TENMARS

UVC Light Meter
UV A/B/C Light Meter
TM-218/TM-228
User's Manual

HB2TM2180000

Contents:

1. Application

- Quickly determine the UV intensity of the factory's UV products
- UVC germicidal lamp intensity and aging measurement.
- UV curing.(TM-228)
- UVA lamp intensity and aging measurement.(TM-228)

2. Accessories

1	Meter
1	UV sensor
1	User's Manua
1	9V alkaline battery
1	Carrying case

3. Safety Precaution

	Caution! Please refer to this manual. Improper use may damage the meter and its components.
	Complies with European Directive.

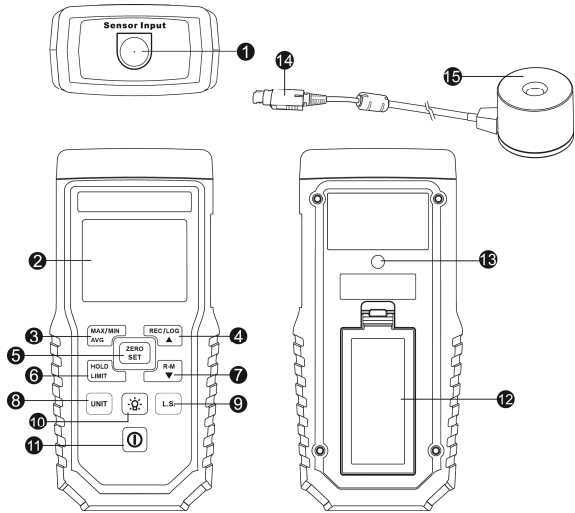
- Do not operate in environments with flammable gas or humid environments.
- Operating altitude: up to 2000M.
- Operating environment: Indoor use; Pollution degree 2.
- Clean with soft cloth when dirty, such as glasses cloth. Do not clean with chemicals and other solvents.

EMC: EN61326-1:CISPR 11:Group 1, Class B

- ✧ **Class B** – Equipment for use in all establishments other than domestic.
- ✧ **Group 1** – RF energy generated is needed for internal functioning.

4. Instrument Description

4.1 Feature and function

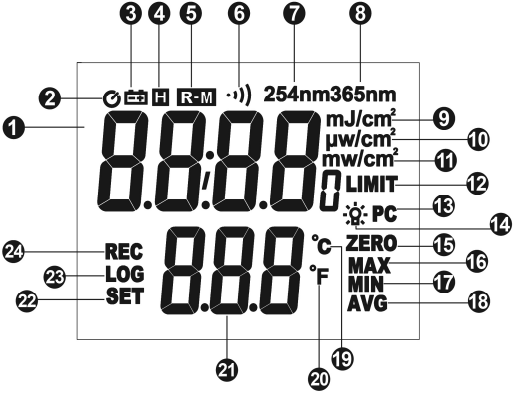


1. Sensor connecting jack
2. LCD display
3. Button for Maximum value /Minimum value / Average value
4. Button for Manual record data / Long-time record data /Up
5. Button for Reset / Setting
6. Button for Readings lock /Comparison
7. Button for Viewing record / Down
8. Unit switch button (TM-228)
9. Button for Selecting measured wavelength

(TM-228)

10. Backlight button
11. Power switch button
12. battery cover
13. Tripod nut
14. Sensor connecting plug
15. Sensing probe

4.2 Indication on the LCD display



1. Primary display
2. Auto power-off
3. Battery low
4. Readings lock
5. Query memory data
6. Buzzer
7.8. Calibration wavelength
9.10.11. Unit
12. Alarm
13. Connection to computer via USB

14. Backlight function
15. Zeroing
16. Maximum value locking
17. Minimum value locking
18. Average value
19.20. Temperature unit
21. Secondary display
22. Setting
23. Auto logging
24. Manual recording

5. Operation

1. Firstly, insert the sensor connecting plug into the sensor connecting jack with the direction indicated on the meter's body (if not connected properly, the LCD will display Err when power-on, as shown in the figure below).

2. Press ⏻ to turn the power-on or off
3. When close to the front of the UV source and the readings not zeroed, press ZERO SET to zero.
4. Align the sensor to the UV source to be tested, and read the measured value on the LCD.

5.1 ZERO SET ZERO

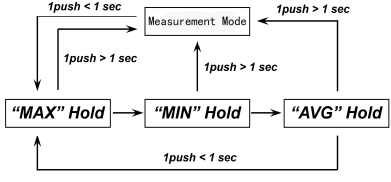
Before the light receiver close to the UV measurement and the previous readings displayed on the LCD, click ZERO SET to clear off.

5.2 HOLD LIMIT Data Hold:

Click HOLD LIMIT to enable or disable the readings lock.

5.3 MAX/MIN AVG The Max./Min. Values Hold:

Click MAX/MIN AVG to activate the Min./Max./Avg. function, and then click MAX/MIN AVG repeatedly, the max., min. and avg. value will appear in turn; press and hold MAX/MIN AVG to quit.
The max., min. and ave. values of all previous measurements can be locked and updated.



5.4 REC/LOG ▲ Manual Record for One Log：

Click REC/LOG ▲ to store one log., the LCD will display "REC" symbol and the number of recorded logs simultaneously; for example: 10 logs will increase by 1 per click and up to 200 logs, and “FuLL” symbol appears if exceeding.

5.5 REC/LOG Auto Record

Pressed and held REC/LOG for more than 2 seconds, the LCD displays **LOG** and auto-record starts. The record can be set according to the storage interval, up to 200 logs.

Again, press REC/LOG to quit the auto recording.

5.6 R-M Read the record data

Click R-M to enter the reading mode for recorded value, **R-M** symbol appears on the LCD simultaneously. Press REC/LOG or R-M to read the logs. Press and hold R-M for more than 2 seconds to quit.

5.7 Backlight:

Press ☼ to turn the backlight on or off.
The backlight mode turns off automatically after 15 seconds.

5.8 ⏻ Disable or Enable Auto Power-off

When power-on, press and hold ⏻ for more than 2 seconds to disable or enable auto power-off, followed by the automatic power-off symbol ↻ disappears or displays accordingly.

5.9 UNIT Intensity/Integrator switch (TM-228)

Click UNIT to select the measurement mode m J/cm^2 or uw/cm^2 (TM-228).

5.10 L.S. 254nm or 365nm select (TM-228)

Click L.S. to select the calibration value of 254nm or 365nm for measurement.

5.11 CLr Reset to factory settings

At power-off status, press ☼ and then press ⏻, the LCD displays the boot screen and followed by CLr for 1 second, the factory settings restored and the memory cleared.

5.12 ZERO SET Settings: SET1~SET9

Press and hold ZERO SET for more than 2 seconds to enter "**SET**", while "**SET**" flashes

Click ZERO SET repeatedly to enter SET1~SET9 sequentially

※PS: Each setting will be stored instantly. If the setting period exceeds 15 seconds, it will be back to the measurement mode.

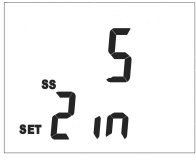
SET.1. Set the buzzer to turn on or off the beep.

1. At the moment, LCD displays "**SET1**" and . **As shown in the figure below:**

2. Press REC/LOG ▲ or R-M ▼ to select ON (ON) or OFF.
3. Again, click ZERO SET to enter "**SET2**".

SET.2. Auto Storage Interval Setting

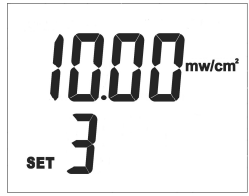
1. Followed by "**SET1**", the LCD displays " **SET2**" and IN sequentially, **as shown in the figure below:**



2. Press REC/LOG ▲ or R-M ▼ to set the storage interval by 5 sec, 10 sec, 20 sec, 30 sec, 60 sec, 5 min, 10 min, 20 min, 30 min, and 60 min.
3. Again, click ZERO SET to enter "**SET3**".

SET.3. Alarm setting (LIMIT)

1. Followed by "**SET2**", the LCD displays "**SET3**" LIMIT, **as shown in the figure below:**



2. Press HOLD LIMIT to select mW/cm² or µW/cm².
3. Press ☼ to move the digit and select while the digit to be selected will flash.
4. Press REC/LOG ▲ or R-M ▼ to modify the settings. The default value of mW/cm² is 10.00mW/cm² and that of µW/cm² is 70µW/cm². Press HOLD LIMIT to switch between 10.00mw/cm² and 70uw/cm², press ☼ to select the digit to be selected.
5. Again, click ZERO SET to enter "**SET4**".

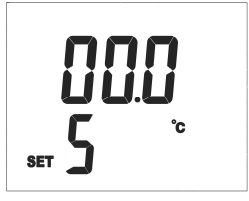
SET.4. Memory Clear

1. Followed by "**SET3**", the LCD displays "**SET4**" and the symbol clr, when clr flashes. **As shown in the figure below:**

2. Click [☼], while dFL flashes, click [☼] again, dEL flashes for 4 times, and the memory is cleared.
3. Again, click [ZERO SET] to enter **SET5**.

SET.5. Temperature Calibration

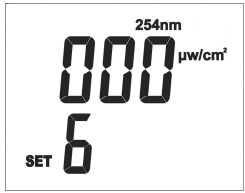
1. Followed by "**SET4**", the LCD displays "**SET5**" and the symbol °C or °F. **As shown in the figure below:**



2. If to increase or decrease the displayed temperature value directly, press [☼] to move the digit, while the digit to be selected flashes.
3. Press [REC/LOG ▲] or [R-M ▼] to modify the value.
4. Again, click [ZERO SET] to enter **SET6**.

SET.6. UV Light 254nm Calibration

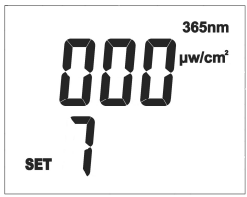
1. Followed by "**SET5**" , the LCD displays "**SET6**" and the symbol 254nm. **As shown in the figure below:**



2. If to increase or decrease the value displayed at the 254nm calibration point directly, press ☼ to move the digit, while the digit to be selected flashes.
3. Press REC/LOG ▲ or R-M ▼ to modify the value.
4. Again, click ZERO SET to enter " **SET7**"

SET.7. UV Light 365nm Calibration(TM-228)

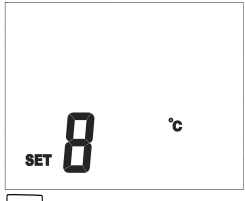
1. Followed by "**SET6**" , the LCD displays "**SET7**" and the symbol 365nm. **As shown in the figure below:**



1. If to increase or decrease the value displayed at the 365nm calibration point directly, press [☼] to move the digit, while the digit to be selected flashes.
2. Press [REC/LOG ▲] or [R-M ▼] to modify the value.
3. Again, click [ZERO SET] to enter "**SET8**".

SET.8. Switching °C°F

Followed by "**SET7**", the LCD displays "**SET8**" and the symbol °C or °F (the default is °C). As shown in the figure below:

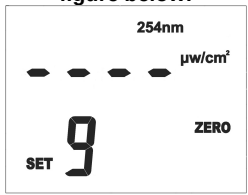


1. Click [R-M ▼] to switch between °C and °F,
2. Again, click [ZERO SET] to enter "**SET9**".

SET.9. Replace the sensor setting with a new one

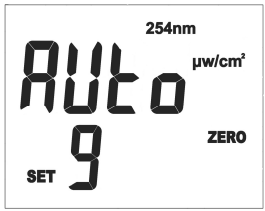
1. Followed by "**SET8**", the LCD displays "**SET9**" , the symbols 254nm, ---- , and ZERO, **as shown in the**

figure below:



2. Press [☼], the LCD displays AUTO.
3. Again, press [☼] button again, the LCD , the LCD displays the word AUTO with flashing for 4 times, the sensor is calibrated automatically. (Require to execute one time only when replacing the sensor)

※As shown in the figure below:



4. Again, click [ZERO SET] to quit the settings status.

6. General Specifications

- 4-digit LCD display, the max. value is up to 9999.
- UV intensity: 0~9999uw/cm^2, 10.00~40.00mw/cm^2.
- Locking for Max./Min./Ave. value
- Auto-switch band and locking data
- Display the UV intensity and temperature simultaneously
- Enable and disable auto-power-off
- Alarm setting LIMIT: The beep of auxiliary judgment for pass/fail from factory QC
- Able to measure cumulative UV energy from 0 up to 99990m J/cm^2 (TM-228).
- 200 logs for stored data with auto logging/manual record
- Sampling time: per 2 seconds.
- Battery low indicator
- Weight: 320g (battery included)
- Power: 9V(NEDA 1604 IEC 6F22 JIS 006P)x 1
- Battery life: up to 100 hours (without alarm)
- Operation temperature and humidity: 0°C to +50°C,<80%RH (No condensation)
- Storage temperature and humidity: 0°C to +60°C,<70%RH (No condensation)
- Dimensions:

Meter	143(L) x 65(W) x 37.5(H) mm
Sensor	39.5ϕ x 30.5(H) mm

- The line length of the light receiver: approximate 100 cm.

7. Electrical Specifications

Accuracy is indicated as [% reading + digital] Environmental conditions at 23°C ± 5°C with RH < 80%.

UV Irradiance Measurement Range

Model	TM-218(UVC)	TM-228(UVA/B/C)
Spectrum Range	220nm～280nm	230nm～395nm
Calibration Point	254nm	254nm/365nm
Range	1μW/cm²～40.00m W/cm²	
Accuracy	±4%+1digit	
Resolution	1μW/cm², 0.01 m W/cm²	

UV-Integrator Measurement Range:(TM-228 Only)

Range	0-99990 mJ/cm^2(9999 x10=99990)
Accuracy	±4%+1digit
Resolution	10 mJ/cm^2

Temprature:

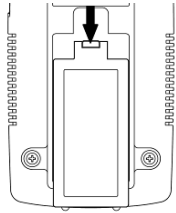
Range	0.0°C～70.0°C(32.0°F～158.0°F)
Accuracy	±1.0°C(±2.0°F)
Resolution	0.1°C/0.1°F

8. Maintenance or Repair

1. [-+] appearing on the LCD display indicates the battery low. Please replace the battery immediately to ensure the accuracy.
2. Please use a soft cloth, such as glasses cloth, to wipe the meter for the dirt and not use chemical solvents.
3. If not using for a long time, please remove the battery to prevent the leakage of battery fluid which may corrode the internal components.
4. In case of malfunction, the meter can only be sent to the authorized service suppliers or back to the original factory for maintenance.

9. Battery Replacement

1. Turn off the power.
2. Open the battery cover at the back of the meter, remove the batteries.
3. Please insert new 9V batteries according to the polarities.
4. Put the battery cover back in place.

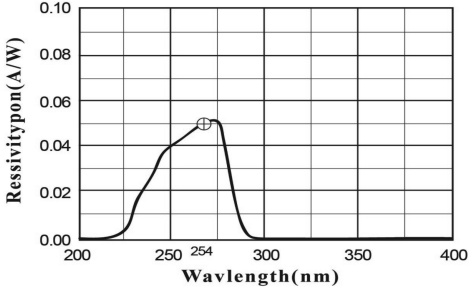


Warning

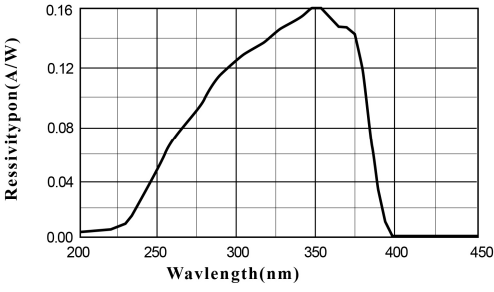
As battery low icon [-+] appears on the LCD display, please replace the battery immediately by the correct steps.

10. Relative Spectral (Sensitivity)

TM-218



TM-228



11. Product Disposal

Note: This symbol indicates that the meter and its accessories must be separated and processed properly.

TENMARS

Professional Electrical and Environment Test & Measurement Instruments:

LED light meter, Temperature & Humidity meter,Infrared Thermometer, Sound level meter, Light meter, EMF meter, UV Light meter, RF meter, Hot wire Anemometer, Co meter,Anemometer, Lan cable tester, Co2 meter, Solar power meter, Radiation meter, Clamp meter, Multimeter, Phase Rotation test, Digital Insulation tester

Our products of high quality are selling well all over the world

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