Ocean Insight

HL-2000

Tungsten Halogen Light Source
Installation and Operation Manual

Products: HL-2000-LL, HL-2000-FHSA-LL, HL-2000-HP, HL-2000-HP-FHSA

Locations

Map labels:
- Rochester, NY, USA
- Duiven, NL
- Shanghai, PRC
- Orlando, FL, USA
- Stuttgart (Ostfildern), DE
- Oxford, UK
- Bengaluru, Karnataka, India

Americas

Manufacturing & Logistics

3500 Quadrangle Blvd., Orlando, FL 32817, USA

Sales: info@oceaninsight.com
Orders: orders@oceaninsight.com
Support: techsupport@oceaninsight.com

Phone: +1 727.733.2447
Fax: +1 727.733.3962

Europe, Middle East & Africa

Sales & Support

Geograaf 24, 6921 EW Duiven, The Netherlands

Manufacturing & Logistics

Maybaachstrasse 11, 73760 Ostfildern, Germany
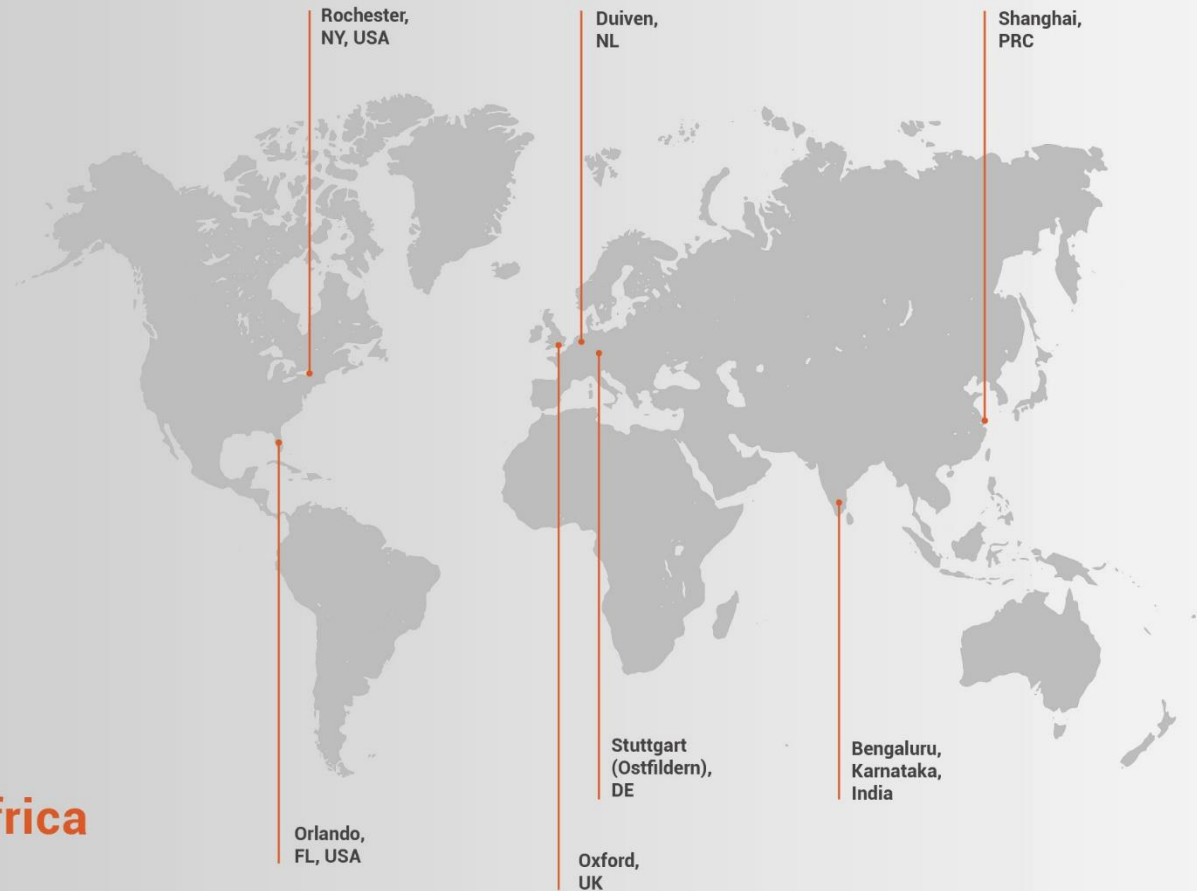
Email: info@oceaninsight.eu

Netherlands: +31 26-319-0500
Netherlands Fax: +31 26-319-0505
Germany: +49 711-341696-0
UK: +44 1865-819922
France: +33 442-386-588

Asia

Ocean Insight China

666 Gubei Rd., Kirin Tower Suite 601B
Changning District, Shanghai, PRC, 200336

Email: asiasales@oceaninsight.com

China: +86 21-6295-6600
China Fax: +86 21-6295-6708
Japan & Korea: +82 10-8514-3797

Ocean Insight India

Prestige Shantiniketan, Gate no.2
Tower C, 7th Floor
Whitefield main road, Mahadevpura
Bengaluru-560048 Karnataka, India

Phone: +91 80-67475336

www.oceaninsight.com

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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 Ocean Insight 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

For the most current warranty information, please visit OceanInsight.com.

Setup

Overview

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

There are 4 versions of light sources in the HL-2000 family. These are outlined below. Only the FHSA versions have the DB15 connector, associated cable, shutter switch, and attenuator.

		Long Lifetime (LL)	High Power (HP)
		The LL light sources employ a unique long lifetime lamp that extends operation to 10,000 hours.	With a 20W nominal bulb power, the HP sources provide 5X the output of the LL models but at a fraction of the operation lifetime.
	No Shutter	**HL-2000-LL**	**HL-2000-HP**
FHSA	The FHSA versions have a DB15 connector allowing for an external source to control the shutter.	**HL-2000-FHSA-LL**	**HL-2000-HP-FHSA**

Unpacking the HL-2000

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.

Contents

Your HL-2000 package should contain the following:

- HL-2000 Light Source
- Power Cable
- FHSA models only
  - One IC-DB15-2 interface cable for shutter operation

Attenuator (FHSA Models Only)

SMA Connector

Setting Up the HL-2000 Light Source

1. Plug the power supply into a wall outlet.
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.
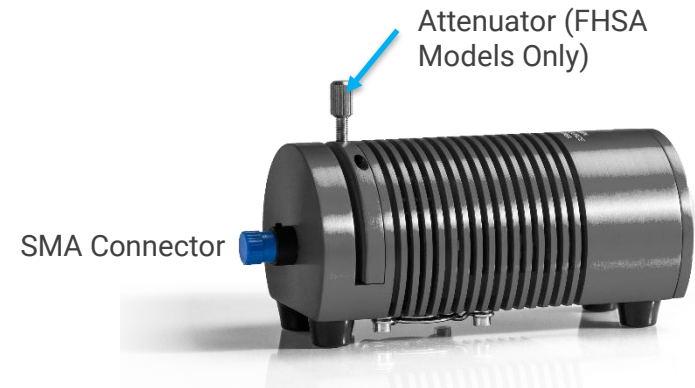
Enabling Automatic Shutter Control (FHSA Models Only)

The FHSA models of the HL-2000 are 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.

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 model).
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)

DB15 Connector (FHSA Models Only)

On/Off Switch

Socket

Shutter Switch (FHSA Models Only)
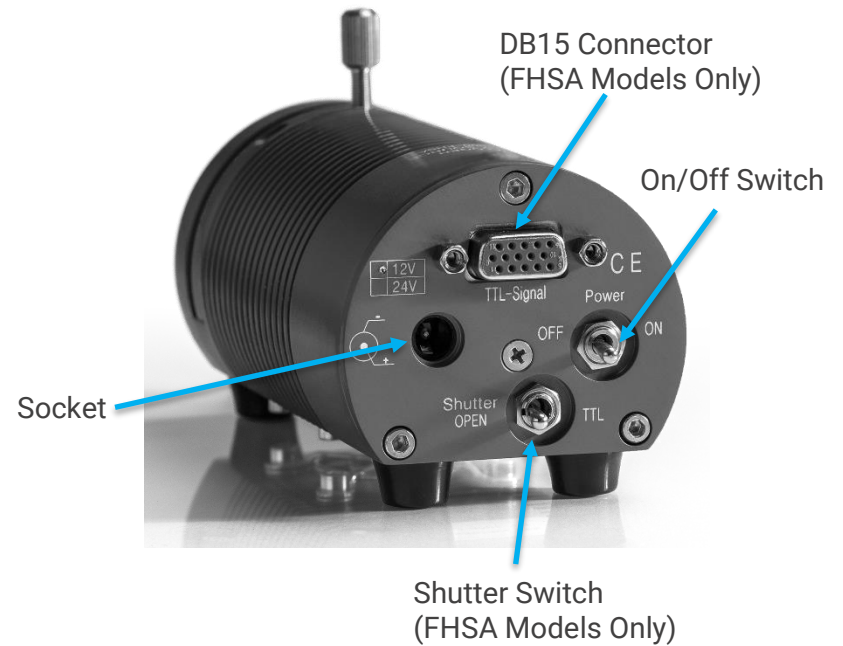
NOTE

Use Ocean Insight software to save a dark measurement.

Optimizing the Optical Power Output

The HL-2000 is adjusted at the factory to provide maximum power into a 200 µm 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.

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 1.3 mm 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.

Blocking Screw

SMA Plug
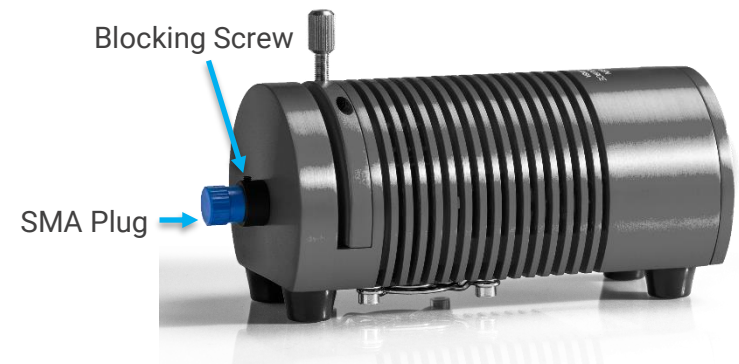
Attenuating the Optical Power Output (FHSA Models Only)

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

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

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 2.0 mm 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, turn the attenuation-screw clockwise.

Attenuation Screw

Fixture Screw
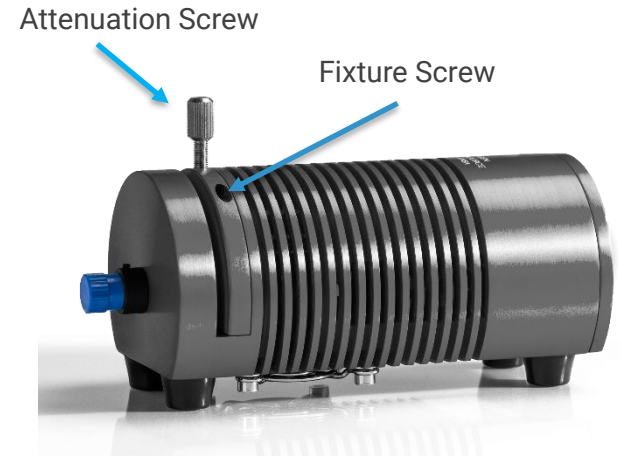
NOTE

The attenuation screw can prevent the shutter from opening if turned clockwise too far. If the shutter is not working, turn the attenuation screw counterclockwise.

HL-2000 Specifications

	HL-2000-LL	HL-2000-FHSA-LL	HL-2000-HP	HL-2000-HP-FHSA
Wavelength range	360 – 2,400 nm			
Stability	0.25% Peak to Peak			
Drift	<0.1% per hour			
Warm Up Time	10 Min			
Bulb lifetime	10,000 Hrs (typical)		1,000 Hrs (typical)	
Fiber Connector	SMA 905			
Shutter	No	Yes	No	Yes
DB-15 Connector	No	Yes	No	Yes
Bulb color temperature	2,800 K		3,000 K	
Operating temperature	5 °C - 35 °C			
Humidity	5–95% without condensation at 40°C			
Nominal Bulb Power	4.75 W		20 W	
Typical Output Power	4.7 mW	4.5 mW	8.8 mW	8.4 mW
Weight	Approximately 0.5 kg			
Size	58 x 59 x 140 mm			
Safety and regulatory	CE, ROHS, WEEE			

Pinout Information (FHSA Models Only)

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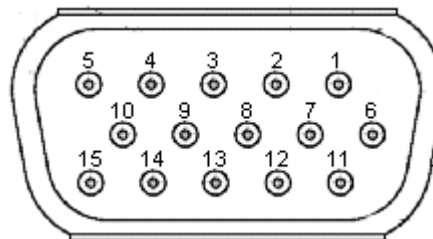
Replacement Bulbs Parts List

Spare Parts / Order Information	Catalog Number
Halogen spare bulb 2.800K / 10.000 hrs	HL-2000-B-LL
Halogen spare bulb High-Power	HL-2000-HP-B

Bulb Replacement

To order replacement bulbs for the HL-2000, please visit OceanInsight.com.

⚠️ Before replacing the bulb in the HL-2000, disconnect the lamp from your power source and allow the unit to cool for at least 20 minutes, if necessary.

Replacing the Bulb

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 2.5 mm Allen wrench.
3. Remove the rear of the HL-2000 and remove the electronics board from the unit, taking care not to disconnect the fan wires.
4. Loosen the bulb fixture screw from the bottom of the unit with the provided 1.3 mm Allen key.

> **NOTE**
>
> Do not completely remove the bulb fixture screw. It may be difficult to reinsert it.

5. Disconnect the wires from the connection block.
6. Replace the bulb and reconnect the wires to the connection block.
7. Slide the lamp into the housing and secure with the bulb fixture screw.
8. Slide the electronics board back into the HL-2000, taking care to ensure that the wires do not come into contact with the fan blades.

> **NOTE**
>
> The bulb fixture screw is above the fan, behind the blades. Turn the blades, if necessary, to reach the screw.

Unlock the Unknown

Ocean Insight exists to end guessing. We equip humanity with technology and data to make precisely informed decisions providing transformational clarity for human advancement in health, safety, and the environment.

Questions?

Chat with us at **OceanInsight.com**.
info@oceaninsight.com • **US** +1 727-733-2447
EUROPE +31 26-3190500 • **ASIA** +86 21-6295-6600

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