OtO Photonics

Light Source Product Sheet

Description

OtO Photonics provides light sources designed to meet our customers' needs with stable and wide-band spectral output for UV, visible and NIR measurements.

These light sources are designed for transmittance and absorbance measurement with color information, and are suited for scientific applications, research and development, production line and quality control fields.

All light sources are designed to be used in the spectral measurement package (PKG) developed by OtO. This package contains a robust platform making it easy for users to perform measurements.

All models come with an external I/O which can be controlled by the spectrometer or other host devices. When ON/OFF control is applied, the user should consider the warm-up condition of the light source in order to get accurate measurement.

Several different lamps and optical filtering techniques are available, as shown below.

Balance Light: LS-BA

Halogen Light: LS-HA

Deuterium-Halogen Light: LS-DH-2

OtO Photonics

Light Source

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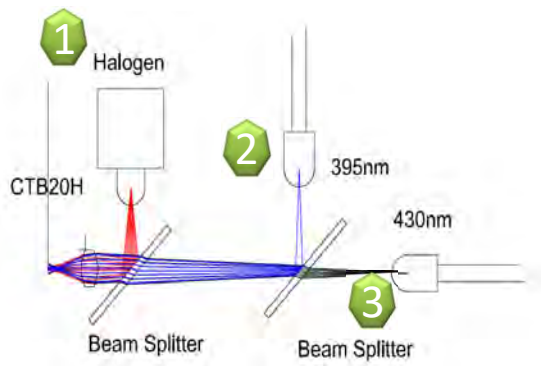
Balance Light LS-BA

The LS-BA balance light source is designed for transmittance and absorbance measurement with color information in the visible and NIR.

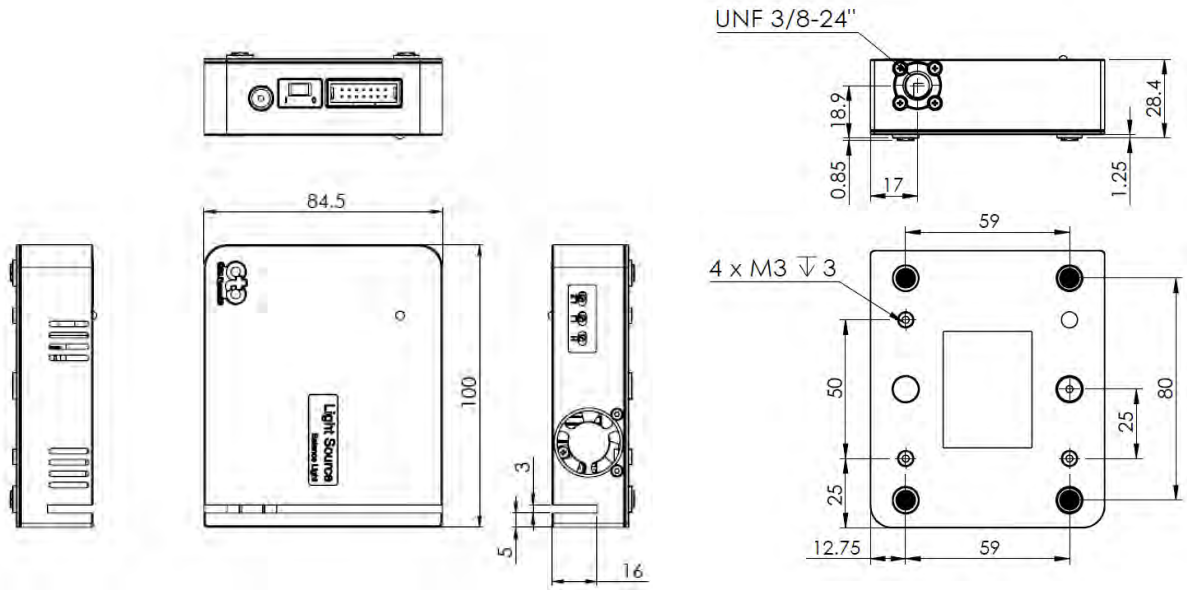
The Halogen source provides a stable and smooth wide-band spectral output which is enhanced by the integration of 395nm and 430nm LEDs to increase the UVA and blue output.



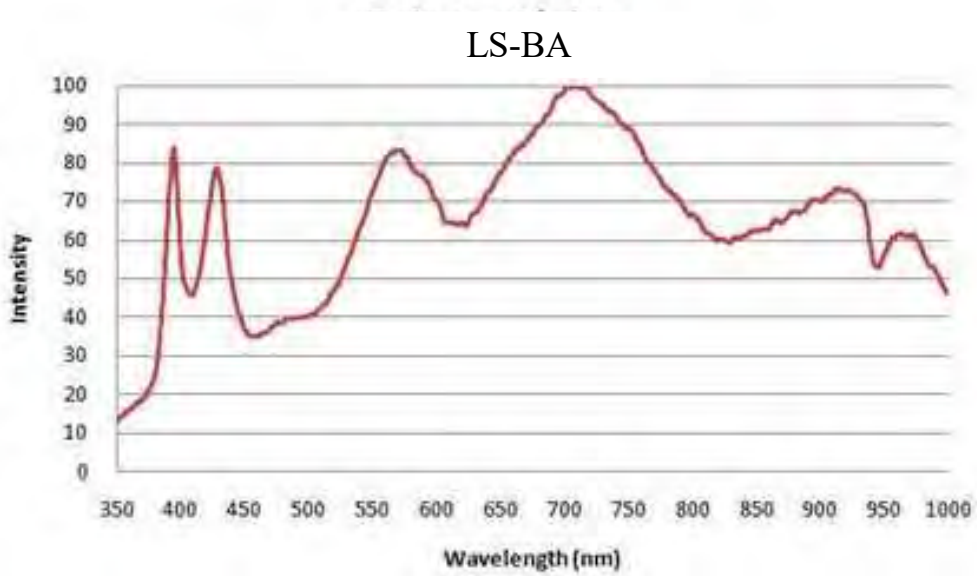
In order to align these three light spots well, the light sources are adjusted accurately. Besides the light spots are optimized, the intensity of each light source is adjusted in balance. It can provide the better measurement result. In some applications, the light source provides the flexibility to compensate the efficiency of the spectrometer.

Model		LS-BA
Halogen Lamp	Rated Voltage (V)	5
	Current (A)	0.97
	Life (hr)	10000
	Color Temperature (k)	2800
LED1 (395 nm)	Forward Voltage (V)	3.5
	Forward Current (mA)	50
LED2 (430 nm)	Forward Voltage (V)	3.8
	Forward Current (mA)	30
Power Adapter	AC input range (V)	100~240
	DC output voltage (V)	5 (max. 2A)

Drawing



Spectrum



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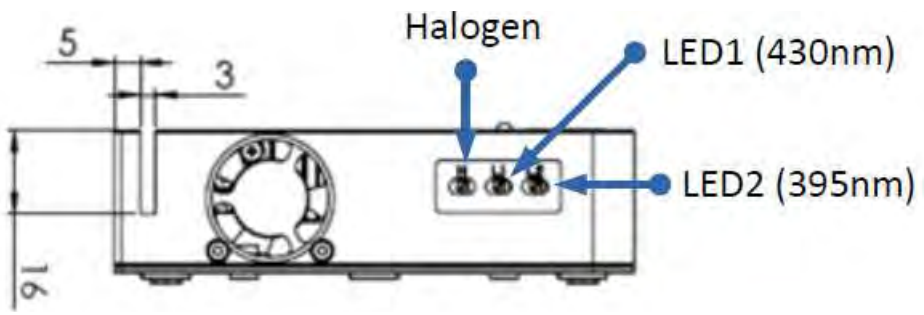
Features

Potentiometer Adjustment

Potentiometers are provided to allow individual control of the Halogen lamp, 395nm and 430nm LED light sources of the LS-BA.

The settings are adjusted during production to provide a balanced spectrum but as the wavelength intensity of a measured spectrum is dependant on the spectrometer's own sensitivity this feature allows users to fine-tune the output to suit their system.



Intensity Adjustment: Halogen、LED1 (430nm)、LED2 (395nm)

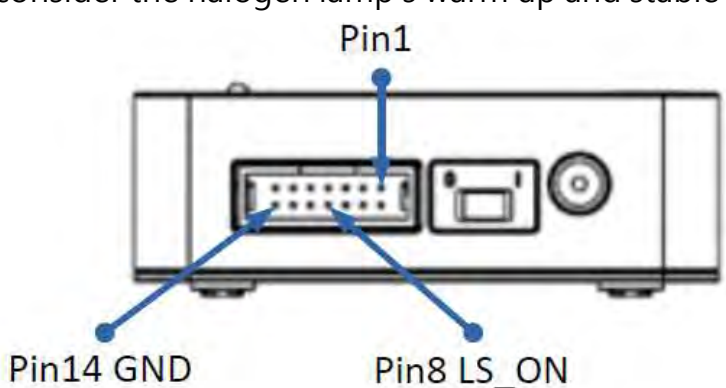
I/O Extension Port

There is one 14-pin 2.54mm pitch connector in the balanced light source.

This 14-pin connector can be connected to SD1220 directly through the 14pin cable.

For other spectrometer models, the user can use two pin cable to link the spectrometer and this light source. (Pin8 & Pin14).

Using SpectraSmart software or SDK, the user can turn on/off the light source, but should consider the halogen lamp's warm up and stable time.



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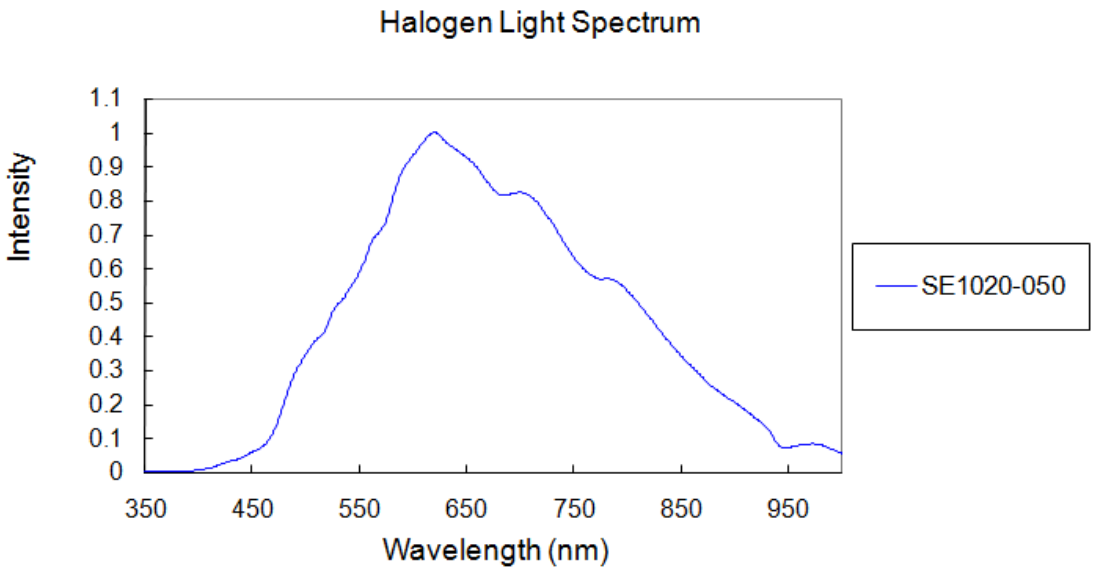
Halogen Light LS-HA

OtO Photonics' Halogen Light source provides a stable and smooth wide-band spectral output suitable for most visible to near-infrared measurements.

This light source is designed to be used in OtO's PKG spectral measurement package. It's a simple and quick measurement platform.

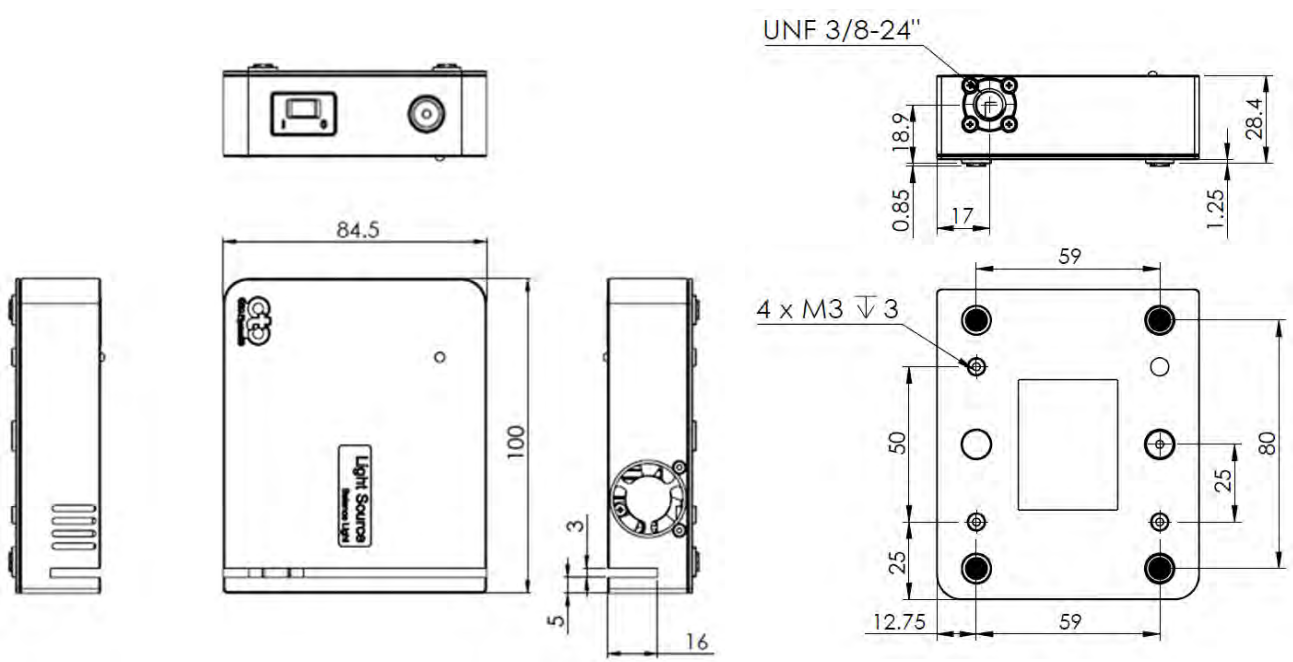
Model	Halogen Lamp			
	Wavelength Range (nm)	Stability (AU)	Drift (%/hour)	Rated Voltage (V)
LS-HA	350-1700	0.5%	<0.3	5
	Current (A)	Life (hr)	Color Temperature (k)	Warming-up time
	0.97	10000	2800	0.5 hr

Spectrum



The spectrum is measured by OtO SE1020-50-VNIR (350-1020nm) spectrometer. Electrical Dark and Linearity Calibration are enabled. Intensity Calibration is disabled.

Drawing



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Deuterium-Halogen Light LS-DH-2

The LS-DH uses both a deuterium and a halogen light source to provide wide wavelength coverage. The deuterium light source is used for UV measurement and the halogen light source is used for visible and NIR region measurement. The light source output is standard SMA905 and can be directly attached to a fiber.

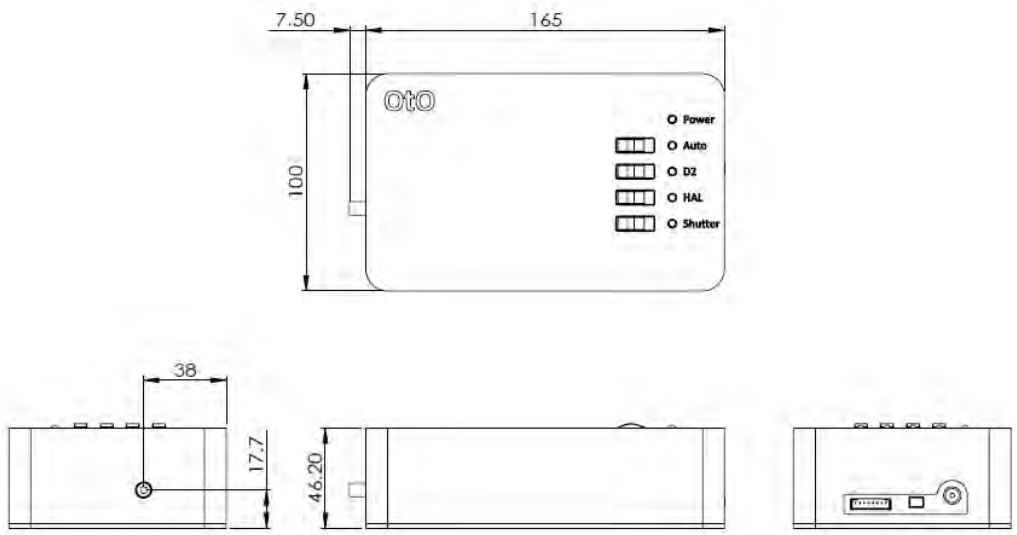
Both light sources can be turned ON/OFF independantly, or a mechanical shutter can be closed to block light without disabling the light sources. These options can either be controlled manually on the LS-DH-2, or by software. When ON/OFF control is applied, consider the light source warm-up duration before taking measurements. The typical warm-up time for a halogen light source is around 15~30 minutes.

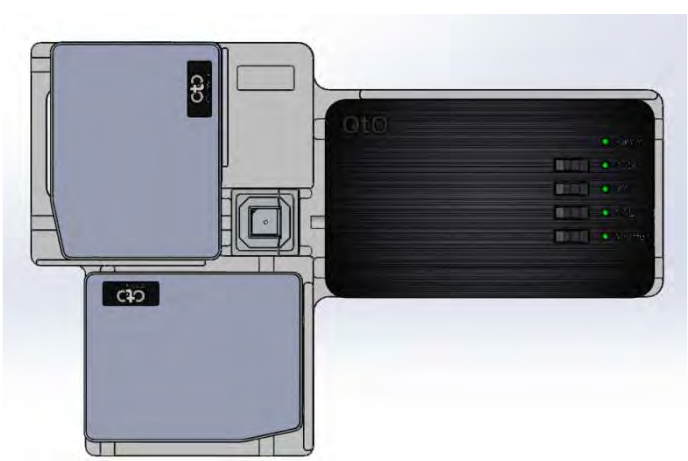
The LS-DH-2 is also designed to be used in OtO's PKG standard measurement package, which features a cuvette holder where user can put a cuvette or lens to perform measurements.

Model		*LS-DH-2*
Aperture		*0.5*
Spectral Distribution (nm)		*200-2500*
Drift		*<0.25 % / hour*
Deuterium Lamp	*Power consumption (W)*	*5*
	Stability (AU)	*<0.1%*
	Life (hr)	*>1000*
Halogen Lamp	*Rated Voltage (V)*	*5*
	Current (mA)	*45*
	Life (hr)	*>2000*
Power Adapter	*AC input range (V)*	*100~240*
	DC output voltage (V)	*12 (max. 3.34A)*

- This Document is for business discussion use only.
- For customer's specification Approval or IQC need, we will provide office Approval Sheet.

Drawing

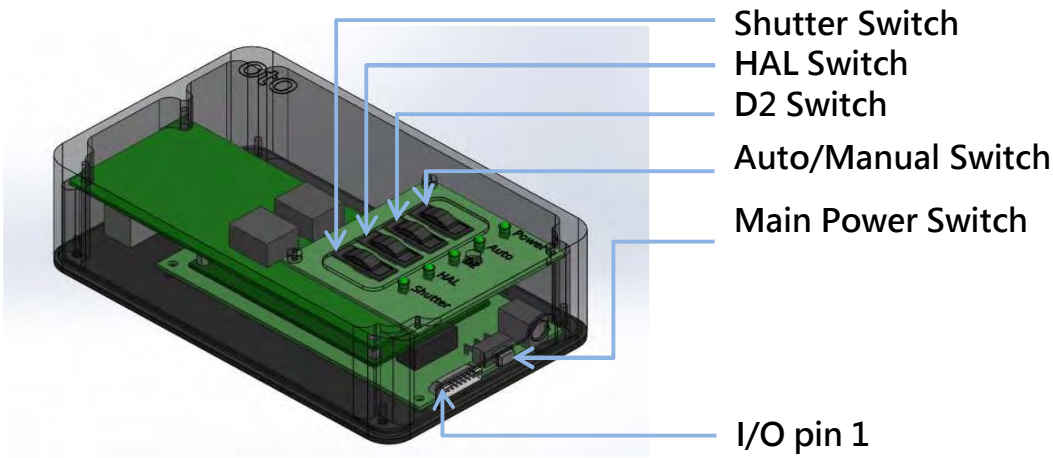




Features

Operation Selection

After plugging the +12V power to the LS-DH Series, the user can turn on the main power by the main switch. Then the user can select the manual mode switch. Once the manual mode is selected, the user can turn on/off the D2/ Halogen/ Shutter by the switches.



I/O Extension Port

There is one 8pin 2.0mm pitch connector in LS-DH Series. This 8pin connector can be connected to SE series spectrometer directly through the 8pin cable. Once the operation mode is selected to Auto mode, D2/ Halogen/Shutter function will be controlled by the I/O level. (3.3V/5V or 0V) Through the SpectraSmart software or SDK, the user can turn on/off the light source. But user needs to consider the warming-up and stable time for light source lamp.

Pin No.	Direction	Pin Name	Function Description
1	NC	NC	NA
2	NC	NC	NA
3	NC	NC	NA
4	Input	Shutter	High: Open Shutter Low: Close Shutter
5	Input	D2_ON	High: Turn on D2 LS. Low: Turn off.
6	Input	HAL_ON	High: Turn on Halogen LS. Low: Turn off.
7	NC	NC	No connection inside the LS-DH-1.
8	GND	GND	GND

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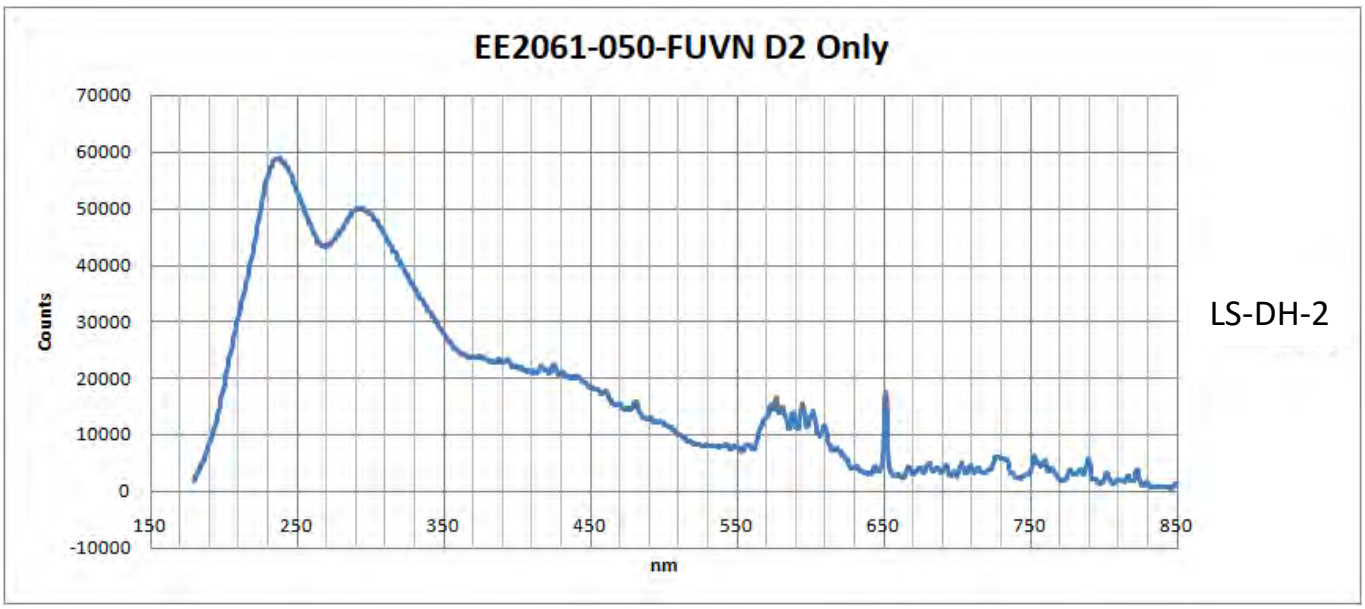
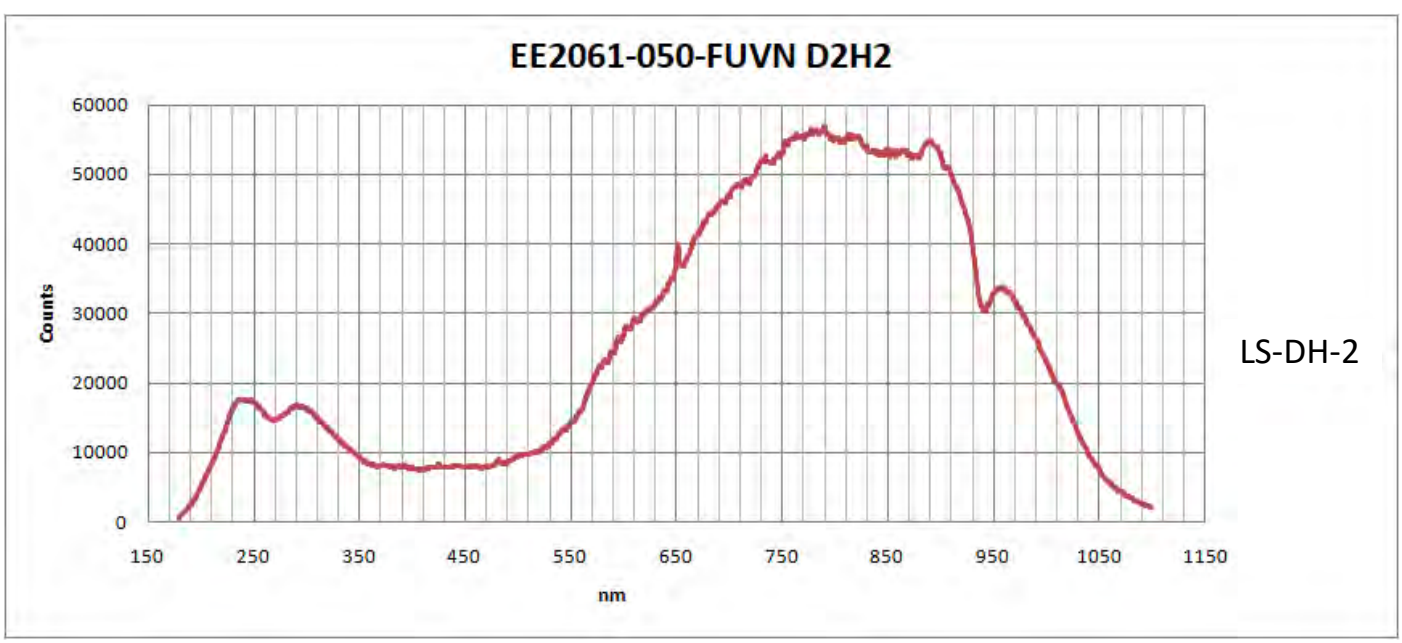
- Spectrum



LS-DH-2

Deuterium light source on only (measured by OtO EE2061 spectrometer)



LS-DH-2

Deuterium and Halogen light source on (measured by OtO EE2061 spectrometer)

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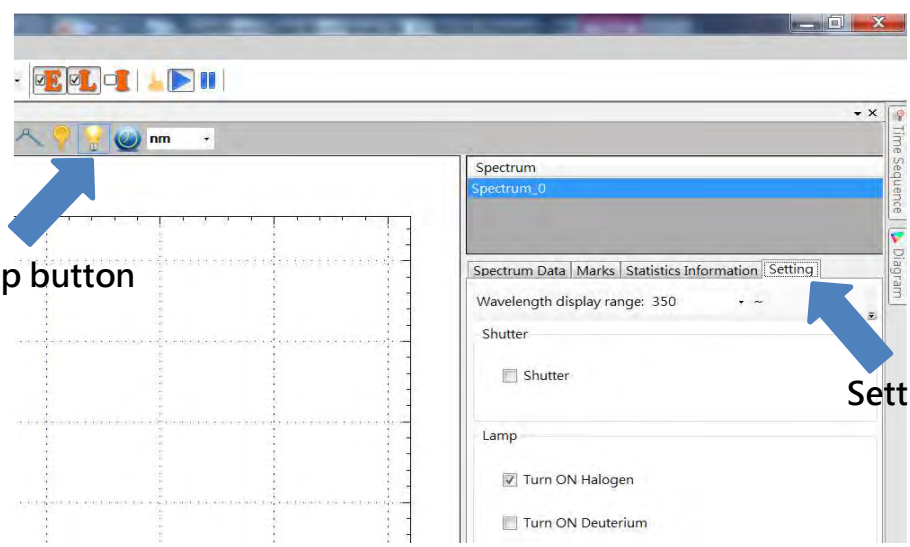
Software Operation Features

SpectraSmart

SpectraSmart provides Setting function at the right column window:

1. Enable / Disable shutter of each scan.
2. Turn on Halogen if lamp button as 
3. Turn on Deuterium if lamp button as 

(Halogen and Deuterium lamp can be controlled independently)



- Software development commands UAI_SpectrometerSetExternalPort and UAI_SpectrometerGetExternalPort can set the operation status of shutter, halogen and deuterium lamp.

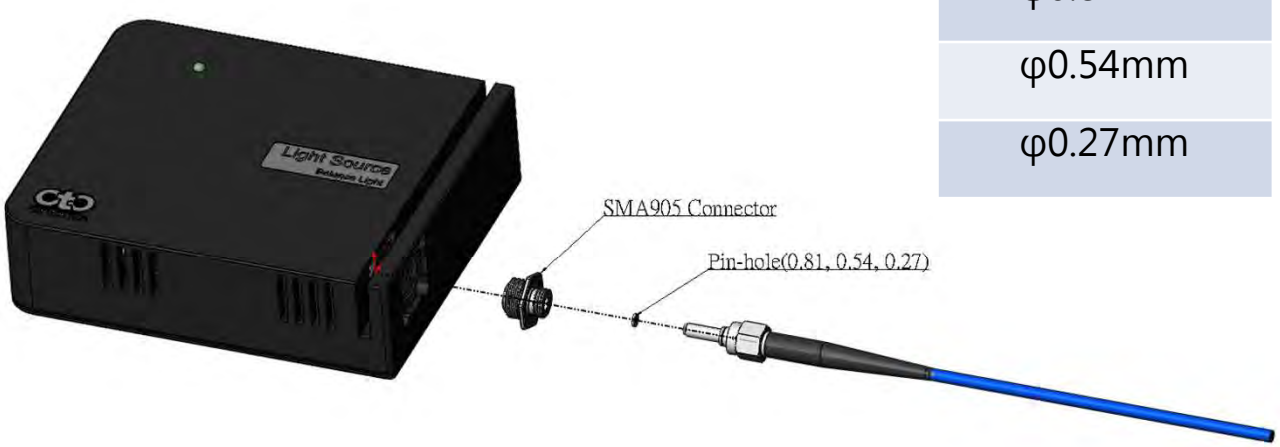
GPIO	Item
GPIO 3	Shutter
GPIO 4	Deuterium
GPIO 5	Halogen

Reducing light level with a pinhole

We offer 3 kinds of pinhole for users to reduce the amount of light.

The pinhole should be placed into the SMA905 before assembling the optical fiber.

Pinhole SPEC.
φ0.81mm
φ0.54mm
φ0.27mm



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