ILT400 and ILT490
Operators Manual

International Light
TECHNOLOGIES

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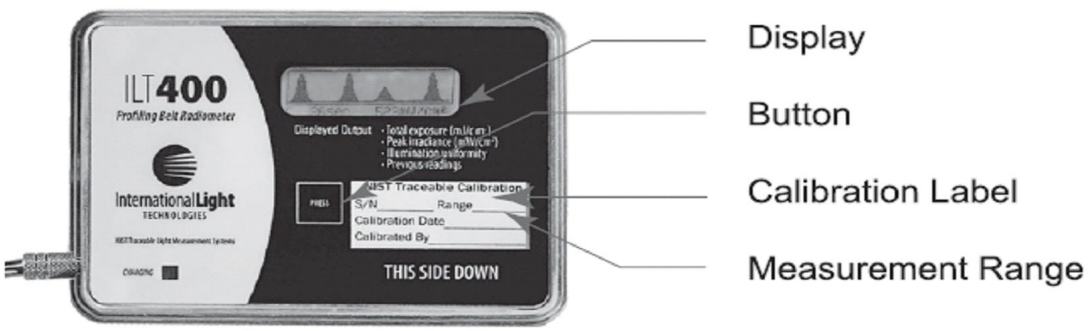
Check Package Contents

Your new ILT400 or ILT490 belt radiometer system includes:

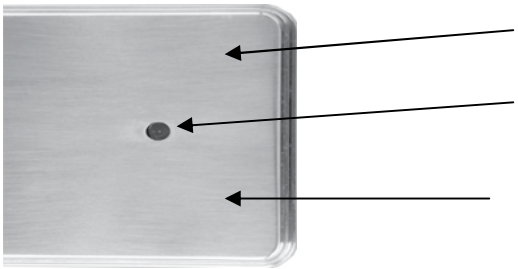
- Belt Radiometer
- A400 charger, or uni-charger
- CC400 Carrying case
- NIST traceable calibration certificate
- Operators manual



Introduction

Congratulations on your purchase of the International Light Technologies **ILT400/ILT490** Profiling Belt Radiometer. The **ILT Belt radiometer** was the world's first one-button, real-time diagnostic tool for assuring proper exposure in your curing processes and optimum operation of your conveyorized curing chamber .The **ILT400/ILT490** is extremely rugged and easy to operate. With proper care and annual calibration service this meter will give you many years of dependable, accurate service.

WARNING: PLACING THE ILT400/ILT490 FACING INCORRECTLY (WITH LABEL SIDE UP) WILL CAUSE SEVER DAMAGE.



THIS SIDE TOWARDS LAMP

KEEP SENSOR CLEAN

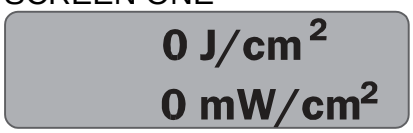
Keep the metal side clean and shiny to help prevent overheating which can cause a reduction in readings.

Battery Test: (software version 3.30 and higher) **When you first turn on the ILT400/ILT490, the system will automatically test the battery and shut off if the system needs to be re-charged.** See recharging instructions on page 6.

TAKING DATA (DATA ACQUISITION MODE):

If the screen is blank, press the on/control button, marked "PRESS" **once**. The unit will turn on and will display screen 1 to the right (It will turn off automatically in 5 minutes if it is not run through the curing chamber)

SCREEN ONE

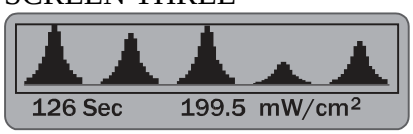


Place the meter **LABEL SIDE DOWN** on the conveyor. When it emerges from the chamber the display will alternate every 5 seconds between numeric and graphical displays similar to screens 2 and 3 to the right.

SCREEN TWO

To stop the display from alternating, press "PRESS" **once**. Press it once again to start the display alternating again. The **ILT400/ILT490** will shut itself off automatically after five minutes. To shut it off immediately press "PRESS" **two times** quickly.

SCREEN THREE



The current profile may be stored for future analysis in the data acquisition mode. Please read the following section for instructions.

ACCESSING DATA ANALYSIS/SYSTEM DIAGNOSIS MODE:

The ILT400 provides a visual display of the status of your lamps and reflectors and allows you to compare the current condition of your equipment to that of a user selectable base line or reference condition. The ILT400 will hold ONE irradiance profile in memory that can be visually compared to the last run at any time. To enter the data analysis mode the unit must be turned off. If you have just completed your current run press the **"PRESS"** button **two times** quickly to turn unit off.

With the screen blank and the unit turned off, press the **"PRESS"** button **two times** to turn the meter on and enter into the data analysis mode.

CREATING A BASELINE

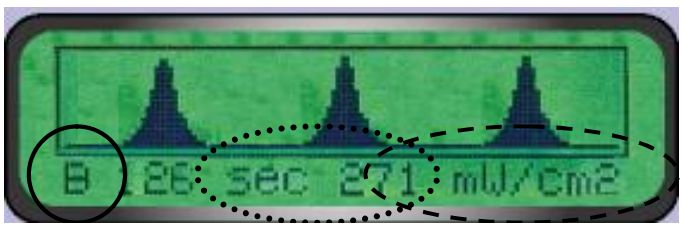
The first time that you enter the data analysis mode, there will be no base line profile. The current profile will be displayed. To save the current run profile as your base line, press the "PRESS' button **three times** rapidly. This profile will remain as the base line until you again press the button three tim es when a current profile is displayed in this mode.

We recommend updating your baseline whenever you install new lamps, clean or re -align reflectors, or perform maintenance.

FEATURES AND OPTIONS IN DATA ANALYSIS MODE:

After the initial base line has been stored, there will be three screens available for viewing in the data analysis mode. You can cycle through t he screens by pressing the "PRESS" button once. *Pressing the button **twice** will **turn off** the ILT400. Pressing the button **three times** while the current profile is displayed, will store it as the new **base line**.*

The base line profile can be identified by th e letter "B" in the lower Left corner of the display. The total exposure time for the run and the maximum irradiance are shown below the profile. The run time information is not important for determining system performance but is shown for process comparis on.



The current profile is from the most recent run through the chamber. The current profile is identified by the letter "C" in the lower left corner of the display. It is easy to see in this example that the maximum irradiance of the system has not changed, as the max imum irradiance values of the base line (ABOVE) and current profiles are the same(271 mW/cm^2). It is also very clear that lamp number two has decreased in intensity. As the height of the profile of lamp 2 is about half that of the lamps 1 and 3, it is clear that it has lost half its power.

The difference screen shows the percentage difference in the irradiance profiles. The "7D" in the lower right corner of the screen shows that there were 7 days between the base line and current run. An "M" or "H" wou ld indicate minutes or hours between measurements. The display shows both decreases and increases in performance. In this case it is clear that the upside down peaks indicate that the only change is that lamp two is currently weaker than it was when the base line was taken. The ±32% indicates that the maxim um (full scale) difference is 32%. The accuracy of the difference display is graphically limited to 5%.

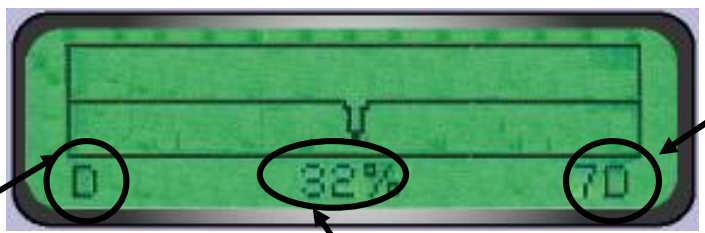
Quick Review: Real-Time System Diagnostics

The baseline profile shows all three Lamps having a uniform output of 271mW/cm^2

Bad Lamp

The current run shows that the middle lamp's output has diminished

C indicates current run



There were 7 days between the baseline measurement and the current measurement

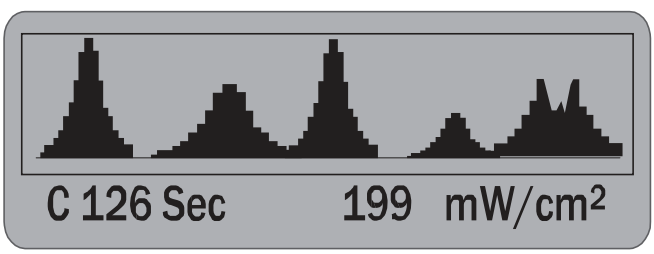
D indicates difference display

% maximum irradiance difference between current and baseline irradiance profiles

SYSTEM ANALYSIS FOR MAINTANANCE

The irradiance profile display can be a powerful diagnostic for determining the type of maintenance that is required. In the diagram to the right we have provided some examples for interpreting the information provided by the display. Peaks 1 and 3 represent well focused normal output lamps. Peak 2 is lower and wider. This indicates that lamp 2 is probably out of focus or that the reflector is very dirty. Peak 4 is lower but not wider. This indicates that lamp 4 is l oosing power, but is well focused. Peak 5 has a double hump. This can indicate that either the reflector is severely defocused or that it is warped or delaminated. The lamp may also be weak.

1 2 3 4 5



To exit analysis mode simply press the "PRESS" button twice quickly at any time.

ILT400 Maintenance

The ILT400 is a very rugged instrument and should not require any maintenance other than cleaning.
Note: It is important to keep the shiny surface clean and to avoid contaminating the input optic.
We recommend using lens cleaner and a soft cloth to prevent scratching the housing. Over time the bandpass filters and integrating sphere in the ILT400 may begin to degrade due to the extreme UV exposure. This gradual degradation manifests itself in changes in total transmission and bandpass characteristics, both of which adversely affect the calibration. It is, in part, for this reason that the ILT400 should be recalibrated on an annual basis. In some cases, with extreme use (irradiance, frequency, or temperature) shorter calibration cycles are required.

ANNUAL RECALIBRATION

The recalibration procedure includes evaluation of the charging system and batteries, evaluation of the internal optics (sensor, filter and integrating sphere), and a complete optical and electrical calibration traceable to N.I.S.T.

Battery Recharging: (WARNING: Do not plug A400charger into 220/230 V supply)

The ILT400 includes rechargeable batteries and the A400Charger US ONLY, or the optional A400unicharger which includes three plug adapters: type A US 110V 2 prong, type G UK 230 V 3 prong, and type C Europe 230 V two prong. The charging unit plugs into the female receptacle located on the lower left side of the ILT400. When the charger is plugged into an AC outlet and connected to the ILT400 a red LED will light to the right of the receptacle on the ILT400, to indicate the system is charging. When the red LED turns off the system is fully charged. You can expect about 3 to 5 hours of continuous operation when fully charged. We recommend keeping the system connected to the charger and the charger plugged in when not it use.

Calibration and Repair

Calibration and repair service can be obtained by contacting our customer service department. All returns require an RMA (returned materials authorization) number: Customer Service may be reached at:

Email: ilservice@intl-lighttech.com
Tel: 978-818-6180 x 2
Fax: 978-818-6181

Software

The most current software is version is 3.30 updated July of 2007. The 3.30 software can handle belt speeds of 1 to 80 fpm, and irradiance values from 1mW/cm^2 up to 20 W/cm^2. Version 3.30 software begins data capture when 10 mW/cm^2 is measured and can profile once an irradiance value of 20 mW/cm^2 is measured. Once an irradiance of 20 mW/cm^2 is measured, the system will continue to measure until less than 20 mW/cm^2 is measured for 5 consecutive seconds. Once the 5 seconds threshold is met, the measurement is complete, and the system will automatically begin toggling between the numerical and graphical display modes.

Warranty and Liability

This ILT product is warranted against defects in material and workmanship for a period of one year from the date of shipment. During the warranty period, ILT will, without charge, repair or replace, at its discretion, the defective product or component parts. For warranty service or repair, this product must be returned to International Light Technologies. For products returned under warranty, the Buyer shall prepay shipping charges (including shipping charges, duties, and taxes for products returned to ILT from another country), and ILT will pay for shipping charges to return the product to the Buyer. This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations, modifications or repairs, if the serial number is altered, defaced or removed, the improper or inadequate maintenance by the Buyer, Buyer-supplied software or interfacing, or improper site preparation or maintenance. No other warranty is expressed or implied. ILT shall not be liable for any consequential damages, including without limitation, damages resulting from loss of use, as permitted by law.

NOTE: Removal of the label from the ILT400 voids warranty.

TROUBLE SHOOTING GUIDE:

1. DISPLAY TURNS BLACK: This is an indication that the meter is being overheated. Assure the meter is cool prior to insertion in the oven, assure shiny surface is clean to allow maximum reflectance of heat, shorten time in the oven and/or increase the distance from the lamp.
2. CHARGING LIGHT DOES NOT TURN ON WHEN I PLUG IN THE CHARGER. If the charging plug is not inserted completely, the LED may not light. Remove the plug and reinsert fully into the charge jack. If the ILT400 is fully charged, the LED will not light.
3. MY METERS ARE NOT READING THE SAME. First be sure you are comparing two of the same models. ILT meters come in different spectral versions. Two ILT UVA meters should read within the stated tolerance on the calibration certificate, but may not read the same as a meter from another manufacturer or as our UVB meter. You can compare spectral and spatial response of the two meters which in most cases will explain the variation in readings. If you are comparing two ILT meters measuring the same spectrum, both in calibration they should read within the tolerance noted. If it has been over 6 months since they have been calibrated, it could be that the usage level requires a shorter cal cycle than you have implemented, or it could be an indication that there is a problem. Please contact our service dept with the model and serial number and a short sample of readings taken.
4. MY SYSTEM READS NO PROFILE CAPTURED. If this is the first time you are operating the unit, you must take a new reading to allow the system to capture a profile. After the first profile is taken, it remains until it is overwritten by a new profile.

QUICK GUIDE

DATA ACQUISITION MODE

"PRESS" Start data collection

"PRESS" Start/stop display cycling

"PRESS"
"PRESS" Shut down

DATA ANALYSIS/SYSTEM DIAGNOSIS

"PRESS"
"PRESS" Shut down (MUST START WITH SYSTEM OFF)

"PRESS"
"PRESS" Start analysis mode

"PRESS" Move between screens

"PRESS"
"PRESS" Store a baseline

"PRESS"
"PRESS" Shut down
"PRESS"

Long Term Performance Tracking

Date	Max. Irradiance	Comments