Spectral Products

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

www.spectralproducts.com

Deuterium and Tungsten-Halogen Hybrid Light Source

- ASBN-D1-WXXX / ASBN-D2-WXXX-

Operation Manual

SPECTRAL PRODUCTS

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Important Safety Notices

1. Never look directly into the light beam, including through the cooling fan while 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 a period of 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 component parts.

For warranty service or repair, this product must be returned to a service facility designated by Spectral Products (SP). 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 without limitation, damages resulting from loss of use, as permitted by law.

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Specification

The following tables provide information on our high power tungsten-halogen light sources.

Overview

Mount	Tapered flange, adjustable, Post mounting for standalone operation
Housing	Air cooled w/ two focusable fused silica doublet collection lens sets, 1" size w/ focusable Al coating mirror, 1" size Dimension: 11.0" X 11.5" X 5.5"
Output type	**Monochromator Matching (M)** : CM110, DK240, or DK480
	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 ºC
	Electric Power Output	**Vdc**: 12V (50-100W), 24V (150W) **Max. Current**: 12.5A (50-100W), 8.4A (150W) **Ripple/Noise**: 100mV Peak to Peak, typically. **Regulation**: +/-0.5% 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 ºC **Humidity:** ≤95% **Cooling:** 20 CFM of forced air across the component side

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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 = ~1.0
		Mirror	1.0" UV protected Al coating mirror, f=12.5mm
Lamp	**Tungsten-Halogen**	50W	Filament size: 2.5mm x 4.2mm Light Output: 900 lumens Voltage: 12.0 V (nominal) Color Temperature: 3000°K Average Life: 2,000 hours (nominal)
		75W	Filament size: 1.6mm x 5.0mm Light Output: 1400 lumens Voltage: 12.0 V (nominal) Color Temperature: 3000°K Average Life: 2,000 hours (nominal)
		100W	Filament size: 2.3mm x 5.2mm Light Output: 2000 lumens Voltage: 12.0 V (nominal) Color Temperature: 3000°K Average Life: 2,000 hours (nominal)
		150W-L	Filament size: 3.0mm x 5.8mm Light Output: 5000 lumens Voltage: 24.0 V (nominal) Color Temperature: 3200°K Average Life: 200 hours (nominal)
		150W-H	Filament size: 3.1mm x 6.2mm Light Output: 6000 lumens Voltage: 24.0 V (nominal) Color Temperature: 3400°K Average Life: 50 hours (nominal)
	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 Life time: 1000 hours (to 50% of initial light output at 300 mAdc Window Transmission at 190nm: 60%

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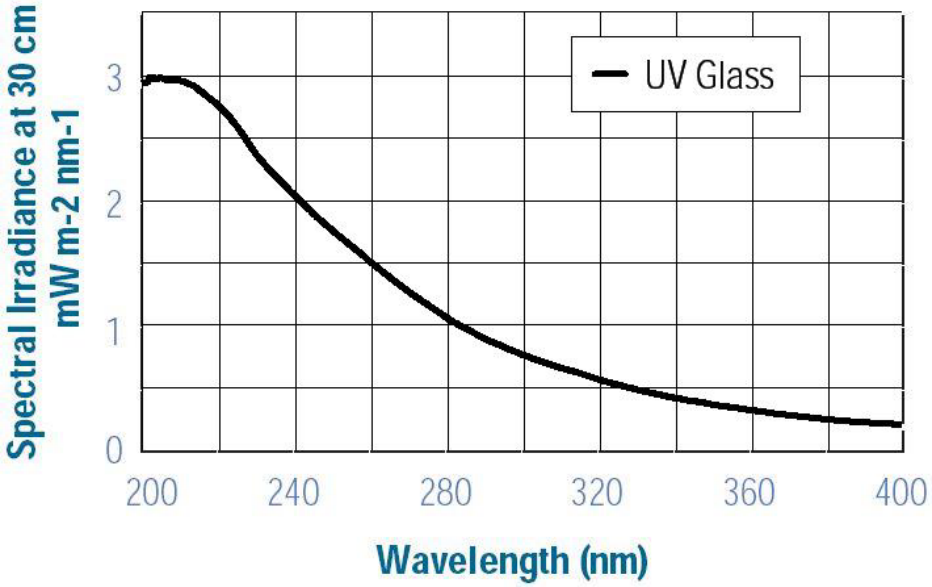
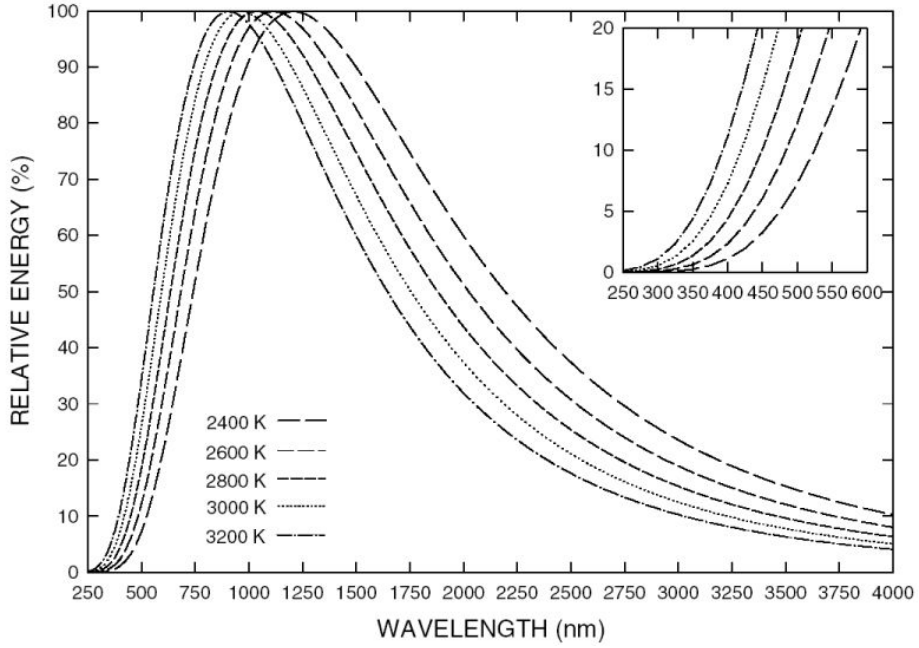
Spectrum

The deuterium (D2) lamp is designed for use in spectroscopic applications where high intensity and stability in the 190 to 400nm band is 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 with those of black body radiation.



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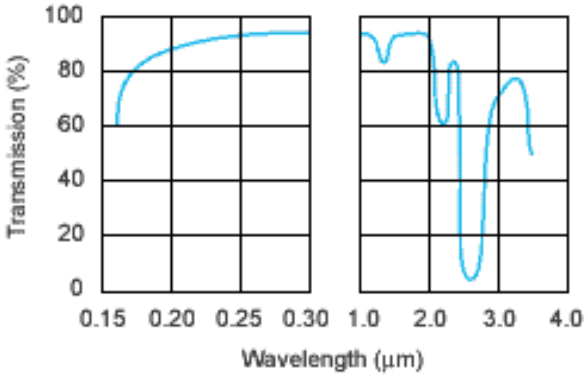
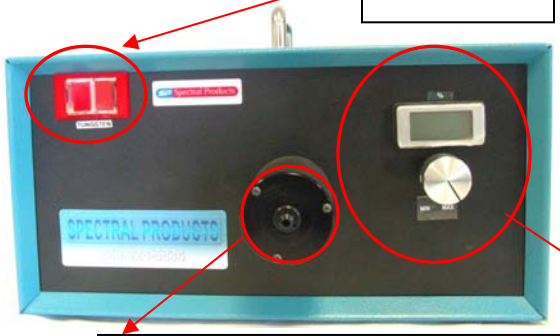
The envelope of tungsten-halogen lamps is made of quartz. Quartz transmittance, therefore needs to be considered.

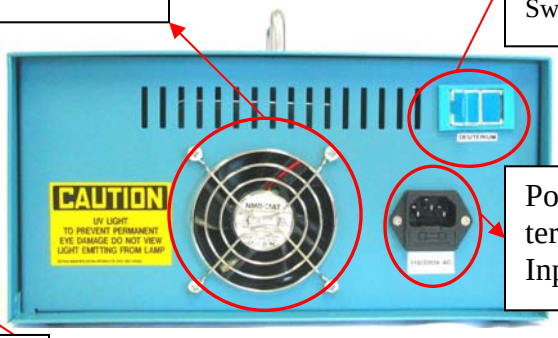


Operation

Front



Back



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

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.

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Component	Description
Power switch	Turns on/off to supply power to the deuterium lamp and the tungsten-halogen lamp. The BLUE switch on the back side is for the deuterium application and the RED switch on the front of the unit is for the tungsten-halogen application. The switch light illuminates when the switch is in the ON position. **Note**: It takes ~20-30 seconds to warm up the deuterium power supply so the deuterium light doesn't come on immediately when the BLUE is on.
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 into the light beam through this fan.
Output	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.
Driving voltage indicator	For ASBN-W-PV option user: Shows the current percentage of the designed driving voltage for the tungsten-halogen lamp. The designed driving voltage of 50-100W lamps is 12V and that of 150W is 24V. It varies from 0% to 100%.
Control Knob	For ASBN-W-PV option user: Controls the relative tungsten-halogen driving voltage from ~0% (min) to ~100% (max).

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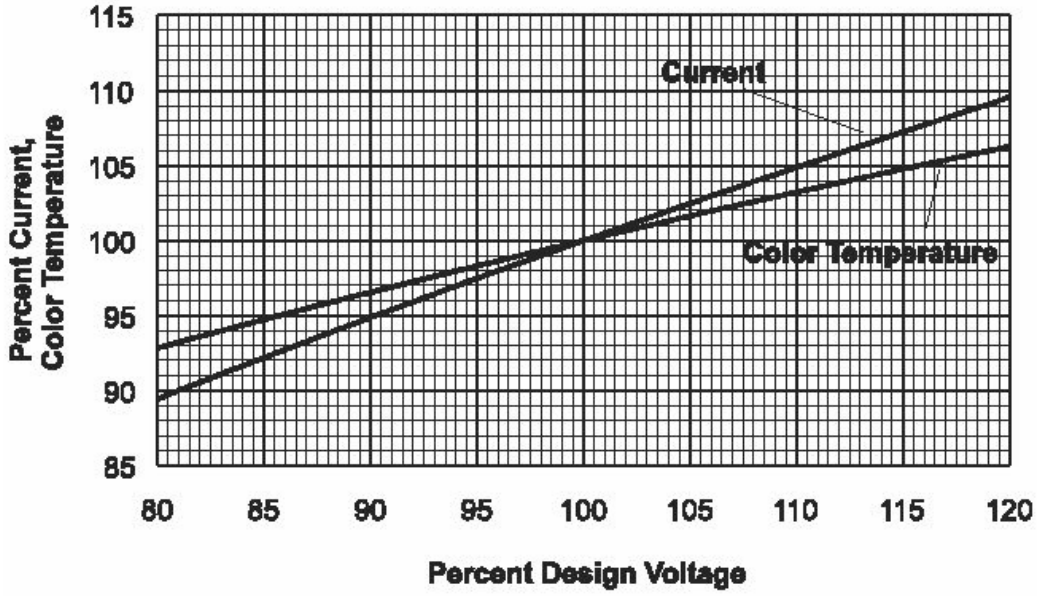
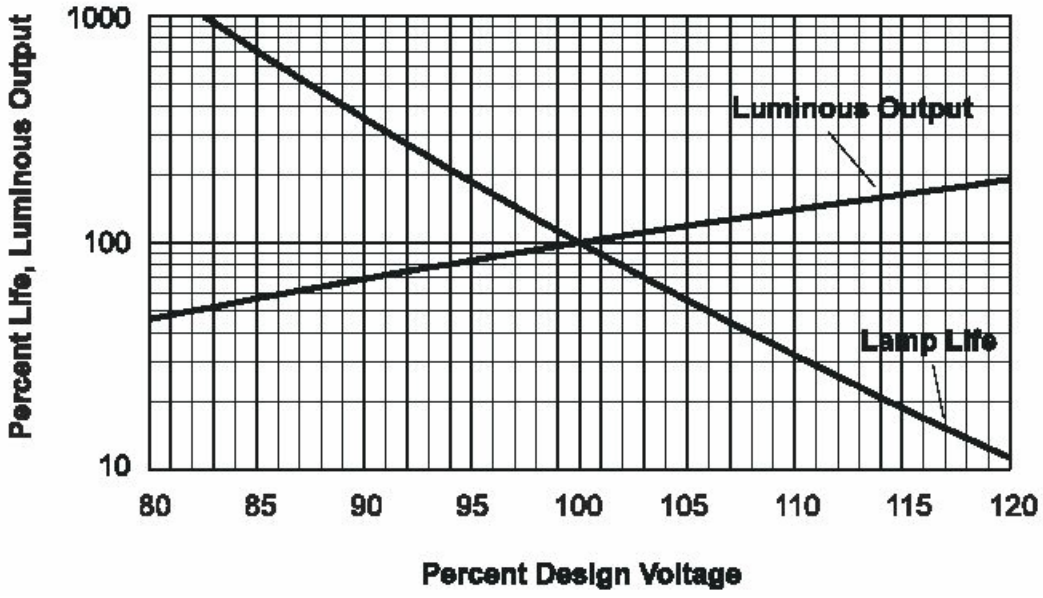
Relationship Curves for ASNM-W-PV

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

Color Temperature/Current vs. Driving Voltage:



Life time/Luminous power vs. Driving Voltage:



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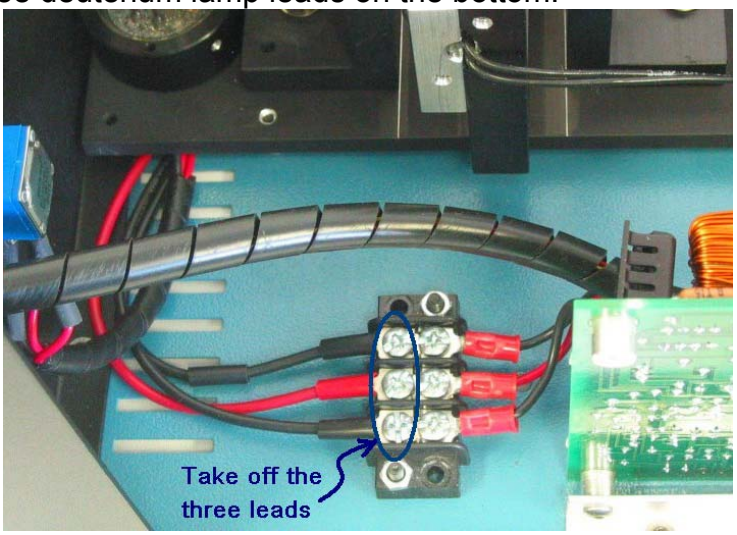
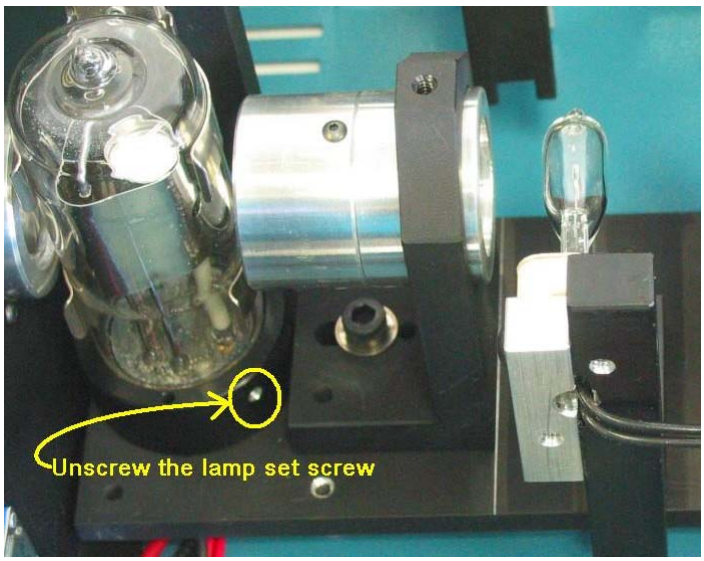
Bulb Replacement

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 set-screw for the deuterium bulb.



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

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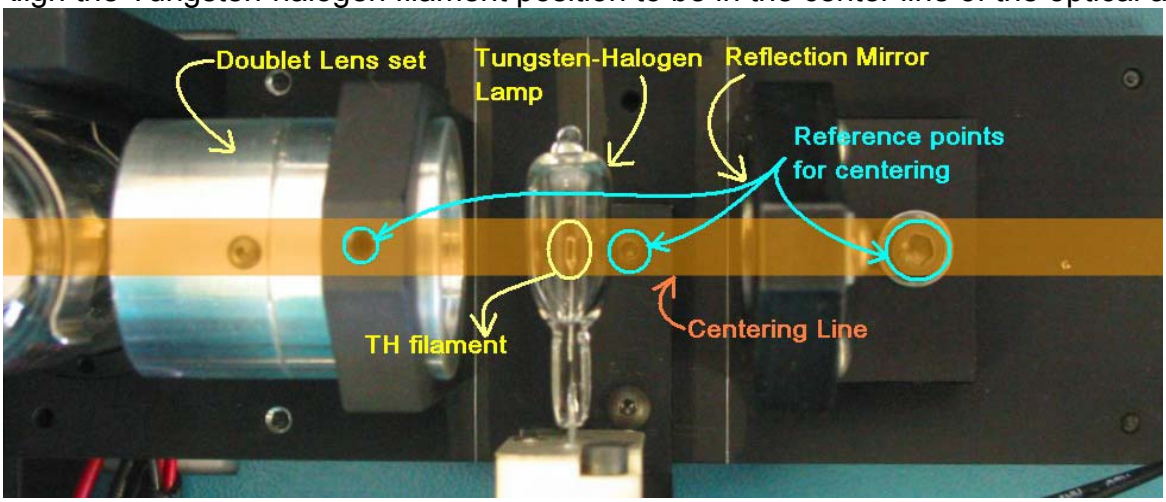
8. Adjust the bulb to be centered properly looking through the focusing lens set. If there is a fiber coupling plug attached, please take it off first.

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 center line 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.

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