

Deuterium and Tungsten-Halogen Hybrid Light Source

- ASBN-DW-F/ASBN-DW-F-BAL -

Manual





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Important Safety Notices

1. Never look directly into the light beam, including through the cooling fan while the light is on, as this can cause eye damage.
2. Do not remove or modify any installed safety devices on this equipment. Doing so will void your warranty and create an unsafe operating environment.
3. Do not use the unit if it is damaged in any way. Contact your dealer for repair or replacement information.

Warranty and Liability

This SP's product is warranted against defects in material and workmanship for one year from the date of shipment. During the warranty period, Spectral Products will, without charge, repair or replace, at its discretion, the defective product, or components/parts.

This product must be returned to a service facility designated by Spectral Products (SP) for warranty service or repair. For products returned under warranty, the Buyer shall prepay shipping charges (including shipping charges, duties, and taxes for products returned to SP from another country), and SP will pay for shipping charges to return the product to the Buyer.

This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations, modifications, or repairs if the serial number is altered, defaced, or removed, the improper or inadequate maintenance by the Buyer, Buyer-supplied software or interfacing, or improper site preparation or maintenance. No other warranty is expressed or implied. SP shall not be liable for any consequential damages, including damages resulting from loss of use, as permitted by law.

Specification

The following tables provide information on our fiber coupling deuterium and tungsten-halogen hybrid light source.

Overview

Mount	Tapered flange, adjustable, Post mounting for standalone operation
Housing	Air-cooled w/ two focusable fused silica doublet collection lens sets, 1" size Dimension: 12.1" X 10.5" X 5.25"
Output type	Fiber coupling (F): SMA905 or FC

Electric

Tungsten-Halogen	Electric Power Input	Input Voltage: 85-264 Vac, 47-63Hz Inrush Current: 30A/100V, 40A/200V Over-voltage protection: Clamp, 115-135% Current limit: 105-150% typically, self-reset fold back Safety: UL/TUV/CE Operation Temperature: 0 to 50 °C
	Electric Power Output	Vdc: 24V from the main power, ~2 +/-0.2V for the tungsten-halogen Max. Current: 0.85A (at 2.6Vdc) Ripple/Noise: 100mV Peak to Peak (typ) for the main power supply Regulation: +/-0.3% typically
Deuterium	Electric Power Input	Input Voltage: 24 Vdc regulated (<45W), 5Vdc (TTL) disable input Input Current: 2A
	Electric Power Output	Anode: 60-100Vdc / 30 W max Trigger pulse: 600±50 Vpk continuous (Anode Vdc included) Heater Warm-up: ~20-30 seconds Regulation: +/-0.5% typically
	Others	Temperature: 0-40 °C Humidity: ≤95% Cooling: 20 CFM of forced air across the component side

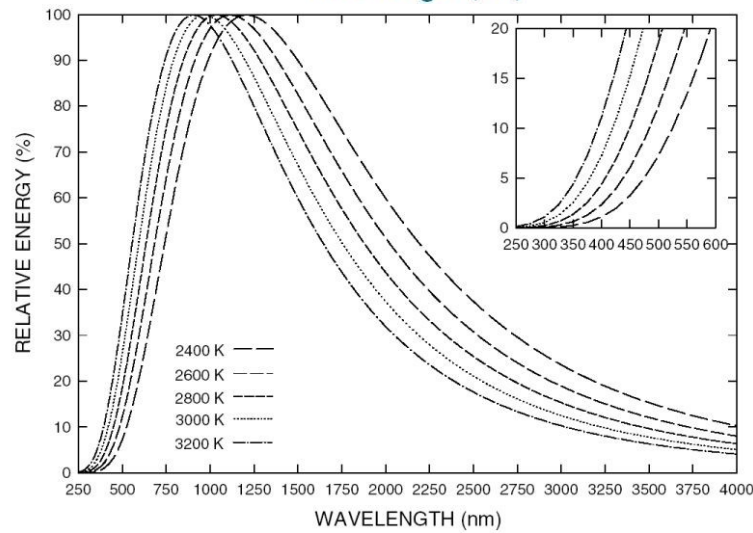
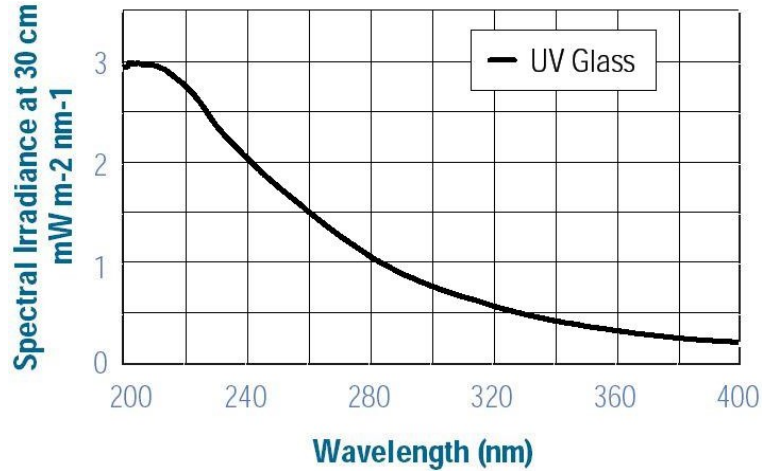
Component

Optics		Lens	2 X 1" UV grade fused silica (quartz) plano-convex lens, R=12.9mm, f=25.0mm (nominal), F# in the housing = ~1.4
Lamp	Tungsten-Halogen	2.5W	Bulb Type: Lens-end Operating voltage: 2.6Vdc (could be lower for "-BAL" version) Operating current: 0.85A Filament size: 0.813mm X 0.432mm Spot size (right after the lens end): 3.56mm dia. Color temperature: 2840K at 2.6V/0.85A, (could be lower for "-BAL" version) Bulb Lifetime: 4,000 hours (typ) at 2.6V/0.85A, could be extended up to ~30,000 hours for the "-BAL" version Bulb Material: fused silica
	Deuterium	30W	Window Material: UV glass Electrical connections: Flex Leads (2 Black for filament, 1 Red for Anode) Starting Voltage: 350 Vdc min Operating Voltage: 65-80 Vdc Operating Current: 300 mAdc Filament Current (starting): 0.8-1.0 Amp Filament Voltage: 9.0-11.0 V (starting), 6.0-7.0 (operating) Arc diameter: 2.0mm Lifetime: 1000 hours (to 50% of initial light output at 300 mAdc) Window Transmission at 190nm: 60%

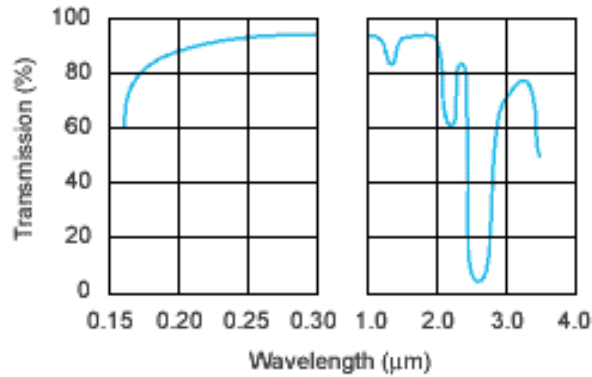
Spectrum

The deuterium (D2) lamp is designed for use in spectroscopic applications where high intensity and stability in the 190 to 400nm band are needed. Above 400nm, some spiky spectra will be detected also.

The Tungsten-halogen light source is a well-known near-black body radiation source. Its spectrum is also very similar to those of black body radiation.

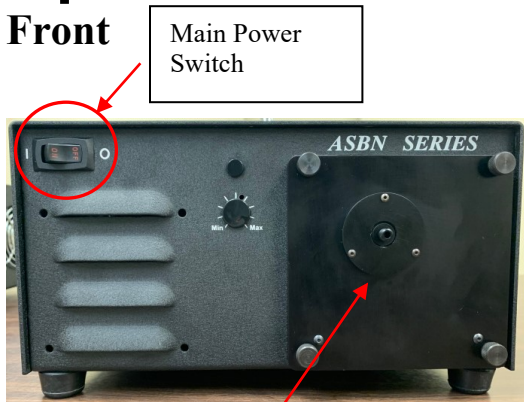


The envelope of tungsten-halogen lamps is made of fused silica. The transmittance of fused silica, therefore, needs to be considered.



Operation

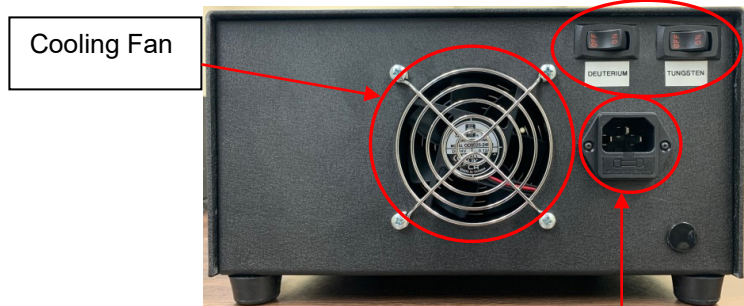
Front



Main Power Switch

Fiber coupling output. SP can provide SMA905 or FC type connector.

Back



Cooling Fan

D2 & Tungsten Power Switches

Power terminal Input & Fuse

Component	Description
Power terminal input	Connects power cable to provide voltage to our deuterium and high power tungsten-halogen hybrid light source. One main power supply provides the input voltages on both lamps.
Power switch	There are three on/off power switches on the light source. One is the main power switch that is located on the front side. The other two are for the deuterium and the tungsten-halogen, which is located on the backside. Note: It takes ~20-30 seconds to warm up the deuterium power supply so the deuterium light doesn't come on immediately when the deuterium power switch turns on. If the tungsten-halogen is on while turning on the deuterium, the tungsten-halogen light can blink several times.
Fuse	Contains the fuse to protect the unit against overload. Fuse type: For main 24V power supply: 5A/250V For deuterium relay power supply: 2A/250V
Cooling fan	Cools the interior of the light source housing. Note: Do not look at the light beam through this fan, especially when the deuterium is on.
Output	SP can provide SMA905 or FC. SMA is the default connector. The tungsten-halogen light is much stronger than the deuterium light in general. The balanced output version, ASBN-DW-F-BAL, will be adjusted the tungsten-halogen output signal at SP based on SP's CCD spectrometer for the 200-1100nm range.

Bulb Replacement

Replacing the Deuterium lamp bulb

1. Turn off all power.
2. Wait until the lamp cools down.
3. Remove housing.
4. Remove heat shield.
5. Take off the three deuterium lamp leads on the bottom.



6. Unscrew the screws for the deuterium bulb.



7. Take out the old bulb and replace the new one.

NOTE: When touching the new deuterium lamp, please be careful not to touch it with a bare hand.

Replacing the Tungsten-Halogen lamp bulb

1. Turn off all power.
2. Wait until the lamp cools down.
3. Remove 4 faceplate screws.
4. Pull out the light source slider.
5. Remove the top 2 set screws from the bulb holder.



6. With finger cots, remove the (0.35-inch) set screw on the bulb holder.



7. Carefully pull apart the holder into its 3 distinct pieces and replace the bulb. Sometimes, the bulb may pull the plug with it, so please be careful when handling it. If this occurs, insert the new bulb into the plug and insert both pieces into the holder.
8. Put pieces back together, in the direction of the reference photo.



9. Insert the set screw on the holder. Tighten firmly.



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10. Place the holder back on the light source mount and tighten the 2 set screws on the mount.

NOTE: All the optical components were properly aligned by SP. Do not touch any mounting screws. Adjust the bulb itself when aligning the filament position.

Technical Support

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