DINTEK DT-PM01 Handheld Power Meter

User Guide

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 understand.

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 are seriously hit, it may cause fluid leakage. And please do not touch.

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Chapter 1: Standard configuration

No.	name	qty
1	Optical Power Meter	1
2	User Manual	1
3	USB cable	1
4	CD	1
5	1.5V AA battery	3
6	Power Supply Unit	1
7	Cotton Swabs	1
8	Carry Bag	1

Chapter 2: Overview

The DINTEK Handheld Optical Power Meter is a newly designed fiber optic tester, aimed at the installation of fiber, engineering acceptance and maintenance of fiber networks.
Compared to usual power meters, the DINTEK Power Meter has additional functions, like automatic wavelength identification, auto wavelength switching, intelligent backlight and data saving via USB port.
Combined with DINTEK Handheld Optical Light Source, it offers a quick and accurate testing solution on both SM and MM fibers.

- 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
- Up to 200hrs battery life

Chapter 3: Data Sheet

Model	A	C
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 universal	
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.

Chapter 4: Function

4.1 Front

(1) Power Key Turns the instrument ON/OFF.

Power Saving setting: Under power saving, the unit will automatically shut off after 15 minutes idle time, whatever the condition of battery power supply or AC power supply. Once selecting this setting, the “auto-off” will display on the left bottom of the screen. This power saving is the default setting, once turned on, the power meter will enter into this mode. Short press the power key to toggle on/off auto power saving mode.

(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 to on/off the wavelength auto-identify mode.

On the upper right of the screen wil be displayed the letters “AU.

Wavelength auto-identify

(2) ☼ backlight control (two modes of back light control, press this key to choose modes):

“LDR” the intelligent backlight control mode. Power meter will toggle off/on the backside within 15 seconds based on the outside light condition. “LDR” is the default backlight mode.

Back light control key mode. Press ☼ to on/off the back light

(3) SAVE Saving / Data-View key。

Using the Data-saving, the tester can save up to 1000 data records.

Press SAVE and the screen will display the **data saving No**.

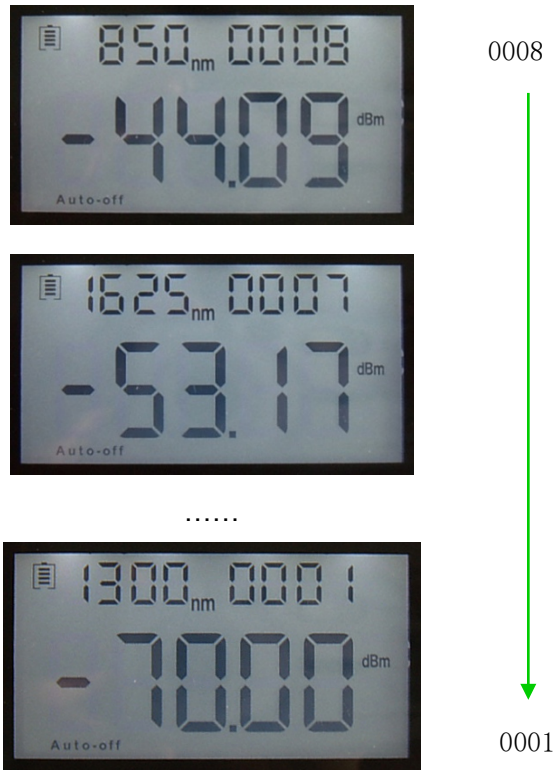
Double press the SAVE to save the data.

Current saving data (wavelength, output power-dBm)

Data Saving Record No.

Data view. To view data records, Long press SAVE to enter into the data view the interface.

Short press SAVE to view the data.



(5) DEL Delete/Cancel Key.

1. Data Delete. When viewing specific 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 the Unit key to switch between the absolute measurement(dBm) and relative measurement(dB) and nW of the optical power.

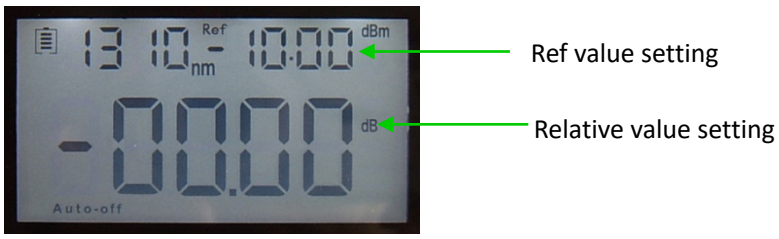
mW、dBm conversion：10 log(mW)=(dBm)

mW、uW、nW conversion：1mW=103uW=106nW

(7) REF REF setting:

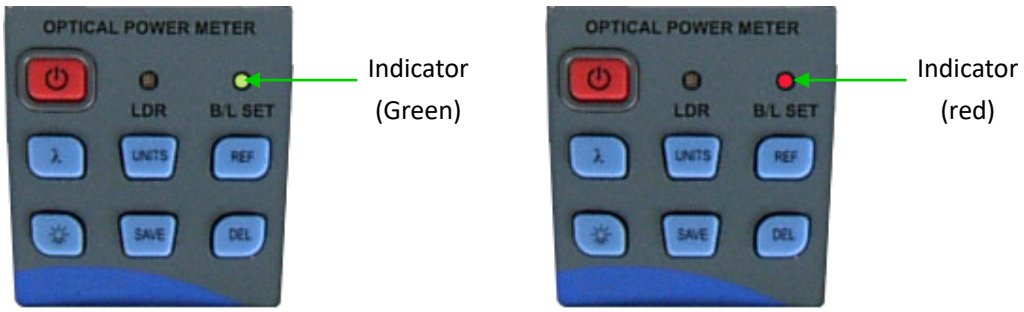
To store the current power value as the reference value which will be displayed on the top right of the LCD screen, at the same time the “Ref” also display on the right top. It will compare the current power with the reference power and show the relative power value in dB.

The relationship 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 indicates “LDR” intelligent backlight control mode, Red light indicate that key-control mode.



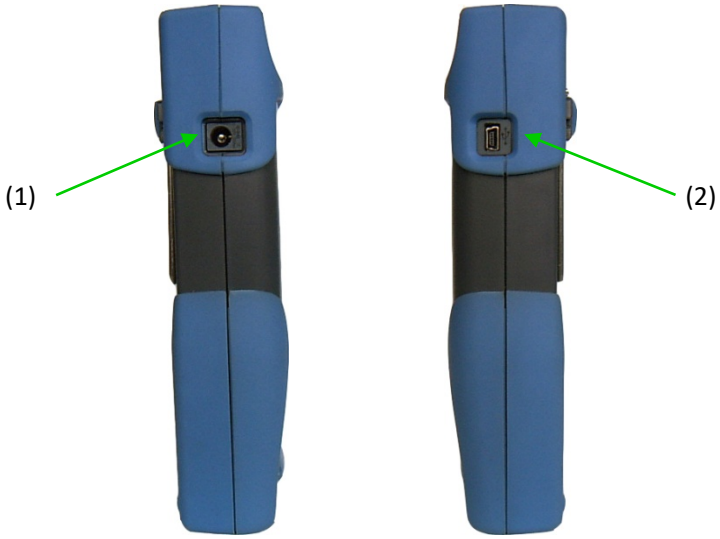
(9) “LDR” Intelligent backlight controller

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

(10) Screen

Display the data and the instrument working mode.

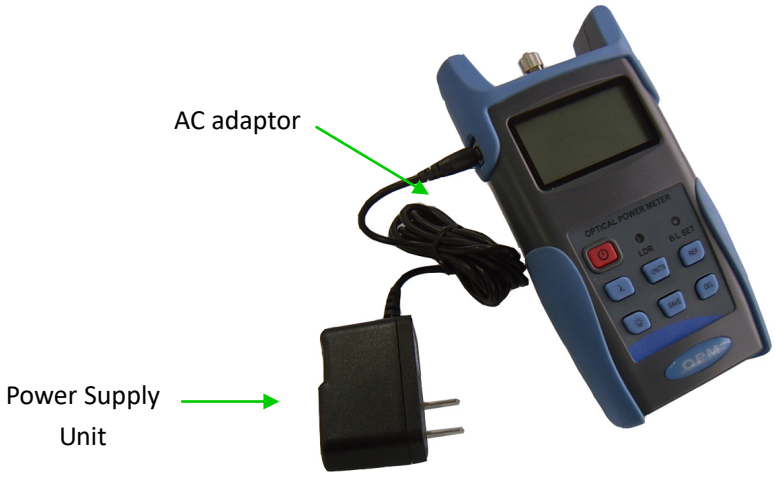
4.2 Two sides



4-2left side　　4-3 right side

(1) Power Supply unit port

Used for connecting with the AC adaptor (pic. 4-4)



4-4

Notice:

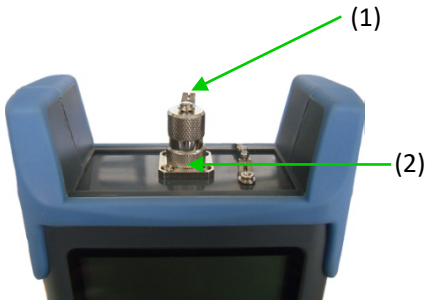
Please use only the power supply unit supplied with the tester. Use of other kinds of PSU may cause damage to the instrument.

***Notice**:*

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 and avoid damage to the optical connector, when not in use make sure that you place the dust cap over the connector.

(2)Optical Connector

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

4-7 FC connector

4-8 Φ2.5mm universal connector

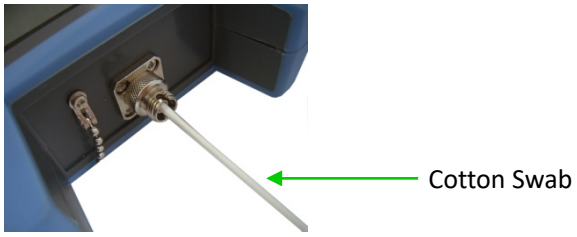
Notice: When changing the optical connector, take care of the connector and the end-face. FC connector can connect with FC adaptor, Φ2.5mm universal connector can connect with FC, SC, ST adaptor. Pic 4-9

FC Patch Cord SC Patch Cord ST Patch Cord

4-9

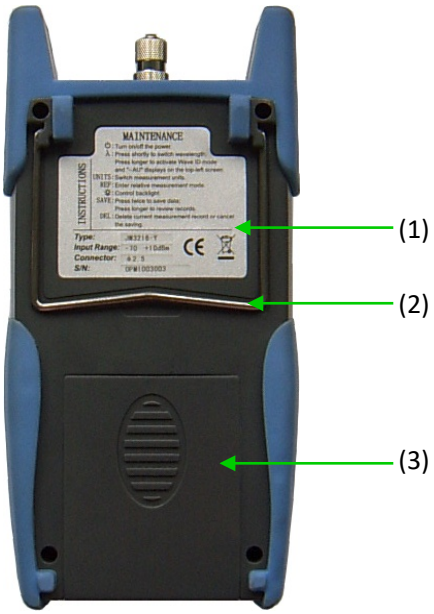
Notice: Any dust on the connector will affect the accuracy of the measurement value. Please clean the connector and the patch cord end-face before conducting the test.

Use an 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 includes the function of, and the instrument information

(2) Bracket

Collapsible metal bracket, 0~90 degree can be adjusted.

(3) Battery Pack

This unit takes 3 x 1.5v AA batteries.

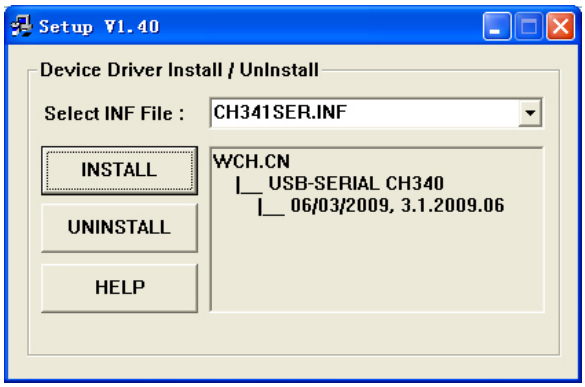
Notice: When inserting the batteries, take a note of their positive (+) and negative (-) connector orientation, the negative battery connector should be against the spring.

Chapter 5 Software

5.1 Install the device

Run the software in the PC, find the “CH341SER-CH340T” as shown below

Double click that “exe” program. This will initiate program. See fig. 5-1



5-1

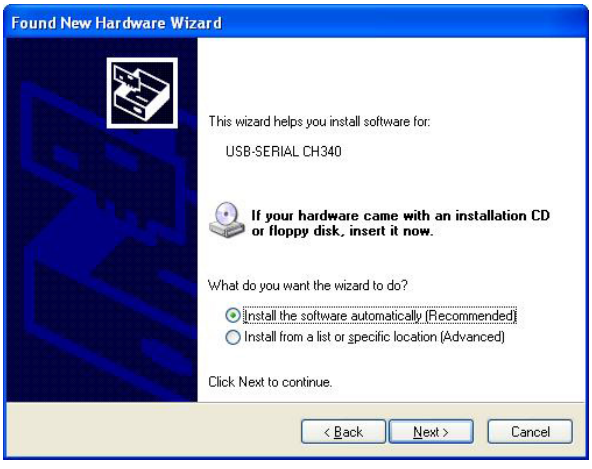
Click “INSTALL”. after you will see the following, Fig 5-2

5-2

Press “OK”, to exit this install interface.

However, the driver still has not installed yet, therefore continue the following operation:

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



5-3

Press “NEXT”, See Fig. 5-4

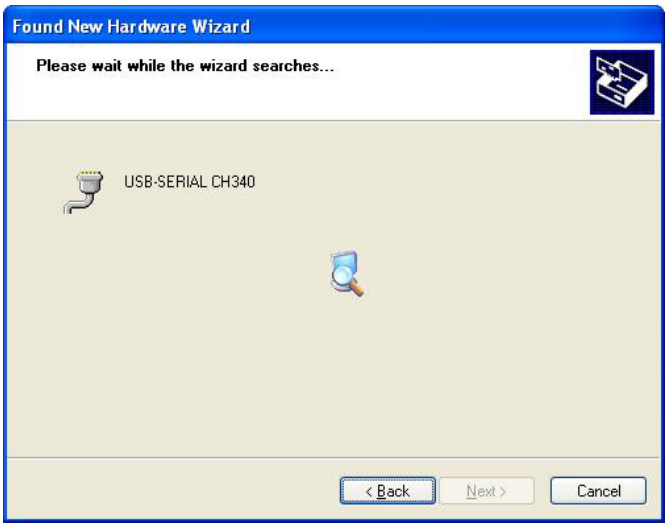


Fig. 5-4

After driver install, click FINISH to exit，See Fig. 5-5

Fig. 5-5

To check if the installation is complete and to avoid any communication problems, when the power meter is connected with the P, 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 和 LPT)” if your interface is the same as the following pic in Fig.5-6, this means the install is a success. If the interface does not show “USB-SERIAL CH340” as in Fig. 5-7, please re-install the devices.

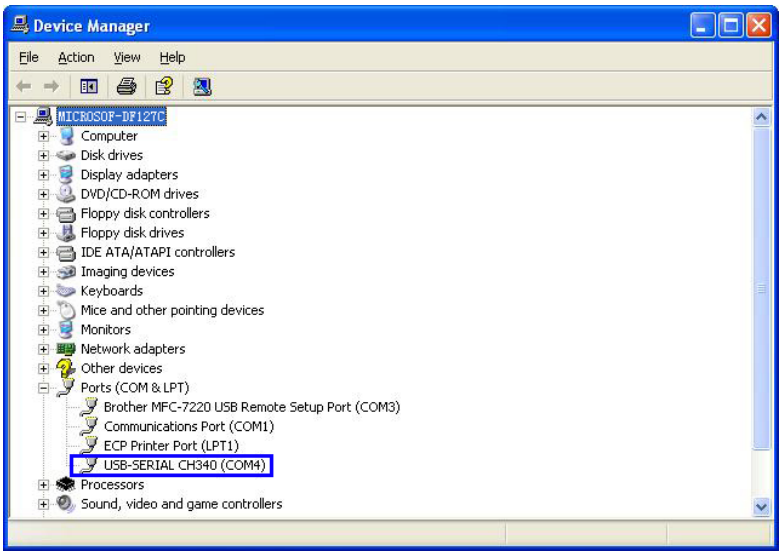


Fig. 5-6

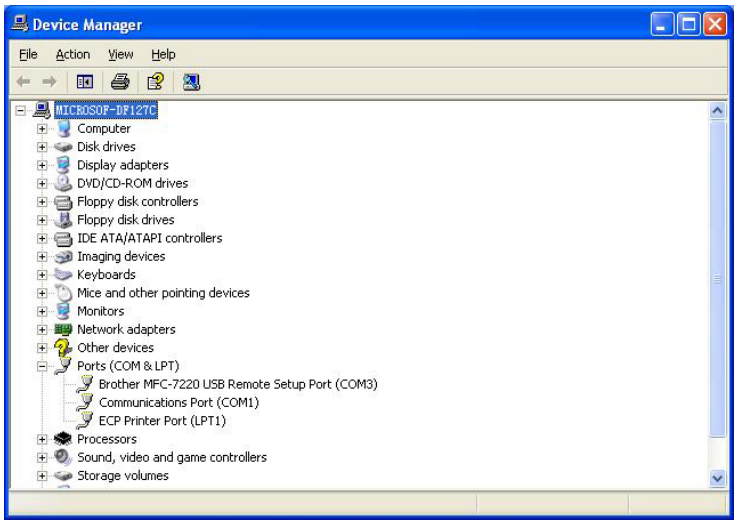


Fig. 5-7

After successful install of the device, you can switch off the power meter and disconnect the USB cable.

5.2 Install the application software

Run the CD in the PC, find the “setup” file

Double click this icon，See Fig. 5-8

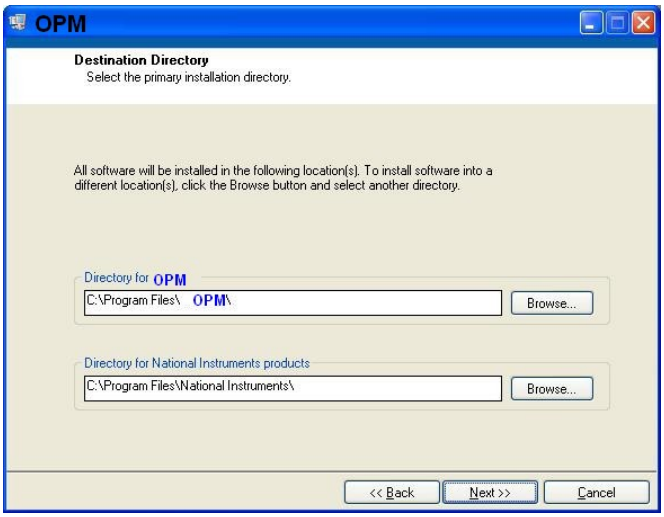


Fig. 5-8

Press “Next”, (as per Fig. 5-9)

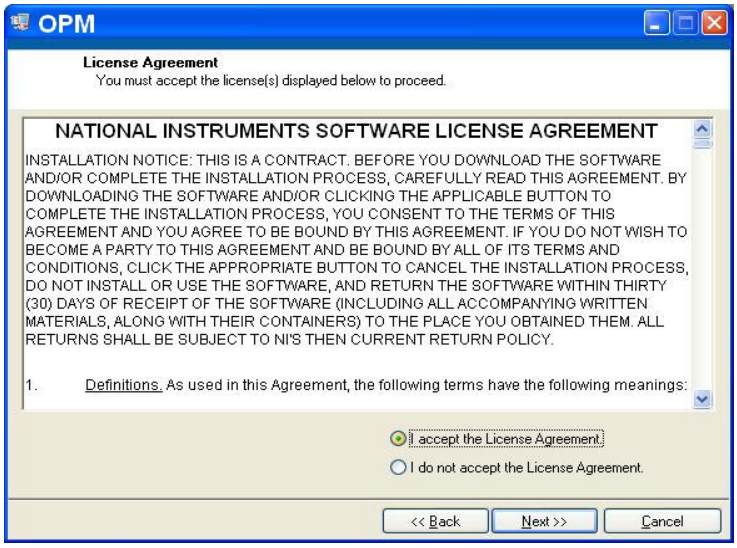


Fig. 5-9

Choose “I accept ……”, Click “Next” (as per Fig. 5-10)

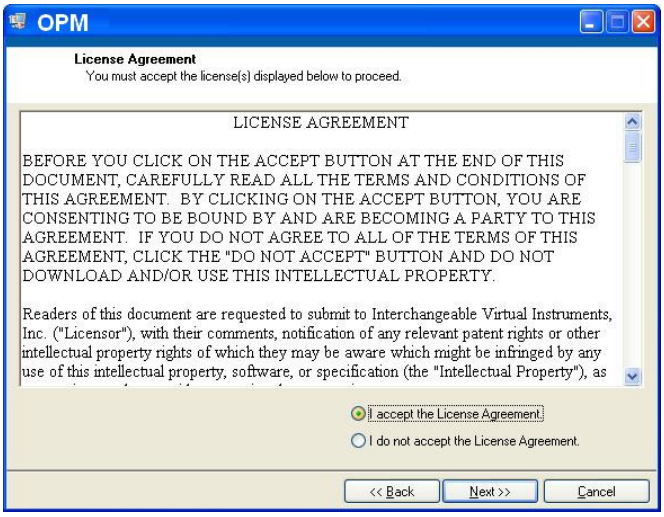


Fig. 5-10

Choose “I accept ……”, click “Next”, (as per Fig. 5-11)

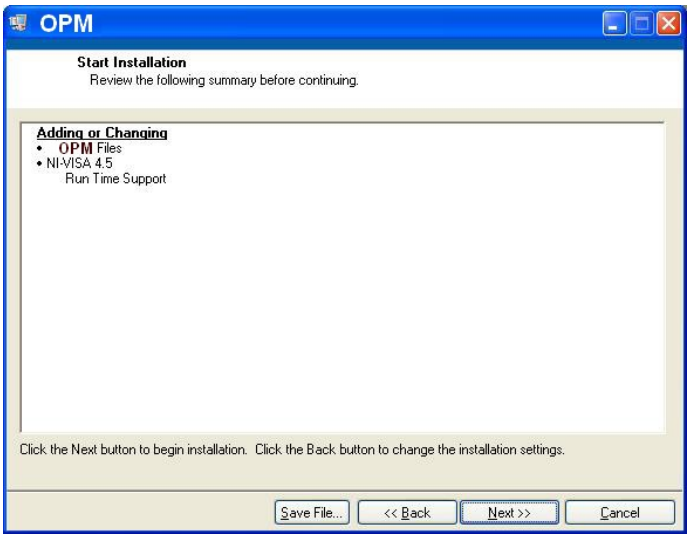


Fig. 5-11

Click “Next”, (as per Fig. 5-12)

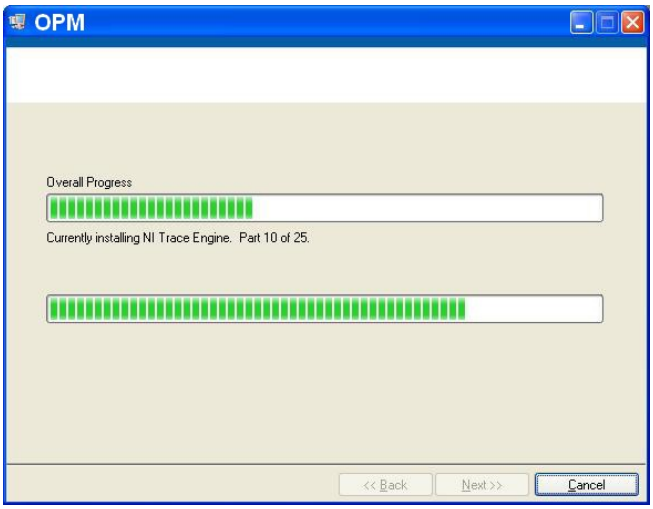


Fig. 5-12

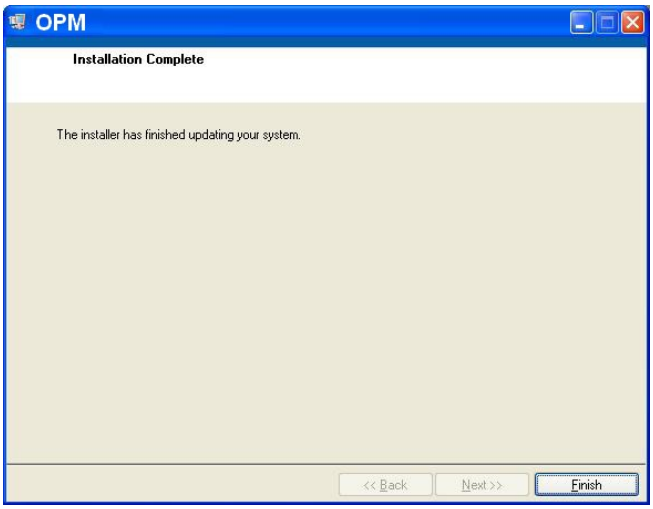


Fig. 5-13

Click “Finish”, Complete the installing (as per Fig. 5-13)

5.3 Software function instruction

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

Double click this icon to open the software. You will see the software interface, (as per Fig. 5-14)
Data processing is the default interface once the software is opened.

5.3.1 Data Processing

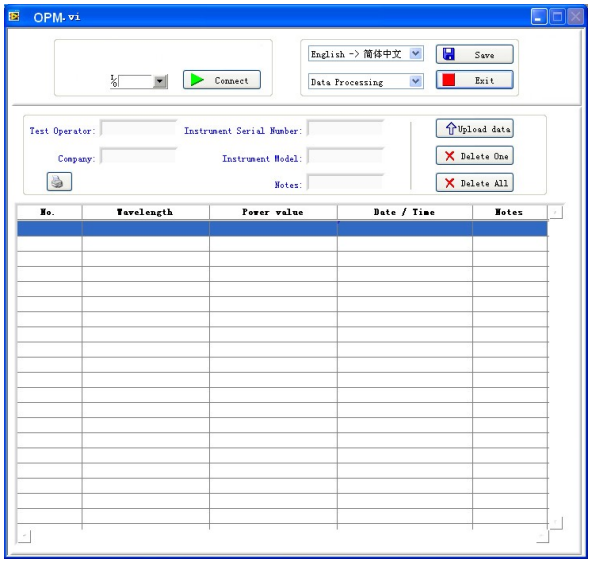
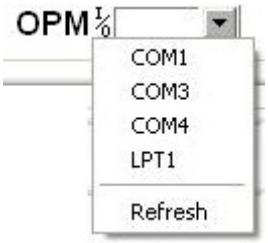


Fig. 5-14

Data Processing interface include 4 parts.

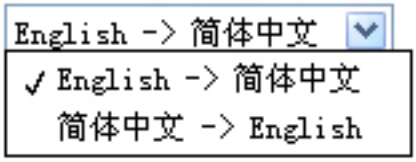
(1) Manual

I. Port Option: Choose the right port, which the same port that the PC connects with
.

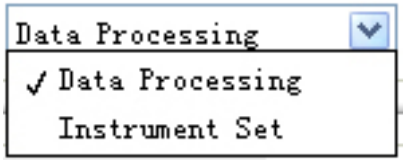


II. Connect icon, make the PC connect with the power meter, and communicate.

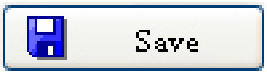
III. Language option, Drop-down the manual, Find the right language for the user prefer, Chinese/ English.



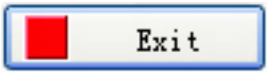
IV. Function interface option: Two functions for option--data processing and the instrument setting, drop-down the manual to choose.



V. Save button, save the current measurement data as the EXCEL file, convenience for user to view and analysis the data on the PC.

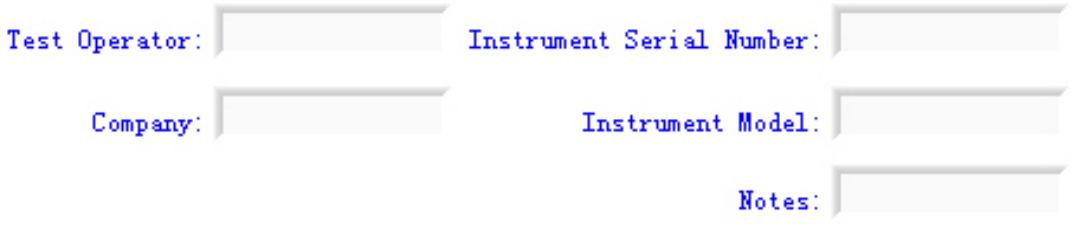


VI. Exit button, disconnect the communication, close the software.



(2) Testing information form

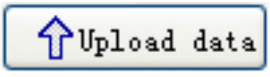
Fill the information in the blank areas



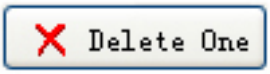
(3) Printing button to print the measurement value.

(4) Data process button

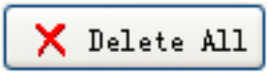
I. Upload the data to the PC, display the data on PC, for the user view.



II. Delete the choose data.



III. Delete all the data that saved in the instrument.



(5) Data display area

To display the saved data of the instrument

5.3.2 Power Meter setting

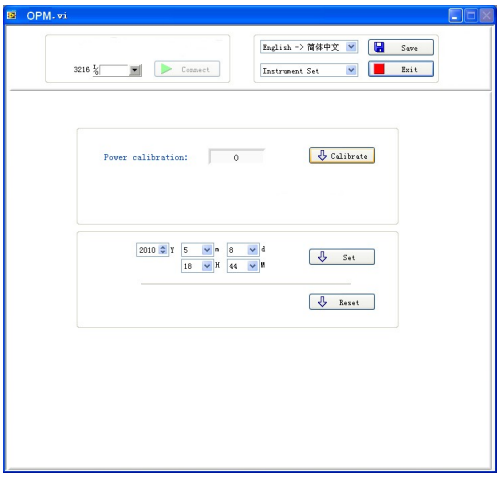
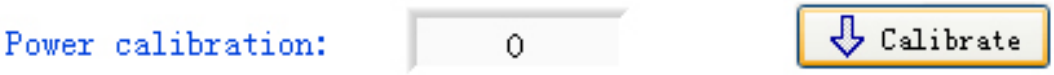


Fig. 5-15

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

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

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



3Time Setting.

(3) Recover the factory default setting. Power meter calibration recover the factory default setting.

Chapter 6 Operation Instruction and Notes

6.1 Powering the Optical Power Meter

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

6.1.1 AA battery

When using AA batteries, will display on the left top of the screen，(as per Fig. 6-1)

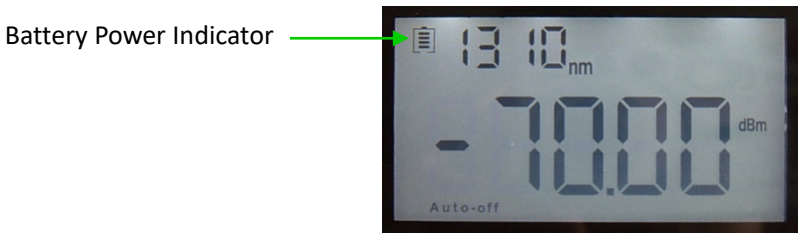


Fig. 6-1

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 be forced to power off

Fitting the batteries， (as per Fig. 6-2)

Fig. 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 battery. 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 (as per Fig. 6.3).

The tester will choose AC power supply as the default when batteries are also installed.

Fig. 6-3

When using the AC adaptor, connect the power plug as (as per Fig. 6-4), and insert into the AC socket.

Fig. 6-4

Notice：*Please use only 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, insert the battery or the PSU. Press to turn on the tester, (Fig. 6-5) is the opening interface.

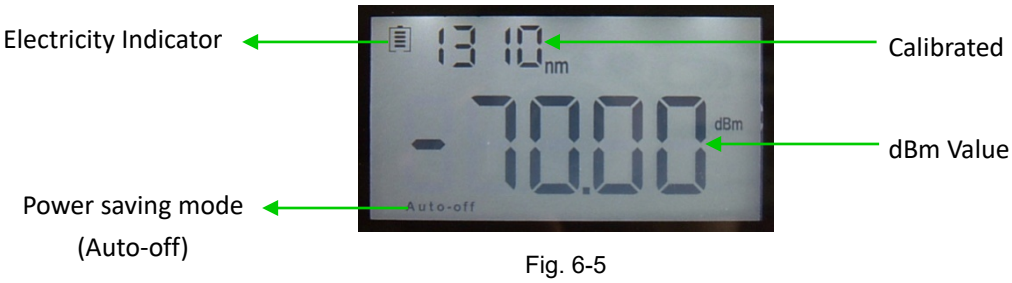


Fig. 6-5

When the tester is standby, press key to restart or choose the auto-off function.

If the auto-off function is choosen, the “Auto-off” will display on the left bottom of the screen.

6.3 Backlight setting

After turning on the optical power meter, long press , to choose the 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 LED indicates off, the LDR the controller will automatically adjust the backlight within 15 seconds with the outside light, which is to save the power.

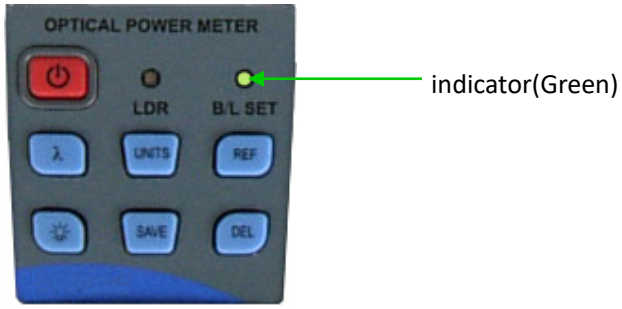


Fig. 6-6

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.

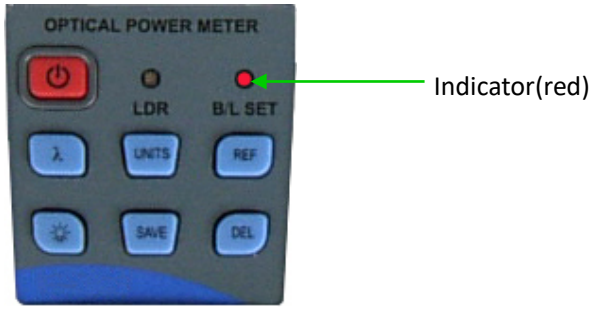


Fig. 6-7

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 is connected.*

ð.4.2 Select the wavelength

Short press λ, select the calibrated wavelength, notice that if the selected wavelength is not the same as the laser source wavelength, it will cause an error in the measurement value. There are 6 calibration wavelengths for selection. (See Fig. 6-8)

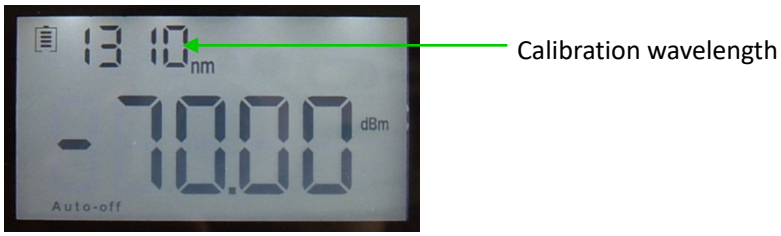


Fig. 6-8

6.4.3 Unit Switch

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

Fig. 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)

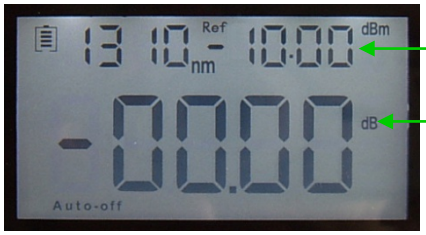


Fig. 6-10

6.4.5 Data processing

Data saving and deleting. The power meter has a data saving memory of 1000 records. After completing the output power measurement, press SAVE, at the right top of the screen which will display the data saving No. eg: “0008” (see fig. 6-11). (**Hint:** Double press SAVE to confirm the saving, and DEL to cancel saving.

Fig. 6-11

Data view & delete. Long press SAVE, 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 SAVE to delete the record, long press DEL exit the data view.

Fig. 6-12

6.5 Data Communication

Note：*Before initiating the data communication, make sure the driver and application software are installed successfully (For details of installation please refer to chapter 5)*

6.5.1 Opening the software

Double click the 

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

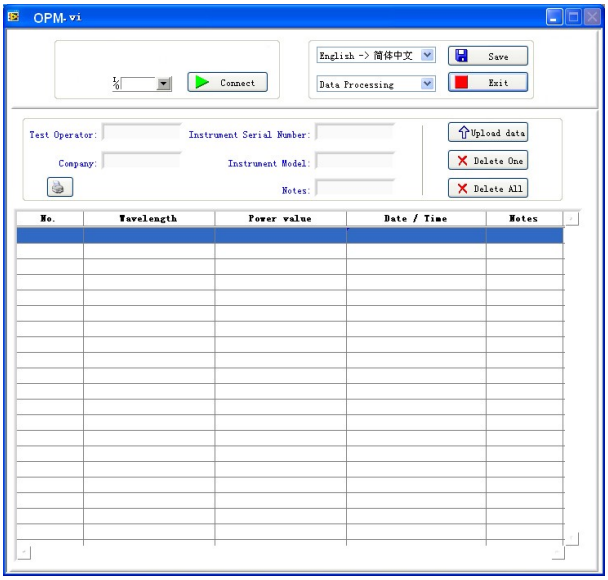


Fig. 6-13

Connect the Optical Power Meter with the computer via the USB cable and turn on. From the Device Manager: “Port（COM&LTP）, We can see that power meter port is “COM4” (See Fig.6-14)

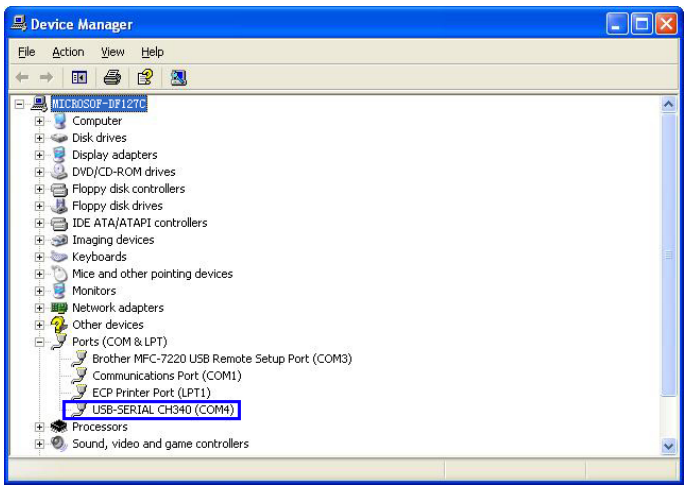


Fig. 6-14

Therefore, choose “COM4”port shown as below as per figure (6-15)

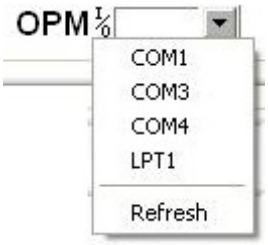


Fig. 6-15

Next click “Connect” as shown in below figure 6-16. This will pop up a successful connection window shown as 6-17, click “OK” to finish the connection, the unit will now be communicating with the PC.

Fig. 6-16

Fig. 6-17

6.5.2 Data edit

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

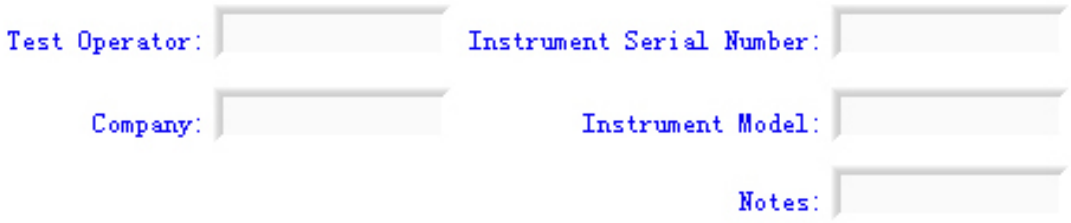
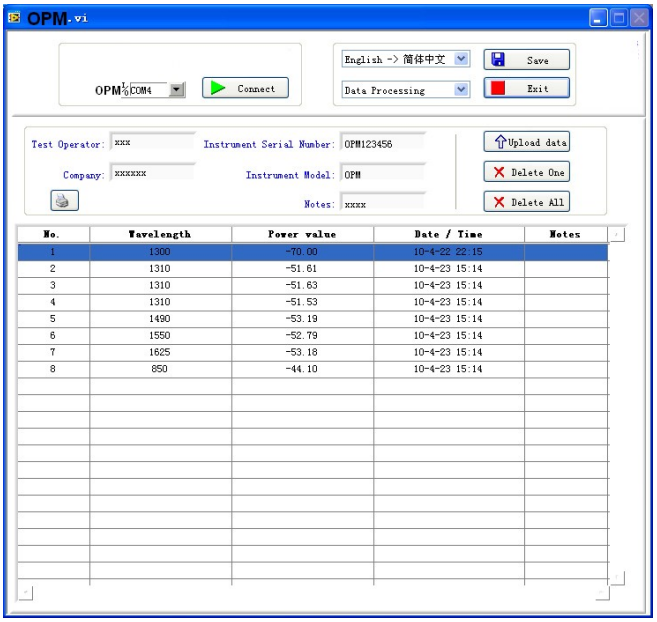


Fig. 6-18

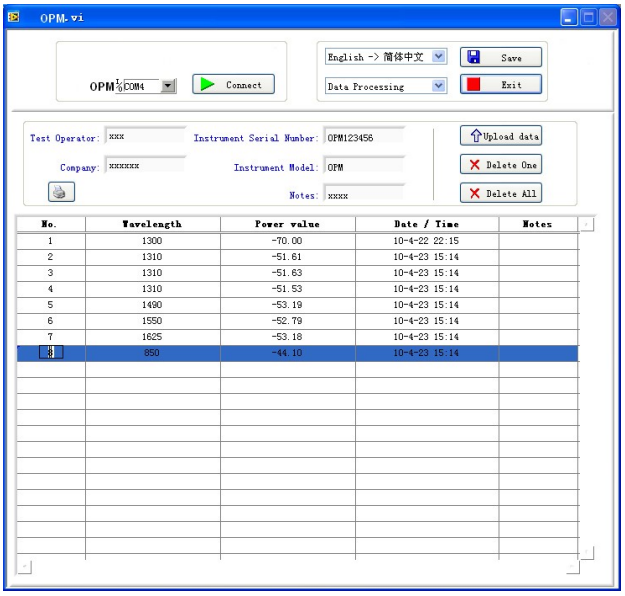
Then click “Upload data”, the saved data in the unit will be uploaded into computer and shown as on below figure (6-19).



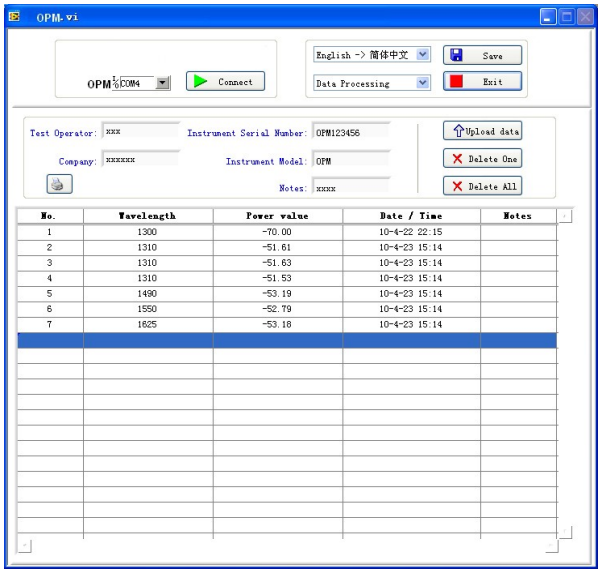
6-19

Data editing is done in the 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.

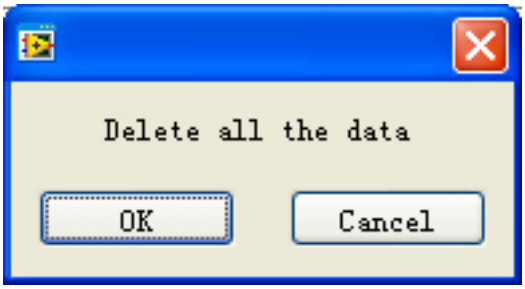


6-20



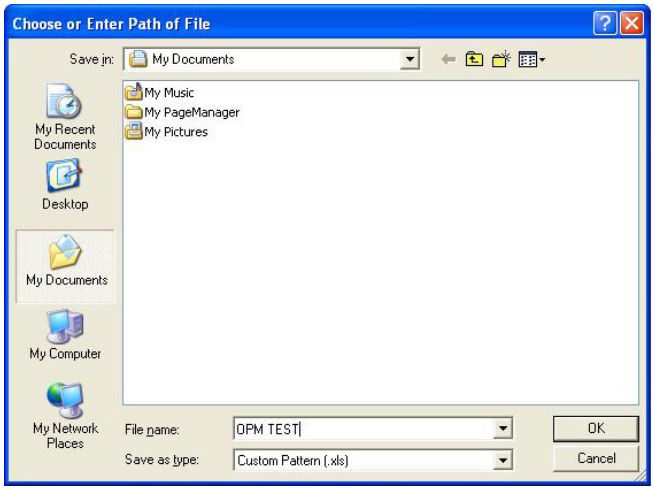
6-21

Click “Delete all” which will show a 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 in figure 6-23, input the file name, choose the save path and press “ok” for storage. File will be saved in EXCEL format and will pop up testing report automatically shown as figure 6-24.



6-23

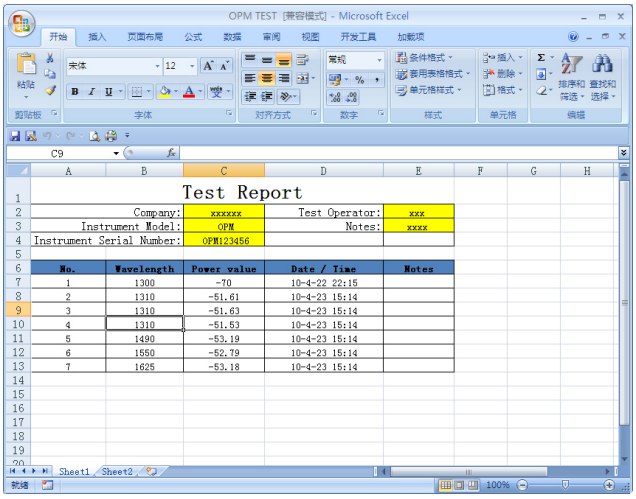


Fig. 6-24

Click  when in the software，you can print testing report directly, you can also print the testing report from Excel.

6.5.3 Function setting on the unit

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

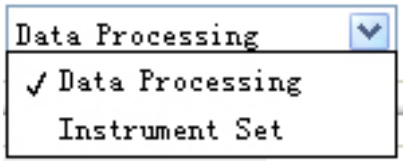


Fig. 6-25

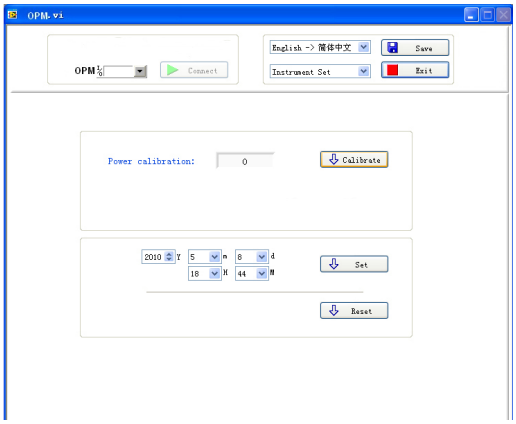


Fig. 6-26

There are there items can be set on the unit:

(1) Optical Power Calibration

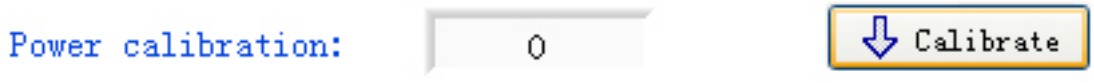


Fig. 6-27

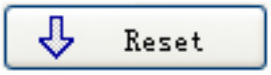
Input the corresponding optical power and click “calibration”, users can recalibrate the optical power by themselves.

(2) Time setting

Fig. 6-28

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

(3)Back to factory mode

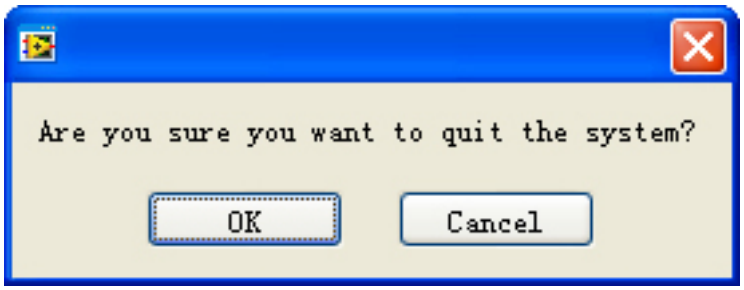


6-29

Click “Reset”, and the unit will be returned 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 a DINTEK Optical Light Source Unit.
- Enable light source to be set under “Wave ID” operation mode: press λ of light source to emerge light output from light source. Hold down CW for few seconds，light source will enter into Wave ID mode, also “--AU” will be shown on the upper right of LCD for an indication.
- To enable power meter under “Wave ID” operation mode: Hold down λ for few seconds. The power meter will be entered 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 again to exit Wave ID mode from light source.

Fig. 6-31

6.7 Frequency detection

***Note**: 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 JW3116.
- Output frequency from MATCHED optical light source: Press λ to emerge light from the unit, press CW 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:

Fig. 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

8.1 Always keep the connector ports of your power meter clean.
8.2 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.
8.3 Try to use only the adaptor supplied.
8.4 Once not in use, make sure dust-proof cap is placed properly over the optical ports.
8.5 Carefully plug in/out for fiber connectors/adapters to avoid scratches on the port of the power meter.
8.6 Keep regular cleaning of 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) The company 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 happen due to quality problems of the product during the warranty period, the company commits to repair or replace free of charge. **But,** the freight cost and related taxes will be shared by both parties. The customer will pay the shipping cost from customer side to our factory, and pay any import taxes related. The Company will pay the return shipping cost from our factory to customer side and any 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 other than because of manufacturer 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.

DINTEK Electronic Limited
5F., No.8, Ln. 97, Wugong Rd.
Xinzhuang Dist., New Taipei City 242
Taiwan (R.O.C.)
P: Office: +886-2-22997898 **E-mail:** sales@dintek.com.tw **W:** www.dintek.com.tw