

ILT750-BILI

Blue Light Meter

Operation Manual

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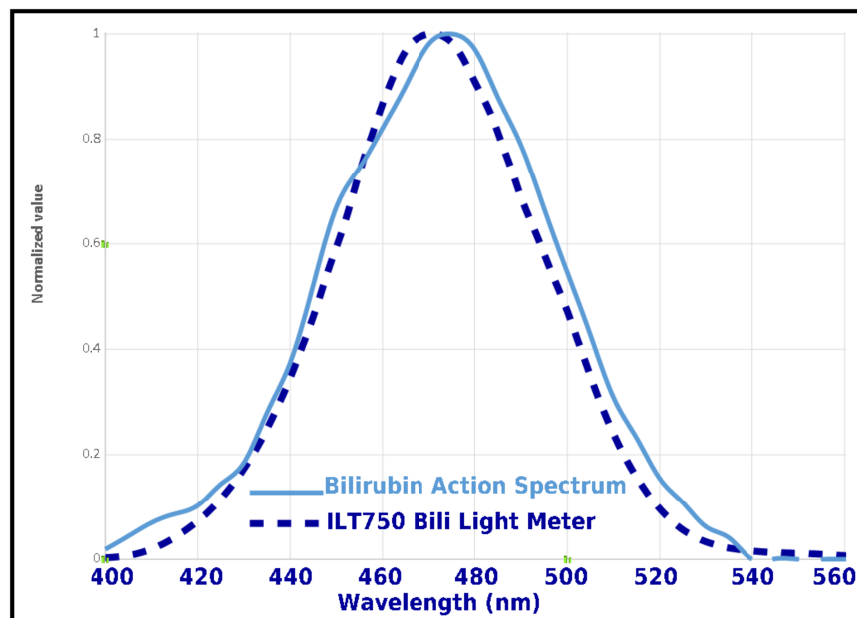
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The ILT750-BILI Light Meter is registered as a class 1 medical device and was designed, manufactured and calibrated to our highest standards, including, ISO13485, ISO9001, ISO170245 and NIST Traceability.

1. INTRODUCTION

The ILT750-BILI is a hand held bili (blue light) light meter designed to measure both irradiance in watts per square centimeter (W/cm^2) and band irradiance in watts per square centimeter per nanometer ($\text{W}/\text{cm}^2/\text{nm}$). It can be used to measure all types of neonatal phototherapy blue light sources including LED light sources, illuminated pads and blankets, and traditional lamp based lighting systems. The system was designed to closely match the Bilirubin action spectrum and measures the spectral range of 420 to 520 nm.



The ILT750 includes 2 AA batteries, a storage case, and a NIST traceable/ISO17025 accredited calibration with certificate.

2. BUTTON FEATURES

The ILT750 Bili Light Meter has a four button membrane front panel with that allows numerous processes.



1 POWER ON / OFF (0.5 SEC)

Long press (On) and long press (Off): Turn device on or off.



2 HOLD / ZERO (4SEC)

HOLD: Short press - Freezes the values shown on the display. "HOLD" will be displayed in the upper left of the screen when in hold mode. Short press again to turn off HOLD. The display will become active again.

ZERO: Takes a reading and subtracts that value from all future readings. ZERO is activated with a long press(4 seconds). A "Z" will appear in the lower left of the screen to indicate the meter has had a user zero applied. **NOTE:** The meter will revert back to factory zero each time it is shut off.

2A. Ambient ZERO: Place the sensor in the measurement location with the test source off. Wait 2-3 seconds for the system to take a measurement of the ambient light levels. Perform a long press (4 seconds) to record an Ambient Zero. The meter will subtract the ambient light reading from all readings taken until a new zero is performed or the meter is turned off. Turn the lamp on and measure only the light supplied from the test lamp.

2B. Dark ZERO: The ILT750 comes with the factory zero setting pre-programmed and does not require a user dark. To perform a dark zero, cover the sensor with an opaque object, wait 2-3 seconds and long press the zero button for 4 sec.



3 UNITS

Short press to toggle units and calibration factors.

Though $\mu\text{W}/\text{cm}^2/\text{nm}$ is becoming a more predominantly used set of units for testing blue lights used to reduce bilirubin levels in the blood, there are still many sources and light meters that offer the units of W/cm^2 . Rather than requiring 2 sensors or 2 calibrations, The ILT750 can switch between $\text{W}/\text{cm}^2/\text{nm}$ and W/cm^2 with the touch of a button. The units will be shown on the display along with the numerical values. The ILT750 will auto-range and the prefix will update to indicate the correct light level(p, n, u, m). For example, values less than 1 $\mu\text{W}/\text{cm}^2/\text{nm}$ will be shown as nW/cm²/nm and values higher than 999 $\mu\text{W}/\text{cm}^2/\text{nm}$ will be shown as mW/cm²/nm.



4 GRAPH MODE

Short press to cycle through the graphing functions.

The Graph button has four functions that cycle **forward** each time button 4 is pressed. Start, Stop, Stats, Exit. It is not possible to return to a previous screen.

GRAPH: Changes the display to graphing mode and begins plotting the results and temporarily storing the readings for final data analysis.

STOP: Stops graphing and holds the display showing the last 60 results(30 seconds)

DATA: Shows the data analysis from when Graph was first pressed, including Min, Max, and Average.

EXIT: Returns the display to numerical /non graphing mode and clears the previous graph data from the display.

3. TAKING A MEASUREMENT

The ILT750 sensor is calibrated with the entire surface of the domed diffuser over-filled with light. The calibration reference plane is the front surface of the housing. When taking an irradiance or band irradiance measurement, the same conditions should be applied. The light source to be measured must fully cover the sensor. The sensor should be placed so that the front surface is at the treatment location and perpendicular to the source.

The ILT750 offers simple operation. Simply turn on the lamp, press and hold button 1 to turn on the meter, place the sensor in the measurement location and view the results on the display.

3A Measurement Overview:

Long Press button 1 until the meter turns on.

Change the units as needed by pressing button 3.

Turn on the lamp and let it warm up 2 minutes (or longer).

Place the sensor in the measurement location with the front surface of the sensor perpendicular to the lamp, at the same distance as the patient will be placed.

The meter will begin providing a readout on the display, updating every ½ second.

Press button 4 to graph and analyze the results as needed.

Long press button 1 to shut off your device, or wait 5 minutes and the meter will shut off automatically to conserve battery life.

(Note: the ILT750 meter is a lamp/light source diagnostic tool. The meter and sensor head are not intended to be used while a patient is undergoing treatment or to come in contact with the patient.)

4. GRAPHING

The graph mode is designed to test the uniformity or stability of a light's output for up to 30 seconds.

The bar graph updates every 1/2 second offering an easy to evaluate, visual response to changes in intensity over time. The graph can display up to 60 readings (30 seconds) and will begin to scroll forward showing only the most current 60 readings when used for longer durations.

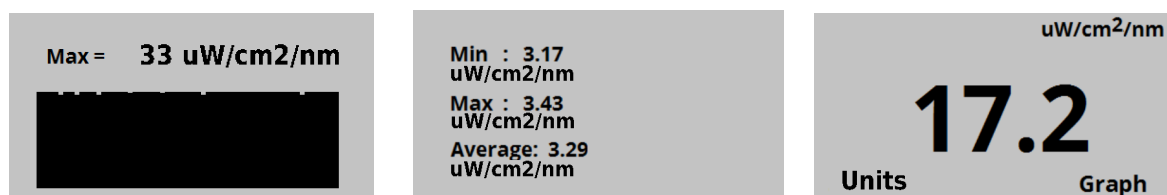
If the sensor is moved slowly across a bili-pad/blanket or under a lamp, the ILT750 will map the *uniformity* of the output over the target area. If the sensor is held stationary, graph mode can verify the *stability* of the lamps output.

To complete a measurement while graphing, press the 4 button. This will freeze/hold the last 60 readings on the display for review.

Press button 4 a third time to access the Data Analysis Display. The graph will be replaced by the graph-analysis window and provide a readout of the Min, Max and Average readings.

To exit the graph mode, Press button 4 a third time. This concludes the graph measurement and returns the meter back to a numerical measurement display.

Review: Press button 4 once to enter graph mode and take your measurements. Press again to stop measuring and review graph. Press a third time to review the analysis and finally press a fourth time to return to the main display.



5. BATTERY

The ILT750 uses 2x AA batteries that come pre-installed with a new meter.. The power drain while the meter is in storage is an insignificant amount, (10+ year shelf life), however, it is not recommended to leave the batteries in the meter when it will not be used for 60 days or longer.

The meter is programmed with a 5 minute auto-off timer. This will help prevent accidental battery drain during use, storage or shipping.

The meter will automatically detect a low battery condition, display a low-battery notification and prevent the user from taking any readings.

5A. BATTERY REPLACEMENT

Battery replacement can be done by the user or their service department. We recommend standard Duracell AA battery (MN1500).

The ILT750 battery compartment is located on the rear of the meter. To access the compartment. Press down at the grooves of the battery compartment cover and slide towards the bottom of ILT750 meter. Remove the cover. Remove and recycle the old batteries. Insert new batteries in the correct orientation, as shown in the battery compartment. Replace the battery compartment cover.

6. SENSOR

The sensor on the ILT750 is hard-wired to prevent loss or inadvertent sensor swapping. The sensor is not waterproof and should not be submerged. Though the seams of the sensor housing were designed for a tight fit, liquids should be used sparingly when cleaning the sensor to prevent leakage into the housing.

The white dome is an input optic, often called a domed diffuser. It should be kept clean and can be wiped with lens clothes or other non abrasive materials. This diffuser is designed to improve the spatial cosine response of the sensor so that it can accurately gather the light coming in from multiple angles. The entire surface of the diffuser should be covered with light during measurements.

The sensors head can be removed from the meter body by sliding the head to the right while the display is face up. The head can be attached facing up for measurement of lamps and overhead sources, or facing down to measure pad, fiber optics and blankets. The sensor cable includes a small Velcro strap to keep the cable neatly wrapped when the head is attached to the meter body. Unwrap the Velcro strap to release the 3-foot cable. Remote detector use maybe preferred for measuring inside an incubator.



Note: The ILT750 meter is a lamp/light source diagnostic tool. The meter and sensor head are not intended to be used while a patient is undergoing treatment or to come in contact with the patient.

7. CALIBRATION

ILT recommends an annual calibration for all equipment, however, the end user may, through their own QC process, create their own calibration cycle.

Service: Please be sure to obtain an RMA number on the ILT website prior to shipment. Be sure to list the RMA number on the packing list and shipping label.

RMA form: <http://www.intl-lighttech.com/service-support/rma-form>

Email: ilservice@intl-lighttech.com

Phone: 978 818 6180

8. WARRANTY

The equipment you have purchased has been expertly designed and was carefully tested and inspected before being shipped. If properly operated in accordance with the instructions furnished, it will provide you with excellent service. The equipment is warranted for a period of twelve (12) months from date of purchase to be free of defects in material or workmanship. This warranty does not apply to damage resulting from improper set up, accident, abuse, loss of parts, or unauthorized alteration / repair. The equipment will be repaired or replaced, at our option, without charge to the owner for parts or labor incurred in such repair. This warranty shall not apply unless the equipment is returned for our examination with all transportation charges prepaid. We accept no other obligation or liability in connection with said equipment.