

# Deuterium and Tungsten-Halogen Hybrid Light Source

- ASBN-D1-WXXX -

## Operation Manual





111 Highland Drive - Putnam, CT 06260  
Phone 860-928-5834 - Fax 860-928-2676

[www.spectralproducts.com](http://www.spectralproducts.com)

## 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 high-power tungsten-halogen light sources.

## Overview

<b>Mount</b>	Tapered flange, adjustable, Post mounting for standalone operation
<b>Housing</b>	Air-cooled w/ two focusable fused silica doublet collection lens sets, 1" size w/ focusable Al coating mirror, 1" size Dimension: 12.1" X 10.5" X 5.25"
<b>Output type</b>	<b>Monochromator Matching (M):</b> CM110, DK240, or DK480
	<b>Fiber coupling (F):</b> SMA905 or FC

## Electric

<b>Tungsten-Halogen</b>	<b>Electric Power Input</b>	<b>Input Voltage:</b> 85-264 Vac, 47-63Hz <b>Inrush Current:</b> 30A/100V, 40A/200V <b>Over-voltage protection:</b> Clamp, 115-135% <b>Current limit:</b> 105-150% typically, self-reset fold back <b>Safety:</b> UL/TUV/CE <b>Operation Temperature:</b> 0 to 50 °C
	<b>Electric Power Output</b>	<b>Vdc:</b> 24V <b>Max. Current:</b> 8.4A <b>Ripple/Noise:</b> 100mV Peak to Peak, typically. <b>Regulation:</b> +/-0.3% typically
<b>Deuterium</b>	<b>Electric Power Input</b>	<b>Input Voltage:</b> 24 Vdc regulated (<45W), 5Vdc (TTL) disable input <b>Input Current:</b> 2A
	<b>Electric Power Output</b>	<b>Anode:</b> 60-100Vdc / 30 W max <b>Trigger pulse:</b> 600±50 Vpk continuous (Anode Vdc included) <b>Heater Warm-up:</b> ~20-30 seconds <b>Regulation:</b> +/-0.5% typically
	<b>Others</b>	<b>Temperature:</b> 0-40 °C <b>Humidity:</b> ≤95% <b>Cooling:</b> 20 CFM of forced air across the component side

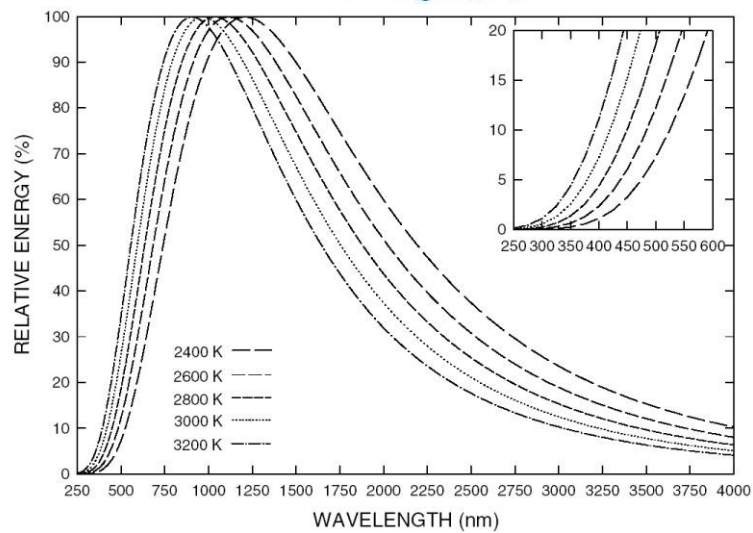
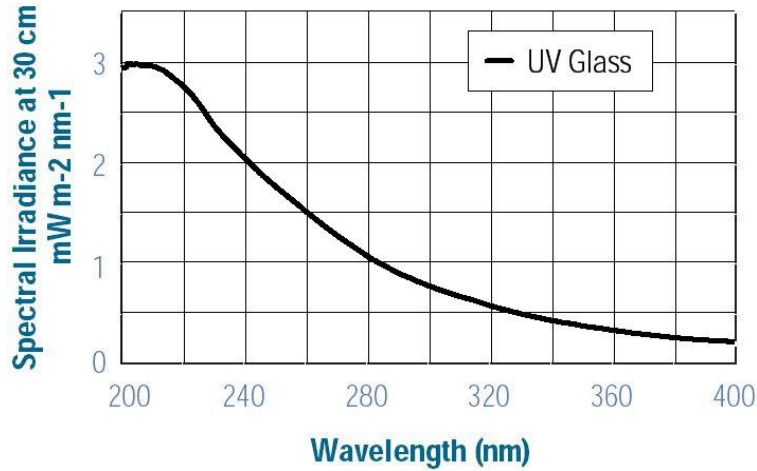
## Component

<b>Optics</b>		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
		Mirror	1.0" UV protected Al coating mirror, f=12.5mm
<b>Lamp</b>	<b>Tungsten-Halogen</b>	50W	Filament size: 2.5mm x 4.2mm Voltage: 24.0 V (nominal) Average Life: 2,000 hours (nominal) Light Output: 900 lumens Color Temperature: 3000°K
		100W	Filament size: 2.6mm x 5.3mm Voltage: 24.0 V (nominal) Average Life: 300 hours (nominal) Light Output: 2970 lumens Color Temperature: 3100°K
		150W-L	Filament size: 2.9mm x 5.8mm Voltage: 24.0 V (nominal) Average Life: 300 hours (nominal) Light Output: 5000 lumens Color Temperature: 3400°K
		150W-H	Filament size: 3.2mm x 6.0mm Voltage: 24.0 V (nominal) Average Life: 50 hours (nominal) Light Output: 6000 lumens Color Temperature: 3450°K
	<b>Deuterium</b>	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%

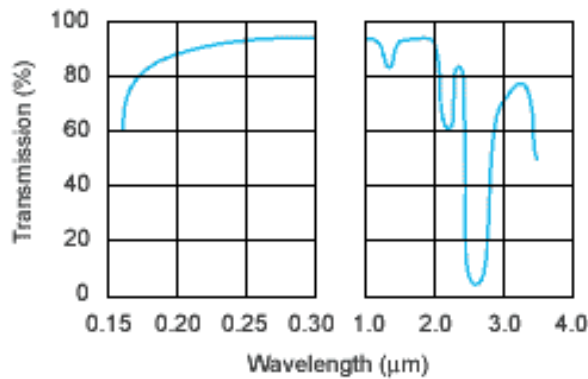
## Spectrum

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.

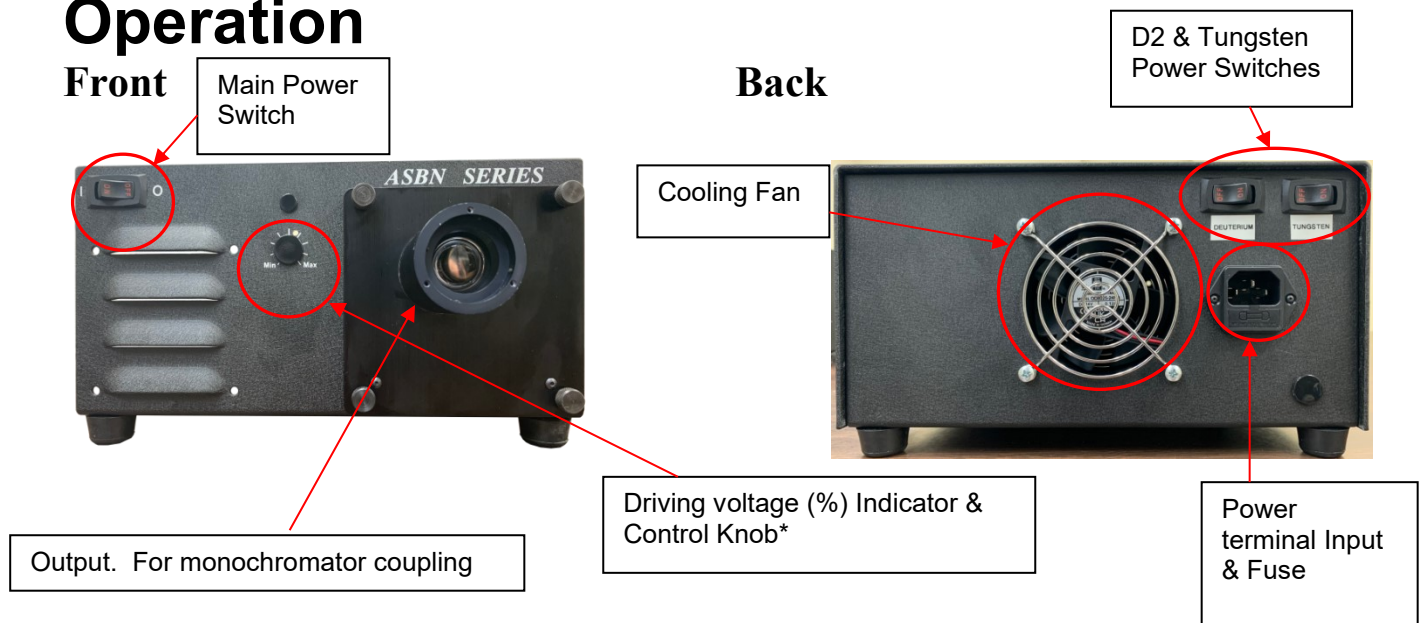
The Tungsten-halogen light source is a well-known near black-body radiation source. Its spectrum is also very similar to those of black body radiation.



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



# Operation



\* Only valid when the power-adjustable option (ASBN-W-PV) is selected.

Component	Description
<b>Power terminal input</b>	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.
<b>Power switch</b>	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.  <b>Note:</b> 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.
<b>Fuse</b>	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
<b>Cooling fan</b>	Cools the interior of the light source housing. <b>Note:</b> Do not look at the light beam through this fan, especially when the deuterium is on.
<b>Output</b>	Fiber coupling and Monochromator coupling are possible. For monochromator coupling, remove the fiber connection plug. The standard monochromator coupling is for CM110/CM112. DK series users should inform SP to obtain the correct coupling.



111 Highland Drive - Putnam, CT 06260  
Phone 860-928-5834 - Fax 860-928-2676

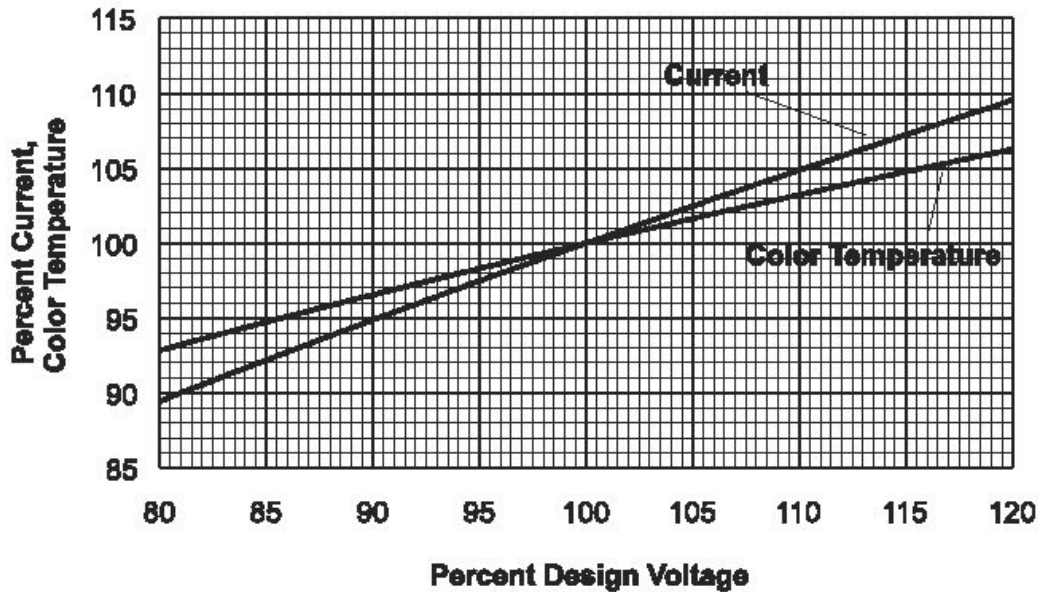
[www.spectralproducts.com](http://www.spectralproducts.com)

<b>Component</b>	<b>Description</b>
<b>Driving voltage indicator</b>	For ASBN-W-PV option user: Shows the current percentage of the designed driving voltage for the tungsten-halogen lamp. The designed driving voltage is 24V. It varies from 0% to 100%.
<b>Control Knob</b>	For ASBN-W-PV option user: Controls the relative tungsten-halogen driving voltage from ~0% (min) to ~100% (max).

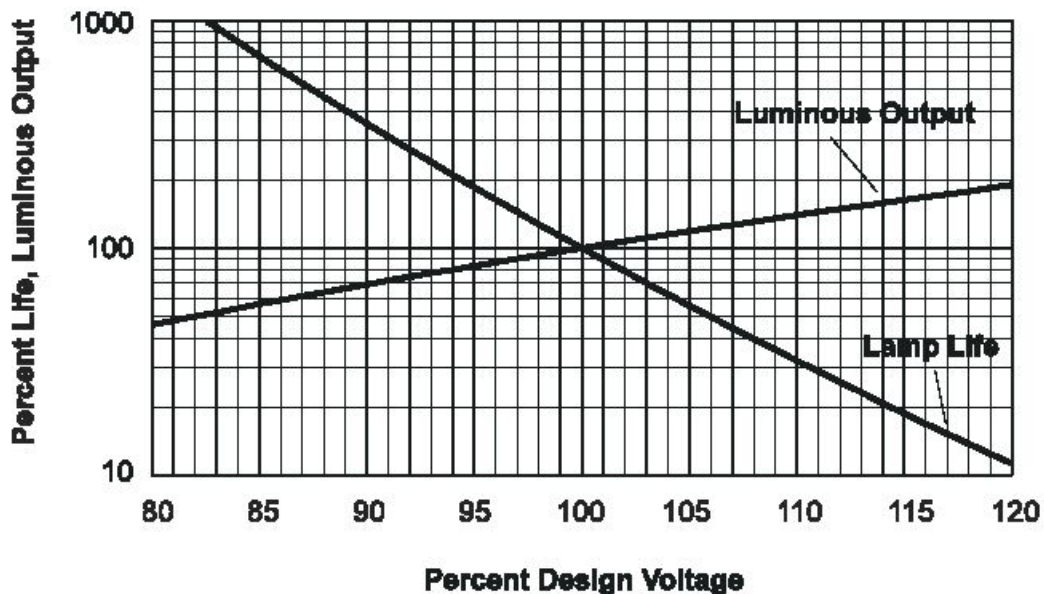
## Relationship Curves for ASN-M-W-PV

The following curves show the relationship between the driving voltage setting and the color temperature/current/luminous power/lifetime on/of the lamp.

### Color Temperature/Current vs. Driving Voltage:



### Lifetime/Luminous power vs. Driving Voltage:

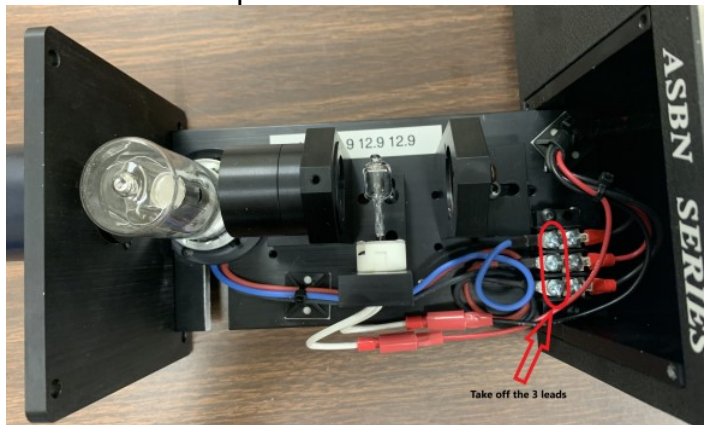




# Bulb Replacement

## 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 three screws for the deuterium bulb.



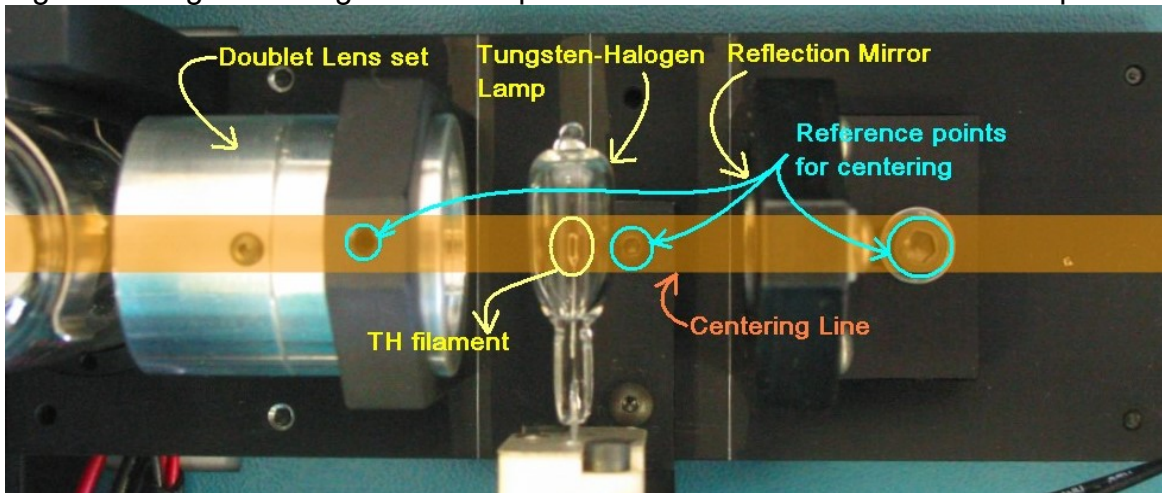
7. Take out the old bulb and replace the new one.

**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 housing.
4. Remove heat shield.
5. Replace the lamp
6. Align the Tungsten-halogen filament position to be in the centerline of the optical axis.



**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.



111 Highland Drive - Putnam, CT 06260  
Phone 860-928-5834 - Fax 860-928-2676

[www.spectralproducts.com](http://www.spectralproducts.com)

## Technical Support

Toll Free: (877) 928-5834, ext 215  
Tel: (860) 928-5834, ext 215  
Fax: (860) 928-2676  
Website: <http://www.spectralproducts.com>  
Email: [support@spectralproducts.com](mailto:support@spectralproducts.com)