



OPM HOPM-PON-S

PON Optical Power Meter users manual



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1. Overview

OPM HOPM-PON-S – PON Optical Power Meter target at the FTTx application and maintenance.

This power meter is able to simultaneously test and estimate the signals of the voice, data and video. It is an essential and ideal tool for the construction and maintenance of the PON projects.

1.1. Features:

- Providing simultaneous measurement at BPON/EPON/GPON for all three wavelengths on the fiber (1490nm, 1550nm, 1310nm)
- Used in Burst mode measurement of 1310nm upstream
- Use the software connect with PC, setting the threshold, data transfer, and calibration the wavelength
- CW light power measurement is available with wavelengths of 850, 1300, 1310, 1490, 1550, 1625nm.
- USB communication port enables data transfer to a PC
- 1000 measurement items can be saved in PON power meter or computer for data review.
- Offers up to 10 different threshold sets in total; Three status LEDs represent different optical signal conditions of Pass, Warn and Fail respectively.
- User self-calibration can be performed and «Factory Default» mode can be retrieved in computer through the software.
- PON SC standard connector, easy to test, other type connector port can be required on customer requests.
- Backlight LCD display supports night operation.
- 10 minutes Auto-off function can be activated or deactivated with keypad operation.

2. Technical Specification

2.1. PON module:

Model	OPM HOPM-PON-S
1310 upstream measurement	
Pass Zone(nm)	1260~1360
Isolation@1490/1550(dB)	>40
Measurement Range(dBm)	-40~+10
1490 downstream measurement	
Pass Zone(nm)	1470~1505
Isolation @ 1550nm(dB)	>30
Isolation® 1310nm(dB)	>40
Measurement Range(dBm)	-40~+10
1550 downstream measurement	
Pass Zone(nm)	1535~1570
Isolation at 1490nm(dB)	>40
Isolation at 1310nm(dB)	>40
Measurement Range(dBm)	-40~+20
Measurement Accuracy	
Connatural uncertainty(dB)	±0.5
Linearity(dB)	±0.1
Passing through insertion Loss(dB)	<1.5
General Information	
Detector Type	InGaAs
Optical Connector	FC/SC Interchangeable
Fiber Type	9/125um
Display	LCD:128*64
Measurement Unit	dB/dBm/xW
Resolution (dB)	0.01
Operation Voltage(V)	DC 3.3-5.5
Power Supply	3 AA1.5V battery
Continuously Operation time (h)	PON Power Meter Mode: 90h Normal Optical Power Meter Mode: 100h
Operation Temperature(C)	-10-60
Storage temperature(C)	-25-70
Weight(kg)	0.6

Note:

The operation time of the battery are all for the instrument that do not turn on backlight, if the backlight turn on the operation time will be shorted.

2.2. Normal Optical Power Meter Module:

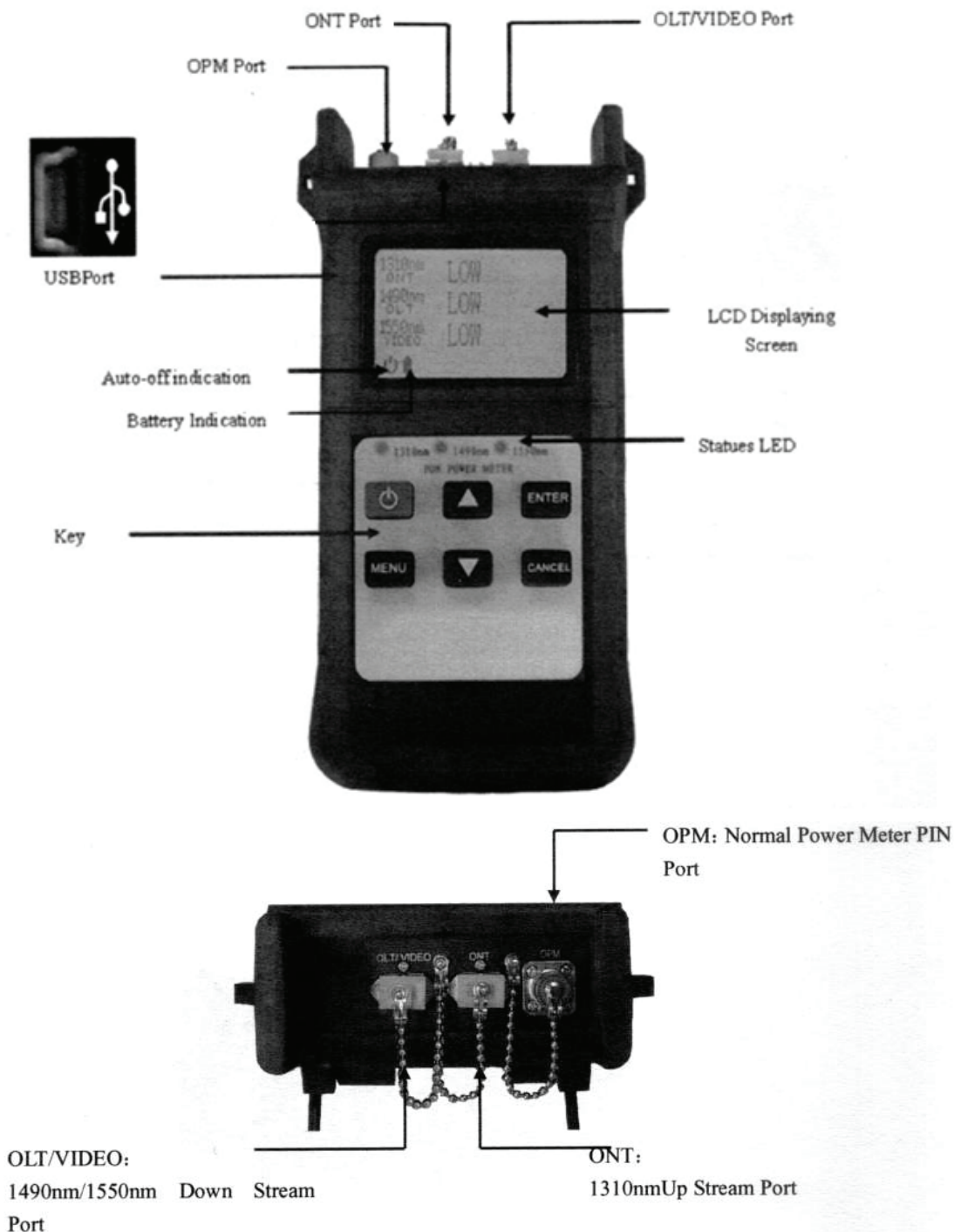
Model	OPM HOPM-PON-S
Measurement Accuracy	
Connatural uncertainty(dB)	± 0.25
Linearity(dB)	± 0.1
Measurement Range(dBm)	-70~+6 (optional)
General Information	
Measurement Unit	dB/dBm
Resolution (dB)	0.01
Calibration Wavelength(nm)	850, 1300, 1310, 1490, 1550, 1625
Detector Type	InGaAs
Optical Connector	FC/SC/ST Interchangeable/2.5 universal adapter
Fiber Type	9/125um

3. Standard Configuration

No.	Name	Quantity
1	OPM HOPM-PON-S	1
2	User Manual	1
3	USB Cable	1
4	CD	1
5	Cotton Swabs	1
6	Soft Carrying case	1

4. Function Explanation

4.1. OPM HOPM-PON-S Front Panel



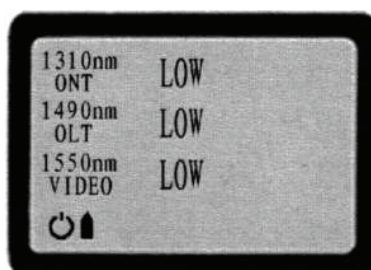
4.2. Key Function

Key	Function
	Turns unit on (Press for one second); Controls 10 minutes Auto power off function (press for half second); Turns unit off (Press for one second)
	PON/CW Power meter module Option
	Function Option, value adjustment
	
	Confirmation the function selection and saving the data
	Function cancel
	Shit the CW wavelength to the modulation (Hz) wavelength

4.3. Operation instruction:

4.3.1. Power ON

Press  for about one second to make the until power on, Enter into the PON power meter function, the unit displays as shown in below figure:



As shown in above figure, the LCD will display simultaneously three wavelengths of 1310nm upstream measurement and 1490nm, 1550nm downstream measurements. When optical signal is present under test, the optical channel will display power levels in dBm, when optical signal is not available, then the optical channel will display «LOW». «» indicates 10 minutes auto-off function is activated. The unit will turn itself off after 10 minutes of idle time. Press  to close 10 minutes auto-off.

4.3.2. Power OFF

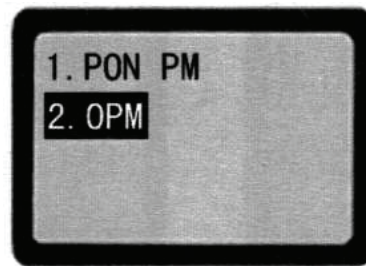
Press  for about one second, to turn off the unit.

4.3.3. Function Setting

4.3.3.1. PON Power Meter module and OPM module selection:

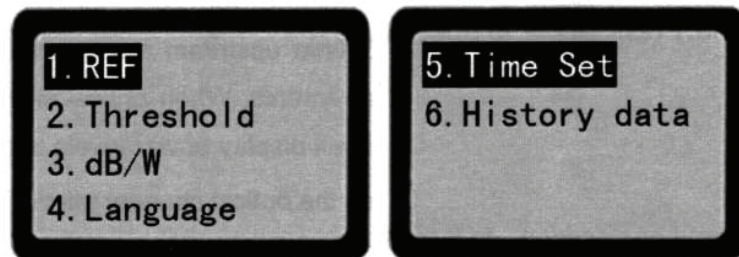
After open the instrument, Press **MENU** to enter into menu operation, Press «CANCEL» to exit.

Press **▲** or **▼** to choose the following settings, and press **ENTER** to choose the function:



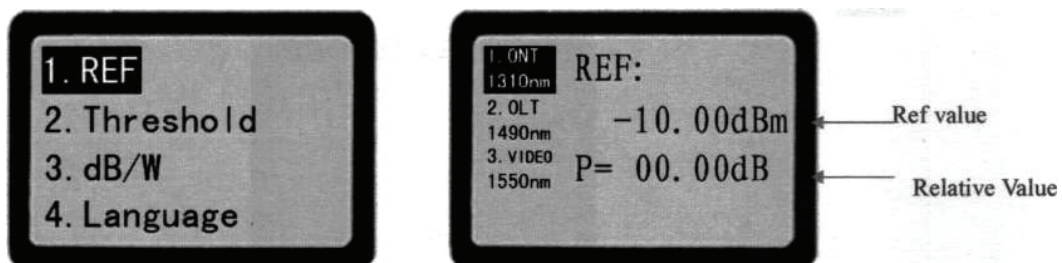
4.3.4. PON power meter Setting

Press **ENTER** for the PON power meter function:



4.3.5. Relative output power measurement:

As per requirements of measurement to select the different wavelengths and Ref settings, relative power=testing value-Ref value. Press **▲** or **▼** to select the different wavelengths, Press **ENTER** to change the Ref value as shown in below figure:



4.3.6. Threshold Selection

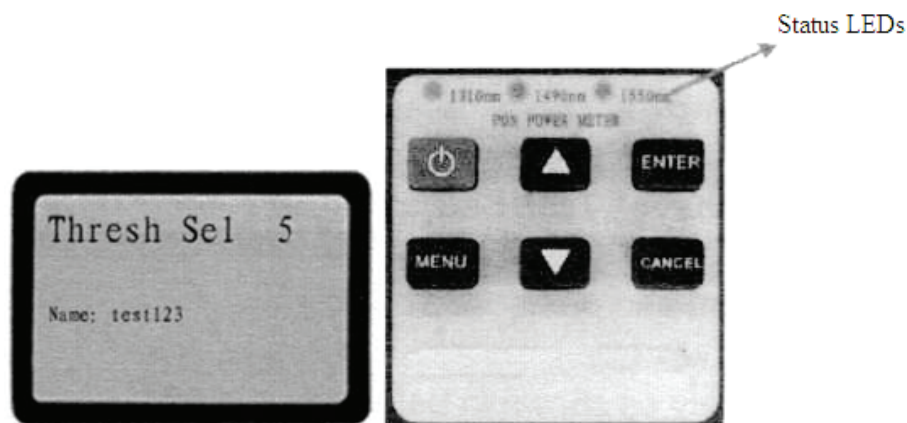
OPM HOPM-PON-S PON power meter offers up to 10 different threshold sets in total.

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There are three status LEDs in the front panel and each light indicator has three conditions of colors which represent different signal status as below:

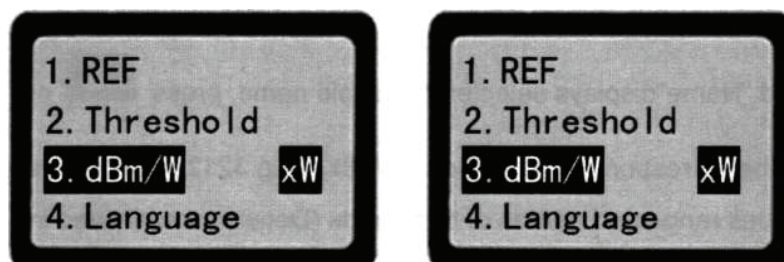
Green	-----	Represents Pass
Yellow	-----	Represents Warning
Red	-----	Represents Fail

Behind «Thresh Sel» displays selected threshold setting order number from 1~10, and behind «Name» displays selected threshold name, press ▲ or ▼ to select the corresponding shresholds. With using PON POWER METER.exe software to modify the values range and names of thresholds (Details as explained in term 5 – Data Communication.)



4.3.7. Switches of measurements units

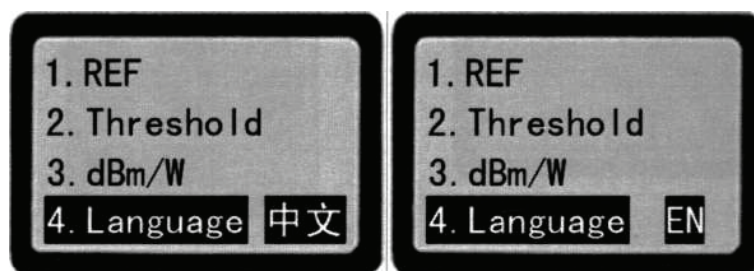
Measure the output power of the fiber use dBm or Xw, Press ENTER with ▲ or ▼ to choose the measurements units, press CANCEL to exit and cancel the current operation as shown in below figure.



4.3.8. Switches of language

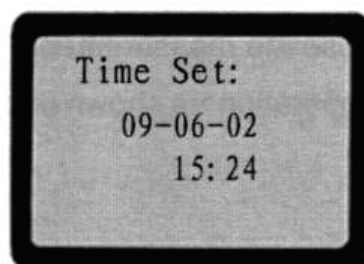
There are two language English and Chinese to Choose, Press ENTER ▲ and ▼ to select «Language» option, Press CANCEL to exit and cancel the current operation.

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4.3.9. Time setting

In item 5 have» Time Setting» Press  and  to select the «Time Set» option, and press  to change year-month-date-time respectively as shown in below figure, use  and  to change the digits. After setting, press  to confirm. Press  to exit and cancel the current operation.



4.3.10. History Data

This option is designed to review and delete saved measurements data. Press "Menu" to enter into menu operation, using with  and  to highlight «History Data» option. There are three options in History data:

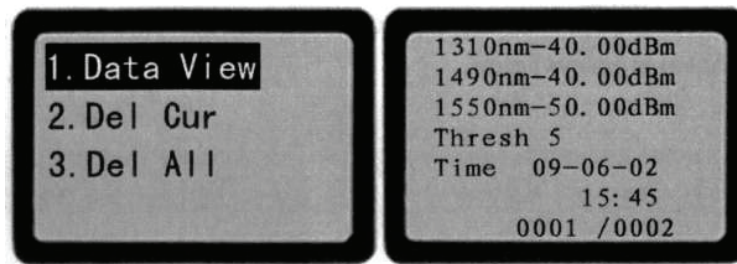
Data view	-----	To view the history data
Del Cur	-----	To delete the current data
Del All	-----	To delete all history data

Use  and  to change the options.

4.3.10.1. «Data View»

Under «History data», use  and  to highlight «Data View», press  to confirm and view the history data as shown in to exit.

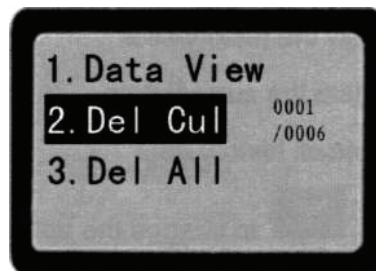
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As shown in above figure, when there is no optical signal to be tested, the power level will show -40dBm at 1310nm&1550nm and -50dBm at 1550nm, when the optical signal is present, the unit will display the corresponding tested value. «Thresh Sel 5» is the name of current viewed data, 0002 here means the total quantity of saved measurements data. Use ▲ and ▼ to choose or change the different saved gistory data. If there is no measurements is saved in the unit, it will display «No Record».

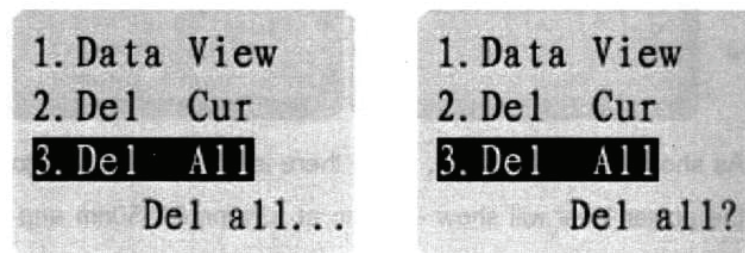
4.3.10.2. «Del Cur»

Under «History data», use ▲ and ▼ to highlight «Del Cur», press **ENTER** to confirm to delete the current data as shown in below figure.

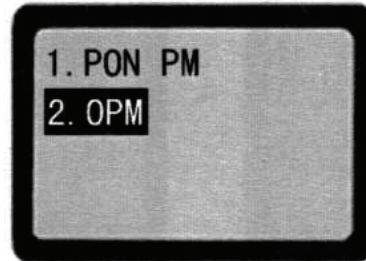


4.3.10.3. «Del All»

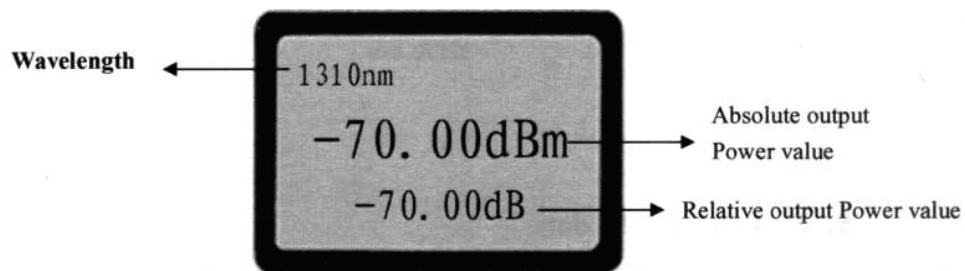
Under «History data», use ▲ and ▼ to highlight «Del All», press **ENTER** to confirm to delete all the saved history data as shown in below figure.



4.3.11. CW Power Meter:



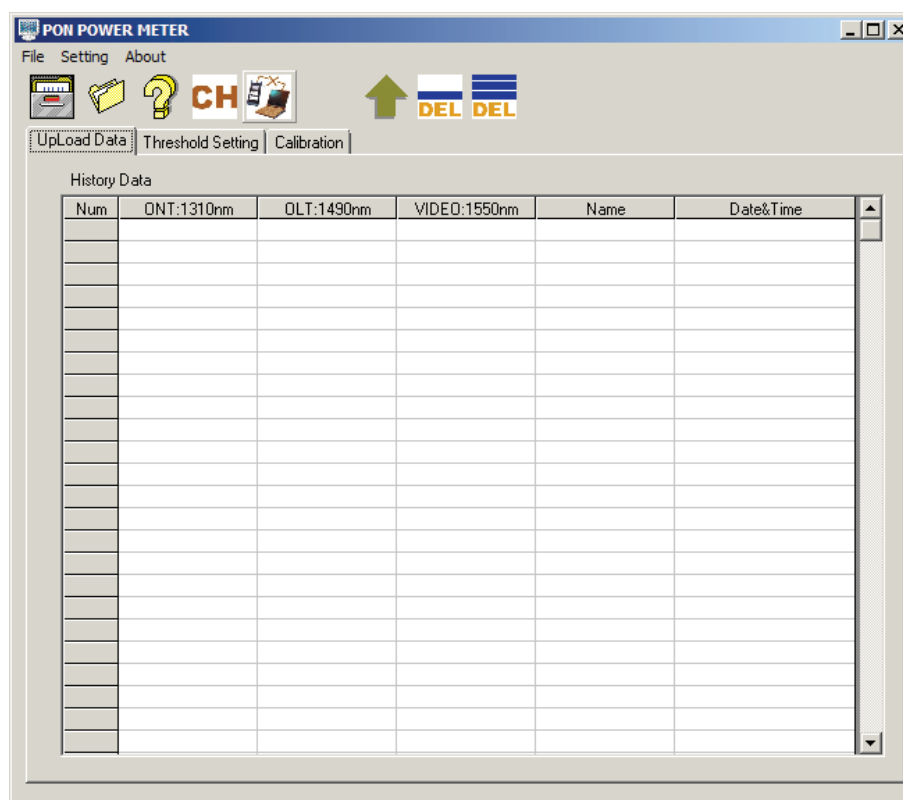
Press **ENTER**, enter into CW power meter function (normal optical power meter)



Choose the wavelength and reference value based on the requirement. OPM HOPM-PON-S provide the six CW wavelength measurement: 850nm, 1300nm, 1310nm, 490nm, 1550nm, 1625nm, Press **▲** and **▼** to choose the wavelength, press **ENTER** setting/ change the reference value. Relative value=absolute value-reference value. It will display the output power value once there got the optic signal, and it will display -70.00dBm when no signal comes in.

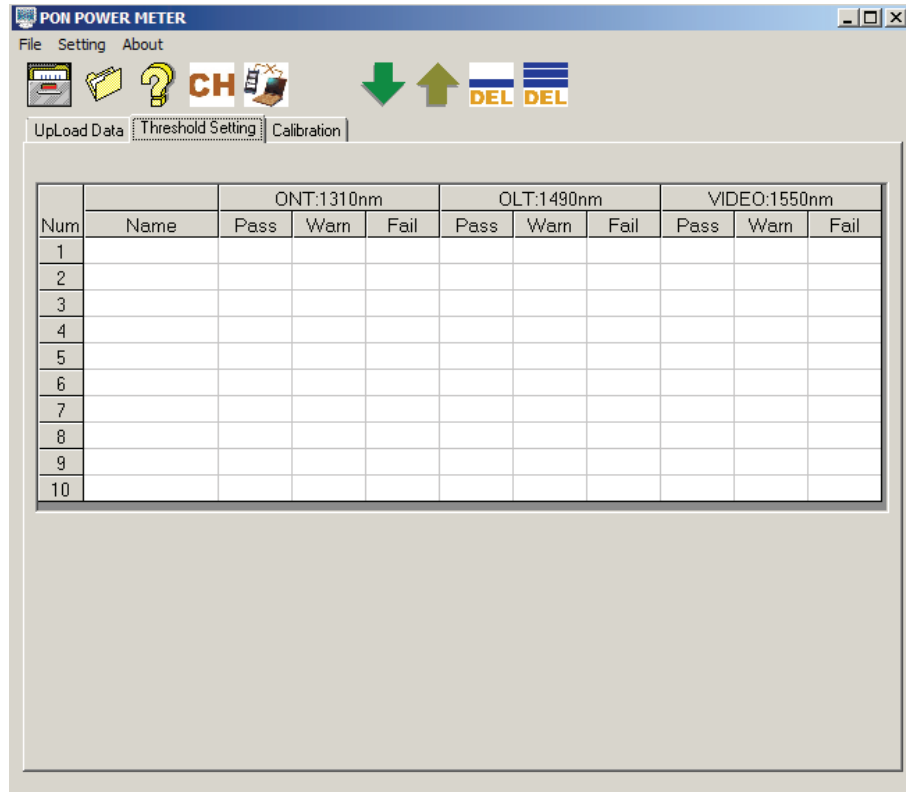
5. Data Communication

5. 1. Connect OPM HOPM-PON-S PON power meter to the computer's port using the provided USB cable. If you still do not install the software of USB driver, then please find «CP210X_VCP_Win_XP_S2K3_Vista_7.exe» in the CD as shown in below figure and install it.
5. 2. Open the software PON POWER METER.EXE
5. 2. 1. Upload the data



- Open the OPM HOPM-PON-S PON power meter, first of all click , connect OPM HOPM-PON-S PON power meter to the computer (Click  «English» to set the language of the operation interface to be English)
- Choose «Upload Data», click  «Upload history data» sign, the saved data can be read on the computer, and saved as a file format
- Click the  button «Del Cur» or  «Del All» to delete the data. Please refer to below figure for better understanding.

5. 2. 2. Threshold Setting

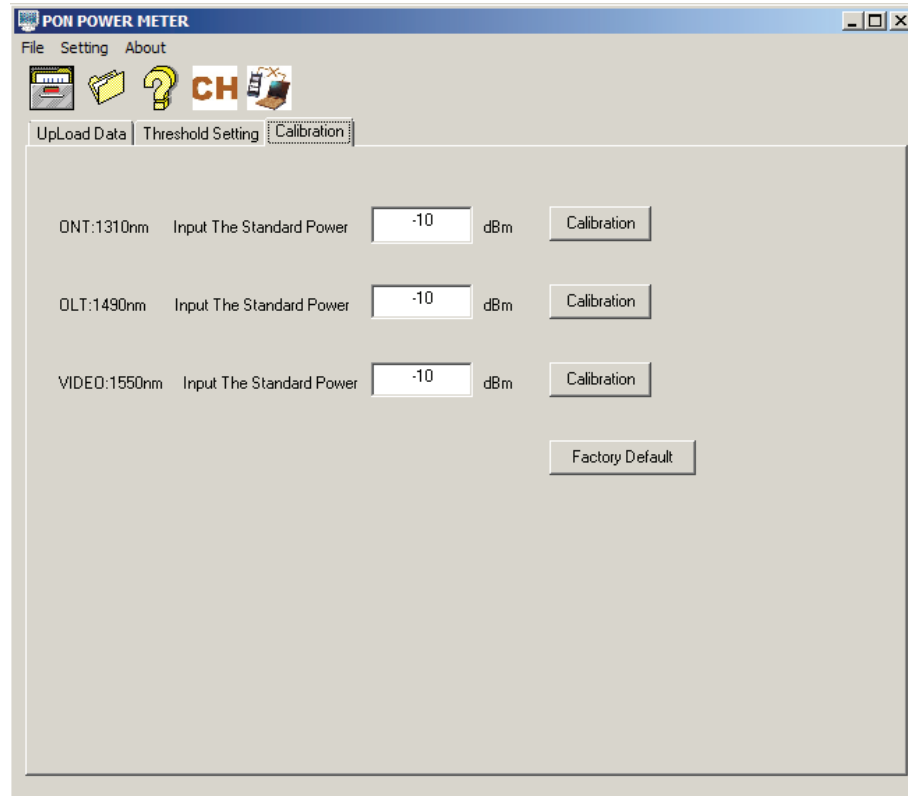


From the toolbar, select «Threshold Setting», and click  «Threshold Setting» icon to type or modify the threshold value.

Click  «Upload threshold value» icon to read the threshold set. For the used testing threshold values will be displayed as blue front, for the non-used threshold values will be displayed as black front.

Click  «Del Cur» or  «Del All» to delete the values.

5. 2. 3. Calibration



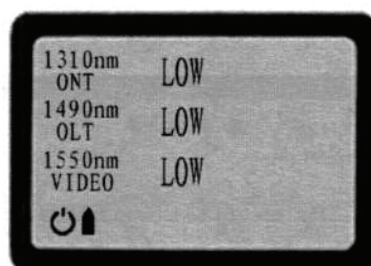
Choose «Calibration» tab, the user can perform user self-calibration operation also can choose «Factory Default» mode. For example, the current optical power at 1310nm is -10dBm, type -10dBm in the text box of input standard power, and click Calibration tab, then finished the calibration operation at 1310nm wavelength. However, if the user made some mistakes during the calibration, then click «factory default» to return to factory mode which set by manufacturer.

6. Operation Instruction and Notes

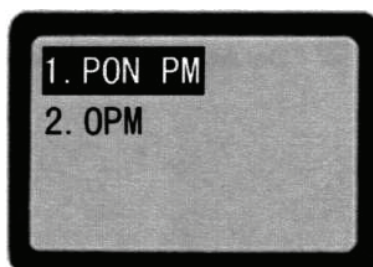
6.1. Instruction for PON power meter

6.1.1.

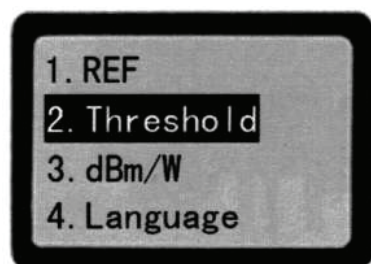
Press  open the instrument, enter into the PON power meter function, short press  choose ten minutes auto-off function.



Press  choose the function.



Again press  to choose the PON power meter function setting, use  or  for threshold option,  for the setting

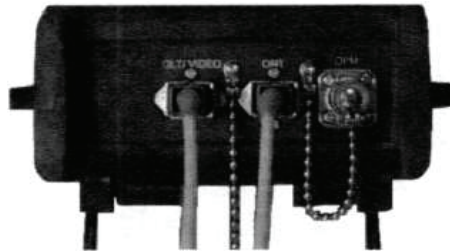


Use  or  to choose the required threshold value, (The thresholds rang and name have already set in the software, and also download to the instrument, please check with the user manual of Chapter 6 data communication).

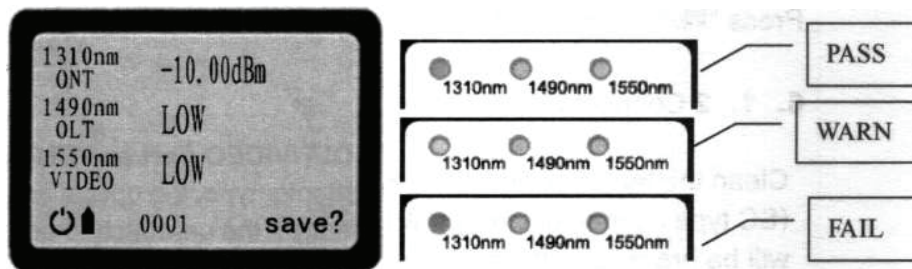
Press  back to the testing menu.

6.1.2. Connect with the tested optic fiber

Clean the tested optic cable, connect with OLT/VIDEO port and ONT port, (SC type connector), noted with the optic adaptor type, the optical adaptor will be break, and the tested value will be faulty if the un-matched adaptor connected



1310nm ,upstream, 1490nm, 1550nm downstream, and 3 wavelength measurement at the same time.



Eg.: The selected threshold name is «test1»(+3dBm,-20dBm,-30dBm). The measured result displayed: -10dBm (Optical power) at 1310nm upstream measurement as shown in above figure, as it is within +3dBm (Pass threshold)~-20dBm(Warning threshold), therefore, it means the optical signal in Pass status and the LED at 1310nm will light up with green color: If the measured result is between -20~-30dBm, it means the optical signal in Warn status and the LED at 1310nm will light up with yellow color which means the optical signal may got problems but still can be used; If the measured result is out of the range of thresholds, i.e greater than +3dBm or smaller than -30dBm, then it means the optical signal got problems, the LED at 1310nm will light up with red color. The same process be used at 1490 and 1550nm wavelengths.

6.1.3. Saving the testing record:

Press «Enter», there will displaying saving on the screen, check with the upper pic. The data recording series No. is 001. press « Enter» saving, and « Cancel» for cancel, and the saving recording can be checked in the «data view» under «historical data» Menu.

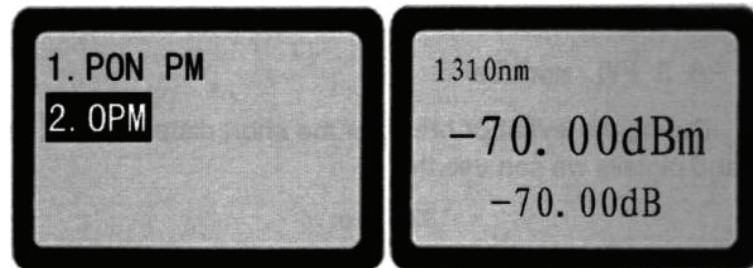
6.1.4.

After finish the testing work, keep the connect port clean, so cover the dusty-cap once finish the work.

6.2. Instructions for Normal Optical Power Meter Function

6.2.1.

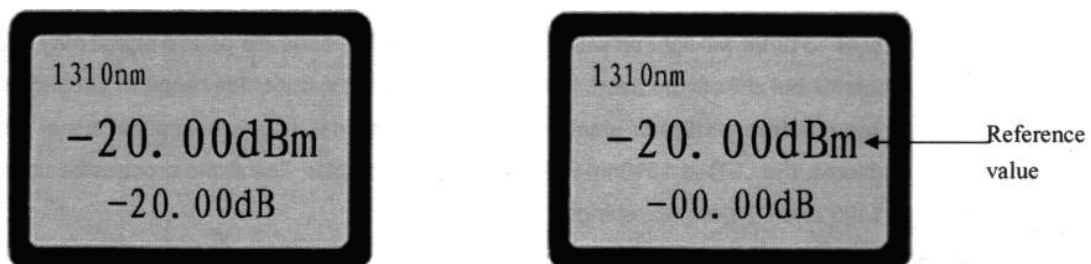
Press  button to open the instrument, use  button and  ,  to choose the Optical Power Meter measurement, then press  to enter into the selected function.  or  Button in this case, is to choose the wavelength. Take 1310nm measurement for example:



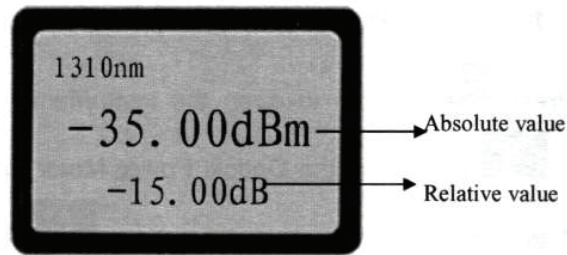
6.2.2. Connect with the tested optic fiber

Clean the optic Fiber end-face, and connect with the PIN port on the instrument (SC/FC/ST adaptor), noted with the type of the optic fiber adaptor, the non-matched connecting will make the damage of the connector on the instrument and also make the faulty of the measurement result.

E.g.: 1310nm measurement, after connect with the optic fiber, it will displaying -20dBm, press  , set the -20dBm as the reference value, and it will also display relative value (dB), see as following:



In order to get the loss between the two measurements, do another time testing under the first relative output power. The relative value will be calculated automatically. For example the second time testing of 1310nm output power is -35dBm, the relative output power will be -15dBm. (relative output power=absolute output power-reference value -15dBm=-35.00dBm- (-20.00dBm) see as following:



6.2.3.

After finishing testing, cover the dusty cap to keep the optical connector port to be clean.

7. Troubleshooting

Problem	Possible Cause	Solution
No display on the LCD	1. Power Off	1. Press to turn on
	2. Lower Battery	2. Change the battery
Inaccurate measurements	1. Optical interface is not clean	1. Clean the fiber optic interface
	2. Improper fiber connection	2. Reconnect the fiber

8. Maintenance

To help ensure long, trouble-free operation:

- Always keep clean fiber-optic connectors before using, keep the unit free from oil and dust.
- Do not use unclean, non-standard fiber-optic connector adapter, do not insert to bad fiber-optic connector interface which may cause the system out of the work.
- Try to use one type fiber optic connector adapter.
- After finish the testing or when the unit is unused, please cover the dust-proof cap to ensure the optical interface is clean and to avoid measurements errors caused by dust.
- Push/pull the fiber-optic connectors carefully to avoid the scratches on the interface.
- Clean optical connectors regularly with cleaning cotton swabs.

9. Warranty and Servicing

Details of warranty terms and conditions are given as below:

- Company warrants that OPM HOPM-PON-S 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 receiving by original customer.
- If any defectives happened due to quality problems of the product during the first month (from the date of goods receiving) of warranty period, Company undertakes at its own cost (including all the freight costs and import taxes) to repair or replace or return the faulty product.
- If any defectives happened due to quality problems of the product during the 2nd month to 18th month of warranty period, Company promises to repair or replace free of charge. But the freight cost and related taxes will be shared by both parties. Company will pay the shipping cost from customer side to Company and pay the import taxes in China. Customer will pay the shipping cost from Company to customer side and its local import taxes accordingly.
- 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.
- 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., Company will charge depend on the actual failure rating.