Halogen Light Source
HL-2000 / HL-2000-LL / HL-2000-HP

A Mikropack Product

Installation and Operation Manual
Document Number 000-10000-050-02-0505

Offices:

Ocean Optics, Inc.
830 Douglas Ave., Dunedin, FL, USA 34698
Phone 727.733.2447
Fax 727.733.3962
8 a.m.– 8 p.m. (Mon-Thu), 8 a.m.– 6 p.m. (Fri) EST

Ocean Optics B.V. (Europe)
Geograaf 24, 6921 EW DUIVEN, The Netherlands
Phone 31-(0)26-3190500
Fax 31-(0)26-3190505

E-mail:

Info@OceanOptics.com	**(General sales inquiries)**
Info@OceanOpticsBV.com	**(European sales inquiries)**
Orders@OceanOptics.com	**(Questions about orders)**
TechSupport@OceanOptics.com	**(Technical support)**

A HALMA GROUP COMPANY

Ocean Optics offers the most comprehensive, innovative and high-quality line of modular spectroscopy tools in the world. Mikropack, a leading supplier of spectroscopy and thin film components, is an essential and valuable partner in this enterprise. We have partnered with Mikropack because they are committed to the same goals of innovation and quality that inspire us here at Ocean Optics. As always, Ocean Optics conducts its business in an open, honest and technically available fashion. We invite you to contact us at Ocean Optics, Inc. (see front cover for contact information) or Mikropack GmbH with any technical questions, comments, or applications inquiries. Mikropack GmbH can be contacted at the following location:

MIKROPACK GmbH
Maybachstraße 11
D-73760 Ostfildern
Germany
Tel.: +49 (0)711 34 16 96-0 • Fax.: +49 (0)711 34 16 96-85
e-mail: **info@mikropack.de**
internet: **www.mikropack.de**

Copyright © 2001-2005 Ocean Optics, Inc.
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, by any means, electronic, mechanical, photocopying, recording, or otherwise, without written permission from Ocean Optics, Inc.
This manual is sold as part of an order and subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out or otherwise circulated without the prior consent of Ocean Optics, Inc. in any form of binding or cover other than that in which it is published.

Trademarks
Microsoft, Windows, Windows 95, Windows 98, Windows Me, Windows NT, Windows 2000, Windows XP and Excel are either registered trademarks or trademarks of Microsoft Corporation.

Limit of Liability
Every effort has been made to make this manual as complete and as accurate as possible, but no warranty or fitness is implied. The information provided is on an “as is” basis. Ocean Optics, Inc. shall have neither liability nor responsibility to any person or entity with respect to any loss or damages arising from the information contained in this manual.

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. Do not use the unit if it is damaged in any way. Contact your dealer for repair or replacement information.

Warranty

Mikropack GmbH warrants to the original user of this instrument that it shall be free of any defects resulting from faulty manufacture of this instrument for a period of 12 months from the original data of shipment.

This instrument should not be used for any Clinical or Diagnostic purposes. Data generated in these areas is not warranted in any way by Mikropack GmbH. Any defects covered by this Warranty shall be corrected either by repair or by replacement, as determined by Mikropack GmbH.

There are no warranties that extend beyond the description herein.

This Warranty is in lieu of, and excludes, any and all other warranties or representations expressed, implied, or statutory, including merchantability and fitness, as well as any and all other obligations or liabilities of Mikropack GmbH including, but not limited to, special or consequential damages. No person, firm, or corporation is authorized to assume for Mikropack GmbH. Any additional obligation or liability not expressed provided for herein except in writing duly executed by an officer of Mikropack GmbH:

MIKROPACK GmbH
Maybachstraße 11
D-73760 Ostfildern
Tel.: +49 (0)711 34 16 96-51 • Fax.: +49 (0)711 34 16 96-85
e-mail: **info@mikropack.de**
internet: **www.mikropack.de**

Table of Contents

About This Manual iii
Document Purpose and Intended Audience iii
What's New in this Document iii
Document Summary iii
Product-Related Documentation iii
Upgrades iii

Chapter 1: Setup 1

Setting Up the HL-2000 Light Source 1
Optimizing the Optical Power Output 2
HL-2000 Diagrams 2

Chapter 2: HL-2000 Specifications 5

Specifications 5
Parts List 5

Appendix A: Bulb Replacement 7

Overview 7
Identifying the Bulb Type 7
Replacing the Bulb 8

Index 11

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 Light Source HL-2000 / HL-2000-LL / HL-2000-HP Installation and Operation Manual* adds our partnership agreement.

Document Summary

Chapter	Description
Chapter 1: *Setup*	Contains a list of package contents and unpacking instructions.
Chapter 2: *HL-2000 Specifications*	Contains operating environment specifications, as well as other physical details of the product.
Appendix A: *Bulb Replacement*	Provides instructions for changing the bulb.

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.

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 Ocean Optics for specific instructions when returning a product.

Chapter 1

Setup

Setting Up the HL-2000 Light Source

Use the following procedure and refer to *HL-2000 Diagrams* to set up your light source.

► *Procedure*

Perform the steps below to set up your HL-2000 Light Source:

1. Plug the power supply into a wall outlet.

Note

The HL-2000-HP Series of light sources requires a 24 VDC power supply. Do not use the standard 12 VDC power supply.

---

2. Plug the other end of the power supply cable into the socket of HL-2000.
3. Connect the SMA connector of your fiber optic cable to the SMA plugs.
4. Turn the Halogen lamp on using the power switch on the rear of the HL-2000.

Optimizing the Optical Power Output

The HL-2000 is adjusted at the factory to provide maximum power into a 200µm fiber. If a lower optical power is required or a different fiber (bundle) diameter is used, you can adjust the optical power of the unit. Refer to *HL-2000 Diagrams* while using the following procedure.

► *Procedure*

Follow the steps below to adjust the optical power of the HL-2000 Light Source:

1. Connect a fiber optic spectrometer or an optical power meter to a fiber, and then connect the other end of the fiber to the HL-2000's SMA plug.
2. Loosen the blocking screw with the provided 1.3mm Allen wrench.
3. Shift the SMA socket to optimize the optical power of the HL-2000.
4. Tighten the blocking screw to secure the SMA socket position.

HL-2000 Diagrams

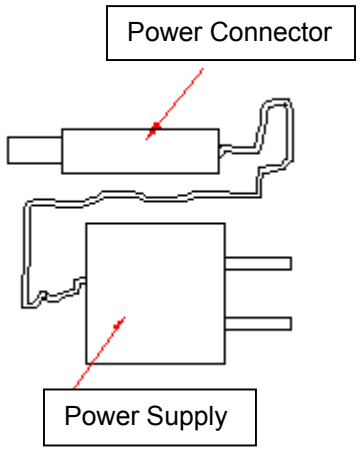

Figure 1: HL-2000 Power Supply

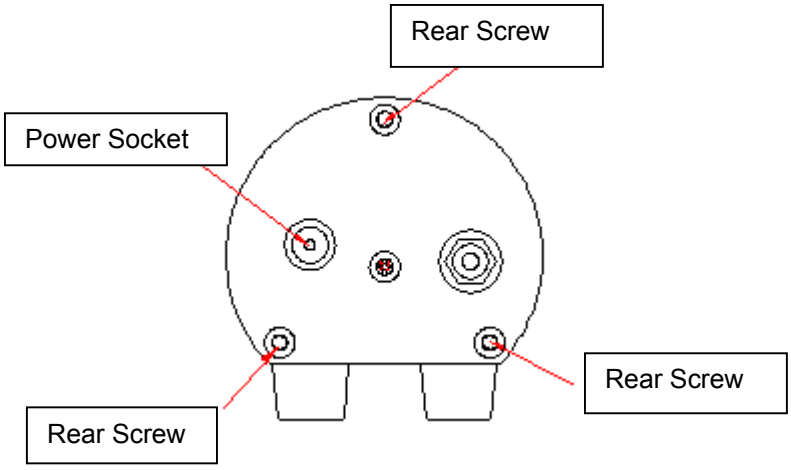

Figure 2: HL-2000 Rear View

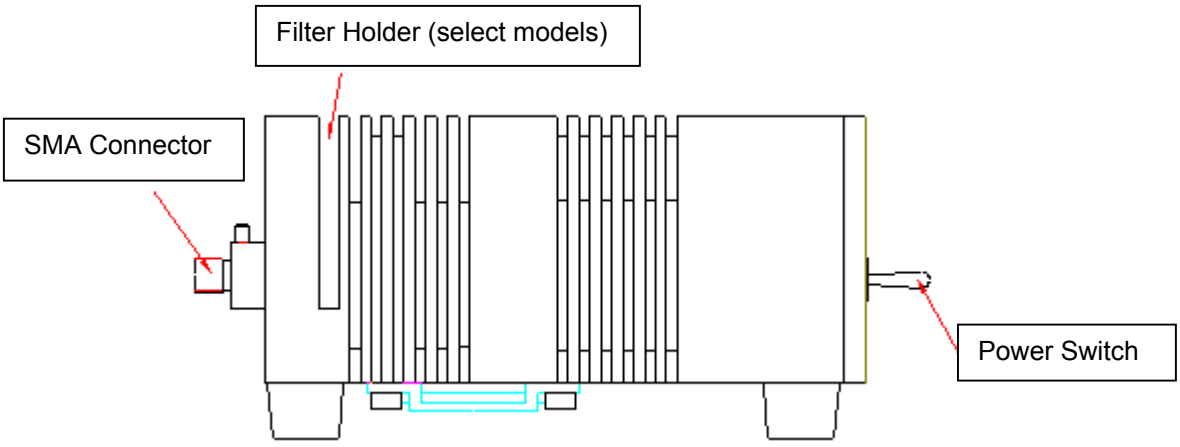

Figure 3: HL-2000 Side View

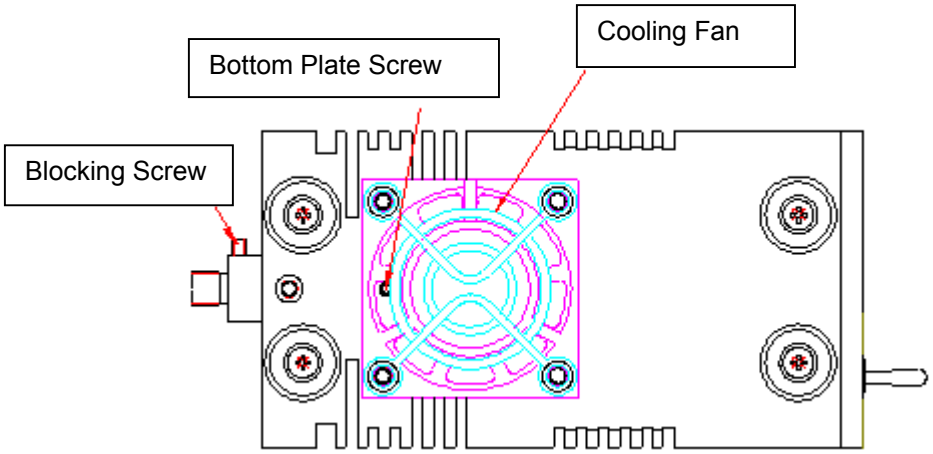

Figure 4: HL-2000 Bottom View

Chapter 2

HL-2000 Specifications

This section provides information on the operating environment, physical controls, and dimensions of the HL-2000. It also provides a parts list.

Specifications

	HL-2000	HL-2000-LL	HL-2000-HP
Wavelength range	360 nm – 1700 nm		
Stability	0.5 %		
Drift	<0.1% pro Hour		
Time to stabilize	Approximately 5 Minutes		
Output to bulb	5V DC / 1,435A	5V DC / 0,970A	2V DC / 1,67A
Bulb life time	1.500 h	10.000 h	2000 h
Characteristic	Focused		
Bulb color temperature	2.960K	2.800K	3.000K
Room temperature	5°C – 35°C		
Humidity	5 - 95% at 40°C		
Output	7W	7W	20W
Weight	Approximately 0.5 kg		
Size	58 x 59 x 140 mm		

Parts List

Spare Parts / Order Information	Catalog Number
Halogen light source with filter holder/shutter and attenuator	HL-2000
Halogen light source, fan cooled, long life	HL-2000 -LL
Halogen light source High-Power with Attenuator and TTL-Shutter	HL-2000-HP
Halogen spare bulb 2.960K/ 1.500 hrs	HL-2000-B
Halogen spare bulb 2.800K / 10.000 hrs	HL-2000-LL-B
Halogen spare bulb High-Power	HL-2000-HP-B

Appendix A

Bulb Replacement

Overview

To order replacement bulbs for the HL-2000, consult the *Parts List*.

WARNING

Before replacing the bulb in the HL-2000, disconnect the lamp from your power source and allow the unit to cool for at least twenty minutes, if necessary.

Identifying the Bulb Type

► *Procedure*

Perform the steps below to identify the bulb type:

1. Unplug the power connector from the power socket on the HL-2000.
2. Loosen the screws on the rear of the unit with the provided 2.5mm Allen wrench.
3. Remove the backside of the HL-2000 and remove the electronics board from the HL-2000, taking particular care not to disconnect the fan wires.
4. Remove the screws from the bottom plate of the unit with the provided 1.3mm Allen key.

5. Inspect the bulb for the bulb code/description. The bulb codes and descriptions are as follows:

Bulb Code	May 2003 and Later - Description	Before May 2003 - Description
HL-2000-B	Cable: Black and red Small housing AD = 13mm	Cable: Black and red Small housing AD = 13mm
HL-2000-BL	Cable: Black and yellow Small housing AD = 13mm	Cable: Black and red Small housing AD = 13mm Ring marker
HL-2000-B-HP	Cable: Black and blue Small housing AD = 13mm	Cable: Black and red Small housing AD = 13mm Bigger bulb

Replacing the Bulb

► *Procedure*

Refer to Figure 5 and perform the steps below to replace the bulb in the HL-2000 Light Source:

1. Unplug the power connector from the power socket on the HL-2000.
2. Loosen the screws on the rear of the unit with the provided 2.5mm Allen wrench.
3. Remove the backside of the HL-2000 and remove the electronics board from the HL-2000, taking particular care not to disconnect the fan wires.
4. Remove the screws from the bottom plate of the unit with the provided 1.3mm Allen key.
5. Remove the bulb from the HL-2000.
6. Disconnect the wires from the connection block.
7. Replace the bulb and reconnect the wires to the connection block.
8. Slide the lamp into the housing and secure the housing with the bottom screw.
9. Slide the electronics board back into the HL-2000, taking particular care to ensure that the wires do not come into contact with the fan blades.

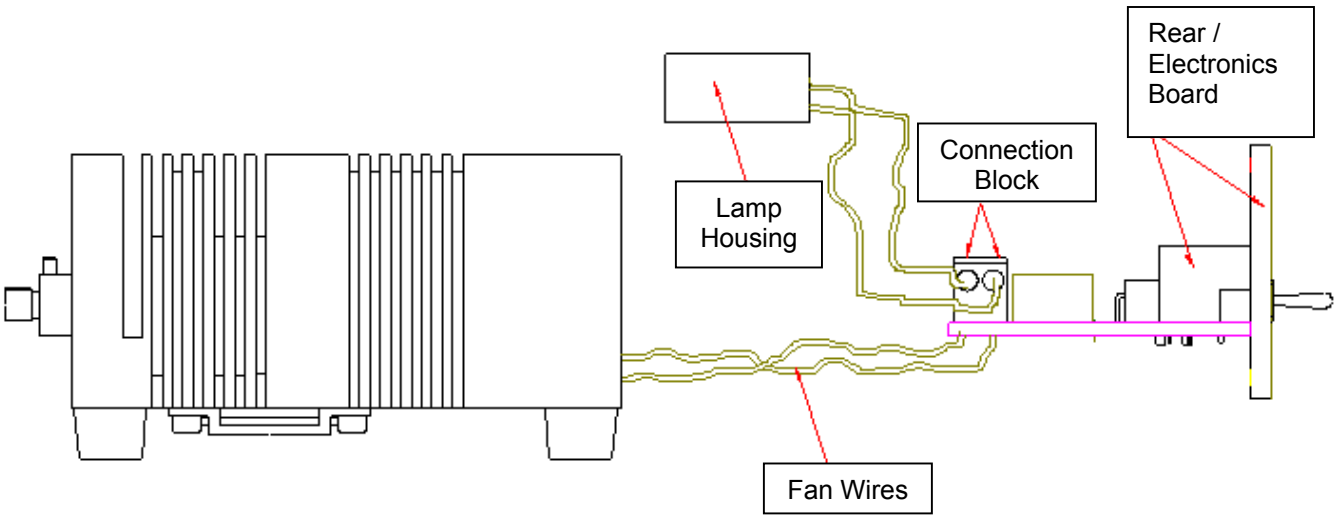

Figure 5: HL-2000 Bulb Replacement Diagram

Index

B

bulb
  indentifying type, 7
  replacement, 8
bulb replacement
  diagram, 9

D

diagrams, 2
  bottom view, 4
  bulb replacement, 9
  power supply, 2
  rear view, 3
  side view, 3
document
  audience, iii
  purpose, iii
  summary, iii

O

optical power
  optimizing output, 2

P

parts list, 5
product-related documentation, iii

S

setup, 1
specifications, 5

U

upgrades, iii

W

warranty, A
what's new, iii