If leakage occurred, Please do not touch.

3. To prevent electric shock, do not open the product case, only the authorized qualified professionals can do the maintenance; Do not expose the testers to rain or wet conditions, to avoid the risk of fire or electric shock

4. Instruments used LCD screen. Do not fall the instrument. If the LCD is seriously hit, it may cause fluid leakage. And please do not touch.

Contents

Chapter 1: Standard configuration

No.	Product	Unit	Quantity
1	Optical Power Meter	set	1
2	AA 1.5V Battery	pieces	3
3	Power Adapter	piece	1
4	Soft Bag	piece	1
5	USB Line	piece	1
6	USB Disk	piece	1
7	FC Adapter	piece	1
8	SC Adapter	piece	1
9	ST Adapter	piece	1

Chapter 2: Overview

SUN-OPM200 Series Handheld Optical Power Meter is a newly designed fiber optic tester, which aims at the installation, engineering acceptance and maintenance of fiber network.

Compared with other usual power meters, this power meter has more functions when used with SUN-LS200 Series handheld optical light source, like automatic wavelength identification, auto wavelength switching, intelligent backlight, data savage via USB port.

- Wave ID - Auto wavelength identification & switching
- Frequency ID - Auto frequency identification
- 2 types of backlight modes, manual or outside light intensity, which indicated by LED light red or blue color.
- Intelligent backlight
- 1000 records storage or download via USB cable
- USB communication port for saved testing records download
- Reference power level can be set up and stored
- User self-calibrating function
- Auto-off function

Fiber Optic Solutions Provider   2/54

- Up to 200hrs battery life

Chapter 3: Specifications

Model	SUN-OPM200-TC	SUN-OPM200-BC
Calibration Wavelength (nm)	850/1300/1310/1490/1550/1625	
Detector type	InGaAs	
Measurement Range (dBm)	-70 ~ +6	-50 ~ +26
Uncertainty (dB)	±0.15 (3.5%)	
linearity (dB)	±0.02	
Display resolution (dB)	0.01	
Frequency ID (Hz)	270, 330, 1K, 2K	
Wave ID (nm)	850, 1300, 1310, 1490, 1550, 1625	
Date Storage Capacity	1000	
Communication Port	USB	
Standard Connector	FC /2.5mm universal	
Optional Optical Connector	FC/SC/ST Interchangeable/2.5mm	
Optional Optical Connector	LC/FC/SC/ST Interchangeable	
Alkaline battery	3*AA, 1.5V	
Power Adapter (V)	8.4	
Battery Operating time (h)	200 without backlight	
Operation Temperature (℃)	-10 ~ +60	
Storage Temperature (℃)	-25 ~ +70	
Dimension (mm)	175*90*44.5	
Weight (g)	231	

Remark: Battery operating time is based on the condition of the power off the backlight. If power on the backlight continuously, the operation time will be shorter.

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Chapter 4: Function

4.1 Front

4-1

(1) ⏻ Power Key

ON/OFF the instrument

Power Saving setting: the unit will automatically shut off after 15 minutes idle time, whatever in the condition of battery power supply or AC power supply. Once choose this setting, the "auto-off" will display on the left bottom of the screen. This power saving is the default setting, once open the power meter, will enter into this mode. Shortly press the power button to deactivate auto power saving mode.

Power Saving(Auto-off)

(2) (λ) Wavelength Selection/Wavelength Identify

Short press this key to switch the wavelength and display it on the top left of the LCD screen, 1310nm is the default wavelength

Calibrated wavelength

Press the (λ) for 2 seconds, enter into wavelength auto-identify, on the upper right of screen have "AU", and also long press this key to quit this function.

Wavelength auto-identify

(3) (☀) Backlight Control (two mode of back light control, press this key to choose one mode):

"LDR" the intelligent backlight control mode. Power meter will off/on the backside in 15 seconds based on the outside light condition, and this is

the default mode back light control key mode. Press ⊛ to on/off the back light

(4) [SAVE] Saving/Data-view Key.

Data-saving, can save data records no more than 1000. Press [SAVE] screen

will display the **Data saving No.**, tip saving the data, double press [SAVE] to confirm the saving.

Current saving data (wavelength, output power-dBm)

Data saving No.

Data view. Long press [SAVE] to enter into the data view interface, short

press [SAVE] can view the data.
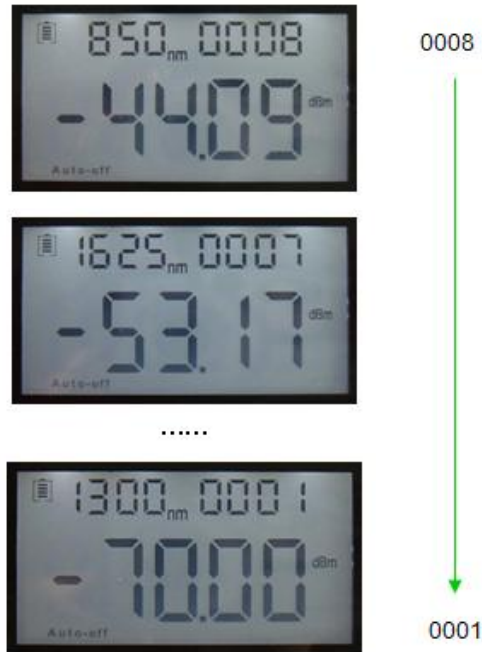
(5) `DEL` Delete/Cancel Key.

(1) Data Deletion. When view the data, press `DEL` to delete the record.

(2) Cancel the saving. When in the saving mode, press `DEL` to cancel the current data saving.

(6) `UNITS` Unit Switch Key

Press this key to switch between the absolute measurement (dBm), relative measurement (dB) or xW of the optical power.

mW, dBm conversion: 10 log (mW) = (dBm)

mW, uW and nW conversion: 1mW=103uW=106nW

(7) [REF] REF Setting:

To store the current power value as the reference value which will be displayed on the top right of the LCD screen, at the same time the "Ref " also display on the right top. It will compare the current power with the reference power and show the relative power value in dB.

The relationships between relative value (dB), absolute value (dBm), and Ref value: relative value=|absolute value|-|Ref|

(8) "B/L SET" Backlight Indicator

Indicate backlight control mode. Green light indicate that "LDR" intelligent backlight control mode, Red light indicate that key-control mode

(9) "LDR " Intelligent Backlight Controller

In the intelligent backlight control mode, the controller will automatically adjust the backlight with the outside light, which to save the power.

(10) Screen

Display the data and the instrument working mode.

4.2 Two sides
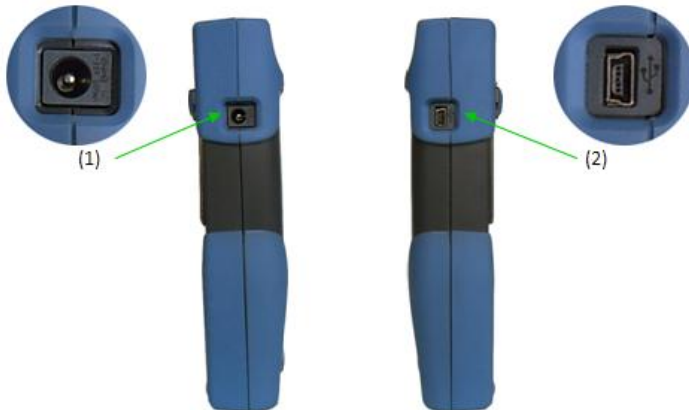
4-2 left side   4-3 right side

(1) Power Supply unit port: Can connect with the AC adaptor pic. 4-4.

AC adaptor

Power Supply
Unit

Power Plug

4-4

Notice: Please only use the power supply unit supplied with the tester, use other kind of PSU may cause damage to the instruments.

(2) USB Port.
Use the USB cable supplied to connect the Optical Power Meter to The USB port on PC pic. 4-5.

4-5

4.3 Top
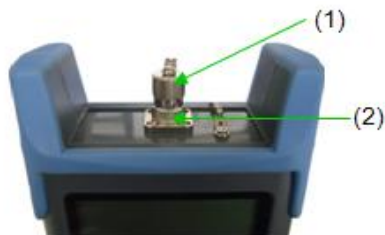
4-6

(1) Dust Cap

In order to protect the optical connector, avoid damage on the connector, as a result of that, when the tester not in use, please make sure that you place the dust cap over the connectors.

(2) Optical Connector.

The standard of this power meter connector is Φ2.5mm PC universal connector.pic. 4-7 & 4-8.Screw off the FC connector, it will turn to Φ2.5mm universal connector.

4-7 FC connector   4-8 Φ2.5mm universal connectors

Notice: When change the optical connector, take care for the connector and the end-face. FC connector can connect with FC adaptor; Φ2.5mm universal connector can connect with FC, SC, and ST adaptor. Pic 4-9

FC Patch Cord   SC Patch Cord   ST Patch Cord

4-9

Notice: the tinny dust on the connector will affect the accurate of the measurement value, so please clean the connector and the patch cord end-face before the test.

Use the alcohol and the cotton swab to clean the connector. Dip the cotton swab with alcohol, insert the cotton swab in the connector, slightly rotating the cotton swab, after that change a dry cotton swab and clean it again. Pic. 4-10.
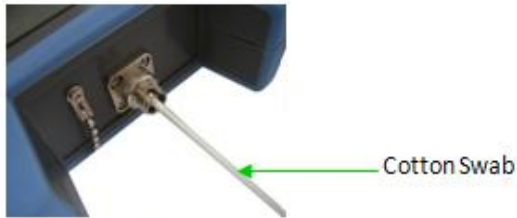
4-10

4.4 Backside

4-11

(1) Label

Content include the function, and the instrument information

(2) Bracket

Collapsible metal bracket, 0 ~ 90 degree can adjust.

(3) Battery Pack: 3 pieces of 1.5V AA batteries.

Notice: When insert the batteries, take a note of their positive (+) and negative (-) connector orientation. The negative battery connector should be against the spring. And do recycle the battery, do not throw the battery to the dustbin, or that will cause dangerous.

Chapter 5 OPM Software

5.1 Install the device

Run the software in the PC, find the "Driver.exe" as show in the below

Double click that "exe" program; the following will pop up (5-1).

5-1

Click "INSTALL", after a few seconds, pop up 5-2.
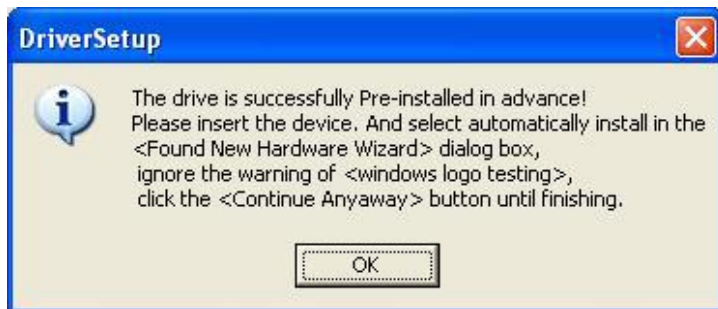
5-2

Press "OK" to exit this install interface. However the driver still haven't install yet, continue the following operation:

Use USB cable connect with power meter and the PC, switch on the instrument, and pop up 5-3
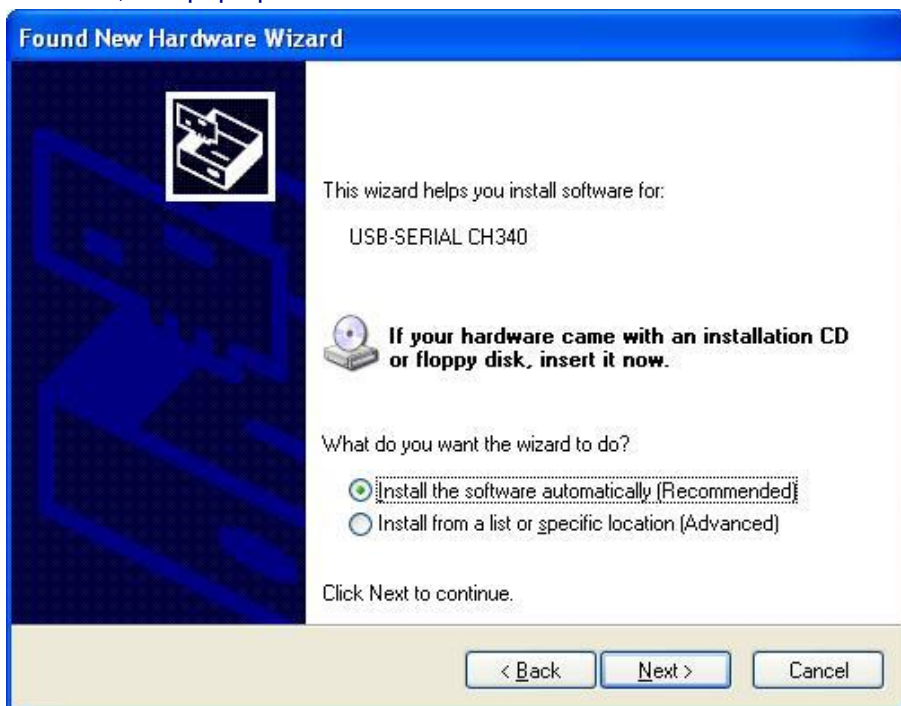
5-3

Press "NEXT", Pop up 5-4.

5-4

Wait for a second, pop up 5-5.

5-5

Press "Finish", complete the deriver Installation.

Please check if the installing is complete or not, to avoid the communication problem when power meter connect with the PC. Open the "Device Manager" (right click "My computer" choose "property", pop up the property interface, choose "hardware option", click "Device Manager"), find the "Port (COM and LPT)" if your interface is the same as the following pic 5-6, means the install success. If the interface do not have "USB-SERIAL CH340" which the same as 5-7, means the failure install, so need to re-install the devices.
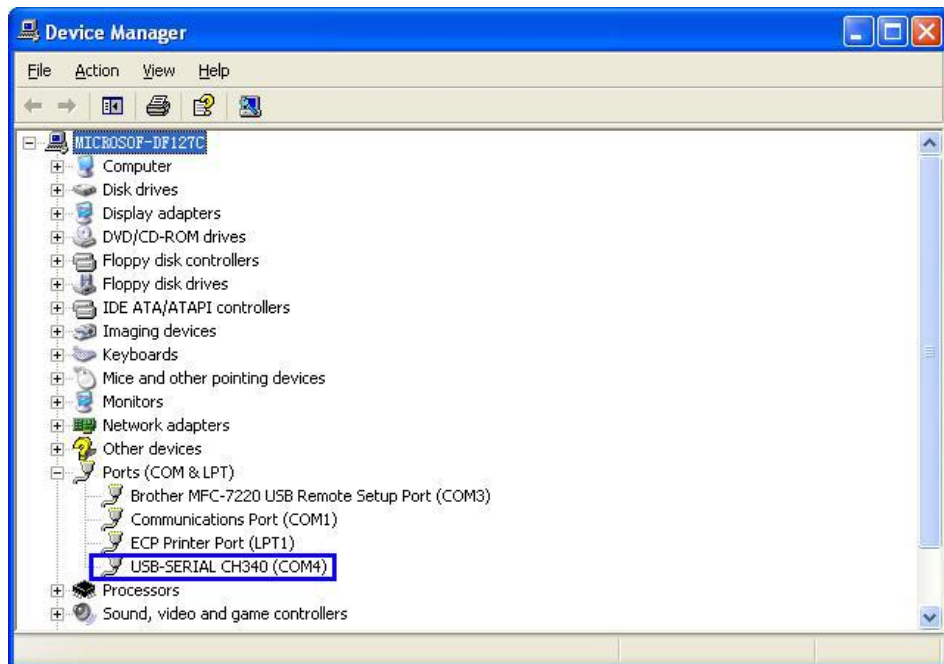
5-6
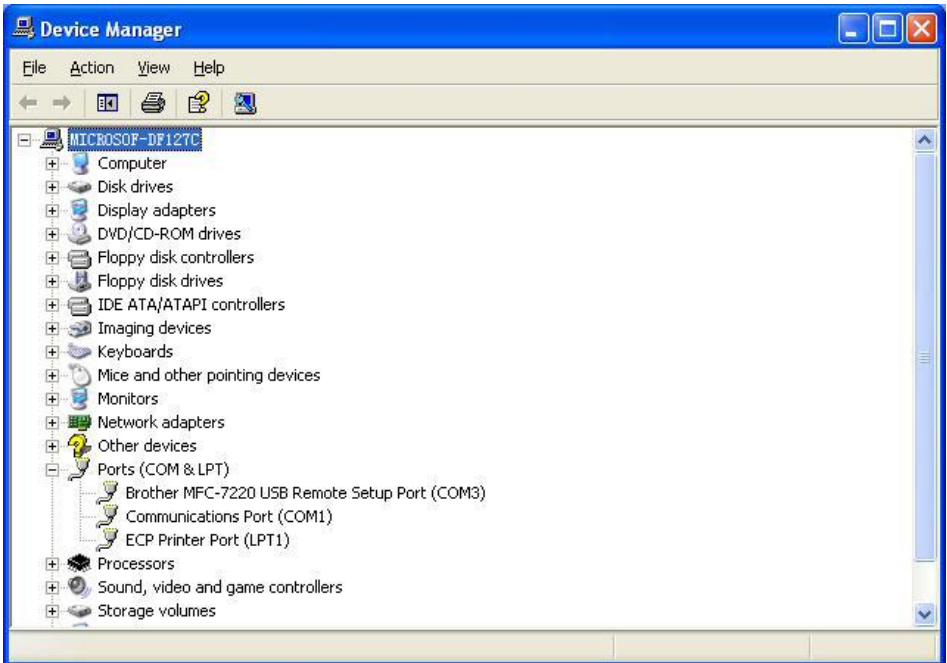
5-7

After success install the devices, can switch off the power meter, and disconnect the USB.

5.2 Install the application software
Run the CD in the PC; find the "setup" file

Double click this icon, pop up 5-8
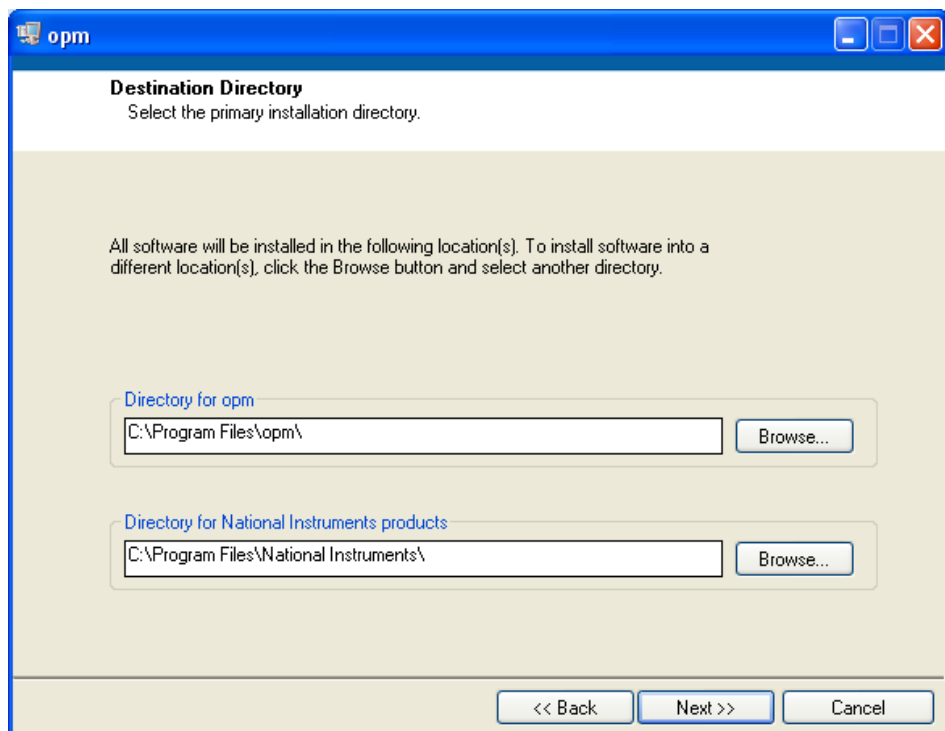
5-8

Press "Next ", and pop up 5-9.
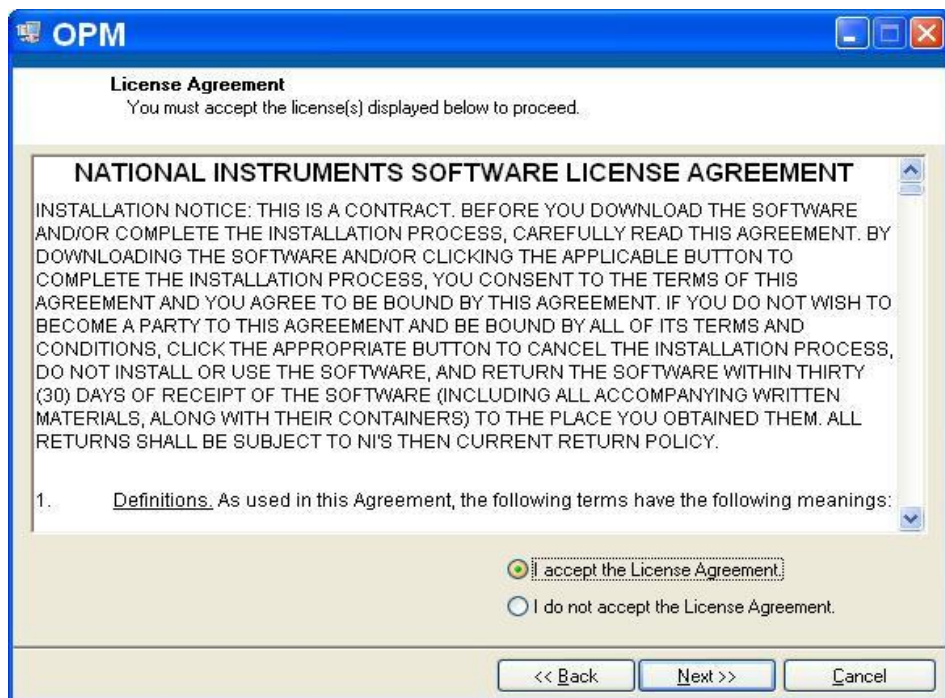
5-9

Choose "I accept …… ", Click "Next ", pop up 5-10.
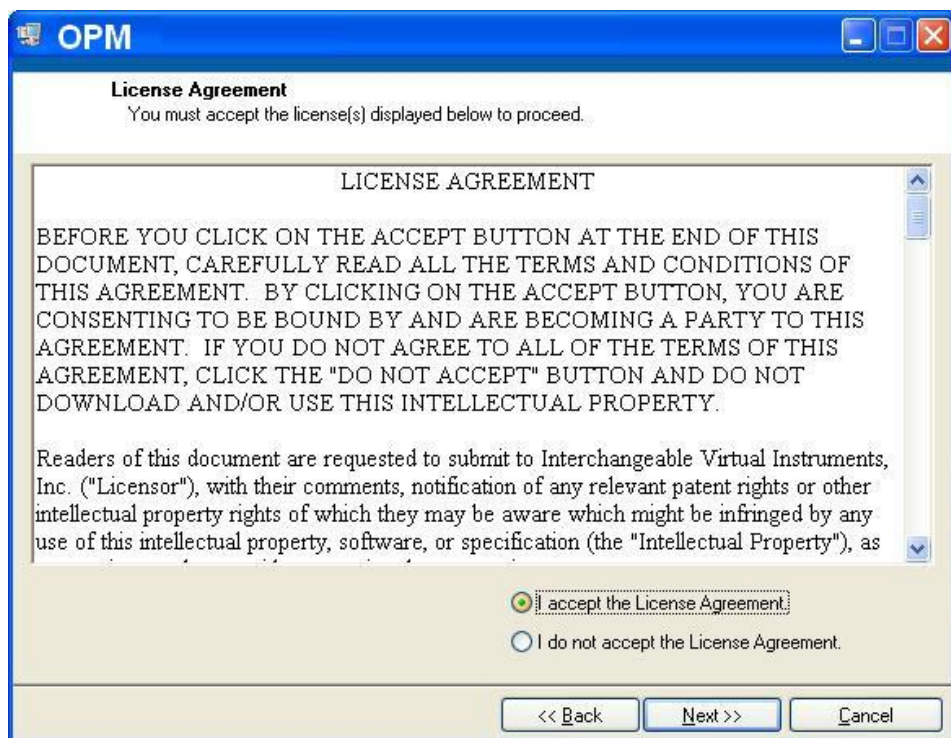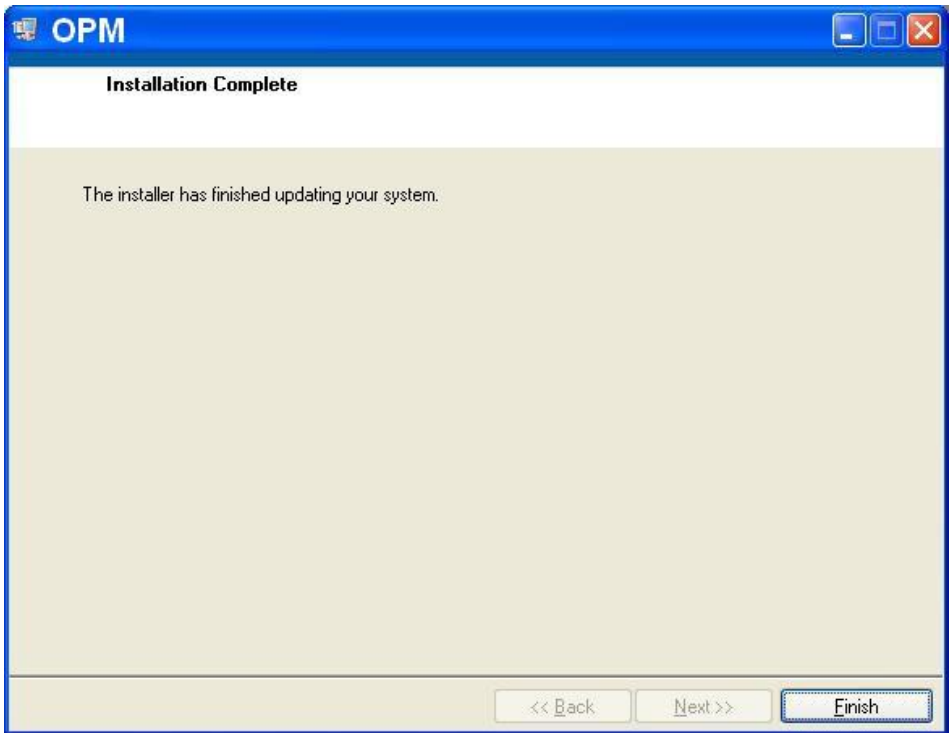
5-10

Choose "I accept ……" click "Next", pop up 5-11.
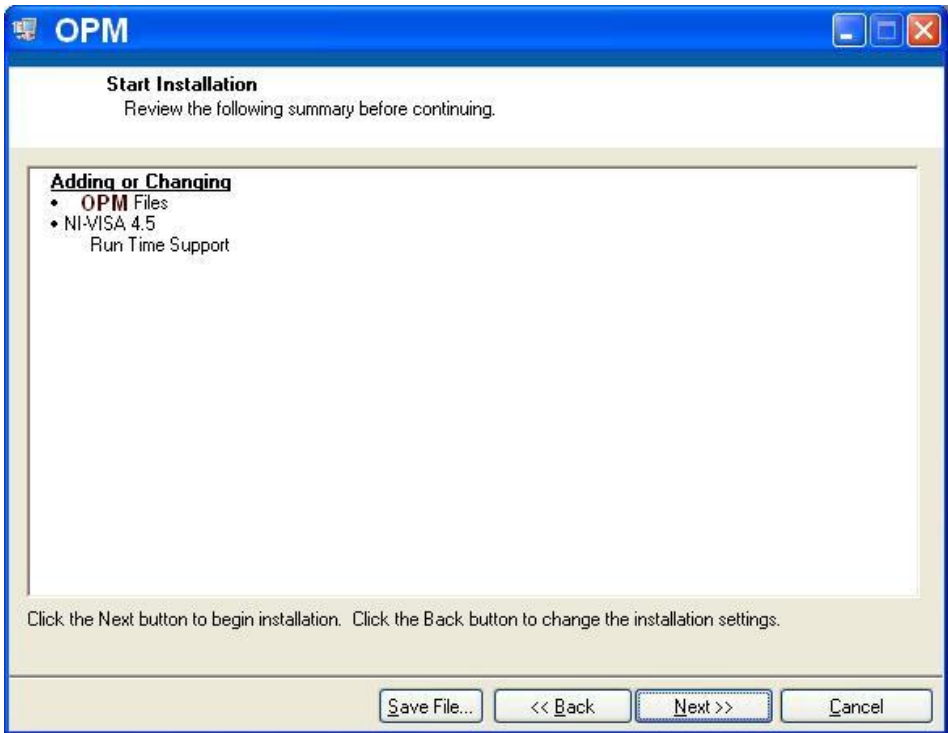
5-11

Click "Next ", pop up5-12.
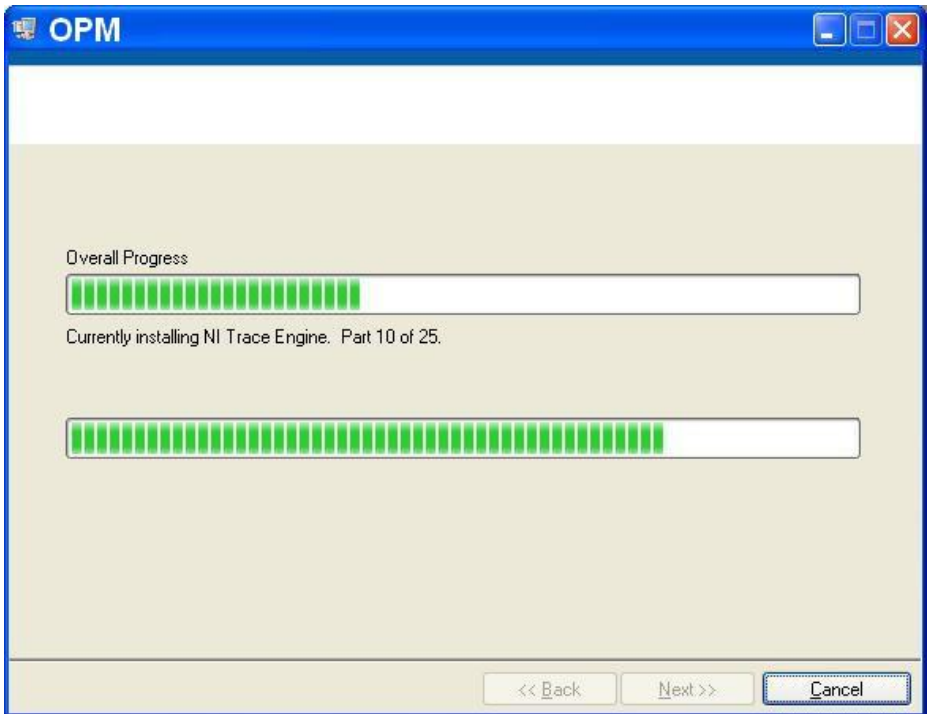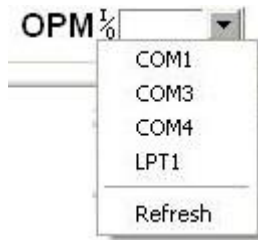
5-12

Wait for a seconds, Pop up 5-13.

5-13

Click "Finish" to complete the installation.

5.3 Software function instruction

This software has two functions: data processing, and the instrument setting. After finish the software, find the short cuts icon for this software.


Double click this icon, open the software, and pop up the software interface as pic 5-14, data processing is the default interface once opens the software.

5.3.1 Data Processing

5-14

Data Processing interface include 4 parts.

(1) Manual

a) Port Option. Drop down the option box; choose the right port, which the same port that the PC connected with the power meter.

b) Connect icon, Connect the PC with the power meter, and communicate.
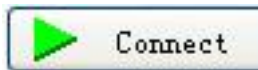
c) Language option, Drop-down the selection, Find the right language for the user preference, Chinese/ English.
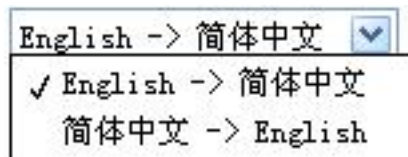
d) Function interface option: Two functions for option--data processing and the instrument setting, drop-down the manual to choose.
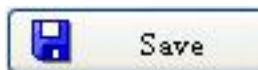
e) Save button, save the current measurement data to the EXCEL file, convenience for user to view and analysis the data on the PC.
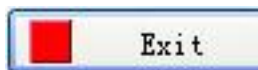
f) Exit button, disconnect the communication, and close the software.

(2) Testing information form
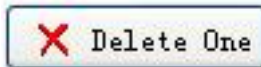
Fill the information in blank

(3) Printing button to print the measurement value.

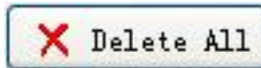(4) Data process button

a) Upload the data to the PC; display the data on PC, for the user view.
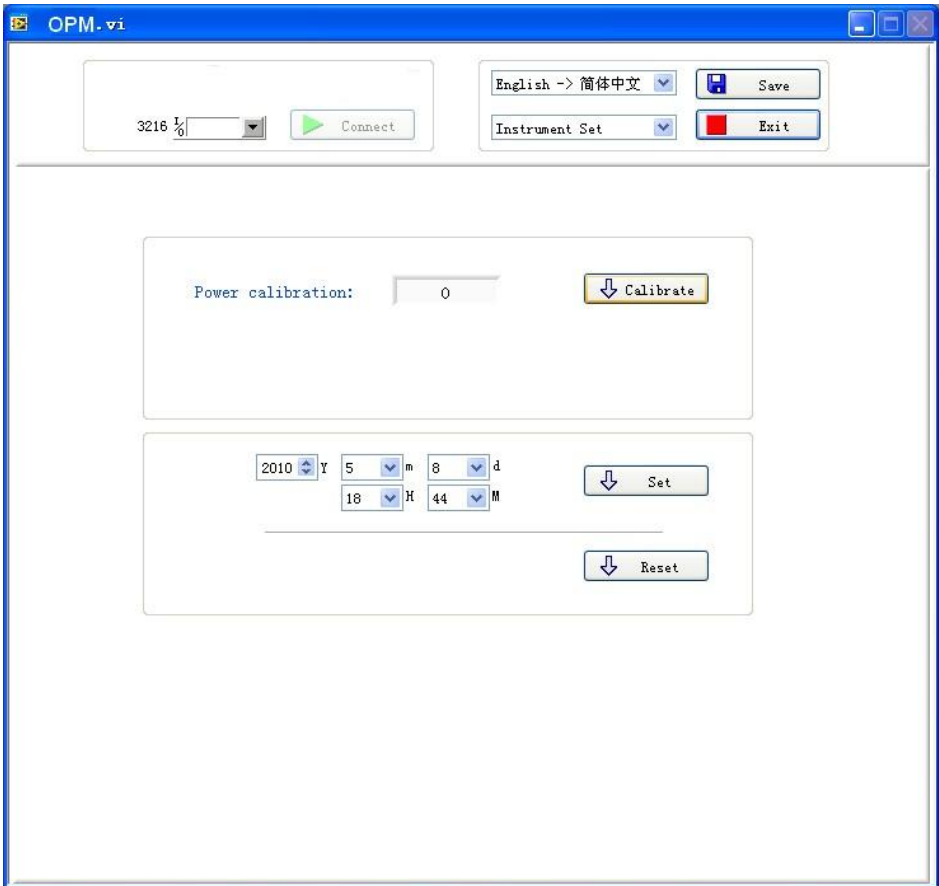

b) Delete the choose data.

c) Delete all the data that saved in the instrument.

d) Data display area

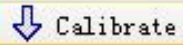To display the saved data of the instrument

5.3.2 Power Meter setting

5-15

The Power Meter setting interface, pic. 5.3.2, which include 4 parts:

(1) Manu bar (Please refer description in data process interface)

(2) Calibration, the user can do the self-calibration.

Power calibration: 0   ⬇ Calibrate
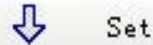
(3) Time Setting.

2010 ⇕ Y   5 ⌄ m   8 ⌄ d

18 ⌄ H   44 ⌄ M   ⬇ Set

(4) Recover the factory default setting. Power meter calibration recovers the factory default setting.

⬇ Reset

Chapter 6 Operation Instruction and Notes

6.1 Powering the Optical Power Meter

The optical power meter can be battery powered or AC adaptor powered, giving total flexibility for most testing sites and situations

6.1.1 AA battery

When use AA battery, the power meter will display the battery capacity on the left top of the screen, refer to 6-1.

6-1

Power Grade:

- 🔳 left 70% ~ 100% electricity
- 🔳 left 40% ~ 70% electricity
- 🔳 left 30% ~ 40% electricity
- 🔳 left 20% ~ 30% electricity.
- 🔳 not enough electricity, left less than 20%, the power meter will forced power off

Fit the battery, 6-2

6-2

Press the clip fastener on the battery compartment cover down. Remove the battery compartment cover; remove all three batteries making a note of their positive and negative connector orientation. The negative battery connector should be against the spring. Insert 3 new 1.5VV AA batteries. Refit the battery compartment cover. The clip fastener should click shut.

Notice: Make sure that you insert the batteries with their positive and negative connectors correctly aligned.

6.1.2 Power Supply Unit

When the battery is used out, can use the power supply unit, and at this time

on the left top of the screen, there will be a ⌁ sign (6-3).When the

battery in the power meter, and still have enough electricity, the tester will choose AC power supply as the priority.

6-3

When use the AC adaptor, connect the power plug as pic 6-4, and insert to the AC socket.

6-4

Notice: Please only use the power supply unit supplied with the tester, use other kind of PSU may cause damage for the instruments.

6.2 Power On the optical power meter

First of all insert the battery or the PSU, do not have any laser in, press

to open the tester, 6-5 is the opening interface

6-5

When the tester is standby, press ⏻ key can cancel or choose auto-off function. If auto-off function chosen, the "Auto-off" will display on the left bottom of the screen.

6.3 Backlight setting

After turn on the optical power meter, long press ☀ to select backlight control mode.
6.3.1 "LDR" Intelligent backlight control mode

Long press ☀, "B/L SET "is green (6-6), after 10 seconds, the green indicate off, the LDR the controller will automatically adjust the backlight within 15 seconds with the outside light, which to save the power.
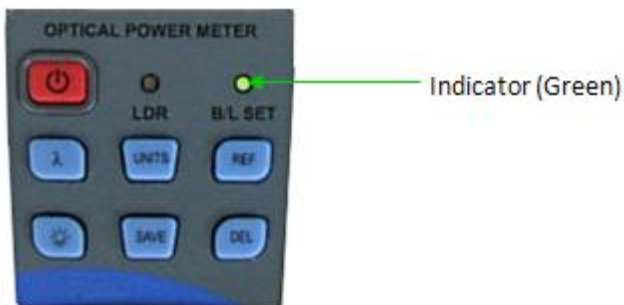
6-6

6.3.2 Choose the key control backlight mode.

Long press ☀️, "B/L SET "indicator turns to red (6-7), enter into key control

backlight mode, after 10 seconds the indicator off, short press ☀️ can
ON/OFF the backlight.
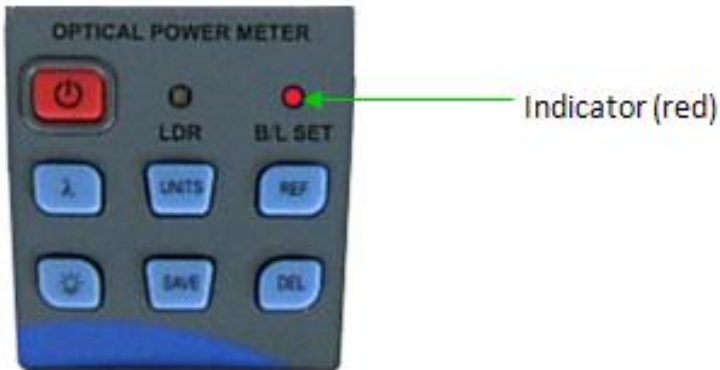
6-7

6.4 Output power measurement
6.4.1 Take off the dust cap, connect with the patch cord.

Notice: Make sure the connector and the end-face of the patch cord is clean, and take notice on the type of the patch cord, make sure the correct patch cord are connected.

6.4.2 Select the wavelength

Shortly press λ to select the calibrated wavelength, and notice that if the selected wavelength is not the same with the laser source wavelength, which will cause the error of the measurement value. There are 6 calibration wavelengths for selection.

Calibration wavelength

6-8

6.4.3 Unit Switch

Press [UNITS] to switch between the absolute measurement (dBm) and relative measurement (dB) and xW of the optical power. (6-9)

dBm

dB

xW

6-9

6.4.4 Relative value measurement

Each wavelength can set the Ref value, Press[REF], set the current value as the ref value, and automatically calculate out the relative value. (Right top of

the screen display the "ref "and setting dBm value 6-10)


Relative value setting
Relative value setting

6-10

6.4.5 Data processing: Data storage and deletion.

The power meter has 1000 data records saving memory. When do the output power measurement, press SAVE , at the right top of the screen will display the data saving No. e.g.: "0008" (6-11), hint that if the data save or not, double press SAVE confirm the saving, DEL cancel saving.

Current saving data (wavelength, dBm)
Data saving No.

6-11

Data view & delete. Long press SAVE to can view the saving record, the screen will display the last saving data. Short press SAVE , can view the data from the last record. (6-12) Press DEL to delete the record, long press SAVE exit the data view.
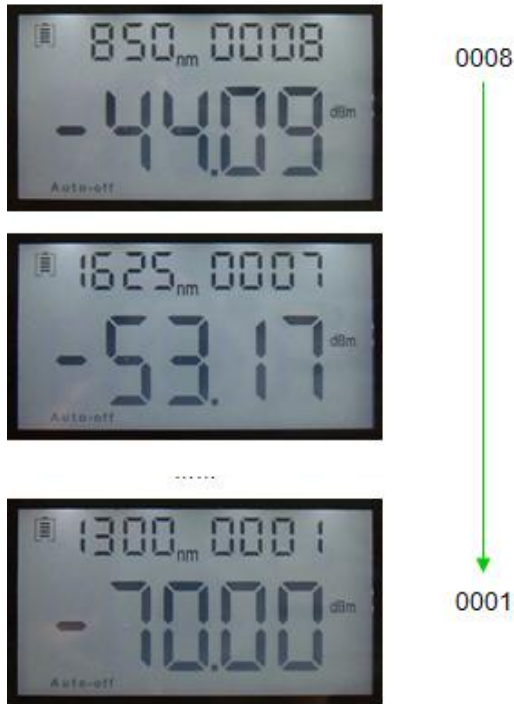
6-12

6.5 Data Communication

Note: Before proceed the data communication, make sure the driver and application software are installed successfully (Details of installation please refer to chapter 5)
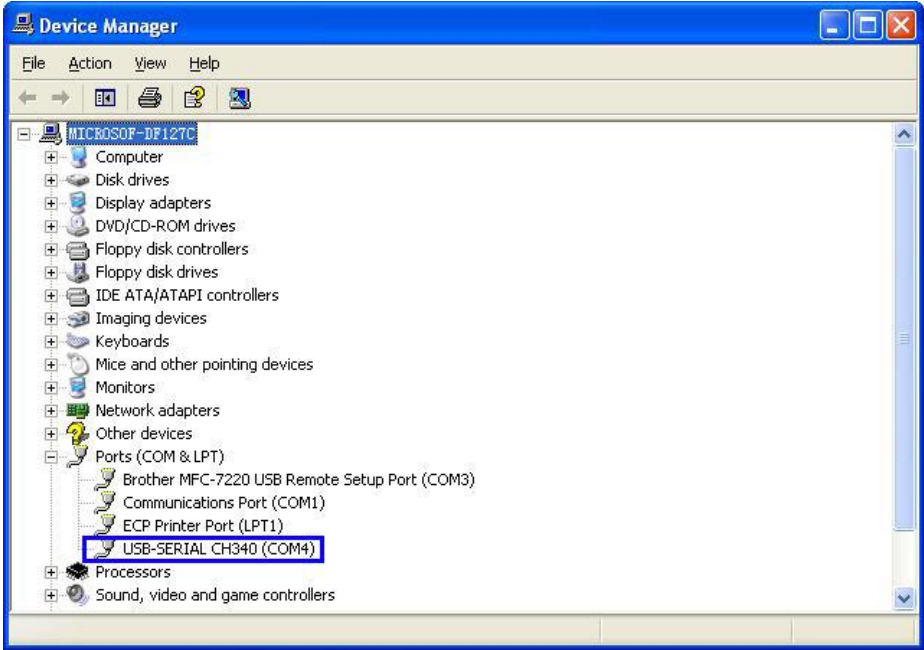
6.5.1 Open the software

Double click ⬚ icon to open the software, user can choose the language on request (Chinese or English), shown as figure 6-13.

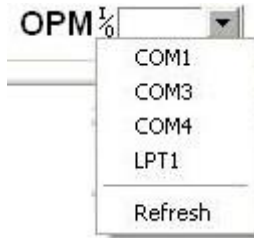| No.	Wavelength	Power value	Date / Time	Notes	
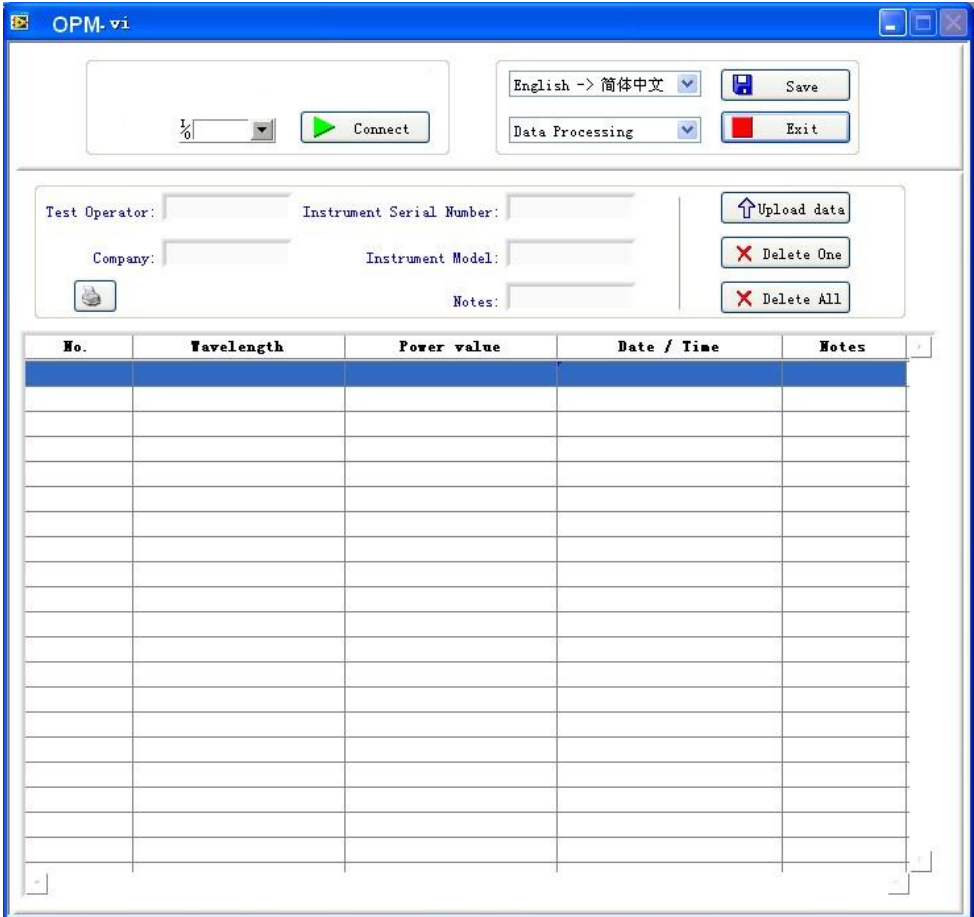
6-13

Connect Optical power meter with computer via USB cable, turns on the power meter.

From the Device Manager: "Port (COM&LTP), we can see that power meter port is "COM", (6-14)

6-14

Therefore, choose "COM4" port shown as below figure (6-15)

6-15

Next click "Connect" as shown in below figure 6-16, will pop up a successful connection window shown as 6-17, click "OK" to finish the connection, the unit can be communicated with computer properly.
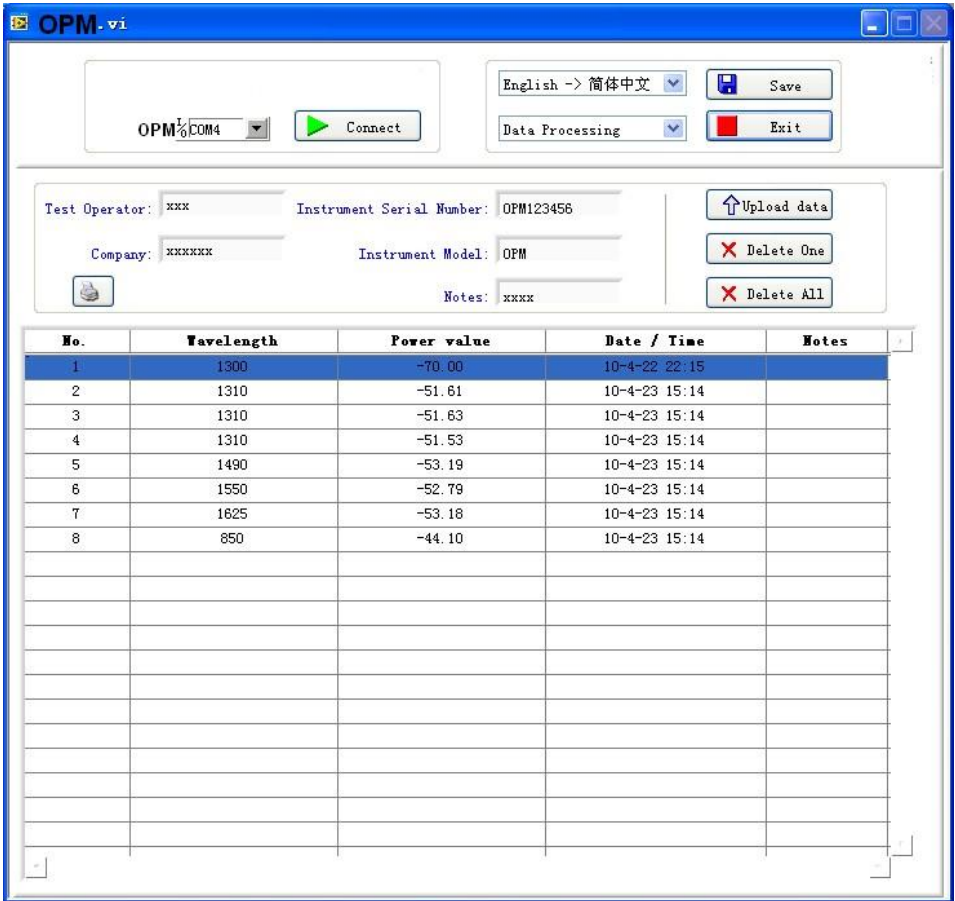

6-16

6-17

6.5.2 Data edit

Firstly, input the following basic information as shown on figure 6-18.
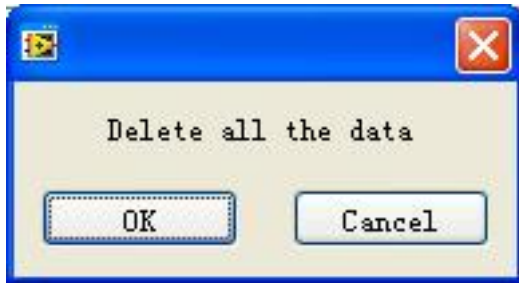

6-18

Then click "Upload data ", the saved data in the unit will be uploaded into computer and shown as on below figure (6-19).

6-19

Data edit at data display area, including data delete, data save and data printing.

Select the required data, click "delete one " to delete it from the sheet, as shown on figure 6-20 and figure 6-21, in addition, the corresponding data from the power meter also will be cleared accordingly.

6-20

6-21

Click "Delete all "pop up a window shown as figure 6-22, click "OK " to delete all data, also will clear all saved data from the unit.
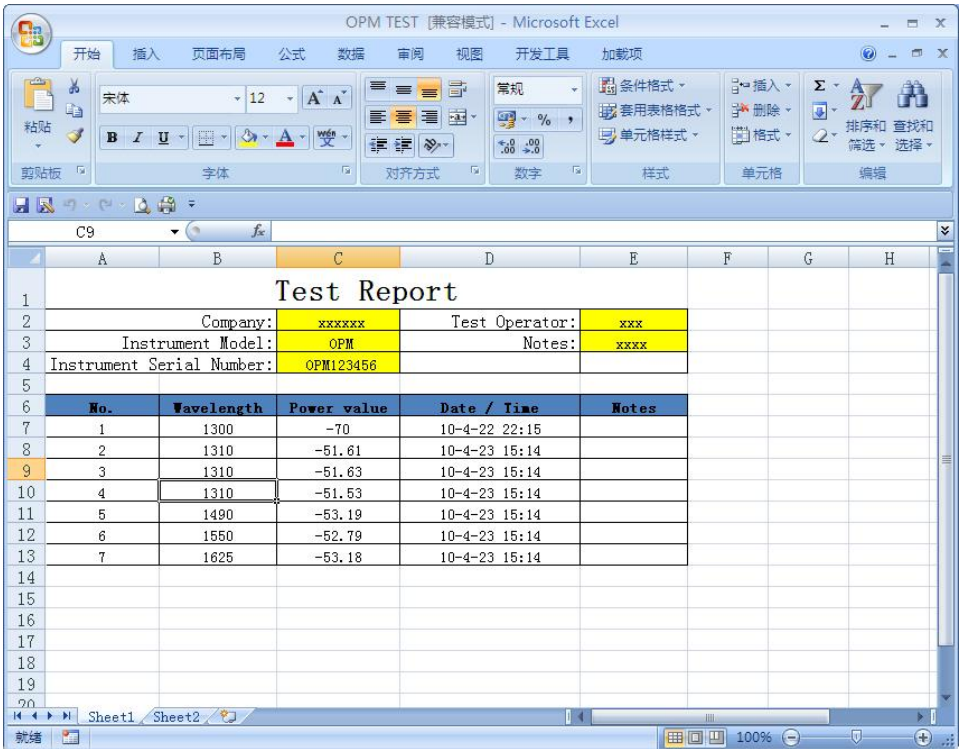
6-22

Click "Save" pop up a window shown as figure 6-23, input the file name, choose the save path and press "ok" for storage. File will be with EXCEL format and will pop up testing report automatically shown as figure 6-24.
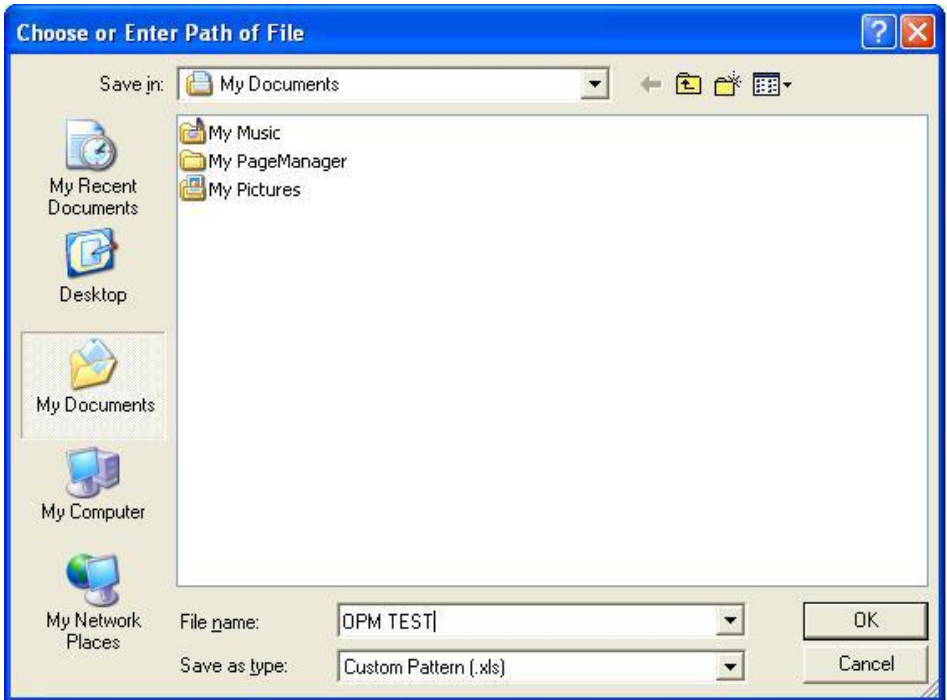
6-23

6-24

Click on the software, you can print testing report directly; you can also print the testing report from Excel.

6.5.3 Function setting of the unit

Under function setting mode to switch the interface as shown on figure 6-25 and figure 6-26:
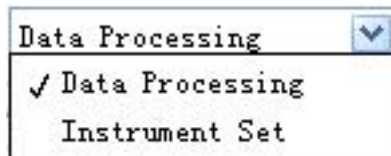
6-25

6-26

There are there items can be set on the unit:
(1) Optical Power Calibration

6-27

Input the corresponding optical power and click "calibration ", users can recalibrate the optical power by themselves.

(2) Time setting

6-28

Input the corresponding date and time, and then click "Set "to modify the time and date accordingly.

(3)Back to factory mode

6-29

Click "Reset", the unit will be back to default setting (factory mode setting).

6.5.4 Close software

Click exit, pop up a window shown as below (figure 6-30):

6-30

6.6 Wavelength Automatic Identification

• Connect power meter with its same serials light source SUN-LS200 Series Light Source.

- Enable light source be Under "Wave ID" operation mode: press 🔲(λ) of light source to emerge light output from light source. Hold down 🔲(CW/ɯ) for few seconds, light source will be enter into Wave ID mode, also "—AU" will be shown on the upper right of LCD for an indication.

- Enable power meter be under "Wave ID" operation mode: Hold down 🔲(λ) for few seconds, power meter will be enter into Wave ID mode, also "—AU" will be shown on the upper right of LCD for an indication.

- Once the ID information is changed from light source (press 🔲(λ) to change wavelength), after 3 to 5 seconds later, the detected information on optical power meter also will be changed automatically according to light source. Please refer to below figure (6-31) for easy understanding.

- Exit Wave ID mode: Hold down 🔲(λ) again to exit Wave ID mode from power meter and hold down 🔲(CW/ɯ) again to exit Wave ID mode from light source.

1310nm(xxdBm)
1550nm(xxdBm)
....

1310nm(xxdBm)
1550nm(xxdBm)
....

SUN-LS200 Light Source   Power Meter

6-31

6.7 Frequency detection

When use tone detection function, following requirements have to be taken into account:

For A: Tone detection will be effective only with measurement range between +6 ~ -40dBm.

For C: Tone detection can be worked only with measurement range between +26 ~ -20dB, because the detected frequency will be unstable when the power is weak.

How to act tone detection on Power Meter?

- Connect power meter with its same serials light source SUN-LS200.

- Output frequency from MATCHED optical light source: Press 🔲 to emerge light from the unit, press 🔲 for very short second, MATCHED light source will output frequencies of 270Hz, 330Hz, 1KHz, 2KHz accordingly, which will be shown on the upper right of the LCD in MATCHED light source. In the mean time, the power meter will detect the corresponding frequency automatically from MATCHED light source. Please refer to below figure (6-32) for better understanding:

SUN-LS200 Light Source   Power Meter

6-32

Note:

Frequency ID and wave ID cannot be operated at the same time.
To avoid risk of serious eye damage, please do not look into the optical port of laser source at any time.

6.8 Power off

Automatic power off: When auto-off function is activated, the unit will turn itself off automatically after 10minutes idle time, whatever the power supply is with alkaline batteries or is with power supply adaptor directly.

Manual power off: Under any operation mode, hold down ⏻ for a few seconds to turn the unit off.

Note: With either power off operation, the unit will store the last calibration wavelength and backlight control mode automatically, which will be the default setting when user turns unit on next time.

Chapter 7 Troubleshooting

Problems	Possible cause	Solution
Faint display on the LCD screen	1. Power is off 2. The battery power is too low	1. Press ⏻ key. 2. Change the batteries
Inaccurate measurements	1. Optical connector is not clean. 2. incorrect fiber connection	1. Clean optical connectors 2. Re-connect the fiber

Chapter 8 General Maintenance

- Always keep the connector ports of your power meter are clean.
- Do not use bad quality optical fiber connectors/adaptors; otherwise, it will damage the interface of detector that will greatly affect the performance of the unit.
- Try to use only the adaptor supplied.
- Once not in use, make sure dust-proof cap is placed properly over the optical ports.
- Carefully plug in/out for fiber connectors/adapters to avoid scratches on the port of the power meter.
- Keep regular cleanings on optical port of power meter; please clean with cotton swabs supplied using alcohol properly.

Chapter 9 Quality Warranty

Details of warranty terms and conditions are given as below:

1) **Sun Telecom** warrants that Optical Power Meter will be free from defects in material and workmanship for a period of 18 months. The date will be started from the date of goods shipment.

2) If any defectives happened due to quality problems of the product during the warranty period, SUN Telecom promises to repair or replace free of charge. But the freight cost and related taxes will be shared by both parties. SUN Telecom will pay the shipping cost from customer side to our factory. And pay the import taxes related. Customer will pay the shipping cost from our factory to customer side and its local import taxes accordingly.

3) This warranty is limited to defects in workmanship and materials and does not cover damages from accident, acts of god, neglect, wrong usage or abnormal conditions of operation.

4) The company. will charge corresponding fees for the cost of materials,

repair and shipping in conditions of below:

- Defects occurred under normal use and service but out of the warranty period.
- Failures and damages occurred do not because of defects in material and workmanship of products.
- Failures and damages occurred because of failing to comply with the Operation Instruction and necessary attention.
- Abnormal conditions of operation or handling:

Such as artificial damage, or operating in abnormal conditions of like high temperature, high voltage, humidity and etc., we will charge depend on the actual failure rating.

An important message from Sun Telecom

We guarantee that any information you supply will remain confidential.

By returning this card, you will automatically be notified about updates, modifications, and recalibration.

Warranty Registration Card

Serial Number: _____

Model Number: _____

Date of Purchase: _____

Company Name: _____

Company Address: _____

TEL: _____   FAX: _____

E-mail: _____

Note: Please fax this note within one month from the date of receiving units.

YOUR OPINION

Do you have any comments on the quality of this product or the service from us?

_____