

High performance Optical Multimeter series

Users' Manual

Summary

1

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Optical Wave Multimeter series are controlled by a chip microprocessor and displayed by 2.8inch color LCD. OPM adopts 1mm large photosensitive surface detectorsingle, it can be better detect weak signals. It also supports SM/MM laser sources and 10mW high-power Visible Fault Location.

Optical Power Meter, Stable Laser Source, Visible Fault Location, RJ45 Sequence and flashlight are standard configuration. RJ45 Tracking, Laser Ranging and Bluetooth are optional. They are mainly used for continuous optical signal power measurement, optical fiber link loss test and optical fiber line on-off test. They are widely used in optical cable construction and maintenance, optical fiber communication, optical cable sensing, optical CATV and other fields.

Note:① the functions of the instrument are different due to different models;
②Due to the need of design improvement, the contents are subject to change without notice.

Ports

2

Left

- ①Charging indicator
- ②TypeC port
- ③RJ45 port
- ④LCD screen
- ⑤Sequence indicator
- ⑥Function keys

Bottom

- ①Remote module

Top

Top

- ①Dust cover
- ②Flashlight
- ③OPM port
- ④VFL port
- ⑤LS port

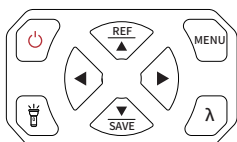
Right

- ①Laser Ranging port
(Optional)

Keys

3

Function keys description



- ⏻: ①Short press to power on, long press to power off
②After power on, short press to turn on or off the automatic shutdown function

- 🔦: ①Short press to turn the flashlight on or off
②Long press to turn on the red light, short press again to 1Hz, 2Hz flashing or turned off

REF/▲ (Up key)、▼/SAVE (Down key) : Toggle items to be set

◀ (Left key)、▶ (Right key) : Adjust the item's value

MENU: Toggle the different function modules

λ: Toggle the different wavelengths

Icons

4

According to different functions and specific operations, the corresponding icon will appear in the interface of this series of instruments. When an icon appears, it means that the corresponding function has been opened or the corresponding operation has been completed. The main icons of the instrument are as follows:

- ⏻ **Automatic shutdown**, in the set time without any operation, the instrument automatically shut down
- 📶 **Data transmission**, through the data line connected to the computer, copy the internal data of the instrument
- 📶 **Bluetooth**, turn on Bluetooth to connect to mobile phone
- 🕒 **12:30 Time**, display the local time

- 💾 **Save completed**, indicating that the test results have been saved
- 🔦 **Flashlight**, turn on the flashlight LED light
- 🔴 **VFL**, turn on the red light
- 🔋 **Battery**, indicating battery capacity

Optical Power Meter

5

OPM:It is used for power test and insertion loss test of all kinds of equipment and optoelectronic components. The test results can be saved and viewed.

REF/▲: Set the current power as the reference value.

▼/SAVE: Long press to save the current power, and the save icon will be displayed at the top for 1s, and then disappear; short press to view the saved results.

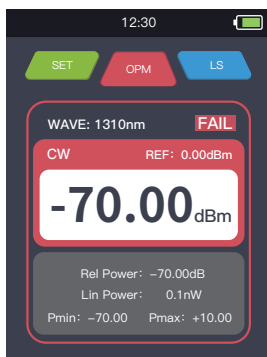
λ: Short press to switch wavelength, including custom wavelength. Long press to enter the user defined wavelength setting interface.

◀: Short press to clear the starting Pmax and Pmin values. The Pmax and Pmin values will be calculated from the short press of this key.

The units of Absolute Power, Relative Power and Linear Power are dBm, dB, mW/nW. The conversion relationship is as follows:

$$P_{\text{Abs Power}} = 10 \lg P_{\text{Lin Power}} / 1 \text{mW}$$

$$P_{\text{Rel Power}} = P_{\text{Abs Power}} - P_{\text{Ref Power}}$$



Optical Power Meter

6

User defined wavelength:

In OPM interface, long press λ to enter the user defined wavelength interface. Press the up and down keys to adjust the items, up to 50; Short press λ to enter or exit the edit mode, left and right key to adjust the number of digits, up and down key to adjust the value, the value range is 800nm~1700nm. Short press the MENU to delete the current wavelength. Long press λ to save and exit.

View the saved results:

Three records are displayed meanwhile. Press the left and right keys to switch the page, 0 ~ 2 in a page, 3 ~ 5 in a page, push back in turn. Long press λ to display "DEL ALL Y/N?" Press the left and right keys to select "Y" (yes) or "N" (no); Select "Y" and press λ to confirm the deletion. At this time, all the saved data will be deleted.

| CUSTOM WAVE | | | |
|-------------|--------|--|--|
| 1. | 1270nm | | |
| 2. | 1577nm | | |
| 3. | 1625nm | | |
| 4. | 890nm | | |
| : | : | | |

| TOTAL: 1000 | | | |
|-------------|------------------|---|-----------|
| NO.: 0 | 2021/03/18 14:18 | | |
| WAVE | 1270nm | P | -00.00dBm |
| CW | | | 1.00mW |
| NO.: 1 | 2021/03/18 14:15 | | |
| WAVE | 1310nm | P | +03.01dBm |
| CW | | | 2.00mW |
| NO.: 2 | 2021/03/18 14:12 | | |
| WAVE | 1577nm | P | +04.77dBm |
| CW | | | 3.00mW |

Optical Power Meter

7

OPM Settings: Long press MENU to enter or exit the setting mode.

THRESHOLD: If the power test result is less than the threshold, it is judged as "FAIL", otherwise it is judged as "PASS".

Resolution: power display resolution, 0.1, 0.01 and 0.001.

Refresh rate: refresh speed of power value display.

Dark current clear: select and press λ Key clear, remove circuit noise, test more accurate.

Calibration mode:

Press the left and right keys simultaneously for 1s to enter or exit the user calibration mode: press the up and down keys to adjust the calibration value in 0.5dB step, the adjustment range is -6dB ~ + 6dB, press λ to switch the wave. Press MENU to exit without saving.

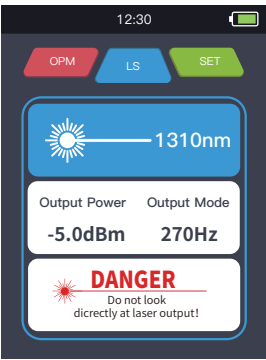
CAL MODE

0.75dB

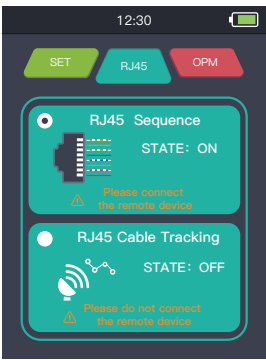
| OPM Settings | | | |
|---------------------|------------|--|--|
| 1.THRESHOLD | -50.000dBm | | |
| 2.WAVE ID | < OFF > | | |
| 3.RESOLUTION | < 0.01 > | | |
| 4.REFRESH | <200ms> | | |
| 5.CLEAR DARKCURRENT | | | |

Light source: used for telecommunication, CATV, LAN cable parameter test; The insertion loss, isolation and return loss of optical passive components are tested; Wavelength responsivity test of detector.

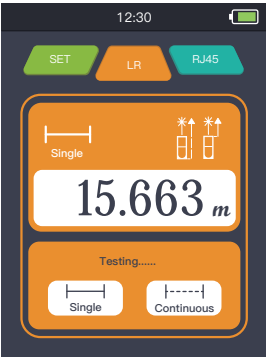
- λ: Switch the output wavelength. When the wavelength is selected, the laser source is turned on by default.
- ◀: Adjust the step to 0.1dB or 1dB.
- ▲/▼: Adjust the output power, the range is -5.0dBm to -11.0dBm.
- ▶: After the laser source is turned on, switch CW (continuous), modulation 270/330/1k/2kHz, ID, twins mode.
- ID: Used for wavelength identification with OPM ID function.
- TWINS: After turned on, the LS emits 1310&1550nm alternately, and the OPM automatically identifies and tests the power of 1310nm and 1550nm alternately.



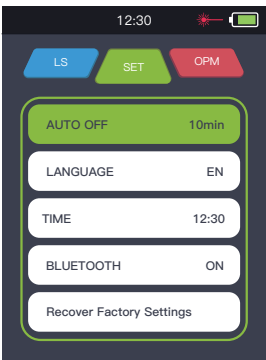
- RJ45 sequence:** When testing, please use the remote module at the bottom of the instrument.
- RJ45 Cable Tracking:** After this function is started, touch the tested cable with the cable finder, and hear the continuous "didi" sound, which is the target cable.
- This equipment can withstand voltage and prevent burning, and it can be used for line searching directly. Ethernet switches, routers and other weak current equipment with DC voltage less than 60V.
- ▲ / ▼: Switch between RJ45 sequence test and cable tracking test. After selection, the function is turned on by default.



- Laser Ranging:** The maximum test distance is 40 meters.
- Test Mode:**
 - Single: Stop after one test.
 - Continuous: Test the length every 1 second.
- Reference point:** Choose a different starting point for testing.
 - Starting from the left side of the instrument, the test results include the length of the instrument;
 - Taking the laser emission port of the instrument as the starting point.
- Up and down key:** switch reference point.
- Left and right key:** switch single test or continuous test.
- λ key:** Start measurement.



- System settings:** set the relevant information of this machine.
- AUTO OFF:** set the automatic shutdown time, optional 10 minutes / 30 minutes / 1 hour.
- Language:** Chinese, English optional.
- Time:** press the left and right buttons to switch the date and time, press the left and right buttons to move the setting item, and press the λ Enter or exit edit mode.
- Bluetooth:** turn Bluetooth on or off.
- Restore factory settings:** Press λ to pop up "Y/N?" Press the left and right keys to switch Y (yes) or N (no) and press λ again to confirm the operation.
- Up and down keys:** select the item to be set.
- Left and right buttons:** adjust the value of the set item.



| Optical Power Meter | | |
|----------------------|---|-------------|
| Wave range | 800~1700nm | 800~1700nm |
| Connector | Universal joint FC/SC/ST | |
| Detector type | InGaAs | InGaAs |
| Power range | -70~-+10dBm | -50~-+26dBm |
| Uncertainty | ±5% | |
| Standard wave | 850/980/1300/1310/ 1490/1550/1625/1650nm | |
| Custom wave | 50 | |
| Display resolution | Linear display: 0.1%, Logarithmic display: 0.001/0.01/0.1dBm | |
| Identified frequency | 270Hz, 330Hz, 1kHz, 2kHz | |
| Storage | 1000 items | |
| RJ45 Cable Sequence | | |
| Test range | ≤300m | |

| Laser Source | |
|-----------------------|---|
| Wavelength | 1310/1550±20nm |
| Output power | ≥-5dBm |
| Adjusting range | 0~6dB |
| Adjusting step | 0.1dB/1dB |
| Mode | CW/270/330/1k/2kHz |
| Stability | ±0.2dB/15min (After preheating for 15min) |
| Connector | FC/SC |
| Visual Fault Location | |
| Wavelength | 650±30nm |
| Output power | ≥10mW |
| Mode | CW/1Hz/2Hz |
| Connector | Universal joint FC/SC/ST |

| RJ45 Cable Tracking (optional) | |
|--------------------------------|------------------|
| Test Range | ≤300m |
| Tracking mode | Digital tracking |
| Live/line to line search | Support |
| Laser Ranging (optional) | |
| Wavelength | 650±40nm |
| Test Range | 0.05~40m |
| Accuracy | ±2.0mm |

| Others | |
|-----------------------|----------------------------------|
| Display | 2.8 inch color LCD 240×320 |
| Power Supply | Rechargeable Li-battery, 2200mAh |
| Wireless interface | Bluetooth (optional) |
| Auto shutdown time | 10min/30min/1 hour |
| Battery duration | ≥12h |
| Operating temperature | -10°C~+50°C |
| Storage temperature | -40°C~+70°C |
| Relative humidity | 0~95% No condensation |
| Weight | About 235g |
| Dimensions | 140mm×32mm×73mm |

- Clean connectors**
 - The optical output interfaces must be kept clean during use. When the test result is not accurate, first consider cleaning the connector.
 - When cleaning, be sure to turn off OPM、LS and VFL function. Wipe the connection end face with a swab wetted with alcohol.
 - At the same time, please cover the dust cap after using the instrument, and keep the dust-proof clean at the same time.
- Instrument screen cleaning**
 - When using, do not click on the LCD with sharp objects, or the derivative LCD screen may be damaged. When cleaning, clean the LCD screen with soft paper. Do not wipe the LCD screen with organic solvent, otherwise it may damage the LCD screen.