Halogen Light Source

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

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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. 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.

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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

Document Summary

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<tr>
<th>Chapter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1: <em>Setup</em></td>
<td>Contains a list of package contents and unpacking instructions.</td>
</tr>
<tr>
<td>Chapter 2: <em>HL-2000 Specifications</em></td>
<td>Contains operating environment specifications, as well as other physical details of the product.</td>
</tr>
<tr>
<td>Appendix A: <em>Bulb Replacement</em></td>
<td>Provides instructions for changing the bulb.</td>
</tr>
</tbody>
</table>

Product-Related Documentation
You can access documentation for Ocean Optics products by visiting our website at [http://www.oceanoptics.com](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.
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
1: Setup

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength range</td>
<td>360 nm – 1700 nm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability</td>
<td>0.5 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drift</td>
<td>&lt;0.1% pro Hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to stabilize</td>
<td>Approximately 5 Minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output to bulb</td>
<td>5V DC / 1,435A</td>
<td>5V DC / 0.970A</td>
<td>2V DC / 1.67A</td>
</tr>
<tr>
<td>Bulb life time</td>
<td>1.500 h</td>
<td>10,000 h</td>
<td>2000 h</td>
</tr>
<tr>
<td>Characteristic</td>
<td>Focused</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulb color temperature</td>
<td>2.960K</td>
<td>2.800K</td>
<td>3.000K</td>
</tr>
<tr>
<td>Room temperature</td>
<td>5°C – 35°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>5 - 95% at 40°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>7W</td>
<td>7W</td>
<td>20W</td>
</tr>
<tr>
<td>Weight</td>
<td>Approximately 0.5 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>58 x 59 x 140 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Parts List

<table>
<thead>
<tr>
<th>Spare Parts / Order Information</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halogen light source with filter holder/shutter and attenuator</td>
<td>HL-2000</td>
</tr>
<tr>
<td>Halogen light source, fan cooled, long life</td>
<td>HL-2000-LL</td>
</tr>
<tr>
<td>Halogen light source High-Power with Attenuator and TTL-Shutter</td>
<td>HL-2000-HP</td>
</tr>
<tr>
<td>Halogen spare bulb 2.960K/ 1.500 hrs</td>
<td>HL-2000-B</td>
</tr>
<tr>
<td>Halogen spare bulb 2.800K / 10,000 hrs</td>
<td>HL-2000-LL-B</td>
</tr>
<tr>
<td>Halogen spare bulb High-Power</td>
<td>HL-2000-HP-B</td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>Bulb Code</th>
<th>May 2003 and Later - Description</th>
<th>Before May 2003 - Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HL-2000-B</td>
<td>Cable: Black and red</td>
<td>Cable: Black and red</td>
</tr>
<tr>
<td></td>
<td>Small housing AD = 13mm</td>
<td>Small housing AD = 13mm</td>
</tr>
<tr>
<td>HL-2000-BL</td>
<td>Cable: Black and yellow</td>
<td>Cable: Black and red</td>
</tr>
<tr>
<td></td>
<td>Small housing AD = 13mm</td>
<td>Small housing AD = 13mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ring marker</td>
</tr>
<tr>
<td>HL-2000-B-HP</td>
<td>Cable: Black and blue</td>
<td>Cable: Black and red</td>
</tr>
<tr>
<td></td>
<td>Small housing AD = 13mm</td>
<td>Small housing AD = 13mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bigger bulb</td>
</tr>
</tbody>
</table>

**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
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