## Field Spectroradiometers for Remote Sensing

<table>
<thead>
<tr>
<th></th>
<th>SR-6500</th>
<th>RS-5400</th>
<th>RS-8800</th>
<th>PSR+</th>
<th>RS-3500</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spectral Range</strong></td>
<td>350-2500nm</td>
<td>350-2500nm</td>
<td>350-2500nm</td>
<td>350-2500nm</td>
<td>350-2500nm</td>
</tr>
<tr>
<td><strong>Spectral Resolution</strong></td>
<td>1.8nm @ 700nm</td>
<td>2.7nm @ 700nm</td>
<td>2.8nm @ 700nm</td>
<td>2.8nm @ 700nm</td>
<td>2.8nm @ 700nm</td>
</tr>
<tr>
<td></td>
<td>2.0nm @ 1300nm</td>
<td>6.8nm @ 1300nm</td>
<td>8.8nm @ 1300nm</td>
<td>8.8nm @ 1300nm</td>
<td>8.8nm @ 1300nm</td>
</tr>
<tr>
<td></td>
<td>3.8nm @ 2200nm</td>
<td>5.8nm @ 2200nm</td>
<td>6.8nm @ 2200nm</td>
<td>6.8nm @ 2200nm</td>
<td>6.8nm @ 2200nm</td>
</tr>
<tr>
<td><strong>Si Photodiode Detector</strong></td>
<td>12 x 24 element TE-cooled Si array (390-1000nm)</td>
<td>12 x 24 element TE-cooled Si array (390-1000nm)</td>
<td>9 x 12 element Si array (390-1000nm)</td>
<td>9 x 12 element Si array (390-1000nm)</td>
<td>9 x 12 element Si array (390-1000nm)</td>
</tr>
<tr>
<td><strong>InGaAs Photodiode Detectors (TE-cooled)</strong></td>
<td>9 x 12 element TE-cooled InGaAs array (1000-1600nm)</td>
<td>9 x 12 element TE-cooled InGaAs array (1000-1600nm)</td>
<td>256 element extended wavelength array (1000-1900nm)</td>
<td>256 element extended wavelength array (1000-1900nm)</td>
<td>256 element extended wavelength array (1000-1900nm)</td>
</tr>
<tr>
<td><strong>Sensitivity Noise Equivalent Radiance (NER)</strong></td>
<td>0.660%cm²/mW, gr/300m</td>
<td>0.530%cm²/mW, gr/200m</td>
<td>0.560%cm²/mW, gr/300m</td>
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</tr>
</tbody>
</table>

### SR-6500
- ultra-high resolution field portable spectroradiometer for analyzing the finest spectral features. Use with our Miniprobe and ILM-660 for soil analysis and mineral identification; use our unique leaf clip for vegetation studies. Available with a range of fiber mount Field of View lenses.

### RS-5400
- high resolution field portable spectroradiometer for in situ measurements with high resolution and sensitivity. Use with our contact probe and Miniprobe or benchtop probe for soil analysis; use our unique leaf clip for vegetation studies. Available with a range of fiber mount Field of View lenses.

### RS-8800
- high resolution spectroradiometer controlled via iPhone, Android device or tablet. Used with Sensor-grip™ probe to provide real-time accurate measurements of scan angle, sun angle, distance from target and real-time target viewing so users of every experience level can scan at nadir for more accurate measurements.

### PSR+
- high resolution/high sensitivity field portable spectroradiometer with both direct attached lenses and fiber mount FOV options. Rugged and reliable construction for field use. Operate in standalone mode with built-in LCD display and memory to store up to 1000 scans. Highest sensitivity of our spectroradiometers.

### RS-3500
- high resolution budget-friendly field spectroradiometer for a range of remote sensing applications. Available with accessories as a remote sensing bundle.

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**Remote Sensing Spectroradiometers**

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www.spectralevolution.com
SPECTRAL EVOLUTION’s remote sensing field spectroradiometers provide a range of solutions for your remote sensing research challenges, including:

- Surface observation—confirming, dispute, or interpreting hyperspectral or multi-spectral data from satellites, flighters and UAVs
- Environmental research, including snow and ice studies
- Agricultural analysis—crop health and yield, N/P/K measurement
- Forestry research, including canopy studies—Leaf Area Index analysis
- Glacial change and climate studies
- Calibration transfer and satellite sensor validation
- Water body studies, including algae blooms
- Plant species identification
- Vegetation health, including photosynthesis efficiency
- Irrigation assessment
- Soil analysis, including topsoil fertility and erosion risks
- Soil degradation, mapping, and monitoring
- Geological remote sensing, including mineral mapping, mineral identification, and geomorphology

Our field spectroradiometers are full range 350-2500nm rugged, reliable, high resolution/high sensitivity systems that are well-suited for remote sensing field or laboratory projects. They are available with a range of accessories including:

- direct attach lenses
- fiber mount Field of View lenses
- two contact probes with a 10mm and 3mm spot size
- a pistol grip with picatinny rail
- Sensaprobe™ grip that provides real-time accurate measurements of scan angle, sun angle, distance from target and real-time target viewing
- benchtop probe for soil analysis and powders
- rugged tablet for field use
- a unique leaf clip with built-in white reference and integrated light source
- RT sphere for reflection and transmittance measurements.

Spectral Evolution Field Spectroradiometers
Our spectroradiometers feature NIST-traceable calibration for spectral radiance or irradiance measurements (depending on your optics choice) so you can get to work immediately. They are ideal for reflectance measurements in applications like vegetation studies, climate research, and soil analysis.

**Advantages**

- Fast, full spectrum UV/VIS/NIR measurements (350-2500nm) with a single scan
- Autoshutter, autoexposure, and autodark correction before each new scan, with no optimization step, for one-touch operation
- Superior reliability—no moving optical parts to break down
- Lightweight and compact—small enough to carry on board and around a field or forest
- Rechargeable Li-ion batteries are included and provide up to 8 hours of field use
- Removable fiber optic cable—field swapable
- Best in class sensitivity/NER (low noise equivalent radiance)
- Bluetooth connectivity (Class I)
- Rugged ALGIZ 8X handheld tablet running Windows 10 with sunlight readable display, GPS, built-in camera and Bluetooth communication with the instrument and DARWin LT
- DARWin SP Data Acquisition software for one-touch scanning, automatically saves data as ASCII files for use with 3rd party software (no post-processing), displays reflectance/transmittance data (percentage) or absorbance (logarithmic) versus wavelength, and produces single and multiple spectral plots

**Applications**

- Available with optional EZ-ID sample identification software and Custom Library Builder
- USGS Library & Vegetation Indices
- Access to the USGS spectral library for vegetation and nineteen vegetation indices is provided by a pull-down menu in DARWin SP Data Acquisition software. Vegetation indices include:
  - NDVI (Normalized Difference Vegetation Index)
  - SR (Simple Ratio Vegetation Index)
  - SAVI (Soil Adjusted Vegetation Index)
  - ARVI (Atmospherically Resistant Vegetation Index)
  - EVI (Enhanced Vegetation Index)
  - IPVI (Infrared Percentage Vegetation Index)
  - PRI (Photochemical Reflectance Index)
  - WBI (Water Band Index)
  - PAR (Photosynthetically Active Radiation)
  - GRVI (Green Ratio Vegetation Index)

**ID sample identification software**

- EZ-ID sample identification software
- EZ-ID also allows you to build your own library from known samples to match against target samples in the field for fast identification.

**www.spectralevolution.com**

**Identifying Clays in Soil**

SPECTRAL EVOLUTION spectroradiometers cover the UV/VIS/NIR spectra using three photodiode arrays with no moving parts. This makes them supremely reliable in the field. They can collect spectra in as little as 100 milliseconds. The exclusive DARWin SP Data Acquisition software included with each unit allows for full-featured instrument control and data handling and is compatible with a wide range of 3rd party analytical software. DARWin allows the user to display single or multiple plot spectra. In the display on the left, the PSR+ was used to identify and classify different clay mixtures in soils in different test pits. The measurements were taken with a contact probe by scanning the pit sidewalls.

**Identifying Clays in Soil**

**USGS Library & Vegetation Indices**

Spectral Evolution Field Spectroradiometers

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