

UT695D Series Optical Multimeters User Manual

Preface

Thank you for purchasing the new UT695D series optical multimeters. In order to use these products safely and correctly, please read this manual thoroughly, especially the *Safety Warning* part.

After reading this manual, it is recommended to keep the manual at an easily accessible place, preferably close to the device, for future reference.

Limited Warranty and Liability

Uni-Trend guarantees that the product is free from any defect in material and workmanship within one year from the purchase date. This warranty does not apply to damages caused by accident, negligence, misuse, modification, contamination or improper handling. The dealer shall not be entitled to give any other warranty on behalf of Uni-Trend. If you need warranty service within the warranty period, please contact your seller directly.

Uni-Trend will not be responsible for any special, indirect, incidental or subsequent damage or loss caused by using this device.

1. Safety Warning

⚠ This manual contains the necessary operating instructions and equipment maintenance method. Please read each part of it carefully before using the equipment.

⚠ If the manual is not read or the operating instructions are not understood, the operation may cause inaccurate test results or damage the equipment, or even endanger personal safety.

⚠ This version of the manual is subject to change without prior notice.

Symbol Description:

| | |
|--|--|
| | Warning or Caution |
| | Complies with European Union standards |
| | Do not discard the battery as unsorted municipal waste. Please place it in a fixed battery recycling station for disposal. |
| | Please read the instructions before use. |

2. Introduction

UT695D series handheld mini optical multimeters integrate three functions of optical signal power measurement, optical fiber continuity detection and LAN cable sequence test. The products are beautiful and durable with ergonomic design. They have various functions, including IP54 dust and water prevention, flashlight, backlight display, automatic identification of light modulation frequency, auto power off, wavelength memory, user calibration, and ultra-wide optical power test range. The products are widely used in optical cable construction and maintenance, optical fiber communication, optical fiber sensing, optical CATV and other fields.

2.1 Models

| Model | UT695D-05 | UT695D-10 |
|-------------------------------|--|---|
| Name | OPTICAL MULTIMETER | OPTICAL MULTIMETER |
| Main function | Power meter + 5mW visual fault locator + LAN cable sequence test | Power meter + 10mW visual fault locator + LAN cable sequence test |
| Power of visual fault locator | >5mW | >10mW |

2.2 Features

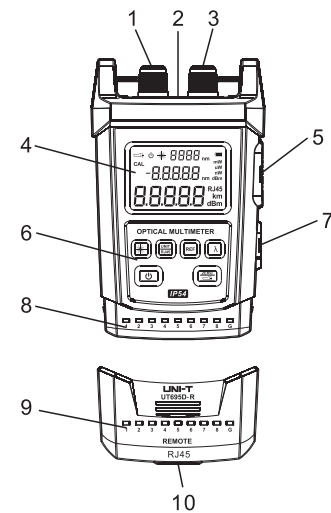
- Simultaneous display of linear mW and nonlinear dBm
- IP54 dust and water prevention (Host only)
- Visual fault locator function
- LAN cable sequence test
- Auto power off
- Powered by lithium battery

- Low battery indication
- Flashlight function
- User self-calibration function
- Wavelength memory function
- FC, SC and ST port
- Battery life ≥60 hours
- Conforms to EN61326-1:2013 and EN61326-2-2:2013 standards

3. Structure

3.1 Structure Diagram

| | |
|----|---|
| 1 | Visual fault locator interface |
| 2 | Flashlight |
| 3 | Optical power interface |
| 4 | LCD |
| 5 | RJ45 interface of the master device |
| 6 | Keypad |
| 7 | Mini USB charging port |
| 8 | Line sequence indicators of the master device |
| 9 | Line sequence indicators of the slave device |
| 10 | RJ45 interface of the slave device |



3.2 Key Description

| No. | Key | Description |
|-----|-----------|--|
| 1 | | Power key 1. Short press to power on, and long press (>1s) to power off. 2. Short press this key in the power on state to turn the auto power off function on or off. |
| 2 | | Short press to switch the status of the visual fault locator function (OFF → ON → flash at 1Hz → OFF cycle by default). |
| 3 | | Short press to turn the flashlight on or off. Long press to automatically zero the optical power meter (for clearing signal noise like dark current). |
| 4 | | Short press to change the display unit (dBm, dB, μW) and the test data will be displayed with the corresponding result. Long press for 2s to turn the LAN cable sequence test mode on or off. When this mode is on, the optical power meter function is off. |
| 5 | | Eight calibrated wavelengths (850nm, 980nm, 1300nm, 1310nm, 1490nm, 1550nm, 1625nm and 1650nm) can be selected by this key. |
| 6 | | Short press to save the current test result as a reference value. |
| 7 | + | Self-calibration mode: Press + simultaneously (press again to exit the calibration mode) to enter the calibration mode. At this time, the character "CAL" is displayed on the LCD. Press to add 0.05dB and to subtract 0.05dB at a time. This is used to calibrate the measurement error. After adjusting, press the power key to save the calibration data. |
| 8 | + | Factory reset: Press + simultaneously to restore factory settings. |
| 9 | | The backlight is turned on by default, and it will automatically turn off after 5 minute of no operation. Press any key to turn the backlight on again. |

4. Specifications

| | | |
|-------------------------|--|--|
| Optical power meter | Wavelength range | 800nm~1700nm |
| | Measurement range | -70dBm~+3dBm |
| | Uncertainty | ±5% |
| | Display resolution | Linear: 0.1%, logarithmic: 0.01dBm |
| | Connector | Universal connector FC/SC/ST |
| | Detector type | InGaAs |
| Visual fault locator | Wavelength | 650nm±10nm |
| | Power | UT695D-10: 10mW (measurable optical fiber length: 8~10km) |
| | | UT695D-05: 5mW (measurable optical fiber length: 2~5km) |
| Connector | Universal connector FC/SC/ST | |
| LAN cable sequence test | Line sequence measurement | |
| Flashlight | Flashlight function | |
| Power supply | 1050mAh polymer lithium battery | |
| Low battery indication | Low battery indication at 3.3V, auto power off at 3V | |
| Working current | <30mA when the visual fault locator function is off | |
| | <130mA when the visual fault locator function is on | |
| Dimensions | 136mm×71mm×41mm | |
| Weight | 175g | |
| Operating environment | Operating temperature: 0°C~40°C | |
| | Storage temperature: -10°C~50°C | |
| | Operating humidity: 20~75% RH(N.C) | |
| | Storage humidity: 10~90% RH(N.C) | |
| | Altitude: ≤2000m | |
| IP rating | IP54 (Host only) | |
| Certification | CE (EMC EN61326-1:2013, EN61326-2-2:2013) | |

Remarks:

- 1) Wavelength range: the calibrated operating wavelength range from 800nm to 1700nm, in which the optical power meter can work under specified index.
- 2) Measurement range: the range in which the maximum power can be measured according to the specified index.
- 3) Uncertainty: the error between the measurement results of a given optical power and a standard optical power.
- 4) The measurable optical fiber length is for reference.

5. Operating Instructions


5.1 Measurement of Absolute and Relative Power

5.1.1 Absolute Power Measurement

Set the test wavelength and access the test optical signal. Then the screen will display the measured linear value (in mw, nw, uw) and nonlinear value (in dBm) of the absolute optical power.

5.1.2 Relative Power (Loss) Measurement

Relative power measurement is mainly used to measure insertion loss or fiber link loss.


- a) Use a standard test jumper to connect the output port of a light source to the optical power interface of the optical multimeter.
- b) Set the test wavelength and access the test optical signal. Then the screen will display the measured linear value (in mw, nw, uw) and nonlinear value (in dBm) of the absolute optical power.
- c) Press  and the measured absolute optical power will be saved as the reference power value and displayed as xx.xx dBm on the second line of the screen.
- d) Connect the optical fiber under test to the light source and the optical multimeter. The difference between the current optical power value and the reference power value will be calculated and displayed as y.yy dB on the third line of the screen, which is approximately the insertion loss of the optical fiber under test.

Note:


- ① P (Reference power value) (dBm) = p (Light source output power) (dBm) – L (Insertion loss of the standard test jumper) (dB)
- ② L (Insertion loss of the optical fiber under test) (dB) = [P (reference power value) (dBm) – p (current power value) (dBm)] – L (Insertion loss of the standard test jumper) (dB)

The optical multimeter can automatically identify the frequency of 0Hz, 270Hz, 1000Hz and 2000Hz emitted by the light source.

5.2 Visual Fault Locator Function Test

- 1) Open the left dust cap and insert the optical fiber under test into the visual fault locator interface.
- 2) Press  in the power on state, and select the continuous red light or pulse mode to test.
- 3) After the test, pull out the optical fiber, cover the dust cap, and then turn off the optical multimeter.

5.3 LAN Cable Sequence Test

- 1) Remove the slave device from the buckle of the master device.
- 2) Connect one end of the LAN cable under test to the RJ45 interface of the master device and the other end to that of the slave device.
- 3) Power on the optical multimeter, long press  for 2s to turn the LAN cable sequence test mode on and "RJ45" will be displayed on the LCD. If the corresponding line sequence indicators (1~G) on the master and slave devices are lit in turn, the line sequence of the measured LAN cable is correct. Otherwise, the line sequence is incorrect. The status (open circuit, short circuit, cross circuit, etc.) of the LAN cable can be judged by the line sequence indicators.

6. Self-calibration and Factory Reset

Please refer to **3.2 Key Description** (7 and 8).

7. Standard Configuration

| No. | Article | Qty |
|-----|--------------------|------|
| 1 | Optical multimeter | 1 pc |
| 2 | User manual | 1 pc |
| 3 | USB charging cable | 1 pc |

8. Common Troubleshooting

| Symptom | Cause | Solution |
|---|--|--|
| LCD displays weakly | Low battery | Replace the battery |
| No display on booting | Low battery or other causes | Reboot or replace the battery |
| LCD displays abnormal data | The connector is faulty, dirty or locked | Reconnect the connector and clean the sensor |
| Output power of the red light is insufficient | The connector is faulty or dirty | Reconnect the connector and clean the laser head |

9. Daily Maintenance

- Please keep the end face of the sensor clean, free from grease and contamination. Do not use unclean or non-standard adapter connectors. Do not insert the end face with poor polishing.
- Please stick to a kind of adapter as far as possible.
- Once the equipment is not in use, please cover the dust caps immediately.
- Please insert and remove the optical adapter connector carefully to avoid scratches on the port.
- Please wipe the sensor surface gently and regularly with a special cleaning swab in the circumferential direction.

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