



High-Power Xenon 2000 Light Source Installation and Operation Manual



IMPORTANT NOTICE

This document is applicable for the HPX-2000 and HPX-2000-HP-DUV products manufactured in the USA. They are identifiable by serial numbers beginning with serial number 10500 for the HPX-2000 and serial number 20500 for the HPX-2000-HP-DUV.

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WARNING

Protective Eye Wear Must Be Worn
When Using This Instrument -
Intense Ultraviolet Radiation Present

See Important Safety Notices inside.

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About This Manual

Document Purpose and Intended Audience

This document provides you with an installation section to get your HPX-2000 or HPX-2000-HP-DUV light source up and running.

What's New in this Document

This version of the *High-Power Xenon Light Source Installation and Operation Manual* corresponds to the units manufactured in the United States. They are identifiable by serial numbers beginning with serial number 10500 for the HPX-2000 and serial number 20500 for the HPX-2000.

Document Summary

Chapter	Description
Chapter 1: Setup	Contains a list of package contents and unpacking instructions. Also contains instructions for connecting the fiber optic cable.
Chapter 2: HPX-2000 Specifications	Contains operating environment specifications, as well as other physical details of the product, a parts list, and pinout information for the 15 DB-15 connector.
Chapter 3: Operating Instructions	Provides instructions for operating the Xenon lamp and the TTL shutter.
Chapter 4: Troubleshooting	Contains a table of troubleshooting information.
Appendix A: Bulb Replacement	Provides instructions for returning the unit to Ocean Optics for bulb replacement.

Product-Related Documentation

You can access documentation for Ocean Optics products by visiting our website at <http://www.oceanoptics.com>. Select *Technical Operating Instructions*, and then choose the appropriate document from the available drop-down lists.

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.

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 operate this unit.
4. Do not use the unit if it is damaged in any way. Contact your dealer for repair or replacement information.
5. Always screw in the fiber optic cables before starting the instrument.



WARNING

Protective eyewear **must** be worn when using this equipment. Intense ultraviolet radiation is present.
Never look directly into the light beam, as this can cause eye damage.

Warranty

Light Source products are covered by Ocean Optics Exclusive Three Year Warranty. For details, please visit the following webpage:

<https://oceanoptics.com/wp-content/uploads/Warranty-Sheet.pdf>

There are no warranties for the Xenon bulbs/modules.

This instrument should not be used for any Clinical or Diagnostic purposes. Data generated in these areas is not warranted in any way by Ocean Optics, Inc.

Certifications and Compliance

ISO CERTIFICATION

Ocean Optics, the industry leader in miniature photonics, has been certified for ISO 9001:2008 applicable to the design and manufacture of electro-optical equipment since 2009.



WEEE COMPLIANCE

The WEEE symbol on the product indicates that the product must not be disposed of with normal household waste. Instead, such marked waste equipment must be disposed of by arranging to return to a designated collection point for the recycling of waste electrical and electronic equipment. Separating and recycling this waste equipment at the time of disposal will help to conserve natural resources and ensure that the equipment is recycled in a manner that protects human health and the environment.



This device has been tested and complies with the following standards:

EN 61326-1:2013

EN 61000-4-2:2009 / IEC 61000-4-2:2008

EN 61000-4-3:2006 / IEC 61000-4-3:2006

EN 61000-4-5:2006 / IEC 61000-4-5:2005

EN 61000-4-11:2004 / IEC 61000-4-11:2004

EN 55011: 2009/A1:2010 Group 1 Class A

ANSI C63.4:2003

FCC COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense.



Chapter 1

Setup

Overview

The following sections provide instructions on unpacking and setting up your HPX-2000 High-Power Light Source.

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



HPX-2000 High-Power Light Source

Unpacking the HPX-2000

► *Procedure*

1. Unpack your lamp assembly carefully. Although the lamp is rigidly mounted, dropping this instrument can cause permanent damage.

1: Setup

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 [Operating Environment](#)).

Contents

Your HPX-2000 package should contain the following:

- ❑ HPX-2000 High-Power Light Source
- ❑ Power cord
- ❑ UV safety goggles
- ❑ One IC-DB15-2 interface cable for shutter operation
- ❑ Quick Start

Connecting the Fiber Optic Cable

► Procedure

To connect the fiber optic cable to the HPX-2000,

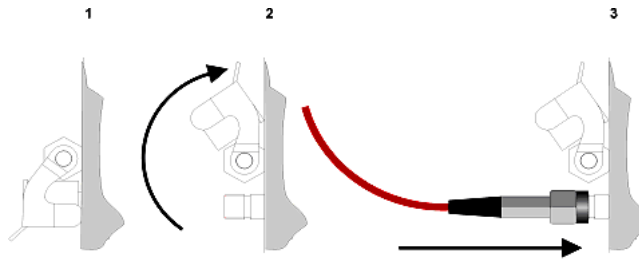
1. Locate the cap on the front of the HPX-2000.



2. Lift the cap on the front of the HPX-2000 to expose the SMA connector.



3. Connect the fiber optic cable to the SMA connector.



Chapter 2

HPX-2000 Specifications

This section provides information on the operating environment, physical controls, and dimensions of the HPX-2000. It also provides pinout information for the connector.

Operating Environment

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

Moisture	5-95% without condensation at 40 °C
Ventilation	Unit should be situated so that its location or position does not interfere with proper ventilation.
Temperature	5 °C – 35 °C. Unit should be situated away from any device that emits excessive heat.
Object and Liquid Entry	Unit 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.

HPX-2000 Components

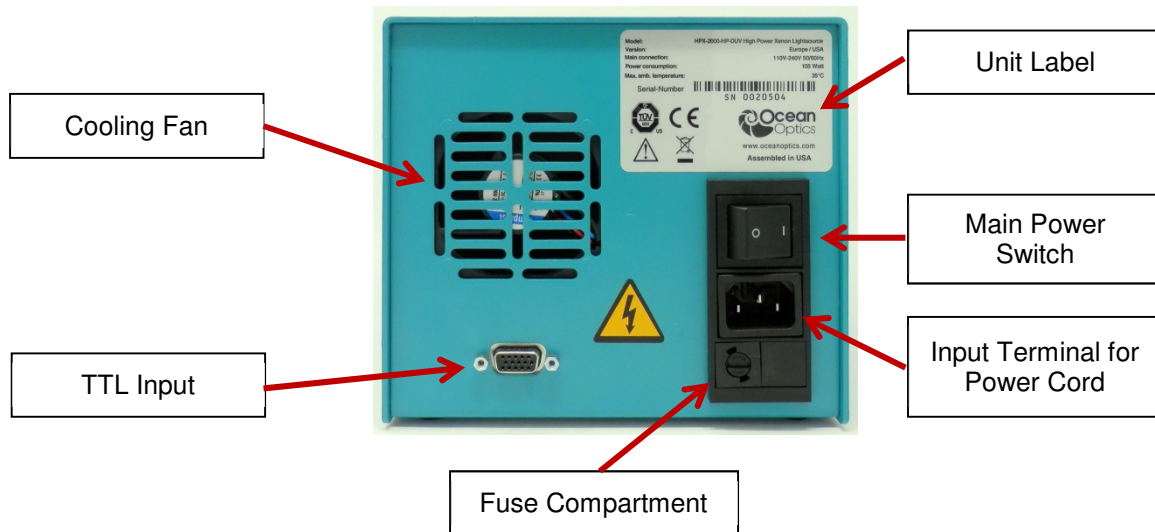
The following sections describe the components located on the front and rear of the HPX-2000 unit.

Front Panel



Component	Description
Filter Slit	Slit to accommodate optical filters. (not available on HPX-2000-HP-DUV))
Power LED	Displays state of main power to lamp.
Xenon ON/OFF	Press and hold the ON/OFF switch for more than 1 second to turn the lamp on or off.
Status LED	Status of the Xenon lamp: <ul style="list-style-type: none"> • Lit – Xenon lamp is on • Blinking – Lamp is in setup mode or cool down mode. The Lamp cannot be started when the Status LED is blinking. • Off – Xenon lamp is off
Shutter Switch	OPEN - Shutter open CLOSE - Shutter closed TTL - operation by external TTL- signal (HIGH=OPEN, LOW=CLOSE)
Mechanical Protection – SMA Connector	Covered to protect users from unintentionally looking directly at the beam of light. Used for SMA connections only. Connect the fiber cable to the HPX-2000 BEFORE turning the lamp on to avoid unnecessary exposure to UV radiation. Avoid direct contact with the fiber end. Always wear proper eye protection when using the HPX-2000 lamp.

Rear Panel



Component	Description
Main Power Switch	Turn on to supply power to the unit. The Power LED lights when this switch is in the ON position.
Fuse Compartment	Contains the fuse to protect the unit against overload: 2.0 Amp, 250 V slow blow. Littlefuse part # 0218002
Input Terminal for Power Cord	Plug power cord into this terminal. Note: Only connect the power cable to the lamp when the Main Power Switch is in the OFF position. THE INSTRUMENT MUST BE CONNECTED TO A GROUNDED (EARTHED) OUTLET
TTL Input	D-SUB 15-pin connector for automatic shutter control and remote lamp enable
Unit Label	HPX-2000 - Type High Power Xenon Lightsource - Version Europe / USA - Order-No. HPX-2000 - Serial-No. xxxxxx - Main connection 115 / 240V 47-63Hz - Power consumption 50 Watt - Max. Ambient Temperature 35°C
	HPX-2000-HP-DUV: - Type High Power Xenon Lightsource - Version Europe / USA - Order-No. HPX-2000-HP-DUV - Serial-No. xxxxxx - Main connection 115 / 230V 47-63Hz - Power consumption 115 Watt - Max. Ambient Temperature 35°C
Cooling Fan	Cools the interior of the HPX-2000. Do not obstruct.

Specifications

Specifications	Criteria
Spectral Range	185 – 2000 nm
Light Output Stability	~ 1%
Warm-up time	25 - 30 minutes
Operating temperature	5°C – 35°C
Humidity	5 - 95% without condensation at 40°C
Power Consumption	HPX-2000 50W; HPX-2000-HP-DUV 150W
Current	4 A/DC maximum
Optical Power in 600 μ Fiber	HPX-2000 1.52 mW; HPX-2000-HP-DUV 6.13 mW
Optical Fiber Connection	SMA (optional FC/PC)
Lifetime Average / Guaranteed	2000h / 1000h
Shutter-Input	TTL-Input, up to maximum 2.5Hz
PIN position at SUB-D-15 pin	Shutter PIN 13: TTL / PIN 10: Ground
Filter Dimensions possible	Up to diameter or square 25 mm x 4 mm or 20 mm x 6 mm
Input Line	115 / 230VAC
Markings, Directives	CE; VDI/VDE 0160; EN 61010
Lamp Input Current	3.5 A
Remote Lamp Enable and Shutter Enable Requirements	I = 2.6 mA at 2.5V I = 8.1mA at 5V
Weight	5kg
Dimensions	145 mm x 165 mm x 260 mm

Modification of device specifications and designs to improve performance may occur without notice.

Parts List

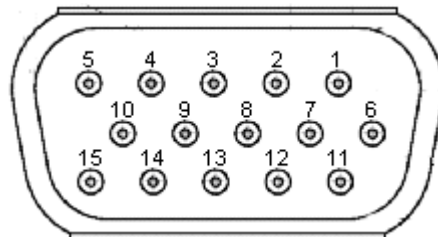
Description	Part Number
High Power Xenon Light source with Shutter and Filter Holder	HPX-2000
High power xenon light source with integrated shutter, enhanced UV output	HPX-2000-HP-DUV
Fuse	Littlefuse 0218002.HXP

Pinout Information

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

Pin	Description
1	NA
2	NA
3	Lamp Enable Signal (Rising Edge ON, Rising Edge OFF, 2.5V to 5V)
4	NA
5	NA
6	NA
7	NA
8	NA
9	NA
10	Lamp and Shutter Signals RETURN
11	NA
12	NA
13	Shutter Control Signal (Hi = OPEN, LOW = CLOSED, 2.5V to 5V)
14	NA
15	NA
NA = not applicable	

Pinout Diagram



Operating Instructions

Operating the Xenon Lamp

The following sections provide instructions on operating the Xenon lamp in the HPX-2000 Light Source. The HPX-2000 unit must be in a horizontal position for it to work.

Starting Main Power

► **Procedure**

To apply main power to the unit,

1. Ensure that the Main Power Switch is OFF. Then, connect the power cord to the Terminal Input on the rear panel of the unit.
2. Turn the Main Power Switch ON. The Power LED lights, indicating that the unit is receiving power. The Status LED blinks momentarily after the main power is switched on. The Xenon bulb remains off after power-on.

Starting the Lamp

Manual Control

Tap the Xenon ON/OFF switch to illuminate the HPX-2000 lamp.

The lamp cannot be started when the Status LED is blinking. The Status LED blinks for about 5 seconds after the main power is switched on, and for about 60 seconds after the lamp has been turned off.



Protective eyewear must be worn when using this equipment - Intense ultraviolet radiation present. Never look directly into the light beam, as this can cause eye damage.

Turning the Lamp Off

Turn the Xenon lamp off by tapping the Xenon ON/OFF switch. The Status LED blinks for about 60 seconds while the lamp cools down. Do not power off the unit while the Status LED is blinking.

Warming Up the Lamp

The HPX-2000 requires 25-30 minutes of operation to reach a state of thermal equilibrium. During this warm-up period, the intensity of the output power can vary substantially.

If applications require extreme intensity stability, the lamp should be warmed up for an additional 30-45 minutes. Once warmed up for this amount of time, the lamp will reach specified drift values.

Operating the Shutter

The shutter on your HPX-2000 device may be operated either manually or remotely by utilizing the shutter switch on the front of the unit.



Manual Operation

Manually set the operating mode of the HPX-2000 with the Shutter Switch as follows:

- OPEN - Shutter open
- CLOSE - Shutter closed
- TTL – Remote operation of shutter

Remote Operation of the LAMP and Shutter

For remote operation, plug the D-SUB 15-pin connector into the appropriate socket on your spectrometer.

3: Operating Instructions

USE ONLY THE CABLE PROVIDED OR A CUSTOM CABLE DESIGNED TO INTERFACE WITH THE PINOUTS AS DESCRIBED IN THE PINOUT SECTION. DO NOT USE A VGA VIDEO CABLE.

- Set the front panel switch to the TTL position
- Pin 2 of the connector is the LAMP ON/OFF control.
- Pin 13 of the connector is the shutter control. (HIGH=OPEN, LOW=CLOSE)

Operating the Filter Slit (HPX-2000 only)

► Procedure

1. Rotate the light beam protection cap to open the filter slit.



2. Insert your filter with a maximum size of 1" round or square into the filter slit.
3. Rotate the light beam protection cap to close the filter slit.



4. After removing the filter, rotate the protection cap to its closed position.

Chapter 4

Troubleshooting

If the power supply or lamp does not seem to be functioning properly, check the following:

Issue	Probable Cause	Resolution
Power switches on, but no LEDs light.	Line power not present	Check line voltage
	Fuse defective	Check fuse
Xenon lamp does not start	Lifetime of the lamp is exhausted	Send unit to Ocean Optics for bulb replacement

Appendix A

Bulb Replacement

All service, including bulb replacements, must be performed by Ocean Optics, Inc.

To initiate service, navigate to: <https://oceanoptics.com/support/rma/> to obtain a RMA (Return Merchandise Authorization) number.

It is very important that you obtain a RMA number.

Please **DO NOT SHIP** merchandise to Ocean Optics, Inc. without prior authorization.

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