



## **AvaLight-HAL-CAL Calibrated Tungsten Halogen light source**

### **Parts Included**

1. AvaLight-HAL-CAL Calibrated Tungsten Halogen light source
2. CC-UV/VIS cosine corrector, mounted in the AvaLight-HAL-CAL
3. Printed Calibration sheet in  $\mu\text{W}/\text{cm}^2\text{nm}$
4. Diskette with Calibrated output as \*.lmp file, to be read in directly by AvaSoft-IRRAD
5. PS-24V/1.25A power supply, should have been ordered separately.

### **Starting up**

1. Plug in the power supply.
2. Plug in the connector of the power supply into the socket of AvaLight-HAL-CAL.
3. Connect the SMA-connector of your fiber to the SMA-plug of the CC-UV/VIS
4. Switch on the Halogen lamp with the frontside switch.

### **Changing of the bulb**

Since the light source is calibrated, the bulb exchange and recalibration can only be done in our calibration lab.

**N.B. The AvaLight-HAL-CAL cannot be used as a light source for standard reflection/absorption spectroscopy.**

### **How to take absolute irradiance measurements with AvaSoft 6.2 IRRAD**

1. Start the AvaSoft 6.2 software, and click the Start button in the main window.
2. Connect a fiber to the Spectrometer input port.
3. Start the Absolute Irradiance Application software by clicking the menu option: Application/Absolute Irradiance. Click the "Perform Intensity Calibration" button.
4. Select the spectrometer channel that will be calibrated, the calibration lamp file and enter the diameter of the fiber/cosine corrector or integrating sphere sample port that is used.
5. Turn on the reference light source (e.g. AvaLight-HAL-CAL or AvaLight-HAL-CAL-ISP). If a cosine corrector is used at the end of the fiber, mount it directly on the reference light source. If an integrating sphere is used at the end of the fiber, put the integrating sphere sample port over the light output port.
6. Verify that the calibration lamp is ON for at least 15 minutes, and click the "Start Intensity Calibration" button. Try to adjust the integration time while looking at the reference light, such that the maximum count over the wavelength range is around 14000 counts. It's also possible to let AvaSoft search for an optimal integration time by clicking the 'JAC' button.
7. Adjust the Smoothing Parameter to optimize smoothing for the Fiber/Slit diameter that is used.



8. If a good reference signal is displayed, click the white “Save Reference” button. A white line will mark the reference spectrum. Then switch off the calibration lamp, wait until the spectrum becomes flat, near the bottom of the scale, and click the black button to save a dark spectrum. A black line will mark the dark spectrum.
9. Click the “Save Intensity Calibration” button. A dialog shows up in which the current settings in this intensity calibration are shown. If the calibration has been performed with diffuser, the intensity calibration data will be saved to an ASCII file with extension \*.dfr, with bare fiber this extension will be \*.fbr. The name of the intensity calibration file can be entered after clicking the “Save As” button.
10. Switch to the Irradiance Chart TAB to enter the hardware setup and select the colorimetric, radiometric, photometric and/or peak parameters of interest. Then click OK.
11. Measure the output parameters in the experiment. If needed, change the integration time, such that the maximum in Scope Mode is around 14000 A/D Counts. Block the light path to the spectrometer, and save a dark spectrum. If the (ir)radiance of the light to be measured needs to be displayed against time, click the time measurement TAB in the settings dialog.

The intensity calibration as performed under point 9 can be loaded in future experiments by selecting the option “Load Intensity Calibration”, as described below under Quick Start (2). After loading an intensity calibration, a dark spectrum needs to be saved before switching to Irradiance mode.

### Technical Data

Power requirement	24 VDC / 1.2A
Calibration Accuracy	± 15 %
Calibration Stability	± 0.1 %
Calibration valid for	60 hrs
Time to stabilize	Ca. 15 Min.
Bulb Output (CC-UV/VIS)	Ca. 150 $\mu$ W/cm <sup>2</sup> nm (@850nm)
Dimensions (mm)	132 x 110 x 44