



# REMOTE SENSING SERIES

FIELD-PORTABLE UV-VIS-NIR  
SPECTRORADIOMETERS



**RUGGED & RELIABLE**  
**COMPACT & PORTABLE**  
**UNPARALLELED ACCURACY**  
**HIGH SPECTRAL RESOLUTION**



**Terraplus Inc.**  
120 West Beaver Creek Rd, Unit #15  
Richmond Hill, ON, Canada, L4B 1L2

**terraplus.ca**  
1.905.764.5505  
sales@terraplus.ca

# FULLY PORTABLE REMOTE SENSING SOLUTIONS DESIGNED SPECIFICALLY FOR THE FIELD

With a variety of features including rechargeable batteries, Bluetooth connectivity, lightweight housing, and a rugged design, you can be sure that you are getting the most accurate and reliable data in the field with a Remote Sensing Series spectroradiometer.



## COMMITTED TO QUALITY

Every instrument and accessory is subject to rigorous quality testing. Each component is meticulously designed, assembled, and calibrated to ensure the maximum performance and reliability.

# FAST, RUGGED, RELIABLE SPECTRORADIOMETERS

## Superior Detectors

We use state-of-the-art TE-cooled photodiode arrays that integrate the complete light signal simultaneously, resulting in faster scan time and more accurate data. With no moving parts you can count on a rugged and reliable performance in the field.

## First-Rate Fiber Optic Cables

Our fiber optic cables bring the complete signal straight to the detectors with a uniform field of view for the best signal-to-noise ratio. You don't need to worry about data loss due to loose connections or fiber optic coupling - our fibers are precisely aligned with a keyed entrance, making it quick and easy to replace right in the field without loss of calibration.

## Outstanding Optimization

With our DARWin™ software, manual optimization is a thing of the past. DARWin performs auto-optimization before each and every scan, including auto-integration, auto-exposure, and auto-dark current. This process maximizes signal-to-noise and ensures repeatable and accurate measurements.

## Essential Accessories

All of our spectrometers have SMA connectors to quickly and easily connect to a variety of accessories including contact probes, leaf clip, R/T sphere, field of view lenses, cosine diffusers, and more for radiance, irradiance, reflectance, and transmittance measurements.

### ILM-550



- Illuminates large spot size for standoff measurements
- Aluminum reflector for bright, uniform illumination across the entire spectral range
- Includes two 50-watt tungsten-halogen bulbs for diffuse or spot illumination mode - additional bulb options available
- Mount on lab benches, optical tables, or tripod for repeatable data collection

### R/T Sphere



- Measures absorbance, reflectance, and transmittance
- Small size and lightweight for use in the lab or field
- Use with included stand or mount on tripod
- Choose a High or Low intensity light setting to scan a variety of samples

### Rugged Handheld Tablet



- Real-time, wireless instrument control
- Instantly view scans & match to vegetative, geological, and soil libraries *in situ* with DARWin™ and EZ-ID™
- 8", sunlight readable touchscreen
- Built-in GPS, camera, and microphone to collect & organize essential field data

### Leaf Clip



- Comfortable handle with push-button external triggering allows for single-handed operation
- Integrated 3mm spot size light source & reflectance standard
- Unique light source design minimizes heat to the sample to prevent damage.

### Pistol Grip



- Ergonomic handle with trigger holds fiber optic in place for precise standoff measurements
- Picatinny rail to mount optional scopes & laser sights for enhanced targeting accuracy

### Field of View Lenses



- Lenses provide flexibility for varying target sizes
- Direct attach lenses available: 4°, 8°, 14°
- SMA fiber mount lenses available: 1°, 2°, 3°, 4°, 5°, 8°, and 10°

### Benchtop Probe w/Compactor



- Ideal for hands-free measurement of loose samples such as soil, crushed stone, or powders
- Optional compactor for consistent sample preparation
- SMA-905 fiber optic connection
- Built-in 5-watt tungsten-halogen bulb and durable sapphire window

### Contact Probes



- Ergonomic design with external trigger for quick contact measurements
- Built-in 5-watt illumination for great signal to noise across the full spectral range
- Available in 10mm or 3mm spot sizes for flexible targeting
- Scratch-resistant sapphire window

### Cosine Diffusers



- Ideal for irradiance measurements
- Compact alternative to an integrating sphere
- Inline and right angle options available

### ILM-660



- Our highest-intensity light source
- Includes two 20-watt tungsten-halogen bulbs for maximum illumination
- Ideal for dark samples like solid rock or loose mineral/soil

# REMOTE SENSING SERIES TECHNICAL SPECIFICATIONS

| Model                                                                        | PSR-1100 <sup>f</sup>                                                                                                                                                                                                                                                   | RS-3500                                                                                                                                                                        |                                     |                                     | PSR+                                                                                                                                                                                                                                                                     |                                     |                                     | NATURASPEC™                                                                                                                                                                                                      |                                     |                                     | RS-8800                                                                                                                                                                                                                                           |                                     |                                     |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|
|                                                                              |                                                                                                                                                                                        |                                                                                               |                                     |                                     |                                                                                                                                                                                       |                                     |                                     |                                                                                                                               |                                     |                                     |                                                                                                                                                                |                                     |                                     |
|                                                                              | <ul style="list-style-type: none"><li>• Smallest full-featured portable instrument</li><li>• Spectral range is ideal for vegetation analysis</li><li>• Internal memory &amp; onboard controls - no need for external PC to operate</li><li>• Tripod mountable</li></ul> | <ul style="list-style-type: none"><li>• Tried and true full-range model</li><li>• Standard spectral resolution</li><li>• Lightweight and portable for field research</li></ul> |                                     |                                     | <ul style="list-style-type: none"><li>• Lightest, most portable full-range instrument</li><li>• Internal memory &amp; onboard controls - no need for external PC to operate</li><li>• Option for direct attach lense or fiber optic</li><li>• Tripod mountable</li></ul> |                                     |                                     | <ul style="list-style-type: none"><li>• Best signal to noise compromise in a field instrument</li><li>• High resolution &amp; sensitivity</li><li>• Better quality data - especially from dark samples</li></ul> |                                     |                                     | <ul style="list-style-type: none"><li>• Built-in computer with IoT operating system to control instrument with smartphone</li><li>• See field of view in real-time &amp; record essential metadata with exclusive accessory Sensaprobe™</li></ul> |                                     |                                     |
| Spectral Range                                                               | 320-1100nm                                                                                                                                                                                                                                                              | 350-2500nm                                                                                                                                                                     |                                     |                                     | 350-2500nm                                                                                                                                                                                                                                                               |                                     |                                     | 350-2500nm                                                                                                                                                                                                       |                                     |                                     | 350-2500nm                                                                                                                                                                                                                                        |                                     |                                     |
| Spectral Resolution                                                          | 3.0nm<br>@<br>600nm                                                                                                                                                                                                                                                     | 2.8nm<br>@<br>700nm                                                                                                                                                            | 8nm<br>@<br>1500nm                  | 6nm<br>@<br>2100nm                  | 2.8nm<br>@<br>700nm                                                                                                                                                                                                                                                      | 8nm<br>@<br>1500nm                  | 6nm<br>@<br>2100nm                  | 2.7nm<br>@<br>700nm                                                                                                                                                                                              | 5.5nm<br>@<br>1500nm                | 5.8nm<br>@<br>2100nm                | 3nm<br>@<br>700nm                                                                                                                                                                                                                                 | 8nm<br>@<br>1500nm                  | 6nm<br>@<br>2100nm                  |
| Spectral Sampling Bandwidth (nm)                                             | 1.5 @ 600nm                                                                                                                                                                                                                                                             | 1.3<br>@<br>700nm                                                                                                                                                              | 3.5<br>@<br>1500nm                  | 2.3<br>@<br>2100nm                  | 1.3<br>@<br>700nm                                                                                                                                                                                                                                                        | 3.5<br>@<br>1500nm                  | 2.3<br>@<br>2100nm                  | 0.6<br>@<br>700nm                                                                                                                                                                                                | 1.7<br>@<br>1500nm                  | 1.2<br>@<br>2100nm                  | 1.3<br>@<br>700nm                                                                                                                                                                                                                                 | 3.5<br>@<br>1500nm                  | 2.3<br>@<br>2100nm                  |
| Detector(s)                                                                  | 512-element Si Array                                                                                                                                                                                                                                                    | 512-element Si Array<br>Two 256-element TE-cooled InGaAs Arrays                                                                                                                |                                     |                                     | 512-element Si Array<br>Two 256-element TE-cooled InGaAs Arrays                                                                                                                                                                                                          |                                     |                                     | 1024-element UV-enhanced Si Array<br>512-element TE-cooled InGaAs Array<br>512-element extended TE-cooled InGaAs Arrays                                                                                          |                                     |                                     | 512-element Si Array<br>Two 256-element TE-cooled InGaAs Arrays                                                                                                                                                                                   |                                     |                                     |
| Calibration                                                                  | Factory calibrated for radiance/irradiance using NIST traceable sources (depending upon optics selection)                                                                                                                                                               |                                                                                                                                                                                |                                     |                                     |                                                                                                                                                                                                                                                                          |                                     |                                     |                                                                                                                                                                                                                  |                                     |                                     |                                                                                                                                                                                                                                                   |                                     |                                     |
| Noise Equivalence Radiance<br>W/cm <sup>2</sup> /nm/sr<br>(1.2m fiber optic) | 0.8x10 <sup>-9</sup><br>@<br>700nm                                                                                                                                                                                                                                      | 0.8x10 <sup>-9</sup><br>@<br>400nm                                                                                                                                             | 1.2x10 <sup>-9</sup><br>@<br>1500nm | 1.8x10 <sup>-9</sup><br>@<br>2100nm | 0.5x10 <sup>-9</sup><br>@<br>400nm                                                                                                                                                                                                                                       | 0.8x10 <sup>-9</sup><br>@<br>1500nm | 1.0x10 <sup>-9</sup><br>@<br>2100nm | 0.3x10 <sup>-9</sup><br>@<br>400nm                                                                                                                                                                               | 0.1x10 <sup>-9</sup><br>@<br>1500nm | 2.5x10 <sup>-9</sup><br>@<br>2100nm | 0.8x10 <sup>-9</sup><br>@<br>400nm                                                                                                                                                                                                                | 1.2x10 <sup>-9</sup><br>@<br>1500nm | 1.8x10 <sup>-9</sup><br>@<br>2100nm |
| Software Included                                                            | DARWin™ SP Data Acquisition                                                                                                                                                                                                                                             | DARWin™ SP Data Acquisition                                                                                                                                                    |                                     |                                     | DARWin™ SP Data Acquisition                                                                                                                                                                                                                                              |                                     |                                     | DARWin™ SP Data Acquisition                                                                                                                                                                                      |                                     |                                     | DARWin™ SP Data Acquisition                                                                                                                                                                                                                       |                                     |                                     |
| Power                                                                        | 7.5V, 5W                                                                                                                                                                                                                                                                | 7.5V, 22.5W                                                                                                                                                                    |                                     |                                     | 7.5V, 22.5W                                                                                                                                                                                                                                                              |                                     |                                     | 7.4V, 28W                                                                                                                                                                                                        |                                     |                                     | 7.5V, 22.5W                                                                                                                                                                                                                                       |                                     |                                     |
| Dimensions (in/mm)                                                           | 7 x 3.3 x 5.8/<br>177.8 x 82.5 x 147.3                                                                                                                                                                                                                                  | 8.5 x 12 x 3.5/<br>215.9 x 304.8 x 88.9                                                                                                                                        |                                     |                                     | 8.5 x 11.5 x 3.3/<br>215.9 x 292.1 x 82.5                                                                                                                                                                                                                                |                                     |                                     | 12.4 x 8.7 x 4.4/<br>314.9 x 220.9 x 111.7                                                                                                                                                                       |                                     |                                     | 12.4 x 9 x 15/<br>314.9 x 228.6 x 381                                                                                                                                                                                                             |                                     |                                     |
| Weight (lbs/kg)                                                              | 4/1.8                                                                                                                                                                                                                                                                   | 8.9/4                                                                                                                                                                          |                                     |                                     | 7.9/3.5                                                                                                                                                                                                                                                                  |                                     |                                     | 12.6/5.7                                                                                                                                                                                                         |                                     |                                     | 9.4/4.2                                                                                                                                                                                                                                           |                                     |                                     |
| Interface                                                                    | USB, Bluetooth                                                                                                                                                                                                                                                          | USB, Bluetooth                                                                                                                                                                 |                                     |                                     | USB, Bluetooth                                                                                                                                                                                                                                                           |                                     |                                     | USB, Bluetooth                                                                                                                                                                                                   |                                     |                                     | USB, Bluetooth                                                                                                                                                                                                                                    |                                     |                                     |
| Minimum Scan Speed                                                           | 100ms                                                                                                                                                                                                                                                                   | 100ms                                                                                                                                                                          |                                     |                                     | 100ms                                                                                                                                                                                                                                                                    |                                     |                                     | 100ms                                                                                                                                                                                                            |                                     |                                     | 100ms                                                                                                                                                                                                                                             |                                     |                                     |
| Wavelength Reproducibility (nm)                                              | 0.1                                                                                                                                                                                                                                                                     | 0.1                                                                                                                                                                            |                                     |                                     | 0.1                                                                                                                                                                                                                                                                      |                                     |                                     | 0.1                                                                                                                                                                                                              |                                     |                                     | 0.1                                                                                                                                                                                                                                               |                                     |                                     |
| Wavelength Accuracy (nm)                                                     | ±0.5 bandwidth                                                                                                                                                                                                                                                          | ±0.5 bandwidth                                                                                                                                                                 |                                     |                                     | ±0.5 bandwidth                                                                                                                                                                                                                                                           |                                     |                                     | ±0.5 bandwidth                                                                                                                                                                                                   |                                     |                                     | ±0.5 bandwidth                                                                                                                                                                                                                                    |                                     |                                     |
| Automatic Exposure                                                           | ✓                                                                                                                                                                                                                                                                       | ✓                                                                                                                                                                              |                                     |                                     | ✓                                                                                                                                                                                                                                                                        |                                     |                                     | ✓                                                                                                                                                                                                                |                                     |                                     | ✓                                                                                                                                                                                                                                                 |                                     |                                     |
| Automatic Shutter for Dark Scans                                             | ✓                                                                                                                                                                                                                                                                       | ✓                                                                                                                                                                              |                                     |                                     | ✓                                                                                                                                                                                                                                                                        |                                     |                                     | ✓                                                                                                                                                                                                                |                                     |                                     | ✓                                                                                                                                                                                                                                                 |                                     |                                     |
| Onboard Storage                                                              | ✓<br>2500 Scans                                                                                                                                                                                                                                                         | ✗                                                                                                                                                                              |                                     |                                     | ✓<br>1000 Scans                                                                                                                                                                                                                                                          |                                     |                                     | ✗                                                                                                                                                                                                                |                                     |                                     | ✓<br>Integrated Computer                                                                                                                                                                                                                          |                                     |                                     |

# DARWin™ DATA ACQUISITION SOFTWARE

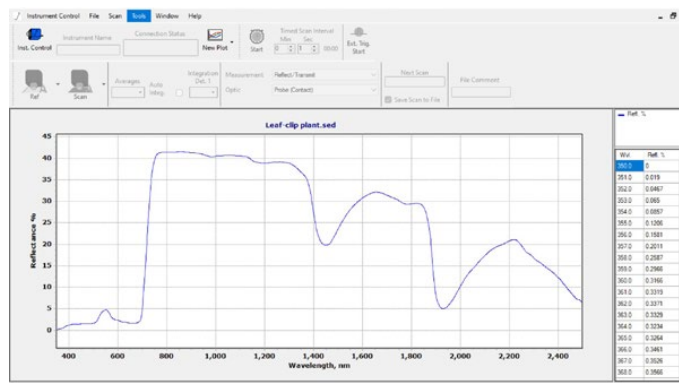
All our spectroradiometers include the exclusive DARWin™ software – a full-featured, menu-driven program for easy data acquisition and analysis of multiple UV-VIS-NIR spectra.

DARWin comes equipped with features specifically for field measurements.

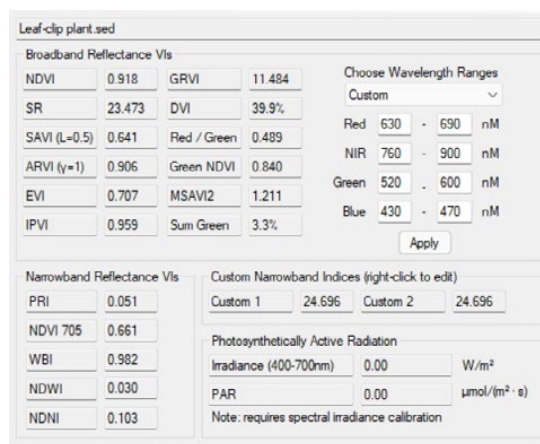
- One-touch operation
- Easy, intuitive menus for fast, effortless operation
- Ability to adjust parameters such as integration time, number of average scans, fore optics selection
- Spectra can be automatically collected at user adjustable intervals from 1 second to 1 hour
- Saves scans as ASCII files for use with third-party software without pre-processing
- Ability to trigger scan from either the software or accessory
- Instrument status displayed after each scan (voltage, temperature, scan title, etc.)
- Specialty pulldown menus to automatically calculate 19 broadband and narrowband vegetative indices
- User-modified index with simple on-screen menu-driven instructions
- Ability to display data as reflectance, transmittance, absorbance, or radiance/irradiance
- Compatible with Windows 7 and Windows 10
- DARWin LT is a simplified version of the software that can be run on a rugged field tablet

## EZ-ID™ Spectral Matching Software

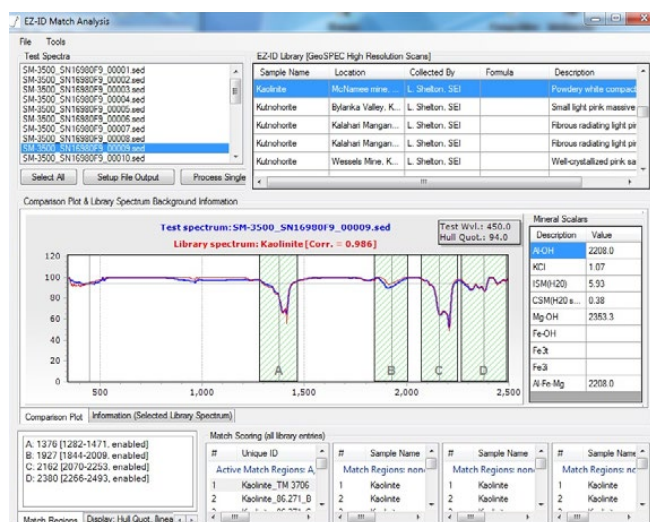
- Add-on module to DARWin
- Build your own custom spectral libraries
- Instantly compare acquired data to reference libraries for instant identification and classification
- Available with up to 3 spectral libraries for minerals, matching to more than 1000 known samples



DARWin interface showing a vegetation scan



Vegetation indices screen



EZ-ID module