Halogen Light Source with Attenuator and TTL-Shutter

HL-2000-FHSA / HL-2000-FHSA-LL / HL-2000-FHSA-HP

A Mikropack Product

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

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Table of Contents

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 with Attenuator and TTL-Shutter HL-2000-FHSA / HL-2000-FHSA-LL / HL-2000-FHSA-HP Installation and Operation Manual* adds our partnership agreement.

Document Summary

Chapter	Description
Chapter 1: *Setup*	Contains instructions for setting up the unit, enabling automatic shutter control, and optimizing and attenuating the optical power output.
Chapter 2: *HL-2000-FHSA 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

Overview

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

Before using the HL-2000-FHSA for the first time check for transport damage. Be sure to adhere to all warnings on the unit and in this manual.

Unpacking the HL-2000-FHSA

► ***Procedure***

1. Unpack your lamp assembly carefully. 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. Contact your dealer for repair or replacement information, if necessary.

3. Use this instrument in a clean laboratory environment (see ***Error! Reference source not found.***).

Contents

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

- HL-2000 Light Source
- One IC-DB15-2 interface cable for shutter operation

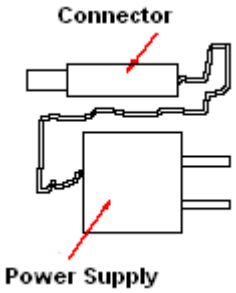
Setting Up the HL-2000-FHSA Light Source

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

► *Procedure*

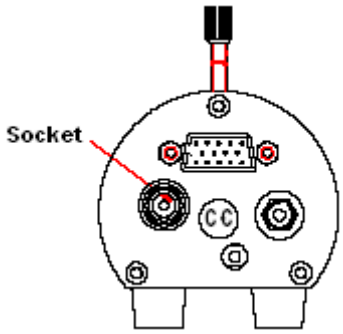
Perform the steps below to set up your HL-2000-FHSA Light Source:

1. Plug the power supply into a wall outlet.



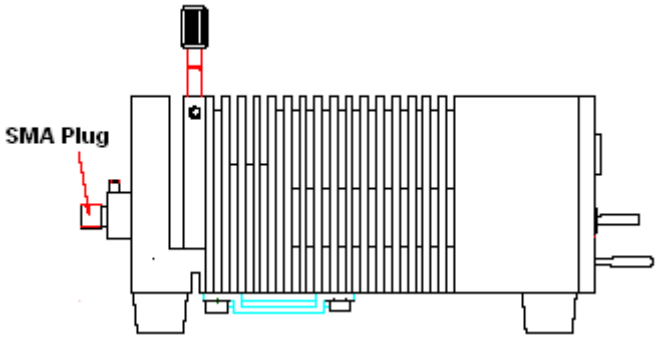
Power Supply

2. Plug the other end of the power supply cable into the socket of HL-2000-FHSA.



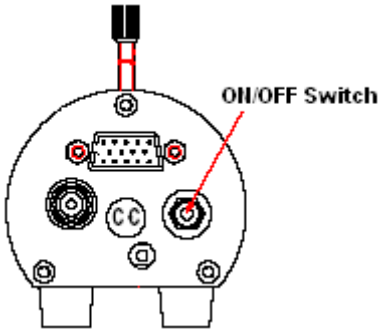
HL-2000-FHSA Rear View

3. Connect the SMA connector of your fiber optic cable to the SMA plugs.



HL-2000-FHSA Right Side View

4. Turn the Halogen lamp on using the power switch on the rear of the HL-2000-FHSA.



HL-2000-FHSA Rear View

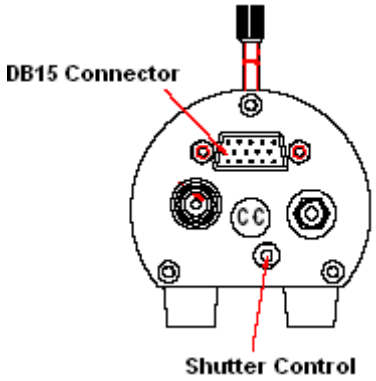
Enabling Automatic Shutter Control

The HL-2000-FHSA is equipped with a 15-pin TTL port on the rear of the unit that allows an external source to control the shutter of the HL-2000-FHSA.

► *Procedure*

To enable automatic shutter control (TTL), perform the following steps:

1. Insert the supplied IC-DB-15-2 15 pin connector into the port on the rear of the HL-2000-FHSA.



HL-2000-FHSA Rear View

2. Move the shutter switch on the rear of the unit into the appropriate position to select the shutter mode.
   - Open – Shutter open
   - Close – Shutter closed
   - TTL – Controlled by external TTL (High = Open, Low = Closed)

Note

Use Ocean Optics OOIBase32 software for automatic save dark.

Optimizing the Optical Power Output

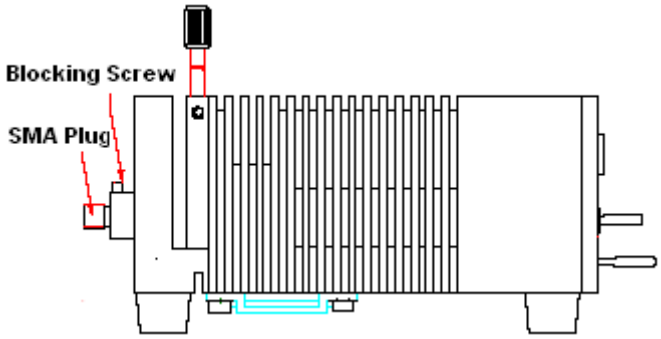
The HL-2000-FHSA is adjusted at the factory to provide maximum power into a 200µm fiber. If a lower optical power is required or a different fiber (bundle) diameter is used, you can adjust the optical power of the unit. Refer to *HL-2000-FSHA Diagrams* while using the following procedure.

► *Procedure*

Follow the steps below to adjust the optical power of the HL-2000-FHSA 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-FHSA'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-FHSA.
4. Tighten the blocking screw to secure the SMA socket position.

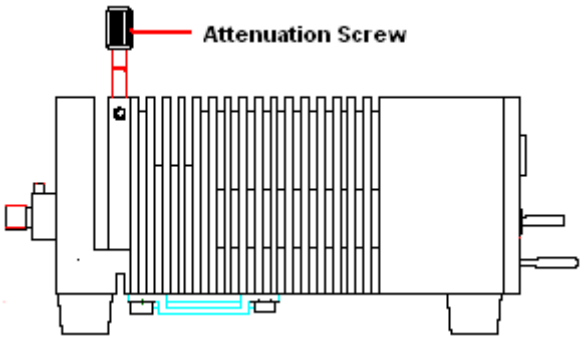
Attenuating the Optical Power Output

The HL-2000-FHSA allows you to attenuate the optical output of the unit by adjusting the attenuation screw.

► *Procedure*

To attenuate the optical output of the HL-2000-FHSA, follow the steps below:

1. Ensure that the shutter switch on the rear of the unit is in the open position.
2. Loosen the fixture screw with the provided 2.0mm Allen wrench.
3. Turn the attenuation screw until the desire optical power is achieved.
4. Tighten the fixture screw when finished.
5. To attenuate the optical output of the HL-2000-FHSA, turn the attenuation-screw clockwise.



HL-2000-FSHA Diagrams

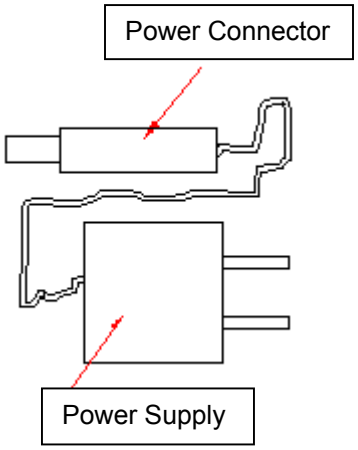


Figure 1: HL-2000-FHSA Power Supply

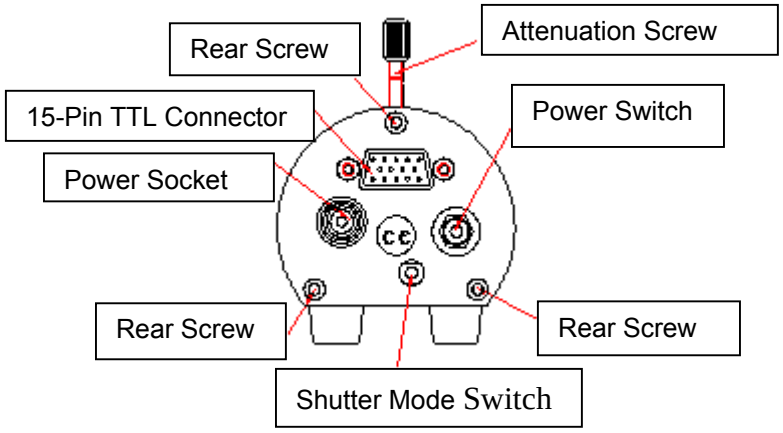


Figure 2: HL-2000-FHSA Rear View

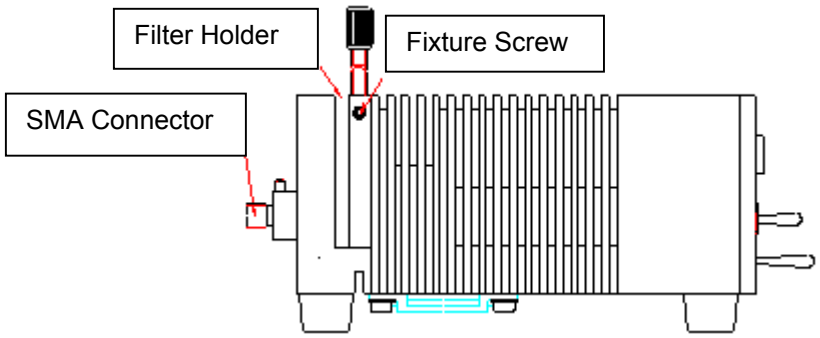


Figure 3: HL-2000-FHSA Side View

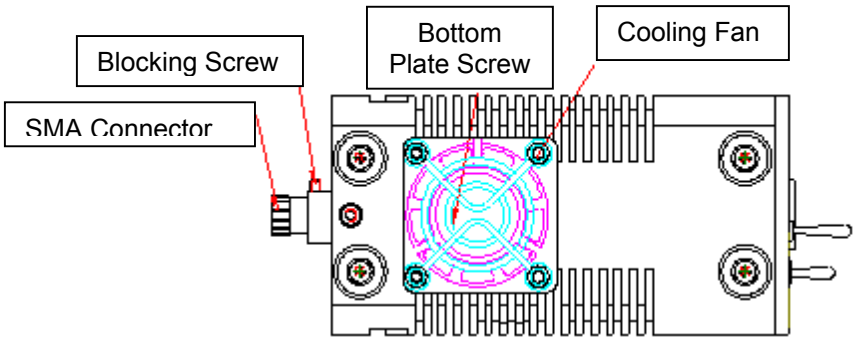


Figure 4: HL-2000-FHSA Bottom View

Chapter 2

HL-2000-FHSA Specifications

This section provides information on the operating environment, physical controls, and dimensions of the HL-2000-FHSA, as well as pinouts for the DB-15 connector. It also provides a parts list.

Specifications

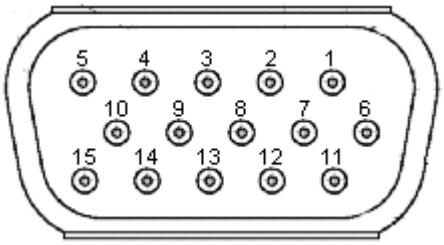
	HL-2000-FHSA	HL-2000-FHSA-LL	HL-2000-FHSA-HP
Wavelength range	360 nm – 1700 nm		
Stability	0.5 %		
Drift	<0.1% per hour		
Time to stabilize	Approximately 5 Minutes		
Output to bulb	5V DC / 1,435A	5V DC / 0,970A	2V DC / 1,67A
Bulb life time	1.500 h	10.000 h	2000 h
Characteristic	Focused		
Shutter	TTL max. 5Hz		
DB-15 Connector	PIN 13: TTL PIN 10: Ground		
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		

Pinout Information

The following table contains pinout information for the HL-2000-FHSA Light Source:

Pin	Description
1	na
2	na
3	na
4	na
5	na
6	na
7	na
8	na
9	na
10	Ground
11	na
12	na
13	TTL Signal – Shutter control
14	na
15	na
na = not applicable	

Pinout Diagram



Parts List

Spare Parts / Order Information	Catalog Number
Halogen light source with filter holder/shutter and attenuator	HL-2000-FHSA
Halogen light source, fan cooled, long life	HL-2000-FHSA-LL
Halogen light source High-Power with Attenuator and TTL-Shutter	HL-2000-FHSA-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-FHSA, consult the *Parts List*.

WARNING

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

Replacing the Bulb

► *Procedure*

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

1. Unplug the power connector from the power socket on the HL-2000-FHSA.
2. Loosen the screws on the rear of the unit with the provided 2.5mm Allen wrench.
3. Remove the rear of the HL-2000-FHSA and remove the electronics board from the unit, 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-FHSA.
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-FHSA, taking particular care to ensure that the wires do not come into contact with the fan blades.

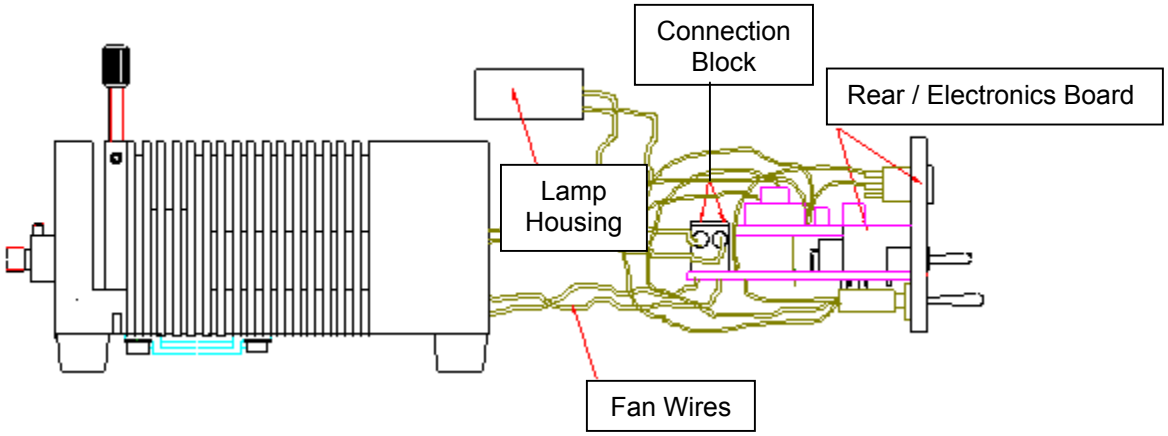


Figure 5: HL-2000-FHSA Bulb Replacement Diagram

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