

AvaLight-DHS Deuterium Halogen Light Source

Operating manual

Version 1.2
February 2006



AvaLight-DHS Deuterium Halogen Light Source

Safety Instructions

Warning: All warnings on the unit and in the operating instructions should be adhered to.

Unpacking Instructions:

Your package should contain:

- 1 - AvaLight- D(H)S Deuterium-Halogen light source
- 1 - Power Cord
- 1 - This manual
- 1 - Safety goggles

- 1) Unpack your deuterium lamp carefully. Although the deuterium lamp is rigidly mounted dropping this instrument can cause permanent damage.
- 2) Inspect the outside of the instrument and make sure that there is no damage to your unit. In case of damage contact the dealer immediately and **DO NOT USE THE INSTRUMENT!**
- 3) Use this instrument in a clean laboratory environment.

Moisture

The unit is designed for operation in dry rooms only.

Ventilation

The unit should be situated so that its location or position does not interfere with its proper ventilation.

Heat

The unit should be situated away from radiators, hot bodies, ovens or other heat sources and direct sun radiation.

Power Sources

The unit should be connected to a power supply only of the type as marked on the unit.

Object and Liquid Entry

Care should be taken that objects do not fall, or liquids spilled into the enclosure through openings.

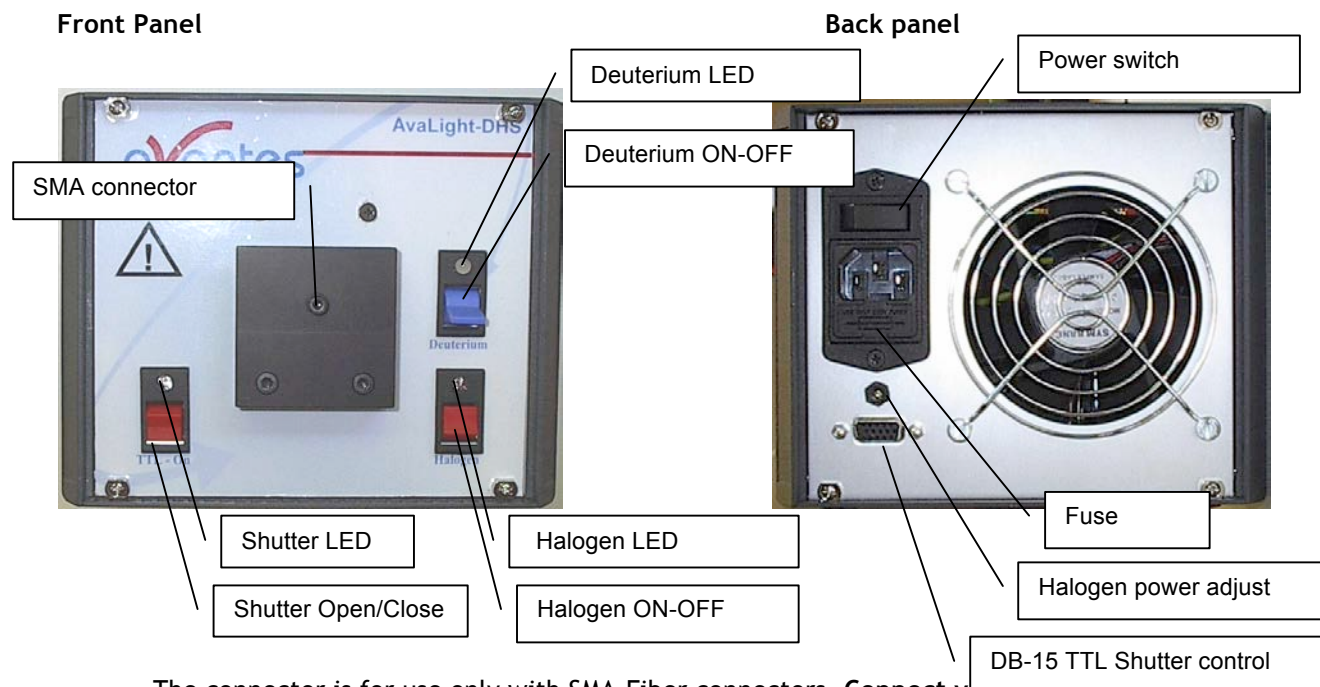
Caution:

This lamp produces ultra violet radiation, which can be harmful to the eyes. **DO NOT LOOK INTO THE LIGHT BEAM. THIS CAN CAUSE PERMANENT EYE DAMAGE - WEAR PROTECTIVE EYE WEAR - USE THE SUPPLIED SAFETY GOGGLES.** Do not use this device in clinical situations.



Disconnect power before opening housing or replace Fuse.
The installation category for this equipment is Class 2, it is not permitted to connect equipment to the AvaLight-DHS with a power supply without SELV or class II qualification.

Designations and Functions of Panel Controls



The connector is for use only with SMA-Fiber connectors. **Connect your fiber optic cable first before starting the Deuterium Lamp. Please be sure to avoid direct radiation of skin and eyes at the other fiber end.**



Caution: This lamp produces ultra violet radiation that can be harmful to the eyes. Lamps must not be viewed directly without suitable approved eye protection being used.

Deuterium Light

By switching the Deuterium switch downwards to ON the Deuterium lamp is preheated. After a warm-up time of 10-20 sec. the Deuterium lamp will ignite automatically. After successful ignition the Deuterium LED lights up green and indicates that the Deuterium lamp is in operation. Should the Deuterium lamp not ignite the Deuterium LED lights up red. This indicates a malfunction of the lamp. See section "Trouble shooting". Switch to OFF to reset the Error LED. Switching the Deuterium switch to upwards to OFF the Deuterium lamp switches off.

Halogen Light

Switching the Halogen switch downwards to ON, the Halogen lamp switches on. The Halogen LED indicates the operation mode. Switching the Halogen switch upwards to OFF, the Halogen lamp switches off.

TTL Shutter -Open

This switch is used to open and close the shutter either manually or by TTL pulse. The LED indicated if the shutter open (LED on) or closed.

Position switch	Shutter
Up	Closed or TTL activated the through backside DB-15 connector TTL signal, Pin 13 (High = Open, Low = Close)
Down	Open

Rear Panel- Power Switch ON/OFF

When the power switch is turned ON, power is supplied to the unit. The unit automatically switches to the basic operating mode and the cooling on the backside operates.

Rear Panel- Halogen light power adjustment

The halogen light, that is focused through the Deuterium Lamp 0,5 mm aperture, can be regulated in the optical power to match the Deuterium output. In order to obtain a more “ balanced” spectrum, the multiturn potentiometer in the backside of the lightsource can be turned to regulate the halogen power.

Rear Panel - DB-15 connector

The DB-15 rear panel connector is available to connect an interface cable IC-DB15-2 or IC-DB-26-2 to the AvaSpec spectrometer, so the TTL shutter can be controlled from the AvaSoft software for auto-save dark.

Table of DB-15 connector

Pin	Description
10	GND
13	Shutter Open/Close (High = Open, Low = Close)

Fuse

This compartment contains 2 fuses to protect the unit against overload.
Type: Miniature fuse 5 x 20 mm, 1 Amp slow blow

Input Terminal for Power Cord

Input voltages AC 100..240V, 50/60 Hz

Type Sign

Information about:

- Type
- Version
- Serial-No.
- Mains connection
- Warnings
- CE-Marking

Replacement of Deuterium or Halogen Lamp



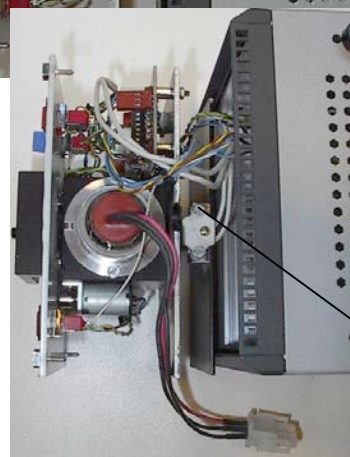
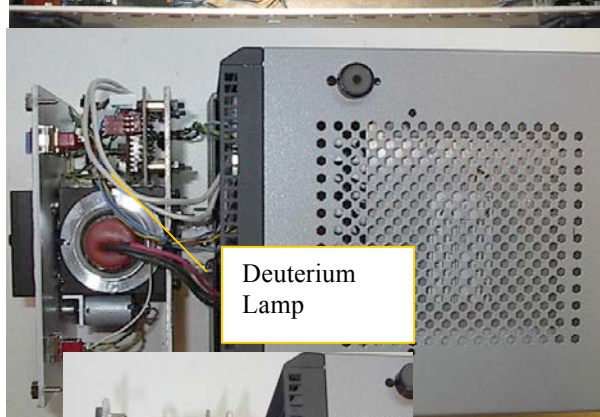
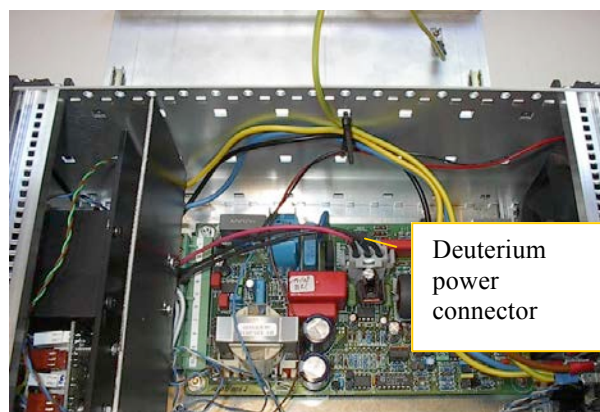
Disconnect power before opening housing or replace Fuse.
The installation category for this equipment is Class 2, it is not permitted to connect equipment to the AvaLight-DHS with a power supply without SELV or class II qualification.

Warning: Disconnection of the power cord to the Deuterium Lamp **MUST** only be done when the power switch is turned OFF. As the output of the power supply is not galvanically separated from the line voltage the connecting lead for the Deuterium lamp can carry a voltage >42 V when the power switch is turned ON.

Warning: During operation the lamp envelope reaches a temperature of approx. 250°C. Should you intend to change the lamp please wait for at least 20 minutes for cooling before touching the lamp. The lamp envelope (quartz glass) should not be touched with bare fingers, otherwise lifetime is severely reduced.

Please follow these instructions for bulb replacement:

1. Disconnect the unit from the mains power supply.
2. Remove both side covers by unclicking.
3. Unscrew a total of 4 screws to remove top cover
4. Disconnect the deuterium power connector
5. Dismount the front panel by unscrewing the 4 front screws.
6. Turn the lightsource upside down and carefully slide out the front panel
7. Unscrew the 2 screws holding the metal ring around the Deuterium Lamp
8. Take out the Deuterium Lamp, **carefull - may be hot!**
9. Replace with new Deuterium Lamp, carefull not to touch lamp glass with your fingers.
10. Tighten 2 screws around aluminum fixture.
11. Put connector back on board socket.
12. For halogen bulb replacement disconnect 2 screws of halogen lamp fitting.
13. Take out the halogen bulb
14. Replace the halogen bulb with new 5W bulb, carefull not to touch lamp glass with your fingers.
15. Tighten 2 screws for halogen lamp fixture.
16. Carefully slide back front panel, take care of wires not getting pinched.
17. Tighten 4 screws of front panel
18. turn housing around and put back top cover
19. Tighten 4 screws of top cover
20. Put back and click in the 2 side panels.
21. Connect mains power supply.



Specifications / Parts List

	Deep UV Deuterium	Deuterium Lamp	Halogen Lamp
Wavelength Range	190-400nm	215-400nm	360-1500nm
Warm-up Time	30 min.	30 min.	20 min.
Lamp Power	78W / 0.75A	78W / 0.75A	5W / 0.2A
Lamp Lifetime	1000 hrs	1000 hrs	1000 hrs
Stability	0,1%	0,1%	0,4%
Color Temperature	-	-	3000 K
Optical Power in 200µm fiber	11 µW	7 µW	43 µW
Optical Power in 600µm fiber	72 µW	61 µW	239 µW
Optical Power in 1000µm fiber	206 µW	166 µW	354 µW
Power consumption	90 Watt (190Watt for heating D-Lamp 4-5 sec.)		
Power Requirements	100-240VAC 50/60 Hz		
Dimensions / Weight	315 x 165 x 140 mm / ca 5 kg.		

Trouble Shooting

Deuterium and Halogen lamps

FAULT	POSSIBLE CAUSE	REMEDY
Light doesn't turn on, clicking sound is audible	Front light switches are ON before main power is switched on.	Put buttons for Deuterium and Halogen in OFF position before switching on main power.

Deuterium Lamp Only

FAULT	POSSIBLE CAUSE	REMEDY
Power switch on, fan not working, nor one of the LED's or lights	Line power not present	Check line voltage
	Fuse defective	Check /replace fuse(s)
Deuterium Lamp does not ignite. The Two-Color-LED of deuterium lights up red (ERROR)	Deuterium Lamp too hot	Allow Deuterium Lamp to cool down. Switch to OFF to reset the Deuterium lamp, then switch to ON to restart.
	Lifetime of Deuterium Lamp has expired	Replace Deuterium Lamp
	Deuterium Lamp internal connection plug is not connected right	Open Unit and connect connector plug
Deuterium Lamp extinguishes during operation	When this fault appears always switch off the deuterium power and then - after cool down - restart	

Halogen Lamp Only

FAULT	POSSIBLE CAUSE	REMEDY
Halogen Lamp does not work after switching on	Halogen Lamp defective	Replace Halogen Lamp
LED does not light up after switching on Halogen lamp	Internal Power Supply is defective	Disconnect the unit from mains power and inform your dealer

Ordering Information

AvaLight-D-S	Deuterium light source, 215-400 nm, incl. TTL shutter, -SR fibers needed
AvaLight-DH-S	Deuterium-Halogen light source, 215-1700 nm, incl. TTL shutter, -SR fibers needed
AvaLight-D-S-DUV	Deep UV deuterium light source, 190-400 nm, incl. TTL shutter, -SR fibers needed!
AvaLight-DH-S-DUV	Deep UV deuterium-halogen light source, 190-1700 nm, incl. TTL shutter, -SR fibers needed!
IC-DB15-2	Interface cable AvaSpec to AvaLight-D(H)S
IC-DB26-2	Interface cable AvaSpec-USB2 platform to AvaLight-D(H)S
AvaLight-D-B	Replacement deuterium bulb for AvaLight-D/AvaLight DH light source
AvaLight-D-B-DUV	Replacement deep UV deuterium bulb for AvaLight-D/AvaLight DH light source
AvaLight-DH-B	Replacement halogen bulb for AvaLight-DH light source
CUV-DHS	Direct attach cuvette holder for AvaLight-D(H)S