Dymax ACCU-CAL™ 50-LED User Guide

LED Radiometer

- Instructions for Safe Use
- Setup and Operation
- Maintenance
- Ordering Spare Parts and Accessories

ACCU-CAL™ 50-LED (PN 40519)

ACCU-CAL™ 50-LED with Adapter Kit (PN 40505)

DYMAX®

About Dymax

UV/Visible light-curable adhesives. Systems for light curing, fluid dispensing, and fluid packaging.

Dymax manufactures light-curable adhesives as well as a complete line of manual fluid dispensing systems, automatic fluid dispensing systems, and light-curing systems. Light-curing systems include LED light sources, spot, flood, and conveyor systems designed for compatibility and high performance with Dymax adhesives.

Dymax adhesives and light-curing systems optimize the speed of automated assembly, allow for 100% in-line inspection, and increase throughput. System designs enable stand-alone configuration or integration into your existing assembly line.

Please note that most dispensing and curing system applications are unique. Dymax does not warrant the fitness of the product for the intended application. Any warranty applicable to the product, its application and use is strictly limited to that contained in the Dymax standard Conditions of Sale. Dymax recommends that any intended application be evaluated and tested by the user to insure that desired performance criteria are satisfied. Dymax is willing to assist users in their performance testing and evaluation by offering equipment trial rental and leasing programs to assist in such testing and evaluations. Data sheets are available for valve controllers or pressure pots upon request.

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Introduction

The enclosed ACCU-CAL™ 50-LED Radiometer was developed and manufactured by the Dymax team, driven by a desire to best serve your needs. Before shipping, your ACCU-CAL™ 50-LED Radiometer was calibrated and tested against standard LED light sources to ensure accurate performance.

The operation of this radiometer in conjunction with an LED light-curing system will maximize safety and user-friendly performance and provide optimum yield of your technological process.

Therefore, we encourage you to read, understand, and follow all safety and operating instructions and recommendations compiled in this and other related manuals prior to setting up and operating this instrument and any associated light-curing systems.

If you encounter a problem, have any questions, or would like to help us with your suggestions or recommendations, please contact our Technical or Customer Service Departments at 860-482-1010. Trained Dymax professionals are standing by to serve you.

Par conséquent, nous vous encouragez a lire, comprend, et suivre tout sécurité et instructions d'opération et conseillations rédiger dans cette et autre manuels etablir un lien avant de mettre en place et de faire marcher cette nouveau système de lampe de tache ou cettes composants individuel.

Si vous rencontrez un problème, avait n'importe de questions, ou si vous voudrez de nous aider avec tes suggestions ou conseillations, s'il vous plait contacte notre departements technique ou service client à 860-482-1010. Dymax formé professionals attendre a vous servir.

Safety

General Safety

Before continuing, please read the following chapters of this manual for safety recommendations and installation, running, and troubleshooting instructions.

CAUTION! *Always wear protective goggles or a face shield when working near the front of any unit which emits UV light! The rear of some units also emits stray UV light.*

WARNING! *Always observe safety requirements!*

PRÉ-CAUTION! *Toujours faisez de l'usage des lunettes de protection ou protéger de visage marche près du devant d'élément!*

PRÉ-CAUTION! *Risque de décharge électrique quand le couvert est enlever!*

ACHTUNG! *Tragen Sie immer eine Sicherheitsbrille oder einen Gesichtsschutz, wenn Sie nahe an der UV Lichtquelle arbeiten. Die Rückseite des Gerätes emittiert gestreutes UV Licht!*

WARNHINWEIS! *Bitte beachten Sie immer die Sicherheitshinweise!*

Safety

The ACCU-CAL™ 50-LED Radiometer is designed to be used in conjunction with Dymax LED curing equipment that is properly setup, with components correctly connected, and operated in accordance with relevant instructions.

Safety Recommendations

- When working with UV or visible light sources, use goggles (provided) or a face shield approved for UV protection to protect your eyes.
- Long-sleeved shirts or a lab coat are recommended to protect the arms, and use of UV opaque gloves will protect the hands.

Sécurité

L'équipment ètre concu pour ètre utilisé correctement constituer, avec composants brancher correctement, et marché en conformément avec instructions important. Le plan étais developer pour render au maxime opérateur sécurité et minimiser expositon à ultraviolette.

Recommander de sécurité

- Emploi lunettes, ou un protéger de visage pour protection de ultraviolet pour protéger vous oeux.
- Chemises à manche long, ou manteau de labo, sont recommander pour protéger les bras, et utilisation de ultraviolette gants opague vais protéger les mains.

Sicherheitshinweise

Dieses Gerät wurde so entwickelt, dass es nur vollständig, alle Komponenten korrekt miteinander verbunden, in Übereinstimmung mit relevanten Instruktionen betrieben wird. Bei der Entwicklung wurde weiterhin großen Wert auf die Benutzersicherheit und minimale UV Belastung gelegt.

Sicherheitshinweise

- Tragen Sie immer die mitgelieferten Sicherheitsbrille oder speziellen Gesichtsschutz, der Ihre Augen vor UV Licht schützt.
- Wir empfehlen Langarm - Hemden oder einen Laborkittel zu tragen, um die Arme zu schützen. Für die Hände empfehlen wir UV- geblockte Handschuhe.

BITTE BEACHTEN SIE: Durch den installierten inneren Filter strahlt die BlueWave® LED Prime UVA und sichtbares Licht aus. Schauen Sie deshalb niemals direkt in die Lichtquelle, wenn das Gerät angeschaltet ist.

Product Overview

Description of the ACCU-CAL™ 50-LED Radiometer

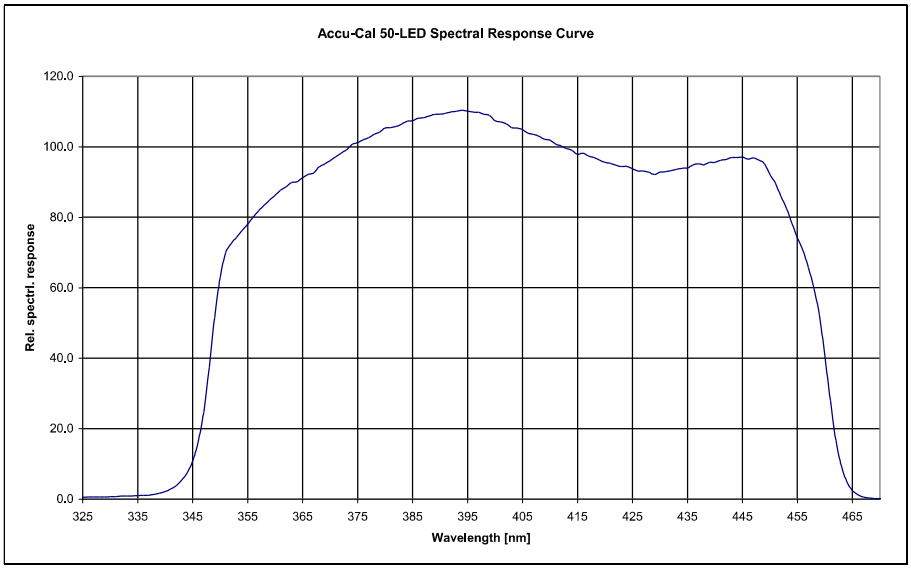
The ACCU-CAL™ 50-LED Radiometer is a microprocessor-based measurement instrument designed to measure curing-energy radiation in the range of 350 - 450 nm.

The ACCU-CAL™ 50-LED uses two AA batteries.

Environmental Considerations

- Optical measurement instruments are sensitive to extremes in environmental conditions like high temperature, humidity, and contamination. Protect the device and its detector(s) from high humidity, high temperature, direct sunlight, and contamination.
- Do not use the ACCU-CAL™ 50-LED Radiometer immediately after moving it from a cold to a warm environment. Under certain circumstances, condensation could develop that may cause inaccurate measurement results. Allow the device to adjust to room temperature before use.
- Do not use the ACCU-CAL™ 50-LED Radiometer in powerful magnetic, electromagnetic, or electrostatic fields. These disturbances may influence measurement results.

Figure 1. ACCU-CAL™ 50-LED Spectral Response Curve



Installation

Unpacking and Inspecting Your Shipment

When your radiometer arrives, inspect the box and immediately notify the shipper of any damage.

Open the box and check for equipment damage. If parts are damaged, notify the shipper and submit a claim for the damaged parts. Contact Dymax so that new parts can be shipped to you immediately.

Check that the parts included in your order match those listed below. If parts are missing, contact your local Dymax representative or Dymax Customer Support to resolve the problem.

Figure 2. ACCU-CAL™ 50-LED Radiometer (PN 40505) for Spot & Flood Lamps

Figure 3. ACCU-CAL™ 50-LED Radiometer (PN 40519) for Flood Lamps Only

Parts Included for Spot Configuration

- ACCU-CAL 50-LED Radiometer
- ACCU-CAL 50-LED Radiometer User Guide
- 3-mm, 5-mm, 8-mm Lightguide Adapters
- Optic Adapter for the BlueWave® QX4™
- Lightguide Simulator (PN 38408)
- 2-mm Hex Wrench
- Spare 2-mm Adapter Screws

Parts Included for Flood Configuration

- ACCU-CAL 50-LED Radiometer
- ACCU-CAL 50-LED Radiometer User Guide

Operation

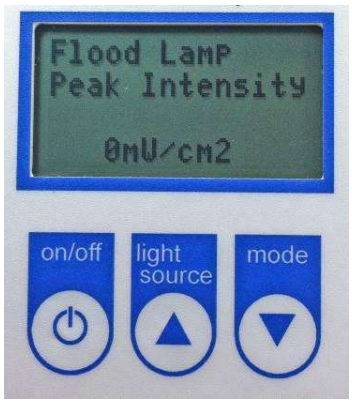
The ACCU-CAL™ 50-LED Radiometer may be used to measure intensity from LED-type flood or spot lamps. Instructions for use with each system type are below.

Testing a Flood Lamp System

1. Attach the Detector to the Radiometer (Figure 4). Do not attach any Lightguide Adapters to the Detector.
2. Press and release the On/Off Key on the Radiometer's Face Plate to turn the unit on.
3. On the Radiometer's Display, the top line displays the light source and the second line displays the mode.
4. Press and release the Light Source Key to select the light source being measured. Repeatedly press the key until the "Flood Lamp" appears on the top line of the display (Figure 5).

Figure 4. Attach Detector to Radiometer

Figure 5. Flood Source Screen (Shown in Peak Intensity Mode)



5. Press and release the Mode Key to select the operating mode. Repeatedly press the Mode Key until the mode you desire appears on the second line of the display. The different operating modes are:
   - **Peak Intensity -** Shows the highest intensity in mW/cm^2 seen by the detector during the measurement and stores that value in the display.
   - **Intensity -** Shows the intensity in mW/cm^2 at the detector during the measurement. This is a dynamic readout of intensity.
   - **Dose -** Shows the total energy dose in mJ/cm^2 at the detector during the measurement. *Note: This measurement is time dependent.*
6. Place the end of the Detector under an operating flood lamp, insuring that the detector sensing window is facing the light source.

Testing Spot Lamp Systems

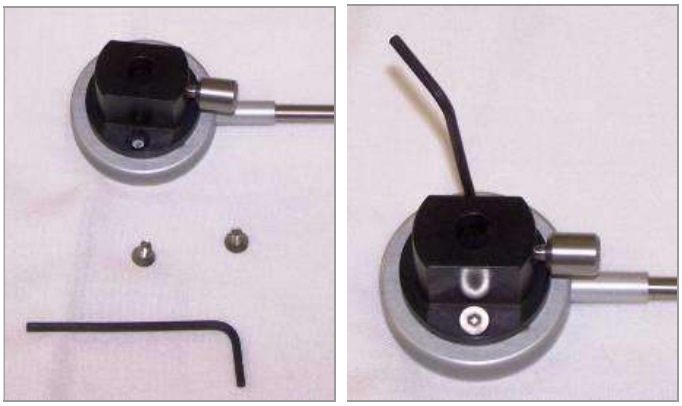
1. Attach the Detector to the Radiometer (Figure 6).

2. Select the Lightguide Adapter that matches the size of the Spot Lamp's Lightguide. 3, 5, and 8-mm Lightguide Adapters are supplied with the Radiometer.

3. Install the Lightguide Adapter on the end of the Detector using the two, 2-mm screws provided (Figure 7).

Figure 6. Attach Detector

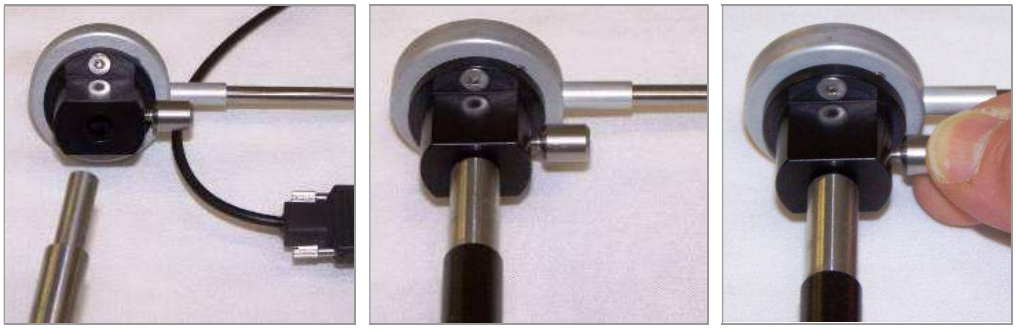
Figure 7. Adapter Installation



4. Insert the Lightguide into the Lightguide Adapter until it bottoms out. Tighten the Set Screw when the Lightguide is installed.

   Note: Do not over-tighten the Set Screw, as damage to the Lightguide may occur.

Figure 8. Attach Lightguide Adapter to Lightguide



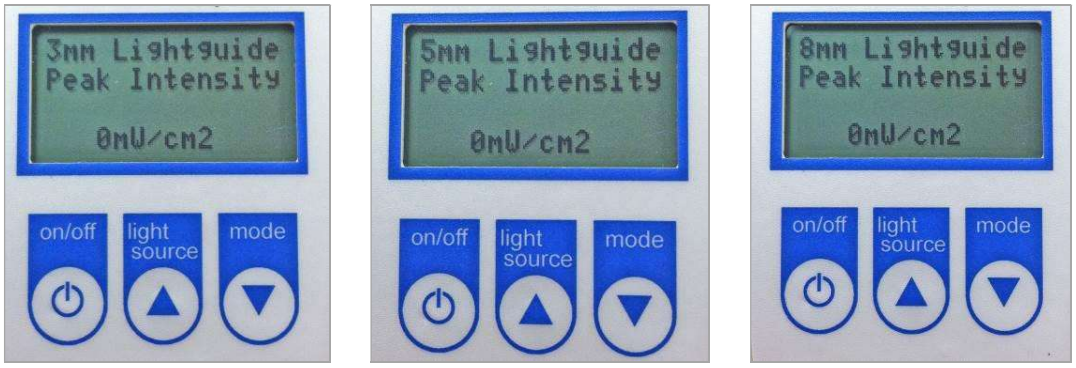
7. Press and release the On/Off Key on the Radiometer's Face Plate to turn the unit on.

8. On the Radiometer's Display, the top line displays the light source and the second line displays the mode.

9. Press and release the Light Source Key to select the light source being measured. For spot lamps, use the lightguide setting. Repeatedly press the Light Source Key until the correct lightguide size appears on the top line. The options are:

- **3-mm Lightguide** - For use when measuring energy at the end of a 3-mm lightguide.
- **5-mm Lightguide** - For use when measuring energy at the end of a 5-mm lightguide.
- **8-mm Lightguide** - For use when measuring energy at the end of an 8-mm lightguide.

Figure 9. Lightguide Source Screens (Shown in Peak Intensity Mode)



10. Press and release the Mode Key to select the operating mode. Repeatedly press the Mode Key until the mode you desire appears on the second line of the display. The different operating modes are:
    - **Peak Intensity -** Shows the highest intensity in mW/cm^2 seen by the detector during the measurement and stores that value in the display.
    - **Intensity -** Shows the intensity in mW/cm^2 at the detector during the measurement. This is a dynamic readout of intensity.
    - **Dose -** Shows the total energy dose in mJ/cm^2 at the detector during the measurement.
      Note: This measurement is time dependent.
11. Turn on the spot lamp to begin testing.

Testing the BlueWave® QX4™

1. Attach the Detector to the Radiometer (Figure 10).
2. Attach the BlueWave® QX4™ Optic Adapter to the Detector (Figure 11) using the two, 2-mm screws provided.

   Note: The Optical Adapter and Optometer are calibrated as a set, so they are not interchangeable among other similar type Radiometers.

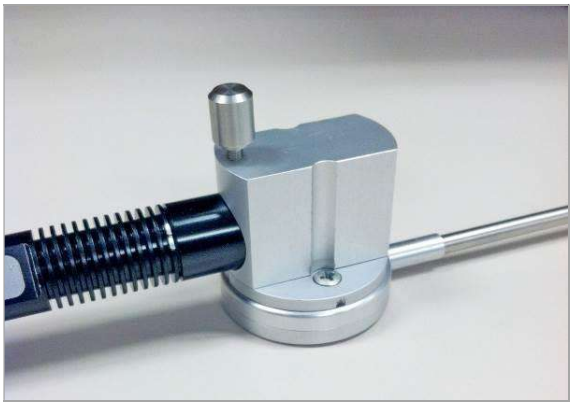
Figure 10. Attach Detector

Figure 11. Attach Optic Adapter to Detector

3. Insert the LED Wand into the Optic Adapter until it bottoms out. Tighten the set screw on the top of the Optic Adapter when the LED Wand is installed.

   Note: Do not over-tighten the setscrew, as damage to the LED wand may occur.

Figure 12. Insert LED Wand into Optical Adapter

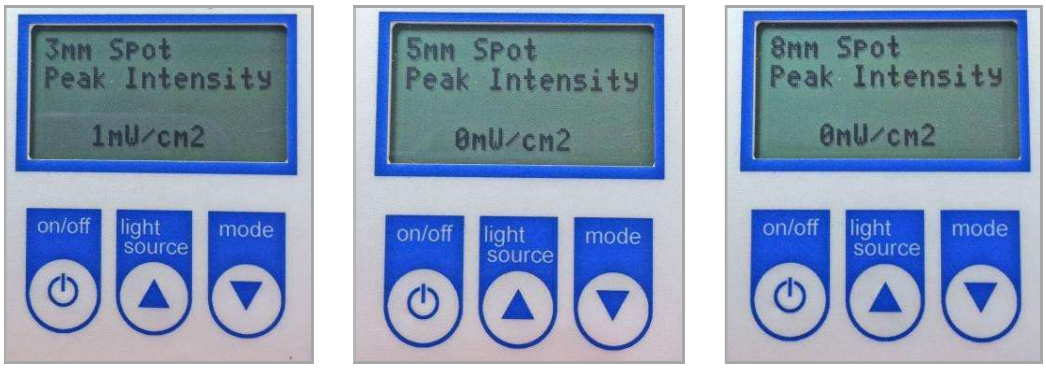


4. Press and release the On/Off Key on the Radiometer's Face Plate to turn the unit on.
5. On the Radiometer's Display, the top line displays the light source and the second line displays the mode.

6. Press and release the Light Source Key to select the light source being measured. For the BlueWave® QX4™, use the "spot" setting. Repeatedly press the Light Source Key until the correct Focus Lens size appears on the top line. The options are:

   - **3-mm Spot** - For use when measuring a BlueWave® QX4™ Wand with the 3-mm Focus Lens installed
   - **5-mm Spot** - For use when measuring a BlueWave® QX4™ Wand with the 5-mm Focus Lens installed
   - **8-mm Spot** - For use when measuring a BlueWave® QX4™ Wand with the 8-mm Focus Lens installed

Figure 13. Spot Mode Screens (Shown in Peak Intensity Mode)



7. Press and release the Mode Key to select the operating mode. The different operating modes are:

   - **Peak Intensity** - Shows the highest intensity in mW/cm^2 seen by the detector during the measurement and stores that value in the display.
   - **Intensity** - Shows the intensity in mW/cm^2 at the detector during the measurement. This is a dynamic readout of intensity.
   - **Dose** - Shows the total energy dose in mJ/cm^2 at the detector during the measurement. *Note: This measurement is time dependent.*

8. Turn on the BlueWave® QX4™ to begin testing.

Maintenance

The ACCU-CAL™ 50-LED was designed to operate with minimum maintenance. Follow the schedule below to assure top unit performance.

- Calibrate the instrument at least annually. Calibration service is available through Dymax Customer Service or Dymax Product Repair.
- Change the batteries when a low battery warning is received. The ACCU-CAL™ 50-LED uses two AA-type batteries. The battery compartment is on the back of the instrument.

Figure 14. Battery Compartment (Closed & Open)

- Keep the detector head's sensing element clean and free of contaminants. The detector head may be cleaned with a clean tissue wetted with isopropyl alcohol.

Spare Parts and Accessories

Spare Parts

Item	Part Number
BlueWave® QX4™ Optic Adapter Upgrade Kit (includes optometer calibration update)	42218
Adapter Kit – Flood to Spot Model (includes parts listed below)	39554
Lightguide Simulator	38408
8-mm Lightguide Adapter	39558
5-mm Lightguide Adapter	39557
3-mm Lightguide Adapter	39556
2 mm Hex Wrench	38656
2 mm Screws	38881

Specifications

Property	Specification
Power	Two AA size batteries
Display	LCD Graphic Display 97x 32 Pixel Display area: 0.56 in x 1.41 in (14.3 mm x 35.8 mm)
Spectral Range	350-450 nm
Detector Interface	9-Pin MDSM9 socket, 4 inputs
Measurement Ranges	Four modes of operation Auto range within each operating mode
Front Panel Control	3 buttons
Temperature	Operating: 5 to 40°C Storage: -10 to 50° C
Size	5.71 in x 2.48 in x 1.18 in (145 mm x 63 mm x 30 mm)
Weight	0.33 lbs (150 g)

CE