

MTTS 4METER Lightmeter Owner's Manual

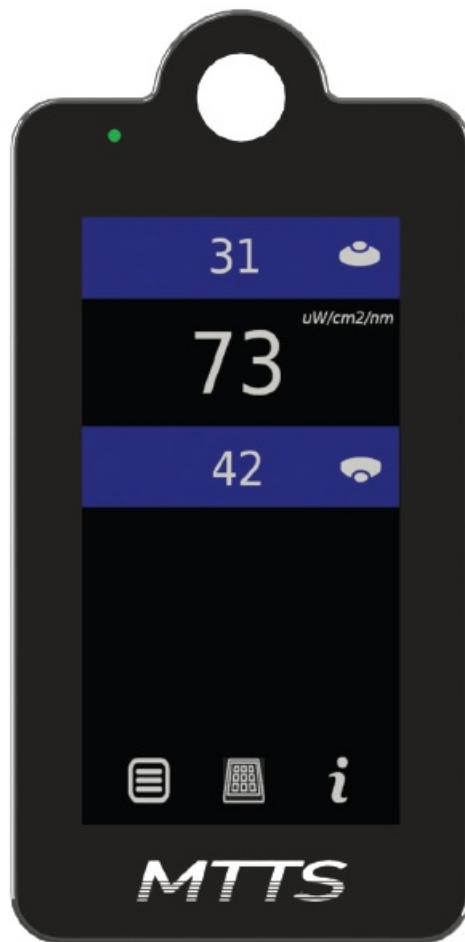
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MTTS

MTTS 4METER Lightmeter



Product Information

The Meter by 4METER is an instrument used to determine the actual level of sources required for effective medical therapy. It comes with a light irradiance sensor that has a spectral response chosen to match the wavelength used for jaundice treatment. The device also has a two-sided measurement for convenient measurement of double-sided phototherapy devices such as the MTTS Firefly.

Key Functions

- **Light Irradiance Sensor**
 - Spectral response chose to match the wavelength used for jaundice treatment.
 - Two-sided measurement for convenient measurement of double-sided phototherapy devices such as the MTTS Firefly.
- **Displays/Indicators**
 - Touch screen liquid-crystal display (LCD).
 - Alarms: low battery, system failure, out of measurement.
 - Results 'freeze'.
 - Bandwidth estimator.
 - Absolute and relative irradiance measurement.
 - Multi-point mode.

Dimensions and Weight:

- **Height:** 148 mm

- **Width:** 73 mm
- **Depth:** 17 mm
- **Weight:** 200 g

Performance Specifications:

- **Application:** LED and blue fluorescent phototherapy light sources; using the lightmeter for halogen phototherapy results in a minor but not considerable error; various gas sources used for respiratory therapy.
- **Light Sensor Spectral Response:** 400-520nm
- **Measurement Range:** +/- 3% of reading
- Resolution Cosine Characteristics
- **Accuracy:**
 - **Oxygen Sensor**
 - **FiO2:** 21-100%
 - **Flow Sensor**
 - **Flow:** 0-120 lpm, bi-directional
 - **Manometer**
 - Pressure Pressure
 - **High-Pressure Sen**
 - **Temperature:** 5-60oC
 - **Humidity:** 0-100% RH

Battery Specification:

- **Type:** 2xAAA 1.5V Alkaline, Non-rechargeable
- **Lifetime:** Up to 120h operating time

Environmental Specification:

- Operation Temperature
- Storage Temperature
- Operation Atmospheric Pressure
- Storage Atmospheric Pressure
- Operation Humidity
- Storage Humidity
- Sealing
- **Drop/Shock Standards:**
 - ISO 13485:2016
 - IEC 61010-1:2010
 - IEC 61326-1:2012

Ordering Information and Servicing:

For ordering or servicing information, please contact MTTS at info@mtts-asia.com or visit their website at <https://mtts-asia.com>. Calibration parts are required every 2 years after the delivery date, and no customer-serviceable parts are available. Please return the device to MTTS for calibration or service.

Product Usage Instructions

1. Turn on the Meter by pressing the power button.
2. Choose the appropriate measurement mode from the touchscreen display.
3. Position the light irradiance sensor towards the source to be measured.
4. Read the results displayed on the LCD screen.
5. If an alarm sounds, check the battery level or system failure and take appropriate action.
6. To freeze the results, press the 'freeze' button on the touch screen display.
7. When finished, turn off the Meter by pressing the power button again.

Note:

Calibration parts are required every 2 years after the delivery date. Please return the device to MTTs for calibration or service if needed.

Parts

An instrument for determination of the actual level of sources required for effective medical therapy.



Key Functions

1. Blue light irradiance measurement:

- verify irradiance of phototherapy devices during preventive maintenance and normal use

2. O₂ measurement:

- verify the purity of O₂ sources (tank, generator, wall) during preventive maintenance
- verify the mechanical blender and another blender during preventive maintenance
- leak search inside the device and along external tubes during repair and equipment inspection

3. Pressure measurement:

- verify pressure at Y connector during use

4. Flow measurement:

- verify flow output of CPAP, Hi-flow, and ventilators during preventive maintenance

5. High-pressure measurement:

- verify hospital gas sources and check them for fluctuations

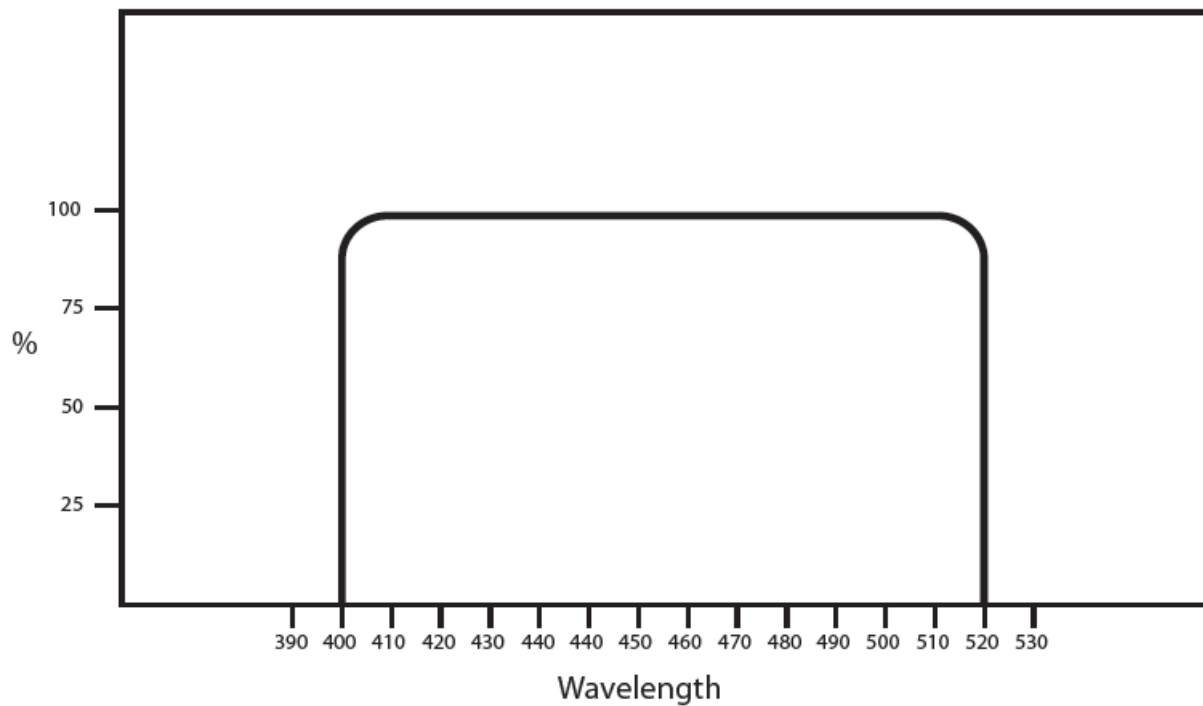
6. Temperature and humidity measurement:

- verify the temperature uniformity of the radiant warmers
- check the temperature and humidity inside the incubators

Light Irradiance Sensor

- Spectral response chosen to match the wavelength used for jaundice treatment
- Two-sided measurement for convenient measurement of double-sided phototherapy devices such as the MTTs Firefly

Light Sensor Spectral Response



Displays/Indicators

- touch screen liquid-crystal display (LCD)
- **alarms:** low battery, system failure, out of measurement
- results 'freeze'
- bandwidth estimator
- absolute and relative irradiance measurement
- multi-point mode

Specifications

Dimensions and Weight

- **Height:** 148 mm
- **Width:** 73 mm
- **Depth:** 17 mm
- **Weight:** 200 g

Performance Specifications

Application

- LED and blue fluorescent phototherapy light sources; using the lightmeter for halogen phototherapy results in a minor but not considerable error
- Various gas sources used for respiratory therapy

LIGHT SENSOR

- Spectral response 400-520nm
- Measurement range
 - single side 0.1 – 150.0 $\mu\text{W}/\text{cm}^2/\text{nm}$
 - double side 0.1 – 300.0 $\mu\text{W}/\text{cm}^2/\text{nm}$
- Resolution 0.1 $\mu\text{W}/\text{cm}^2/\text{nm}$
- Cosine characteristics
 - $\pm 2\%$ @ 30-degree angle
 - $\pm 7\%$ @ 60-degree angle
 - $\pm 25\%$ @ 80-degree angle
- Accuracy +/- 3% of reading
- OXYGEN SENSOR
 - FiO_2 21-100%
- FLOW SENSOR
 - flow 0-120 lpm, bi-directional
- MANOMETER
 - pressure 0-100 cm H₂O
- HIGH-PRESSURE SEN.
 - pressure ± 100 psi
- TEMP/HUMIDITY SEN.
 - temperature humidity
 - 5-60°C
 - 0-100% RH

Battery Specification

- Type 2xAAA 1.5V Alkaline, Non-rechargeable
- Lifetime Up to 120h operating time

Environmental Specification

- Operation Temperature 10°C to 40°C
- Storage Temperature 0°C to 50°C
- Operation Atmospheric Pressure 70 – 106 kPa
- Storage Atmospheric Pressure 70 – 106 kPa
- Operation Humidity 30 – 90% RH non-condensing
- Storage Humidity 5 – 90% RH non-condensing
- Sealing IP-54
- Drop/Shock 1m onto a hard surface, meets or exceeds IEC 60068-2-32 (only with the protective case)

Standards

- ISO 13485:2016
- IEC 61010-1:2010
- IEC 61326-1:2012

Ordering Information and Servicing

ORDERING INFO/ITEM ORDER NO


- Lightmeter LM-800 Main Unit
- Oxygen meter LM-800-020
- Flow meter LM-800-030
- Manometer LM-800-040
- High-pressure meter LM-800-050
- Temperature/Humidity meter LM-800-060
- Rechargeable batteries and charger LM-800-070
- Storage case LM-800-080
- Calibration
 - Required Every 2 years after delivery date; return to MTTS for calibration
- Parts No customer serviceable parts; return to MTTS for service

MEDICAL TECHNOLOGY TRANSFER AND SERVICES Co., LTD
ISO 13485: 2016 Certified Company

For more information or to place an order please contact us at:

- info@mtts-asia.com
- <https://mtts-asia.com>
- No 26, Lane 41 An Duong Vuong Street Phu Thuong Ward, Tay Ho District Hanoi, Vietnam.
- +84 24 37 666 521

Documents / Resources

	<p>MTTS 4METER Lightmeter [pdf] Owner's Manual 4METER Lightmeter, 4METER, Lightmeter</p>
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References

-  [LifeKit by MTTS](#)

