



Halogen Calibration Light Source

HL-2000-CAL and HL-2000-CAL-ISP

Installation and Operation Manual

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Important Safety Notices

1. Do not remove or modify any installed safety device on this equipment. Doing so will void your warranty and create an unsafe operating environment.
2. Dangerous voltages are present in this device. There are NO user serviceable parts inside.
3. Only allow qualified personnel to service this unit.
4. Inspect this unit and its power supply before using it for the first time. Do not use the unit if it is damaged in any way. Contact your dealer for repair or replacement information.

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About This Manual

Document Purpose and Intended Audience

This document provides you with an installation section to get your system up and running.

What's New in this Document

This version of the *Halogen Calibration Light Source HL-2000-CAL2000 Installation and Operation Manual* updates the specifications.

Document Summary

Chapter	Description
Chapter 1: Setup	Contains a list of package contents and unpacking instructions. Also contains procedures for connecting to a spectrometer.
Chapter 2: HL-2000-CAL Specifications	Contains operating environment specifications, as well as other physical details of the product.

Product-Related Documentation

You can access documentation for Ocean Optics products by visiting our website at <http://www.oceanoptics.com>. Select *Technical* → *Operating Instructions*, then choose the appropriate document from the available drop-down lists. Or, use the **Search by Model Number** field at the bottom of the web page.

- Detailed instructions for SpectraSuite Spectrometer Operating Software is located at: <http://www.oceanoptics.com/technical/SpectraSuite.pdf>.

You can also access operating instructions for Ocean Optics products on the *Software and Technical Resources* CD included with the system.

Engineering-level documentation is located on our website at *Technical* → *Engineering Docs*.

Upgrades

Occasionally, you may find that you need Ocean Optics to make a change or an upgrade to your system. To facilitate these changes, you must first contact Customer Support and obtain a Return Merchandise Authorization (RMA) number. Please contact an Ocean Optics Application Scientist for specific instructions when returning a product.

Chapter 1

Setup

Overview

The HL-2000-CAL Halogen Calibrated Light Source for the VIS-Shortwave NIR (350nm-1050nm) is a tungsten-halogen light source that provides known absolute intensity values at several wavelengths, expressed in $\mu\text{W}/\text{cm}^2/\text{nm}$. Since the spectral intensity of the HL-2000-CAL can be traced to an intensity standard traceable to the National Institute of Standards and Technology (NIST), it is specifically designed for calibrating the absolute spectral response of your system.

Note

If you have a spectrometer setup that is highly sensitive, you may not be able to use the HL-2000-CAL as a calibration source.

Before using the HL-2000-CAL for the first time, check for transport damage. Be sure to adhere to all warnings on the unit and in this operational manual. Make sure you have your HL-2000-CAL, your spectrometer, an SMA-terminated optical fiber or CC-3 cosine-corrected irradiance probe, and Ocean Optics software.

The following sections provide instructions on unpacking and setting up your HL-2000-CAL Calibration Light Source.



Unpacking the HL-2000-CAL

► Procedure

1. Unpack your lamp assembly and power supply carefully. Although the lamp is rigidly mounted, dropping this instrument can cause permanent damage.
2. Inspect the outside of the instrument and make sure that there is no damage. Do not use the instrument if damage is present.
3. Use this instrument in a clean laboratory environment (see [Operating Environment](#)).

Contents

Your HL-2000-CAL package should contain the following:

- ❑ HL-2000-CAL unit
- ❑ 1 AC adapter for stabilizing power
- ❑ Power cord
- ❑ 2 Lamp Calibration Reports; one for using the HL-2000-CAL with a bare fiber and one for using the HL-2000-CAL with a CC-3 cosine-corrected irradiance probe
- ❑ 1 CD that holds files for both lamp calibration reports
- ❑ 1 Allen wrench for adjusting the inner barrel of the SMA connector

Connecting a Spectrometer to the HL-2000-CAL

► Procedure

Use the following procedure to connect your HL-2000-CAL unit to a spectrometer:

1. Loosen the set screw on the HL-2000-CAL's SMA connector
2. **If using a bare fiber with the lamp:**

Remove the inner barrel from the SMA connector (if using a bare fiber with the lamp). Screw this connector barrel onto the end of your fiber. The connection should be tight. Insert the barrel/fiber all the way into the HL-2000-CAL's SMA connector.

If using a fiber and cosine corrector with the lamp:

Remove the inner barrel from the SMA connector (if using a fiber and cosine corrector with the lamp). Screw the CC-3 cosine corrector onto the end of the fiber. The connection should be tight. Insert the CC-3/fiber all the way into the HL-2000-CAL's SMA connector, taking the place of the SMA's inner barrel.

3. Tighten the setscrew on the SMA connector of the HL-2000-CAL with an Allen wrench. Connect the other end of the fiber into the SMA connector of the spectrometer.
4. Plug the switching AC adapter into the back of the HL-2000-CAL. The adapter stabilizes power coming into the lamp to ensure constant spectral intensity.
5. Plug one end of the power cord into the AC adapter and the other end into a standard outlet.
6. Turn the lamp on. Allow the lamp to warm up for at least 15 minutes before using it.
7. Insert the calibration disk that came with your lamp into your computer. This disk contains two ASCII files with the same information as the Lamp Calibration Reports that came with your HL-2000-CAL. One file has the calibration numbers for calibrating the spectral response of your system with the lamp and a *bare fiber*; its name contains the lamp's serial number, followed by **FIB.LMP**. The second file has the calibration numbers when calibrating the spectral response of your system with the lamp and a *CC-3 cosine-corrector and fiber*; its name contains the lamp's serial number, followed by **CC.LMP**. Copy these files into the desired directory on your computer.
8. Start SpectraSuite software in Scope mode. See your SpectraSuite manual for instructions on calibrating a spectrometer with the HL-2000-CAL.

Chapter 2

HL-2000-CAL Specifications

This section provides information on the operating environment and specifications of the HL-2000-CAL.

Operating Environment

The following table provides information on optimizing the operating environment of your HL-2000-CAL.

Operating Environment	The HL-2000-CAL Unit . . .
Moisture	Is designed for operation in dry rooms only.
Ventilation	Should be situated so that its location or position does not interfere with proper ventilation.
Heat	Should be situated away from any device that emits excessive heat.
Object and Liquid Entry	Should be positioned so that objects do not fall on top of the unit. Additionally, ensure that no liquids are spilled into the enclosure through openings.

Specifications

Component	Description
Spectral Range (calibrated)	350-1050 nm
Dimensions	9.0 cm x 5.0 cm x 3.2 cm (LWH); 3.5" x 2.0" x 1.25" (LWH)
Power Input	12 VDC/800 mA (regulated)
Power Output	6.5 W
Bulb Life	900 hours (recalibrate after 50 hours of use)
Output to Bulb	5 V / 1.3 A
Output Regulation	0.2% voltage
Time to Stabilized Output	15 minutes
Connector	SMA 905

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