

SPECTRAL TIPS AND TECHNIQUES:  
**MAXIMIZING LIGHT MEASUREMENT  
ACCURACY: A GUIDE TO THE AVASPHERE-  
50-LS-HAL-12V INTEGRATING SPHERE**



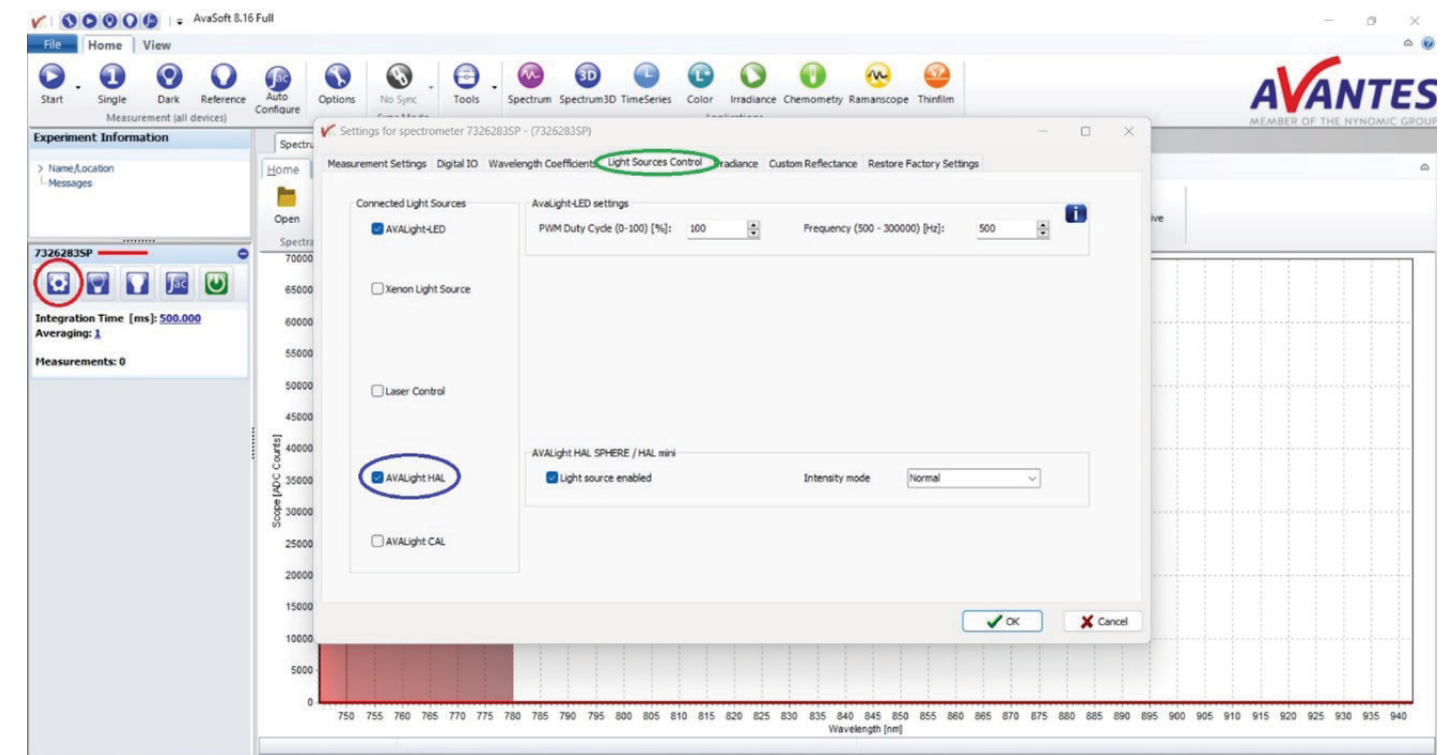
## INTRODUCTION AND GUIDE

Integrating spheres are helpful and versatile tools for many spectroscopic applications, including radiometry, photometry, reflection, and transmission measurements. The simple theory behind an integrating sphere is that light enters the sphere through a sample port, goes through multiple reflections on the highly reflective, Lambertian surface of the sphere which uniformly scatters the light, and then exits the sphere behind a baffled port that leads to a fiber optic cable. This creates a uniform, though highly attenuated, signal. In cases where signal strength is limited, we offer the AvaSphere-50-LS-HAL-12V, which has a built-in internal halogen bulb that can provide up to 160 times more light on the sample for a reflection measurement relative to our standard reflectance integrating sphere. Below is a short guide covering the setup and functionality of the AvaSphere-50-LS-HAL-12V and its use with the Light Sources Control setting in AvaSoft.

Setting up the AvaSphere-50-LS-HAL-12V requires powering the internal halogen bulb with the included 12V power supply. The connector type is a 3-pin M8 field connector, which is unique compared to our other light source power supplies. The halogen bulb is engaged by flipping the small switch located on the base of the unit. When the switch is in the “on” position, power to the bulb can also be toggled in AvaSoft via the 4-pin field connector input, which will be covered later. The interface cable for this integrating sphere is available separately under the part number IC-DB26-AvaSphere-0.5. This cable is specifically for spectrometer models that have a DB26 IO connector. For spectrometer models with a different IO connector, such as the Nexos, a custom cable can be requested and provided. If an external light source is preferred or must be used in conjunction with the internal halogen source (such as using a deuterium light to cover the UV region), the AvaSphere-50-LS-HAL-12V is equipped with an SMA illumination port at its base. A picture of an example unit is shown below.



With the setup complete, we can toggle power to the internal bulb by adjusting the Light Sources Control setting in AvaSoft. To access this setting, open the spectrometer settings (circled in red below), navigate to the Light Sources Control section (circled in green below), and check off the “AVALight HAL” box in the Connected Light Sources portion (circled in blue below).



With this box checked, the internal halogen bulb can be disabled by unchecking the “Light source enabled” box (this box will be checked by default). It should be noted that this light source control setting is also used to control the AvaLight-Hal-S-Mini, which has the additional option of controlling light intensity. This option is not available for the AvaSphere-50-LS-HAL-12V, so adjusting this parameter will not change the intensity of the internal bulb.

With these steps complete, the AvaSphere-50-LS-HAL-12V can be utilized for a variety of measurements, including those that may require the internal bulb to be engaged and disengaged without access to the power switch. Please reach out to our support team at [support@avantes.com](mailto:support@avantes.com) for further explanation or troubleshooting options.

## CONTACT

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# WE'RE HAPPY TO HELP

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### Avantes Headquarters

Phone: +31 (0) 313 670 170  
Email: [info@avantes.com](mailto:info@avantes.com)  
Website: [www.avantes.com](http://www.avantes.com)

### Avantes Inc.

Phone: +1 (303) 410 866 8  
Email: [infousa@avantes.com](mailto:infousa@avantes.com)  
Website: [www.avantesUSA.com](http://www.avantesUSA.com)

### Avantes China

Phone: +86 (0) 108 457 404 5  
Email: [info@avantes.com.cn](mailto:info@avantes.com.cn)  
Website: [www.avantes.cn](http://www.avantes.cn)

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