

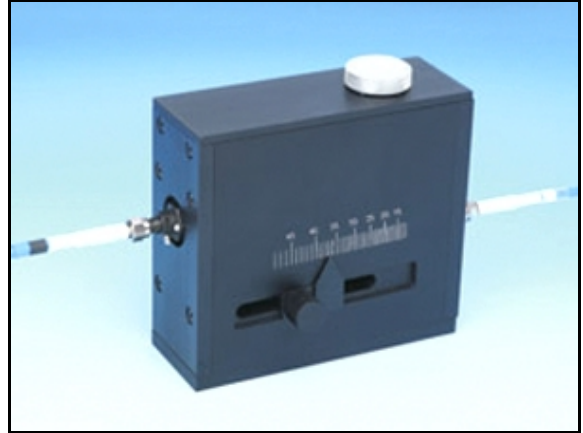
RSS-VA Variable-angle Reflection Sampling System

The RSS-VA Variable-angle Reflection System is an opto-mechanical device that couples to spectrometers and light sources to measure the specular reflection of optical substrates from 200-1100 nm, at varying angles of incidence.

The RSS-VA features two SMA 905 Connectors – one to illuminate the sample and one to collect the reflected light and transfer it to the spectrometer. It also features a 3-point surface mount that holds the sample to be measured in a fixed position during the integration period.

Inside the black anodized chamber, the RSS-VA features optics mounted on a carrier that you can manually adjust to set the angle of incidence from approximately 10° to 50°. Once adjusted, a thumbscrew holds the optical assembly at the fixed angle.

When used with Ocean Optics spectroscopic systems and specular reflectance standards, the RSS-VA is a versatile variable-angle device for characterizing a variety of optical substrates, such as those featuring metallic and dielectric coatings.

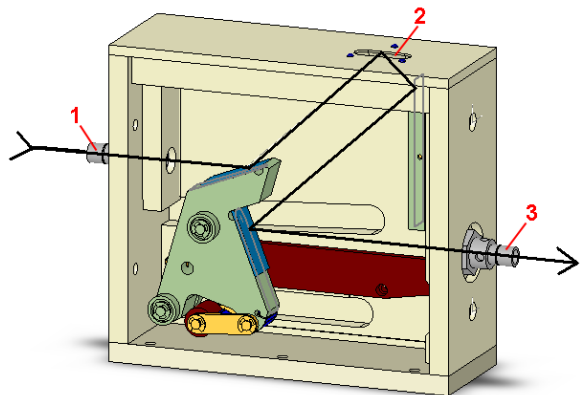


Ocean Optics RSS-VA Variable-angle Reflection System

How the RSS-VA Works

The RSS-VA features a unique internal design that enables it to obtain sample measurements at varying angles of incidence (AOI). The RSS-VA works as follows:

1. Light enters the RSS-VA via the SMA 905 input connector (1).
2. Light is reflected up onto the sample port (2) at the degree determined by the AOI setting on the RSS-VA, where it interacts with the sample.
3. Sampled light is reflected back down through the RSS-VA.
4. Light exits the RSS-VA via the SMA 905 exit connector (3).



Cut-away view of the RSS-VA

Using the RSS-VA

Using the RSS-VA is a three-part process:

- Setting up the hardware
- Configuring the software
- Measuring the sample

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The sections that follow provide instructions on each process required when using the RSS-VA Variable-angle Reflection Sampling System.

Setting up the Hardware

You must first configure your sampling hardware and the RSS-VA prior to measuring your sample. Follow the steps below to set up the RSS-VA:

1. Connect a fiber from the light source to the SMA 905 input connector of the RSS-VA.
2. Connect a fiber from the SMA 905 output connector of the RSS-VA to the spectrometer.
3. Place a STAN-SSH standard on the sample port.
4. Start OOIBase32. Once data acquisition begins, a typical bell-shaped curve should be displayed in the graph area.
5. Adjust the position of the slide carrier on the RSS-VA until the pointer on the RSS-VA is at the desired AOI.
6. Adjust the integration time in OOIBase32 until the signal peaks at approximately 3500 counts.

You have now properly configured the RSS-VA hardware.

Configuring the Software

Once you configure your sampling hardware, you must configure the software to properly work with your hardware configuration. Follow the steps below to set up the software for use with the RSS-VA:

1. Insert the floppy disk that came with your STAN-SSH or STAN-SSL standard.
2. Copy the standard file from the floppy disk that came with your STAN-SSH or STAN-SSL standard to the \OOIBase32\Standards directory.
3. Start the OOIBase32 software, if necessary.
4. Select **Spectrum | Configure Standard Selection** from the OOIBase32 menu bar. The Configure Standard Selection dialog box appears.
5. Enable the check box next to the **Enable Standard Correction** option, and then enter the AOI setting on the RSS-VA into the **Reflection AOI** box.
6. Navigate to and select the standard file in the OOIBase32\Standards directory. The standard information is loaded into OOIBase32.
7. Click the **OK** button to store these inputs and close the dialog box.

You have now configured the software for use with the RSS-VA.

Taking Measurements Using the RSS-VA

Once the hardware and software are configured, you can begin to take samples with the RSS-VA connected to your system. Follow the steps below to take measurements with your RSS-VA-equipped system:

1. Place the STAN-SSH or STAN-SSL standard on the sample port. Ensure that the standard is mounted properly on the 3-point mount and that it is not tilted.
2. Store a reference spectrum in OOIBase32.

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3. Turn the light source off and store a dark spectrum in OOIBase32. The system is now normalized.

Note: When using a transparent sample with the RSS-VA, ambient light may enter the sample port when attempting to take a spectrum. In this scenario, place the screw-on cap of the standard over the sample port (on top of the sample) to block the ambient light from entering the sample port. Then, block the light path and store a dark spectrum as you normally would.

4. Click on the **R** icon in OOIBase32 to enter Specular Reflectance mode.
5. Place the sample on the sample port and measure the reflectance at the desired AOI (configured in Step 5 of the *Configuring the Software* section, above). Ensure that the sample is mounted properly on the 3-point mount and that it is not tilted.

Note: If you adjust the AOI of the RSS-VA, you must re-normalize the spectrometer. Perform Steps 1-3 in the *Taking Measurements Using the RSS-VA* section above, and ensure that the peak signal in the OOIBase32 graph window is at approximately 3500 counts.
